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A Results Paper on Tourist Identification with Preferences Based on POI using Machine Learning

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Abstract:
This paper advocate for and gift style and prophetic Analysis for Transportation primarily based tour information (bus, train, etc.). This work is motivated by the discovered limitations of utilizing ancient information sources (e.g., social media information and survey data) that ordinarily suffer from the restricted coverage of tour population and unpredictable info delay. This project demonstrates however the transport information will overcome these limitations and supply higher insights for various stakeholders, usually as well as tour agencies, transport operators and tourists themselves. Specifically, here propose a SVM rule to acknowledge tourists from public commuters. Taking advantage of the trace information from the known tourists, then style a tour preference analytics model to find out and predict their next tour, wherever associate interactive computer program is enforced to ease the knowledge access and gain the insights from the analytics results. Additionally tourist will get recommendation supported dish of alternative tourists. Experiments with real-world datasets show the promise and effectiveness of the planned framework: the Macro and small F1 countless the tour identification system come through zero.8549 and 0.7154 severally, whereas the tour preference analytics system improves the baselines by a minimum of twenty three.53% and 11.44% in terms of exactitude and recall.

Keywords: Data mining and knowledge discovery, transportation systems, emerging applications and technology, tourist recommendation.

I. INTRODUCTION

Tourism is a vital social cultural and economic side that have the movement of many folks round the world with an enormous impact on the economy of the many countries. Therefore, the generation of tourism-related tools will have an enormous impact in society. Traveling recommendation systems became very fashionable applications for organizing and coming up with traveller visits. one among the most bottlenecks of this sort of systems consists of the initial population and later maintenance of the knowledge concerning Points Of Interest (POIs), user ratings, and reference to geographic systems.[1] However, in recent years we've seen the emergence of latest social network platforms wherever users will simply and area unit willing to update that sort of data.[1][2] Also, the broad use of traveller net applications permits users to request real time data concerning the schedules, guides or plans that fulfill their preferences. trailing and understanding tourists would directly profit government and tour agencies to style and improve their services, like launching new tour journey and providing made-to-order tour packages supported tourist's side and preferences to require and perceive tourists and their preferences, the recent business enterprise analytics analysis principally adopts social media information wherever the fundamental assumption behind this attempt is that the majority tourists would love to share their travel moments on their on-line social networks. However, victimization social media information might suffer from the restricted coverage and knowledge delay, solely a little portion of tourists area unit actively sharing their photos or travel experiences on social media, as several travelers might not use the net.[3] what is more, most shared contents area unit well-liked landmarks, not covering all the places a traveller visited, and so the insight gained from social media information could also be scarce, considering the high information roaming fees, several social network sharing's don't seem to be period announce. Tourists might share their photos and feelings when a full day's travel, or maybe when coming to their hometowns.[4] Still, a way to effectively and timely drag all the tourists' social media data from the service suppliers is additionally difficult.[6][7] Besides the social media information, sensing element network information and cellular information also are adopted by the researchers for traveller study, however they suffer from the similar limitations and constraints. Previous system that was victimization social media information which will suffer from the restricted coverage and knowledge delay. [5]solely alittle portion of tourists area unit sharing their photos or travel experiences on social media and lots of social network sharing's don't seem to be period announce. to beat these drawbacks i'm propose a completely unique "Design And prognostic Analysis For Transportation based mostly traveller Data", here i'm about to give higher results for various tour agencies, transport operators and travellers by distinguishing tourist from transportation information and acquire their preferences for the tour that may facilitate others to travel for the tour. Here i'm showing however the general public transport information will give hard-to-obtain, tourist-specific insights and quantitative results. victimization the transport information, here i am propose a two-phase algorithmic rule to spot tourists from public commuters. Properly ranking transport stations per however traveller area unit doubtless to be a destination and

planning a graph-based novel repetitive learning algorithmic rule to accomplish the traveller identification. For known tourists and their travel records, the personalised preference analytics and site recommendation strategies used. This work makes an attempt to influence the on top of problems, by demonstrating however the transport information is accustomed determine and analyze tourists.[8][9][10] Despite of a diversity of native tour services out there, transport (e.g., train and bus) continues to be the foremost efficient and convenient travel approach for many tourists, particularly within the densely-populated cities like geographic area. consequently, the general public transport information provide a comfortable coverage of the traveller population.[11] Meanwhile, the wide adopted electronic fare payment systems will timely record and trace tourists and their travel routes, once they faucet in/ out at the platform of a station or on a stop. specially, I propose a completely unique however sensible framework for traveller analytics, that (a) foremost applies machine learning techniques on transport information to spot tourists from public commuters, and (b) uses the known traveller travel data to conduct their preference analytics and thereby timely makes the personalised recommendation and prediction. to produce the sensible realization of the planned framework, i'm taking geographic area as associate commendable case and gift the empiric experiment results victimization the general public transport information from the town. Recently, deep learning models have incontestable nice potential for learning effective representations and delivered the progressive performance in ancient recommendation tasks. for example, Wang et al. integrated stacked de-noising auto-encoders (SDA) into a matrix resolving model. In their methodology, de-noising auto-encoders area unit accustomed extract the items' latent factors from their content data. Li et al. extended the work to unify the marginalized de-noising auto-encoders (mDA) with a matrix resolving model. Kim et al. combined convolution neural network model (CNN) with matrix resolving. though these strategies use deep learning techniques to find out the item illustration, only 1 sort of item feature is taken into account as auxiliary data. Here I will note that there area unit multiple sorts of dish options with various input modalities, like matter content, geographical options and neighborhood options, which can contribute wealthy data to boost dish recommendation. a way to extract a unified dish illustration from the heterogeneous options for dish recommendation is tougher and has not been studied. Besides, these strategies assume that non-public preferences area unit stable and ignore their spatial dynamics over nations.

II. LITERATURE SURVEY

Traveling recommendation systems became highly regarded applications for organizing and coming up with traveller visits. Among different challenges, these applications ar faced with the task of maintaining updated data concerning in style traveller destinations, similarly as providing helpful traveller guides that meet the users preferences. during this work authors gift the PLANTOUR, a system that makes personalized traveler plans victim is ation the human-generated data gathered from the MINUBE1 traveling social network. The system follows an automatic coming up with approach to get a multiple-day set up with the foremost relevant points of interest of the city/region being visited. notably, the system collects data of users and points of interest from MINUBE, teams these points with bunch techniques to separate the matter into per-day sub-problems. Then, it uses Associate in Nursing ready-made domain-independent automatic planner that finds sensible quality traveller plans. in contrast to different traveller recommender systems, the PLANTOUR planner is in a position to arrange relevant points of interest taking under consideration user's expected drives, and user scores from a true social network. The paper additionally highlights the way to use human provided recommendations to guide the hunt for solutions of combinatorial tasks. The ensuing intelligent system opens new prospects of mixing human-generated information with economical automatic techniques once finding laborious machine tasks [1].

Recommender system is one amongst the foremost widespread data processing topics that keep drawing intensive attention from each world and business. Among them, dish (point of interest) recommendation is very sensible however challenging: it greatly advantages each users and businesses in real-world life, however it's arduous because of information deficiency and numerous context. whereas variety of algorithms plan to tackle the matter w.r.t. specific information and drawback settings, they typically fail once the situations amendment. during this work, author propose to plot a general and principled SSL (semi-supervised learning) framework, to alleviate information deficiency via smoothing among neighboring users and POIs, and treat numerous context by regularizing user preference supported context graphs. To modify such a framework, develop PACE (Preference And Context Embedding), a deep neural design that conjointly learns the embeddings of users and POIs to predict each user preference over POIs and numerous context related to users and POIs. Here show that PACE with success bridges CF (collaborative filtering) and SSL by generalizing the de facto strategies matrix resolution of CF and graph Laplacian regularization of SSL. [2].

Point-of-interest (POI) recommendation is a very important service to Location-Based Social Networks (LBSNs) which will profit each users and businesses. In recent years, variety of dish recommender systems are projected, however there's still a scarcity of systematical comparison thence. during this paper, authors offer associate all around analysis of twelve progressive dish recommendation models. From the analysis, here get many vital findings, supported that we are able to higher perceive and utilize dish recommendation models in varied situations. Here associate this work to supply readers with an overall image of the with-it analysis on dish recommendation. [3].

Point-of-interest (POI) recommendation has become a vital thanks to facilitate folks discover enticing and fascinating places, particularly once they travel out of city. However, the acute sparseness of user-POI matrix and cold-start problems severely hinder the performance of cooperative filtering-based ways. Moreover, user preferences could vary dramatically with relevancy the nations because of totally different urban compositions and cultures. to deal with these challenges, we tend to stand on recent advances in deep learning and propose a Spatial-Aware stratified cooperative Deep Learning model (SH-CDL). The model collectively performs deep illustration learning for POIs from heterogeneous options and hierarchically additive illustration learning for spatial-aware personal preferences. To combat information sparsely in spatial-aware

user preference modeling, each the collective preferences of the general public in a very given target region and also the personal preferences of the user in adjacent regions square measure exploited within the style of social regularization and abstraction smoothing. To contend with the multimodal heterogeneous options of the POIs, introduce a late feature fusion strategy into our SH-CDL model. The in depth experimental analysis shows that our planned model outperforms the progressive recommendation models, particularly in distant and cold-start recommendation situations [4].

The tourism industry is a key economic driver for many cities. To understand tourists' traveling patterns can help both public and private relevant sectors design and improve their services to serve tourists better and get additional values from it. The existing approaches to discover tourists' traveling pattern focus on small sets of known tourists extracted from social media or other channels. The accuracy of the mining result cannot be guaranteed due to the small and bias set of samples. In this paper, we present our system FTT (Finding and Tracking Tourists) to identify tourists from public transport commuters in a city, and to further track their movements from one place to another. Our target is a large set of tourists and their trajectories extracted from public transport riding records, which more accurately represent the movements of general tourists. In particular, we design an iterative learning algorithm to find the tourists among public transport commuters, and provide interface to answer user queries on tourists' traveling patterns. The result will be visualized on top of a city map [5].

III. EXISTING SYSTEM

To capture and perceive tourists and their preferences, the recent commercial enterprise analytics analysis chiefly adopts social media information (e.g., geo tagged pictures in Flickr), wherever the essential assumption behind this try is that the majority tourists would love to share their travel moments on their on-line social networks. However, exploitation social media information could suffer from the restricted coverage and data delay: (a) solely a little portion of tourists area unit actively sharing their photos or travel experiences on social media, as several travellers might not be the fans of social networks or perhaps not use the net. what is more, most shared contents area unit common landmarks, not covering all the places a traveler visited, and therefore the insight gained from social media information could also be incomplete or biased; (b) considering the high information roaming fees, several social network sharing don't seem to be period announce. Tourists could share their photos and feelings once an entire day's travel, or perhaps once returning to their hometowns. Meanwhile, the way to effectively and timely crawl all the tourists' social media data from the service suppliers is additionally difficult. Besides the social media information, detector network information (e.g., bluetooth information) and cellular data also are adopted by the researchers for traveler study, however they suffer from the similar limitations and constraints.

IV. EXISTING SYSTEM DISADVANTAGES

• Only a small portion of tourists are actively sharing their photos or travel experiences on social media.
• Completely depend on social medias photos.

V. PROBLEM STATEMENT

A novel "Designing And Predictive Analysis For Transportation Based Tourist Data" shows that how the transport data can overcome the limitations of existing system and provide better results for different tour agencies, transport operators and tourists..

VI. PROPOSED SYSTEM

Despite of a diversity of native tour services accessible, conveyance (e.g., railroad line and bus) remains the foremost efficient and convenient travelling approach for many tourists, particularly within the densely-populated cities like Singapore and Japanese capital. consequently, the general public transport information provide a adequate coverage of the holidaymaker population. Meanwhile, the wide adopted electronic fare payment systems will timely record and trace tourists and their travelling routes, after they faucet in/ out at the framing of a station or boarding/alighting on a bus. specially, we tend to propose a completely unique however sensible framework for holidaymaker analytics, referred to as TourSense, that (a) first off applies machine learning techniques on transport information to spot tourists from public commuters, and (b) uses the known holidaymaker travelling info to conduct their preference analytics and thereby timely makes the personalised recommendation and prediction. to supply the sensible embodiments of the planned framework, we tend to take Singapore as AN exemplary case and gift the empirical experiment results victimization the general public transport information from the town.

VII. PROPOSED SYSTEM ADVANTAGES

• More efficient.
• Analyze the tourists with the help of transportation data.
• Show Rank wise transport stations that tourist mostly use to reach at destination.
• It provide location recommendation for tourists to visit that are mostly liked by other tourists.

VIII. SYSTEM ARCHITECTUR

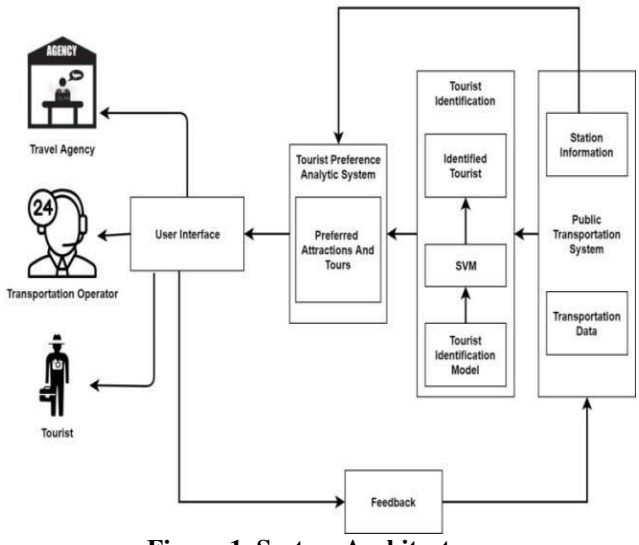


Figure.1. System Architecture

IX. PROJECT SCREENSHOTS

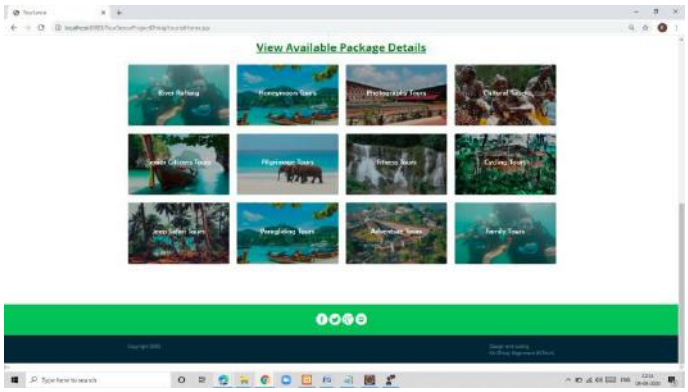


Figure.2. Tourist Home Page

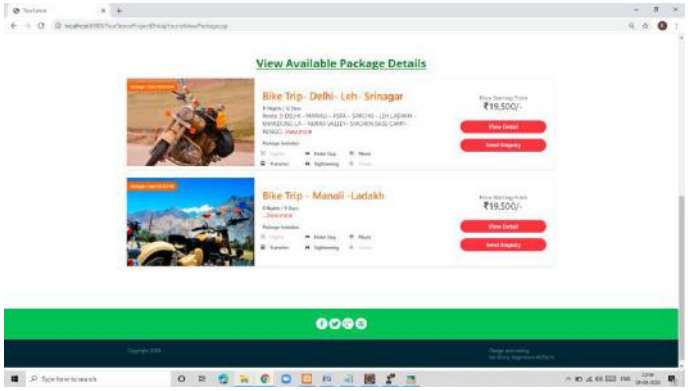


Figure.3. Available Package Details

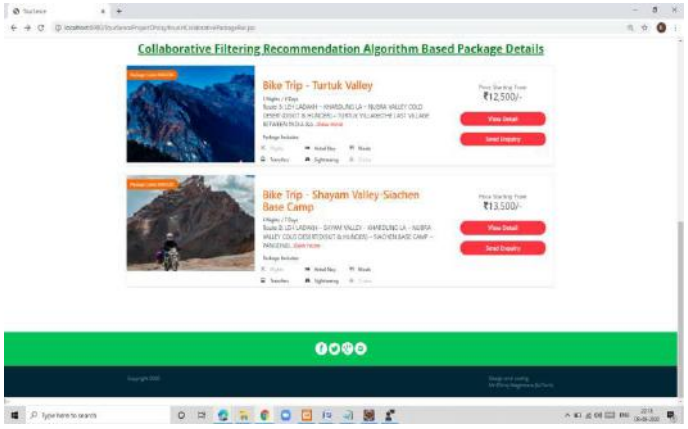


Figure.4. Collaborative Filtering Recommendation

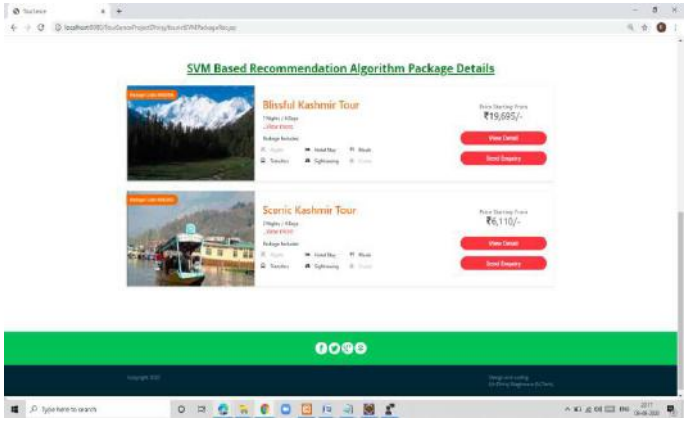
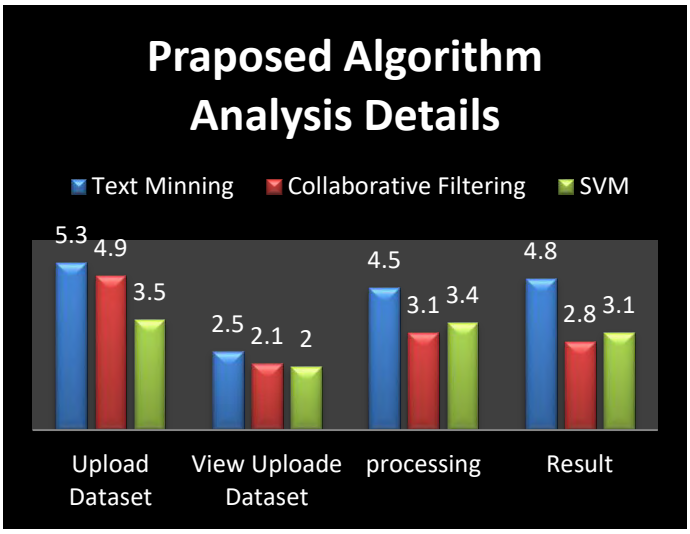


Figure.5.6. SVM Classification based Recommendation

X. RESULT ANALYSIS



Operations/ Algorithm	Textminning	Collaborative Filtering	SVM
upload	5.3	4.9	3.5
ViewUpload	2.5	2.1	2
processing	4.5	3.1	3.4
Result	4.8	2.8	3.1

XI. CONCLUSION

In this paper, we have introduced TourSense framework that firstly identifies tourists and subsequently conducts their preference analytics using city-scale public transportation data. The SCR graph together with the iterative propagation learning is proposed to effectively recognize tourists from public commuters. After that, a tourist preference analytics model is constructed to predict next attraction and tour. We have shown the promise of this approach via using the city-scale data from Singapore public transportation system. In the experimental results, the Macro and Micro F1 scores of the proposed tourist identification approach achieves 0.8549 and 0.7154 respectively, and meanwhile the proposed preference analytics model improves the baselines in terms of both precision and recall. An interactive and informative user interface is developed to help access and visualize all the analytics results. On a broader canvas, the proposed framework demonstrates the feasibility of recognizing and analyzing different groups of public commuters, such as tourists, business travellers, local citizens, or even foreign workers. We believe that many other insights of practical interest (e.g., the different travel demands and behaviors between tourists and business travellers) can be investigated using the proposed framework and the public transport data. Moreover, this work reveals many unique advantages of transport data over other information sources (e.g., social media data), typically including a good coverage of population, timeliness of information, and the usefulness of the transportation infrastructures (e.g., subway gantries or bus stops can be potentially used to distribute the analytics results).

XII. REFERENCES

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Design and Predictive Analysis for Transportation based Tourist Data

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Abstract: We advocate for and gift TourSense, a framework for touristidentification and preference analytics exploitation city-scale transport knowledge (bus, subway, etc.). Our work is driven by the ascertained limitations of utilizing ancient knowledge sources (e.g., social media knowledge and survey data) that unremarkably suffer from the restricted coverage of touristpopulation and unpredictable info delay. TourSense demonstrates however the transport knowledge will overcome these limitations and supply higher insights for various stakeholders, usually together with tour agencies, transport operators and tourists themselves. Specifically, we tend to initial propose a graph-based repetitious propagation learning formula to acknowledge tourists from public commuters. Taking advantage of the trace knowledge from the known tourists, we tend to then style a tourist preference analytics model to be told and predict their next tour, wherever associate interactive computer programmer is enforced to ease the data access and gain the insights from the analytics results. Experiments with real-world datasets (from over five.1 million commuters and their 462 million trips) show the promise and effectiveness of the planned framework: the Macro and small F1 a lot of the touristidentification system attain zero.8549 and 0.7154 severally, whereas the touristpreference analytics system improves the baselines by a minimum of twenty three.53% and 11.44% in terms of exactness and recall.

Keywords: Data mining and knowledge discovery, transportation systems, emerging applications and technology, touristrecommendation.

I. INTRODUCTION

As one of the world's largest industries, commercial enterprise is the economic backbone of the many countries and cities. trailing and understanding tourists would directly profit regime and tour agencies to style and improve their services, like launching new tour journey and providing customized tour packages supported tourist's facet and preferences.

To capture and perceive tourists and their preferences, the recent commercial enterprise analytics analysis primarily adopts social media information, wherever the fundamental assumption behind this try is that almost all tourists would love to share their travel moments on their on-line social networks. However, mistreatment social media information might suffer from the restricted coverage and knowledge delay: solely atiny low portion of tourists area unit actively sharing their photos or travel experiences on social media, as several travelers might not be the fans of social networks or maybe not use the web. moreover, most shared contents area unit common landmarks, not covering all the places a traveler visited, and so the insight gained from social media information is also incomplete or biased; Considering the high information roaming fees, several social network sharing aren't period of time denote. Tourists might share their photos and feelings when a full day's travel, or maybe when coming to their hometowns. Meanwhile, a way to effectively and timely go along with all the tourists' social media info from the service suppliers additionally difficult also the social media information, sensing element network information (e.g., bluetooth information) and cellular data are follow by the researchers for traveler study, however they suffer from the similar limitations and constraints.

This work tries to affect the on top of problems, by demonstrating however the transport information may be accustomed establish and analyze tourists.

Despite of a diversity of native tour services out there, conveyance (e.g., train and bus) remains the foremost cost-effective and convenient motion approach for many tourists. consequently, the general public transport information supply a ample coverage of the traveler population. Meanwhile, the wide adopted electronic worth payment systems will timely record and trace tourists and their motion routes, after they faucet in/ out at the platform of a station or stop on a bus. specially, we have a tendency to propose a completely unique however sensible framework for traveler analytics, referred to as TourSense, that applies machine learning techniques on transport information to spot tourists from public commuters, and uses the known traveler motion info to conduct their preference analytics and with timely makes the personalized recommendation and prediction. to produce the sensible realization of the projected framework.

II. LITERATURE SURVEY

1. Paper Name: TourSense: A Framework for TouristIdentification and Analytics Using Transport Data
Author: Yu Lu, Huayu Wu, Xin Liu, Penghe Chen

Description: Authors advocate for and gift TourSense, a framework for tourist identification and preference analytics exploitation city-scale transport knowledge (bus, subway, etc.). Here is impelled by the determined limitations of utilizing ancient knowledge sources (e.g., social media knowledge and survey data) that normally suffer from the restricted coverage of tourist population and unpredictable info delay. TourSense demonstrates however the transport knowledge will overcome these limitations and supply higher insights for various stakeholders, generally together with tour agencies, transport operators and tourists themselves. Specifically, here 1st propose a graph-based reiterative propagation learning formula to acknowledge tourists from public commuters. Taking advantage of the trace knowledge from the known tourists, then style a tourist preference analytics model to be told and predict their next tour, wherever associate degree interactive interface is enforced to ease the data access and gain the insights from the analytics results.

2. Paper Name: Planning for tourism routes using social networks
Author: I. Cenamor, T. de la Rosa, S. N´u˜nez, and D. Borrajo

Description: Traveling recommendation systems became very talked-about applications for organizing and designing holidaymaker journeys. Among different challenges, these applications square measure sweet-faced with the task of maintaining updated data regarding standard holidaymaker destinations, further as providing helpful holidaymaker guides that meet the users preferences. during this work authors gift the PLANTOUR, a system that makes customized holidaymaker plans mistreatment the human-generated data gathered from the MINUBE1 traveling social network. The system follows an automatic designing approach to come up with a multiple-day arrange with the foremost relevant points of interest of the city/region being visited. notably, the system collects data of users and points of interest from MINUBE, teams these points with bunch techniques to separate the matter into per-day sub-problems. Then, it uses associate ready-to-wear domain-independent machine-driven planner that finds sensible quality holidaymaker plans. in contrast to different holidaymaker recommender systems, the PLANTOUR planner is in a position to arrange relevant points of interest taking into consideration user's expected drives, and user scores from a true social network. The paper conjointly highlights a way to use human provided recommendations to guide the hunt for solutions of combinatorial tasks. The ensuing intelligent system opens new prospects of mixing human-generated information with economical machine-driven techniques once finding onerous machine tasks.

3. Paper Name: Bridging collaborative filtering and semi-supervised learning: A neural approach for poi recommendation

Author: C. Yang, L. Bai, C. Zhang, Q. Yuan, and J. Han

Description: Recommender system is one in every of the foremost standard data processing topics that keep drawing intensive attention from each domain and business. Among them, dish (point of interest) recommendation is extraordinarily sensible however challenging: it greatly edges each users and businesses in real-world life, however it's exhausting thanks to information inadequacy and varied context. whereas variety of algorithms plan to tackle the matter w.r.t. specific information and drawback settings, they typically fail once the situations amendment. during this work, author propose to plan a general and principled SSL (semi-supervised learning) framework, to alleviate information inadequacy via smoothing among neighboring users and POIs, and treat varied context by regularizing user preference supported context graphs. To change such a framework, develop PACE (Preference And Context Embedding), a deep neural design that conjointly learns the embeddings of users and POIs to predict each user preference over POIs and varied context related to users and POIs. Here show that PACE with success bridges CF (collaborative filtering) and SSL by generalizing the factual strategies matrix factoring of CF and graph Laplacian regularization of SSL.

4. Paper Name: An experimental evaluation of point-of-interest recommendation in location-based social networks

Author: Y. Liu, T.-A. N. Pham, G. Cong, and Q. Yuan

Description: Point-of-interest (POI) recommendation is a crucial service to Location-Based Social Networks (LBSNs) which will profit each users and businesses. In recent years, variety of dish recommender systems are projected, however there's still a scarcity of systematical comparison thence. during this paper, authors give AN all around analysis of twelve progressive dish recommendation models. From the analysis, here acquire many vital findings, supported that we will higher perceive and utilize dish recommendation models in numerous situations. Here ANticipate this work to supply readers with an overall image of the with-it analysis on dish recommendation.

5. Paper Name: Spatial-aware hierarchical collaborative deep learning for poi recommendation

Author: H. Yin, W. Wang, H. Wang, L. Chen, and X. Zhou

Description: Point-of-interest (POI) recommendation has become a crucial thanks to facilitate individuals discover enticing and attention-grabbing places, particularly after they travel out of city. However, the intense meagerness of user-POI matrix and cold-start problems severely hinder the performance of cooperative filtering-based strategies. Moreover, user preferences might vary dramatically with reference to the nation-states thanks to totally different urban compositions and cultures. to deal with these challenges, we have a tendency to stand on recent advances in deep learning and propose a Spatial-Aware class-conscious cooperative Deep Learning model (SH-CDL). The model conjointly performs deep illustration learning for POIs from heterogeneous options and hierarchically additive illustration learning for spatial-aware personal preferences. To combat information sparsely in spatial-aware user preference modeling, each the collective preferences of the general public in an exceedingly given target region and therefore the personal preferences of the user in adjacent regions ar exploited within the sort of social regularization and abstraction smoothing. To cope with the multimodal heterogeneous options of the POIs, introduce a late feature fusion strategy into our SH-CDL model. The intensive experimental analysis shows that our planned model outperforms the progressive recommendation models, particularly in distant and cold-start recommendation situations.

III. EXISTING SYSTEM

To capture and perceive tourists and their preferences, the recent commercial enterprise analytics analysis chiefly adopts social media information (e.g., geotagged pictures in Flickr), wherever the essential assumption behind this try is that the majority tourists would love to share their travel moments on their on-line social networks. However, exploitation social media information could suffer from the restricted coverage and

data delay: (a) solely alittle portion of tourists area unit actively sharing their photos or travel experiences on social media, as several travellers might not be the fans of social networks or perhaps not use the net. what is more, most shared contents area unit common landmarks, not covering all the places a traveler visited, and therefore the insight gained from social media information could also be incomplete

or biased; (b) considering the high information roaming fees, several social network sharing don't seem to be period announce. Tourists could share their photos and feelings once an entire day's travel, or perhaps once returning to their hometowns. Meanwhile, the way to effectively and timely crawl all the tourists' social media data from the service suppliers is additionally difficult. Besides the social media information, detector network information (e.g., bluetooth information) and cellular data also are adopted by the researchers for traveler study, however they suffer from the similar limitations and constraints.

IV. EXISTING SYSTEM DISADVANTAGES

- Only a small portion of tourists are actively sharing their photos or travel experiences on social media.
- Completely depend on social medias photos.

V. PROBLEM STATEMENT

Previous system that was victimisation social media information that will suffer from thelimited coverage and data delay. solely atiny low portion of tourists arsharing their photos or travel experiences on social media and lots of socialnetwork sharing's aren't period of time denote. to beat these drawbacks we tend topropose a completely unique "Predictive Analysis For Transportation primarily based traveler informationUsing information Mining", to produce higher results for different tour agencies,transport operators and travelers by distinguishing tourist from transportationdata and acquire their preferences for the tour which will facilitate others to travel for thetour. By showing however the general public transport information will give hard-to-obtain,tourist-specific insights and quantitative results.

VI. PROPOSED SYSTEM

Despite of a diversity of native tour services accessible, conveyance (e.g., railroad line and bus) remains the foremost efficient and convenient travelling approach for many tourists, particularly within the densely-populated cities like Singapore and Japanese capital. consequently, the general public transport information provide a adequate coverage of the holidaymaker population. Meanwhile, the wide adopted electronic fare payment systems will timely record and trace tourists and their travelling routes, after they faucet in/ out at the framing of a station or boarding/alighting on a bus. specially, we tend to propose a completely unique however sensible framework for holidaymaker analytics, referred to as TourSense, that (a) first off applies machine learning techniques on transport information to spot tourists from public commuters, and (b) uses the known holidaymaker travelling info to conduct their preference analytics and thereby timely makes the personalised recommendation and prediction. to supply the sensible embodiments of the planned framework, we tend to take Singapore as AN exemplary case and gift the empirical experiment results victimization the general public transport information from the town.

VII. PROPOSED SYSTEM ADVANTAGES

- More efficient.
- Analyze the tourists with the help of transportation data.
- Show Rank wise transport stations that tourist mostly use to reach atdestination.
- It provide location recommendation for tourists to visit that are mostly liked by other tourists.

VIII. SYSTEM ARCHITECTUR

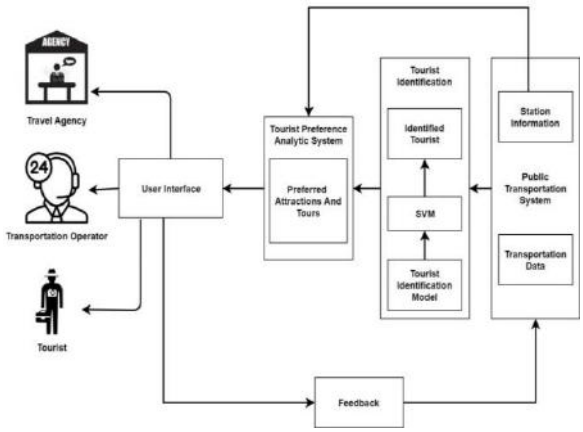
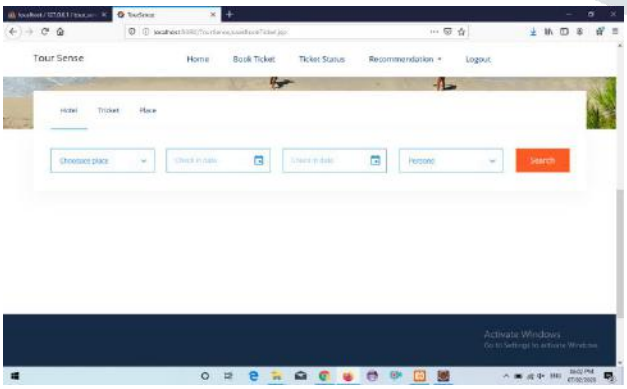
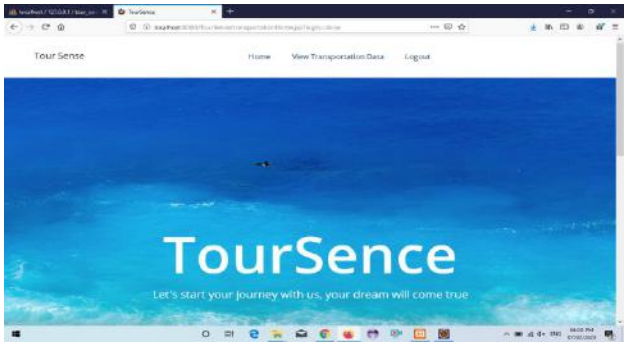
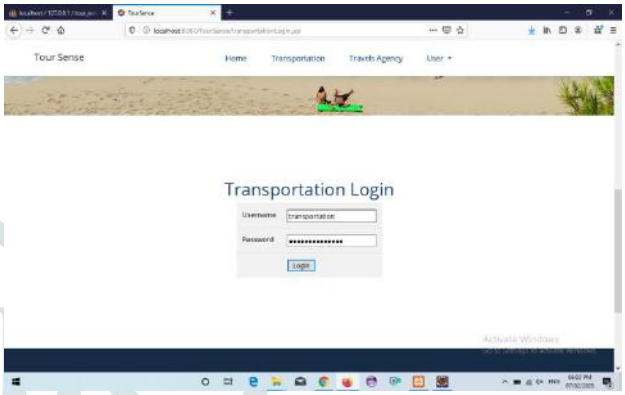


Figure 1 System Architecture

PROJECT SCREENSHOTS







CONCLUSION

In this paper, introduced Tour Sense framework that foremost identifies tourists and in a while conducts their preference analytics mistreatment city-scale public transportation data. The SVM effectively acknowledge tourists from public commuters. After that, a tourist preference analytics model is formed to predict next attraction and tour. associate degree interactive and informative program is developed to help access and visualize all the analytics results. On a broader canvas, the projected framework demonstrates the utility of recognizing and analyzing utterly totally different groups of public commuters, like tourists, business travellers, native voters, or even foreign employees. i feel that a great deal of different insights of smart interest is investigated mistreatment the projected framework and so the conveyance data. Moreover, this work

reveals many distinctive blessings of transport data over various data sources (e.g., social media data), typically along with a good coverage of population, timeliness of information, and so the standard of the transportation infrastructures (e.g., train or bus stops is likely accustomed distribute the analytics results).

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INTERNATIONAL JOURNAL OF CREATIVE RESEARCH THOUGHTS (IJCRT)

An International Open Access, Peer-reviewed, Refereed Journal

COMPARATIVE PUSHOVER ANALYSIS OF RCC, STEEL AND COMPOSITE HIGH RISE BUILDING FRAME (G+11) BY USING ETABS

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ABSTRACT- *The majority of building structures are designed and constructed in reinforced concrete which is mainly depends upon availability of the constituent materials and the level of skill required in construction, as well as the practicality of design codes. R.C.C is no longer economical because of their increased dead load, hazardous formwork. However composite construction is a new concept for construction industry. The use of modern composite systems, allowing the erection of multi-story structural frames to proceed at pace, can make it economically prohibitive to delay the construction of each floor while concrete columns are cast. In Japan, however, the superior earthquake resistant properties of composite beam-columns have been long recognized and have become a commonly used for construction in that region. It was therefore necessary to develop seismic design criteria for typically used Indian structural systems, to advance the use of this efficient type of mixed construction. This Project shows comparison of various aspects of building.*

In this project a residential of G+11 multi-story building is studied for Pushover Analysis using ETABS, assuming that material property linear, static and dynamic analysis is performed. These non-linear analysis are carried out and different parameters like displacement, storey drift, Performance point, base shear are plotted. Now it is the demand of time that every structure must be analyzed and designed for lateral forces such as earthquake and wind forces. But generally it is found that the cross sectional area of RCC structural member comes out very heavy with large amount of constituent material such as steel & concrete, which takes large space in construction of multistory building. Under such circumstances composite structure is one of the best options, which not only takes care for earthquake forces but also gives less cross sectional area of structural member and provides large space for utilization in economical way.

KEYWORDS- *Pushover, ETABS, Performance Point, Non-linear*

I. INTRODUCTION

1.1 Introduction to project work

The majority of building frames are designed and constructed in reinforced concrete structures, depending upon the availability of constituent materials and the workmanship required in construction industry along with practicality of the existing design codes. Now a day to fulfill the demand of increasing population there is need of high rise building construction and today in India RC construction is popular to fulfill demand of construction industry. But since from last two decades construction industry experiences drastic changes due to increasing population demand, market condition, and availability of resources (men, money & material) etc. which results new techniques of construction are introduces in industry by inventors which give alternative solution to conventional construction. These are mix type or hybrid construction called as a composite construction, which are make efficient use of constituent material which can be most effective than conventional RC construction. The composite structures is the structures in which sections are made up of building different types of materials such as steel and concrete which are used for construction of beams, columns, slabs etc. Numbers of the studies are carried out on composite construction techniques by different researchers in different parts of the world and found it to be better earthquake resistant and more economical as compared to RCC construction.

In composite or hybrid construction different types of sections are utilized as a encased or in filled sections.

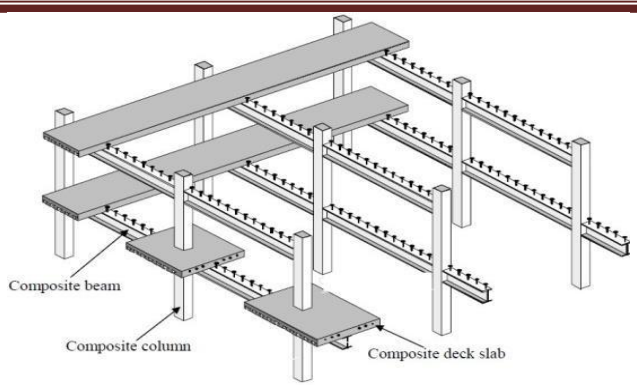

Fig no.1: Composite Frame

1.2 Alternative construction Techniques-

There are various techniques are used for the fulfillment of demand of construction industry. Some of them are popular due to availability of men, material & money, some of them are popular due to their practicality of design.

There are mainly three types of Construction techniques used for the high rise buildings construction and these are:

- RCC ConstructionSteel Structures
- Composite or hybrid Construction

1.3 Composite construction

Now a day's composite is famous one in foreign countries due to their suitability in construction, also it overcomes the disadvantages of RCC & Steel construction which make the composite or hybrid beneficial for high rise construction though the composite resist lateral forces more effectively compared to the RCC & steel.

In composite structure the advantage of bonding property of steel and concrete is taken in to consideration so that they will act as a single unit under loading. These essentially different materials are completely compatible and complementary to each other; they have almost the same thermal expansion; they have an ideal combination of strengths with the concrete efficient in compression and the steel in tension; concrete also gives corrosion protection and thermal insulation to the steel at elevated temperatures and additionally can restrain slender steel sections from local or lateral-torsional buckling. In conventional composite construction, concrete rests over steel beam and under loading conditions these two component acts independently and a relative slip occurs at the interface of concrete slab and steel beam, which can be eliminated by providing appropriate connection between them. So that steel beam and slab act as composite beam and gives behavior same as that of Tee beam.

In steel concrete composite sections both steel and concrete resists external loads together and helps to limit sway of the building frame. It should be added that the combination of concrete cores, steel frame and composite floor construction has become the standard construction method for multi-story commercial buildings in several countries. The main reason for this preference is that the sections and members are best suited to resist repeated earthquake loadings, which require a high amount of resistance and ductility.

1.3.1 Composite Frame Element

A composite member is constructed by combining concrete member and steel member so that they act as a single unit. As we know that concrete is strong in compression and weak in tension on the other side steel is strong in tension and weak in compression. The strength of concrete in compression is complemented by strength of steel tension which results in an efficient section. By the concept of this composite member the concrete and steel are utilized in well-organized manner.

Composite Element-

The primary structural components used in composite construction consist of the following elements.

a. Composite Slab
b. Composite Beam
c. Composite Column
d. Shear Connector

II. AIMS AND OBJECTIVES

1. To evaluate the comparison of composite columns with concrete filled steel tubes and composite encased I section column.

2. To fing the structural behavior of multi-storey building for different plan configuration like Rectangular, C,L,and I shape with two different composite columns.

3 .To find out which building is performed good in each cases.

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IV. CONCLUSION

In elastic/pushover analysis of both RCC & Composite frame is carried out using ETAB. The outcome from the analysis is described with respective to various parameters in this chapters and comparative analysis is done with RCC frame. The results from above analysis shows that in case of dead load and base shear the sections of steel,EIS-SB,CIS-SB and CFT-SB gives minimum dead load as compared to RCC. The performance point of CFT-RC is maximum as compared to RCC .

Hence we can conclude that the composite section are more prefable than RCC for high rise building.

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Accessing Suitability of Pinned Base and Fixed Base PEB Structure with Pile Foundation

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ABSTRACT

Pre Engineered Buildings (PEB buildings) nowadays are majorly used in industrial areas for its economy and time optimization. In PEB structures, column base provided can be pinned or fixed. It is a general practice in PEB design that when the piles are provided or when the soil strata is weak, PEB column base selected is a pinned base. In such a condition, economy when compared with a fixed base is generally ignored in Indian practice. In this research, Two different industrial PEB sheds are analyzed and designed according to the Indian standard code IS 800-2007 with two different column base conditions; one being the pinned base and another one being the fixed base, both resting on the piles. In this project the economy of structural steel and piles is evaluated for these two column end conditions. The soil under the PEB shed is simulated by the springs of varying stiffness at varying depth. The springs are assigned with the property of soil subgrade reaction obtained from the soil report. Thus bending moment, shear force, and deflection of a pile is found out and the soil can be simulated more accurately.

KEYWORD: *PEB shed, pinned base, fixed base, pile, soil simulation, spring subgrade*

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INTRODUCTION

India is a developed country and massive house building construction is happening in various parts of the country. Since 32% of Indian population lives in towns and cities; hence constructional activity is more within the urban places. The requirement of housing is extreme but there'll always be a shortage of accommodation availability because the present masonry and conventional construction technology cannot meet the rising demand year by year. Hence theres a need to think for alternative construction system for steel or timber buildings, but timber is anyway unsuitable to tropical countries like India. In structural engineering, pre-engineered building is designed by a manufacturer in factory and is to be fabricated using a pre-determined inventory of raw materials and manufacturing methods that can efficiently compensate a wide range of structural and aesthetic design requirements. Within some geographic industry sectors these buildings are also called Pre-Engineered Metal Buildings. Historically, the primary framing structure of a pre-engineered building is an assembly of I shaped members, often referred as I beam. In PEB, I section beams used are usually formed by welding together 3 steel plates to make of I section. I section beams are then field-assembled and fabricated (e.g. bolted connections) to form the whole frame of the pre-engineered building. Cold formed Zee and C-shaped members 9 could also be used as secondary structural elements to lock and support the external cladding and facias. Roll-formed profiled steel sheet, tensioned fabric, wood, masonry block, precast concrete, glass curtain wall or other materials could also be used for the external cladding of the building. In order to accurately design a pre-engineered building, engineers consider the clear span between bearing points, roof slope , bay spacing, live loads, wind uplift, dead loads, collateral loads, deflection criteria, internal crane system and maximum practical size and weight of fabricated members. Historically, pre-engineered building manufacturers have developed pre calculated tables for different structural elements in order to allow designers and engineers to select the most efficient and economic optimal I beams size for their projects. In pre-engineered building concept the entire designing is completed at the factory and the building components are delivered to the location of site in Completely knock down condition or full ready form. These components are then fixed / jointed at the location and raised with the assistance of cranes. The pre-engineered building involves in no time construction of buildings and with aesthetic looks and good quality construction. Pre-engineered Buildings are often used extensively for construction of commercial and residential buildings and industrial sheds. The buildings are often multi storied (4-6 floors). These buildings are suitable to varied environmental hazards. Pre-engineered buildings are often adapted to suit a good sort of structural applications; the best economy are going to be realized when utilizing standard details. An efficiently designed pre-engineered building are often lighter than the traditional steel buildings by up to 30%. Lighter

weight equates to less steel and a possible price savings in structural framework.

LITERATURE REVIEW

1. U. D. Dabhade1, N.A.Hedaoo2, Dr. L. M. Gupta3 and Dr. G. N(2009)

they got to achieved the time saving of 55.3% after used of steel framed composite floor construction instead of using precast framed with precast concrete floor and 14.3% times than that of steel framed with pre concrete slab. After using steel framed composite floor building it saves time which definitely help us for saving in an overall net cost. The direct cost need steel framed with composite floor is 23.10% which is higher than precast concrete floor and only 0.52% higher than steel framed with precast concrete floor. After time saving, the cost need for steel framed with composite floor is 12.99% which is 2.32% is less than steel. The steel framed with precast concrete floor saves 35.83% construction time than precast framed with precast concrete floor.

2. S.D. Charkha and Latesh S (June 2014)

Has observed that reduction of steel quantity then PEB is better than CEB. PEB is useful for reduction of steel quantity. So there is reduction in steel quantity then definitely there will be reducing the dead load. if dead load is reduced then it will reduce size of foundation. Using PEB helps to increase the aesthetic view of structure.

3. Jatin D. Thaka r, 2 Prof. P.G. Patel

Observed that PEB are steel building on the framing member and other components are fully fabricated in the factory after designing mostly by nut bolts so resulting into steel structure of high quality accurate. It conventional steel construction site welding involved which is not case PEB using nut bolt mechanism for primary framing this kind of structure use for hot rolled tapered section and cold rolled tapered section. Usually z and c section. in secondary framing wastage of steel get reduced self weight of structure and there will be lighter foundation international codes referred in this design as per the MBMA (metal building manufacturing association). The tapered section concept was firstly adopted in US by keeping in mind the bending moment diagram. At locations of high bending moment values, greater depth is used while less moment encouraged the use of lesser depths. Further unlike the conventional steel sections, where Moment of inertia (I) remains constant, it is not so in case of P.E.B due to varying depths.

4. G. Sai Kiran , A. Kailasa Rao, R. Pradeep Kumar (Aug 2014)

In recent few years its observed that PEB concept in designing helped in improvement designing after adopting of PEB instead of CSB concept proved in many advantage include in their economy and easier fabrication In this study, an industrial structure (Ware House) is analyzed and designed according to the Indian standards, IS 800-1984, IS 800-2007 and also by referring MBMA-96 and AISC-89. In this study, a structure with length 187m,width 40m,with clear height 8m and having R-Slope 1:10,isconsidered to carry out analysis& design for 2D frames (End frame, frame without crane and frame with 3 module cranes). The economy of the structure is discussed in terms of its weight comparison, between Indian codes (IS800-1984, IS800-2007) & American code (MBMA-96), & between Indian codes (IS800-1984, IS800-2007).

5. Aijaz Ahmad Zende 1, Prof. A. V. Kulkarni , et.al

They observed PEB structure provide structure clear span their weight is lesser than that of `conventional building and for sustainable development steel is the material that reflect the essential when there are structure life longer span conventional building are not suitable with clear span so therefore PEB are the best way for longer span structure without using interior column. PEB structure are costly as compared to conventional structure in case there are smaller span structure.

6. Anbuchezian et al [2013]

A. Studied behavior of cold formed sections.
B. Cold formed steel purlins are the widely used structural elements in India.
C. Practically 'Z' sections are provided, where the span of the roof purlins is sloped and the length of the span is maximum.

7. Satpute et al [2012]

- He has done the detailed analysis of lndustrial building with Cold formed concept is carried out.
- A com pa rative study has also been ca rried out between Hot Roll steel lndustrial building and Cold formed lndustrial building and a conclusion has been drawn.
- In lndustrial building the material & cost of the building is minimized in case of cold formed steel while in case of conventional building it was be higher both in two cases. The saving in material and cost is about 25%.

8. Kumar et al [2014]

- Studied the Pre-Engineered Bulking (PEB) concept in the design of structures which helped in optimizing design.
- The ability of PEB in the place of conventional steel building (CSB) design Concept resulted in many advantages, including economy and easier fabrication.
- The economy of structure is discussed in terms of its weight comparison. Between Indian codes (IS800-1984, IS800-2007).

CONCLUSION

From the literature we can summarize the work in pre-engineered building "as below.

- The construction of steel framed composite floor building saves time, which leads to an overall savings in net cost.
- Pre-engineered building can be adopted to suit a wide variety of structural applications, the greatest economy will be realized when utilizing standard detailks in structural framework.
- To understand the importance of cost effectiveness.
- Minimum weight buildings that are targeted with simple fabrication process and easy erection to have maximum structural efficiency. Minimum weight of structure is proportional to minimum cost and lowers seismic and gravitational forces.
- In industrial the material and cost of the building is minimized in case of cold formed steel while in case of conventional building it was be higher both in two cases. The saving in material and cost is about 25% can be achieved.

- Design of one-story industrial building structure with larger clear spans by using PEB is more economical than truss framing design.
- As per all reviews it is observed that there is a scope of work in Comparing IS800:2007 (LSM) with international standard (LSM/LRFD), so Here an attempt is made to compare the same by designing actual building using IS800 2624.

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INTERNATIONAL JOURNAL OF CREATIVE RESEARCH THOUGHTS (IJCRT)

An International Open Access, Peer-reviewed, Refereed Journal

REVIEW ON EXPERIMENTAL INVESTIGATION ON GLASS FIBRE REINFORCED CONCRETE

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Abstract: In this paper, we have seen that now days Construction industry is always trying to find new, better and economical material to manufacture new product, which is very beneficial to the industry. Today a significant growth is observed in the manufacture of composite material. With this energy conservation, corrosion risk, sustainability is important when a product is changed or new product is manufactures. Glass fibre (GF) is one of the high performance non-metallic fibres made by fusing (co-melting) silica with minerals. Glass fibre reinforced concrete (GFRC) offers more characteristics such as light weight, good fire resistance and strength. In future it is very beneficial for construction industry. Many applications of glass fibre are residential, industrial, highway and bridges etc.

Most of the studies preferred parameters like addition of glass fibres into the concrete with various proportions represented the positive as well as negative improvements in mechanical properties of concrete. However, the researchers could not exhibit the improvement in properties like compressive strength, modulus of elasticity, flexural strength, tensile strength, toughness, early age cracking etc. Even though these properties are important for desired quality of concrete, to overcome this, use of optimum percentage glass fibres in concrete. In present work different percentages of glass fibres were added for M-30 grade of concrete. The experimental study were carried out by casting the cubes in different proportions of glass fibres and glass fibre mesh and the results were obtained to find out optimum percentage of glass fibres. The glass fibres were added into the concrete in proportion of 0, 0.5 %, 1.0 % and 1.5 % by volume at an increment of 0.5 %. A comparative study of various experimental results was carried out.

Index Terms **- cement, coarse aggregate, fine aggregate, water and glass fibre**

I. INTRODUCTION

Industry is always trying to find new, better and economical material to manufacture new product, which is very beneficial to the industry. In the recent days, the various fibres develop and used in the construction, industrial and highway engineering. The steel is mainly used in that various application. Also fibre glass polythene fibres, carbon fibres, polyamide fibres are now developed and also used in construction, industrial and infrastructure development. In that list new one fibre is added, called as glass fibres.

Today a significant growth is observed in the manufacture of composite material. With this in mind energy conservation, corrosion risk, the sustainability and environment are important when a product is changed or new product is manufactures. Glass fibre is a high performance nonmetallic fibre Glass melts are made by fusing (co-melting) silica with minerals, which contain the oxides needed to form a given composition. The molten mass is rapidly cooled to prevent crystallization and formed into glass fibres by a process also known as fibreization. The glass fibres do not contain any other additives in a single producing process, which gives additional advantage in cost. Glass fibres have no toxic reaction with air or water, are non-combustible and explosion proof. When in contact with other chemicals they produce no chemical reaction that may damage health or the environment. Glass fibre has good hardness and thermal properties. Glass fibres have been successfully used for foundation such as slabs on ground concrete.

By industrial production of glass fibres on the basis of new technologies their cost is equal and even less than cost of basalt fibre. The glass fibres and materials on their basis have the most preferable parameter ratio of quality and the price in comparison with glass, carbon fibres, and other types of fibres. It can also be mixed with other materials, when compacted it develops a high degree of mechanical particle interlock which results in high shear strength partly due to its texture.

In this modern age, civil engineering constructions have their own structural and durability requirements, every structure has its own intended purpose and hence to meet this purpose, modification in traditional cement concrete has become mandatory. It has been found that different type of fibres added in specific percentage to concrete improves the mechanical properties, durability and serviceability of the structure. It is now established that one of the important properties of Fibre Reinforced Concrete (FRC) is its superior resistance to cracking and crack propagation and which containing fibrous material which increases its structural integrity. It contains short discrete fibres that are uniformly distributed and randomly oriented. Fibres include steel fibres, basalt fibres, glass fibre, synthetic fibres and natural fibres – each of which lends varying properties to the concrete. In addition, the character of fibre

reinforced concrete changes with mixing fibre materials, geometries, distribution, orientation, and densities. The weak matrix in concrete, when reinforced with fibres, uniformly distributed across its entire mass, gets strengthened enormously, thereby rendering the matrix to behave as a composite material with properties significantly different from conventional concrete. Because of the vast improvements achieved by the addition of fibres to concrete, there are several applications where FRC can be intelligently and beneficially used. These fibres have already been used in many large projects involving the construction of industrial floors, pavements, highway overlays, etc. in India. These fibres are also used in the production of continuous fibres and are used as a replacement to reinforcing steel. High percentages of steel fibres are used extensively in pavements and in tunnelling. Fibres are usually used in concrete to control cracking due to plastic shrinkage and to drying shrinkage. They also reduce the permeability of concrete and thus reduce bleeding of water. Some types of fibres produce greater impact, abrasion, and shatter– resistance in concrete. Glass fibres can be considered environmentally friendly and non-hazardous materials. It is not a new material, but its applications are surely innovative in many industrial fields, from building and construction to energy efficiency, from automotive to aeronautic, thanks to its good mechanical, chemical and thermal performances. Hence, glass fibre has gained increasing attention as a reinforcing material. The production process, even if it is very similar to the glass fibres one, does not require additives and a lower amount of energy is needed with benefits in terms of environmental impact, economics and plants maintenance. The base cost of glass fibres depend on the quality and the chemical composition of the raw material and this leads to have several kind of fibres with different thermal, chemical and mechanical properties.

II. AIM AND OBJECTIVE

The aim of the experimental investigation is to analyse the properties of concrete by adding the most suitable combination of glass fibre percentage into the concrete. This optimum percentage of glass fibre is used for further investigation.

1. To be check the behaviour of GFRC under compression and flexural strength.

2. To be determine the optimum percentage of glass fibre quantity into the concrete.

3. To be use optimum percentage of reinforcing steel in glass fibre concrete.

III. LITERATURE REVIEW

A significant amount of research work on various structural aspects of use of structure and their mechanism has been published by many investigators. Review of some of the technical papers are briefed below:

2.1" Glass Fibre Reinforced Concrete to study the Properties of the Concrete"

Md.Abid Alam (2015)

For experiment Cem-Fil Anti-Crack, HD 12mm, Alkali Resistant glass fibre were used for the work. The specific gravity of the fibre is 2.68 mm and the length 12 mm. For the experimentation, M-20 and M-30 Grade concrete is used under the proportioning procedure mentioned under IS 10262-2009. For M20 grade of concrete 0.50 W/C Ratio is used and for M-30 Grade of Concrete 0.42, W/C Ratio is used. Fibre is added in an increment of 0.02% from 0% to 0.06%. (0%, 0.02%, 0.04%, 0.06%). And according to the test result concrete attain higher strength that the target strength. An M-20 grade of concrete attains 41.28 Mpa of Compressive Strength and 5.76Mpa of Tensile Strength when 0.06% of fibre is added in concrete. And M-30 grade of concrete attain 62.29Mpa of Compressive strength and 7.17Mpa of Tensile Strength. Almost concrete attain 1 times of the target strength of the concrete.

2.2 "Conducted Durability Studies On Glass Fibre Reinforced Concrete"

Dr. P. Srinivasa Rao, 2015

The alkali resistant glass fibres were used to find out workability, resistance of concrete due to acids, sulphate and rapid chloride permeability test of M-30, M-40 and M-50 grade of glass fibre reinforced concrete and ordinary concrete. The durability of concrete was increased by adding alkali resistant glass fibres in the concrete. The experimental study showed that addition of glass fibres in concrete gives a reduction in bleeding. The addition of glass fibres had shown improvement in the resistance of concrete to the attack of acids.

2.3 "The Performance Of Glass Fibre Reinforced Concrete"

Yogesh Murthy 2015

The study revealed that the use of glass fibre in concrete not only improves the properties of concrete and a small cost cutting but also provide easy outlet to dispose the glass as environmental waste from the industry. From the study it could be revealed that the flexural strength of the beam with 1.5% glass fibre shows almost 30% increase in the strength. The reduction in slump observed with the increase in glass fibre content.

2.4 " Experimental Study On Behavior Of Steel And Glass Fibre Reinforced Concrete Composites"
Kavita Kene, 2012

The study conducted on Fibre Reinforced concrete with steel fibres of 0% and 0.5% volume fraction and alkali resistant glass fibres containing 0% and 25% by weight of cement of 12 mm cut length, compared the result.

2.5 "The Strength Aspect Of Glass Fibre Reinforced Concrete"
Avinash Gornale, 2012

The study had revealed that the increase in compressive strength, flexural strength, split tensile strength for M-20, M-30 and M-40 grade of concrete at 3, 7 and 28 days were observed to be 20% to 30%, 25% to 30% and 25% to 30% respectively after the addition of glass fibres as compared to the plain concrete.

2.6 "The Performance Of Glass Fibre Reinforced Plastic Bars As Reinforcing Material For Concrete Structures"
S. H. Alsayed, 2000

The study revealed that the flexural capacity of concrete beams reinforced by GFRP bars can be accurately estimated using the ultimate design theory. The study also revealed that as GFRP bars have low modulus of elasticity, deflection criteria may control the design of intermediate and long beams reinforced with FDRP bars.

2.7 Experiment On Concrete Which Is Added With Glass Fibre In It"
T.Sai Kiran 2016

Glass Fibre used in this project is an Alkali Resistance Glass Fibre, which has a specific gravity of 2.68 and in 14 microns diameter. For the experimentation M30 grade of concrete is used in this work with 0.45 W/C Ratio. Glass fibre is added with the concrete in 5%, 6%, 7%, and controlled concrete are also cast. In this work, the author has tested the concrete for compression and flexural test. In this work, the concrete is tested for different ages from 1 to 56 days (1 day, 3 days, 7 days, 28 days, 56 days). After curing for 28 days the concrete.

IV.CONCLUSION

To be calculate property of Glass Fibre ,like flexural property, compression, and behavior.

The study had revealed that the increase in compressive strength, flexural strength.

The study revealed that the flexural capacity of concrete beams reinforced by GFRP bars can be accurately estimated using the ultimate design theory.

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Review on Analysis of Floating Column with Lateral Load Resisting System by Using STAAD Pro

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Abstract: Many urban multistorey buildings in India today have open first storey as an unavoidable feature. This is primarily being adopted to accommodate parking or reception lobbies in the first storey. Whereas the total seismic base shear as experienced by a building during an earthquake is dependent on its natural period, the seismic force distribution is dependent on the distribution of stiffness and mass along the height.

The term floating column is a vertical member which ends at its lower level rests on a beam which is a horizontal member. The beams in turns transfer the load to other column below it. In present scenario buildings with floating column is a typical feature in the modern multistory construction in India. In present paper effort has been taken to review the behavior of building with floating column.

Index Terms **- Multistorey, seismic, floating column.**

I. INTRODUCTION

A column is supposed to be a vertical member starting from foundation level and transferring the load to the ground. The term floating column is also a vertical element which (due to architectural design/ site situation) at its lower level (termination Level) rests on a beam which is a horizontal member. The beams in turn transfer the load to other columns below it.

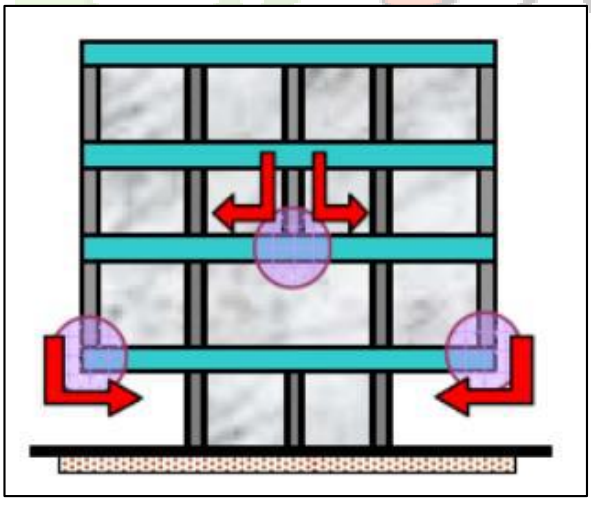

Fig 1.1 : Floating Column

There are many projects in which floating columns are adopted, especially above the ground floor, where transfer girders are employed, so that more open space is available in the ground floor. These open spaces may be required for assembly hall or parking purpose. The transfer girders have to be designed and detailed properly, especially in earth quake zones. The column is a concentrated load on the beam which supports it. As far as analysis is concerned, the column is often assumed pinned at the base and is therefore taken as a point load on the transfer beam. STAAD Pro, ETABS and SAP2000 can be used to do the analysis of this type of structure. Floating columns are competent enough to carry gravity loading but transfer girder must be of adequate dimensions (Stiffness) with very minimal deflection.

Looking ahead, of course, one will continue to make buildings interesting rather than monotonous. However, this need not be done at the cost of poor behavior and earthquake safety of buildings. Architectural features that are detrimental to earthquake response of buildings should be avoided. If not, they must be minimized. When irregular features are included in buildings, a considerably higher

level of engineering effort is required in the structural design and yet the building may not be as good as one with simple architectural features. Hence, the structures already made with these kinds of discontinuous members are endangered in seismic regions. But those structures cannot be demolished, rather study can be done to strengthen the structure or some remedial features can be suggested. The columns of the first storey can be made stronger, the stiffness of these columns can be increased by retrofitting or these may be provided with bracing to decrease the lateral deformation.

II REVIEW PAPERS

1. N.Elakkiyarajan, G.Iyappan And A Naveen

In this paper behavior of structure with and without column was studied. Structure was first analyzed without floating column and the with floating column and it was observed that the strength of the structure get reduced due to introduction of floating column. Model having no floating column shows very less amount of bending moment as compared to model with floating column. Due to introduction of floating column there is a sudden increase in shear force and bending moment at bottom storey, whereas for other stories change is gradual.Behaviour of different structural materials like concrete, steel and composite materials were also checked. In case of deflection criteria concrete gives good result as compared to steel, in concrete value of deflection increases rapidly with increase of seismic zone. In case of steel and composite section values of deflection increases gradually as compared to concrete with increase in seismic zone. For shear performance of steel structures is much better than the concrete and composite model. In above study author conclude that from ductility point of view behavior steel and composite sections is quite good than the concrete as the stiffness of steel is less than the concrete.

2.Chandan Kumar, G. Ragul, V.Jayakumar, Prasidh E Prakash

In this study behavior of G +10 storey building was carried out by static analysis. For the purpose of comparison columns were grouped as exterior, interior and core columns and parameters like storey drifts, displacement and base shear studied and compared. After analyzing the structure it was found that stiffness of building does not affected by the use of floating column provide that the floating column and beam column joint designed carefully and ductile detailing was made as per IS 13920:1993. Drift for both the structure increases gradually from bottom to top. There is a increase in drift observed in case of structure provided with floating column, still the value of drift satisfied the serviceability criteria. Values of shear force and axial load increases in structure with floating column for all three groups mentioned above. Behaviour of both the structure is same for displacement and there is increase in displacement in floating column.In above study author conclude that the design of structure with floating column can be possible by satisfying serviceability and economical criteria.

Kandukuri Sunitha, Mr. Kiran Kumar Reddy

In this paper author carried out analysis of G+4, G+9 and G+14 buildings with and without floating column for external lateral forces. Location of building is in Zone III and forces are applied as per IS1893:Part 1:2002.I this study seven models were studied first normal building without floating column and other six with floating column with shear wall and bracing. Study shows in static analysis maximum displacement and stoey drift values increases for floating column.Height of the building also have a significant effect on deflections and storey drifts and both are changed drastically with increase in height.
Due to provision of floating column axial loads on other column increases due to transfer of load from floating columns to the conventional columns. Building with shear wall behaves well or all cases whereas building with bracing system behaves well for smaller height building. Bending moment varies for each stories it ia maximum in top stories and lesser in bottom stories.

Vivek Soni, M. P. Verma

In this study G+7 buildings has been chosen for analysis. The building models are designed by E-TABs 2018. The study is carried out on a building with floating columns. The plan layout of the building is shown in figure.

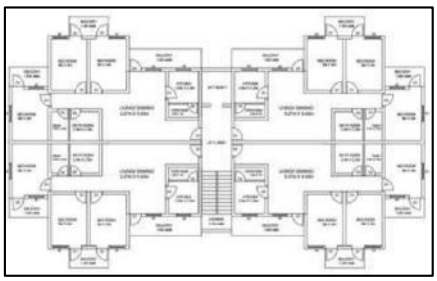

Fig 2.1 : Typical architectural plan

The building is taken into account as residential building having G+6. Height of every storey is kept same as other prevalent data. Based on the analysis data it is concluded that the optimum position of floating column is at first floor.

Badgire Udhav S., Shaikh A.N., Maske Ravi G

Main purpose of this study is to analyses the building with floating column.G+10 building has been selected for the purpose of analysis and software STAAD Pro V8i is used.The G+10 with floating column having moment resisting frame in orthogonal directions were selected. The building considered to be located in zone III and analysis is carried out as per IS1893:2002.Lateral loads were apllied in X and Z directions and structure analyzed for various load combinations and displacement and base shear for each storey noted. It is found that shear values increases and decreases drastically depending upon he position and orientation of column.

Ankit kumar and Durgesh nandan verma

In this study a building model has been made in stad-pro to study their properties such as Storey drift, Storey displacement, Max. Displacement with floating column and without floating column. This properties compared with various load combination provided in IS code 1893 so that to find out floating column is reliable to use in seismic zone. By using static analysis design spectrum, total four models were analyzed by varying the location of floating columm. The change in the values of Displacement and storey drift depends on the position of floating column in horizontal as well as vertical direction. The value of displacement and storey drift by using floating column at base has more as compared to floating column at first and second storey. And also Storey drift increases rapidly till third floor and starts decreasing while displacement keep on increasing.
In above study author conclude that floating column produces high Storey drift and displacement due to which floating column is not safe to use in high seismic zone.

Trupanshu patel, Jasmin Gadhiya, Aditya bhatt

In this paper work behavior of G+3 Building having floating column is studied to obtain the infill walls and mass variation on behavior of floating column and normal building. Diffferent building models were analysed with or without provisions of infill walls based on SAP 2000 version 18 by providing floating column at corner of ground floor. By applying different load combination maximum horizontal and vertical displacement of typical floor for each case were obtained. Various models comparison had been carried out according to the position of floating column, with and without increment of live load, with and without effect of infills.
In above study author conclude that floating column with corner provision considered as critical case. As the position changes from corner to centre of typical floor there is decrement in displacement value. After comparing with horizontal one higher decrement seen in vertical displacement.Without infills sudden increment occurs in the value of displacement as compare with infill hence it will reduce seismic response and make structure economical.

Chimanna chaitali R, Mohite Prakash M, Mohite kiran K

In this paper G+13 multistoried building with floating column resting on RCC Transfer girder and post tensioning transfer girder has been discussed for the comparison of seismic response. By using ETABS Software the response of building such as storey displacement, storey shear and storey drift has been used to evaluate the result. This model consists of 22 no. of columns which supports 1 m thick transfer slab and this 1 m transfer slab supports 64 floating column. This column terminates at its first level.
In above study author conclude that Time period, Displacement and drift storey of a building with floating column resting on RCC transfer girder is greater than building with floating column resting on P.T transfer girder. But base shear of a building with floating column resting on P.T transfer girder is grater than building with floating column resting on RCC transfer girder.

Nikhil N verma, S.A.Bhalchandra

In this study pushover analysis is carried out for 2 RC strucure with floating column and without floating column having G+3 stories by using ETABS 2015 and compared the base force and displacement of RC structures for earthquake forces. Some special arrangements are made to increase the lateral strength and stiffness of member and hence to avoid damages due to earthquake. dynamic analysis of building carried out to designed strength, stiffness effect and inelastic deformation on members accordingly. The column below floating are found to be critical when pushover analysis is performed on the building with floating column. In above study author conclude that roof displacement, column forces of columns, base shear, displacement, drift etc. increase in building with floating column as compared to building without floating column.

Kapil dev Mishra, Dr. A.K. Jain

In this study analysis of (G+2+3) multi-storied PLAZA building at two different zones (zone III and zone IV) having different position of floating columns at different height of building is carried out by using Stad pro for seismic analysis of structure. In this work different combination of office and residential floors are considered. Support reaction at the base and maximum moment at joint also result from the software are some considerations on which comparisons are based. In the above study author conclude that Structure with floating column having higher maximum bending moment and maximum support reaction than that structures without floating column and also zone IV are more affected by earthquake than zone III

II. CONCLUSION

From the study of all literature review it was observed that study is required for improving the response of building with floating column under the effect of lateral loads. Following are the key observation of above review.

- When floating column is used then the performance of steel structure is better than the concrete and composite structure.
- Design design of structure with floating column can be possible by satisfying serviceability and economical criteria.
- Building with shear wall behaves well for high rise building and bracing is good for building of medium height.
- Optimum position of floating column is on first floor.
- Shear values increases and decreases drastically depending upon he position and orientation of column.
- Structure with floating column having higher maximum bending moment and maximum support reaction than that structures without floating column and also zone IV are more affected by earthquake than zone III

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Comparative Study of Flat Slab and Conventional Slab in Various Seismic Zones using E-Tabs

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Abstract— In present era, flat slab buildings are commonly used for the construction as it has many advantages over conventional RC frame building in terms of architectural flexibility, use of space, easier formwork and shorter construction time. In the present work a G+12 multistoried building having flat slab with column head and conventional slab has been analyzed using E-TABS software for the parameters like storey displacement, storey drift, storey shear, base shear and time period. The main objective of the present work is to compare the seismic behavior of multistory buildings having conventional RC frame, flat slab with column head and conventional slab in seismic zone II, III, IV, V and to study the effect of height of building on the performance of these types of buildings under seismic forces. Linear dynamic response spectrum analysis was performed on the structure to get the seismic behavior.

Keywords: Conventional RC frame building, flat slab with column head building, Response spectrum analysis, overturning moment, storey drift, base shear, displacement, time period

I. INTRODUCTION

This project presents the "Comparative Study of Flat Slab and Conventional Slab in various seismic zones using ETABS". This work includes the analysis of flat slab and Conventional Slab. The purpose of this study is to understand the characteristics, the method of analysis, and the design of flat slab and Conventional Slab in ETABS structural software; and to find out which slab system with certain parameters is superior to other. A slab is a flat two dimensional planar structural element having thickness small compared to its other two dimensions. It provides a working flat surface or a covering shelter in buildings. It primarily transfers the load by bending in one or two directions. Reinforced concrete slabs are used in floors, roofs and walls of buildings and as the decks of bridges. Concrete slab behave primarily as flexural members and the design is similar to that of beams.

SR. NO.	BASED ON	CLASSIFICATION OF SLAB
	Shape	Square, rectangular, circular and polygonal in shape.
	Type Of Support	Slab supported on walls, Slab supported on beams, Slab Supported on columns (Flat slabs).
	Support Or Boundary Condition	Simply supported Cantilever slab, Overhanging slab, Fixed or Continuous slab.
	Use	Roof slab, Floor slab, Foundation slab, Water tank slab.
	Sectional Configuration	Ribbed slab /Grid slab, Solid slab, Filler slab, folded plate.
	Spanning Directions	One way slab – Spanning in one direction Two way slab – spanning in two directions

Table 1: Classification of Slab

SR. NO.	FLAT SLAB	CONVENTIONAL SLAB
	Live load shall not exceed 3 times the design dead load.	Live load has no relation with design dead load
	The thickness of slab is large.	The thickness of slab is small while depth of beam is large.
	Greater clear ceiling heights.	Lesser clear ceiling heights.
	Load from slab is directly transferred to column.	Load from slab is transferred to beam and from beam to column.
	Less formwork hence not costly.	More formwork hence costly.
	Ratio of Longer span to shorter span should not be more than 2.2.	Ratio of Longer span to shorter span has no limitation.
	Reduction in storey height.	Increase in storey height as compared to flat slab.
	Dead load of structure is less.	Dead load of structure is more.
	In flat slab system, minimum thickness of flat slab is 125 mm.	In slab beam system, minimum thickness of slab is 100 mm.
	Reinforcements are commonly provided in two layers.	Reinforcements are commonly provided in one layer.
	Illumination is better as beams are absent.	Illumination is not as effective as in flat slab as beam are present.
	Easier to provide acoustical treatment underside of slab.	Difficult to provide acoustical treatment underside of slab.
	It is less resistant to earthquake as it is less flexible than slab beam system.	It is more resistant to earthquake as it is flexible than flat slab system.

Table 2: Flat Slab & Conventional Slab

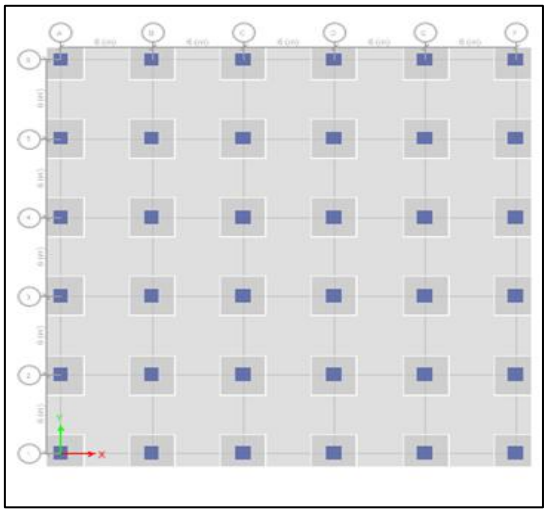

Fig. 1: Building plan for Flat slab building

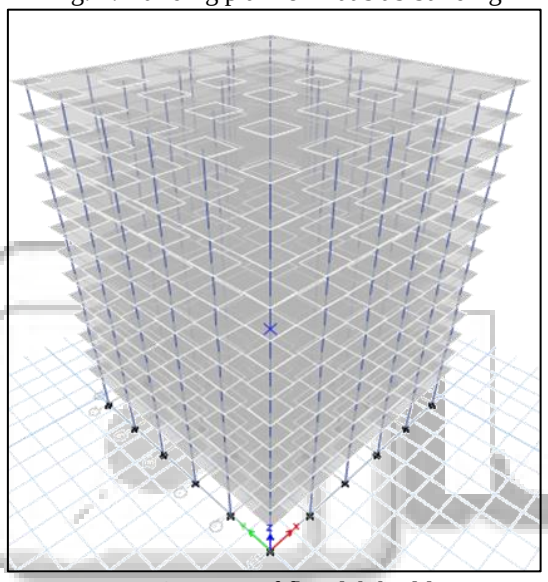

Fig. 2: 3D view of flat slab building

II. OBJECTIVE

- To carry a relevant literature review by going through journal papers, conference proceedings, texts, reference books, standard handbooks etc.
- To analyze different form of slab arrangement for example conventional slab and flat slab for the given plan area and there comparative study.
- To make analysis of multistoried RCC building with flat slab and conventional slab (G+ 12 storey's) having regular geometry with response spectrum analysis taking into account earthquake zone II, III, IV, V as per the Indian standard code of practice IS 1893:2002 part-I, criteria for earthquake resistance structure.
- To evaluate the seismic behavior of different regular moment resisting flat slab and conventional slab structure.
- To evaluate base shear, overturning moment, storey displacement, storey shear etc.
- To model different structures aforementioned configuration and compare them using design aids like ETABS.

III. LITERATURE REVIEW

A. *[1] Vishesh P. Thakkar and Anuj k. Chandiwala*

The main objective of present work is to compare the seismic behavior of multi storey buildings having conventional RC frame, flat slab with drop and flat slab without drop in seismic zone III with type II medium soil and to study the effect of height of building on the performance of these types of buildings under seismic forces.

B. *[2] Thummala spoorthy and S. Ramesh Reddy*

In general the structures are analysis as RC slab and flat slab with a drop for G+ 15 storeys building in different zones using E-Tabs software. Therefore the characteristics of a seismic behavior of flat slab and conventional RC frame building measure storey shear, overturning moment and storey drift for flat and conventional slab is provided and its variation of these parameters in different zones is also detailed.

C. *[3] A. A. Sathwane and R. S. Deotale*

The study is focused on the most economical slab between flat slab with drop, flat slab without drop and grid slab. The proposed construction site is Nexus point opposite to vidhan bhavan and beside NMC office, Nagpur. Analysis of the flat slab and grid slab has been done both manually by IS 456:2000 and by using software also. Flat slab and grid slab has been analyzed by STAAD PRO. It was observed that the flat slab with drop is more economical than flat slab without drop and grid slabs.

D. *[4] A. B. Climent and D. Z. Sanchez (2012)*

Investigated about the effective width of reinforced concrete flat slab structures subjected to seismic loading on the basis of dynamic shaking table tests. The study is focused on the behavior of corner slab column connections with structural steel-I. To this end, a ½ scale test model consisting of flat slab supported on four box type steel columns was subjected to several seismic simulations of increasing intensity. It is found from test results that the effective width tends to increase with the intensity of the seismic simulation.

E. *[5] M. Altug Erberik and Amr S. Elnashai [2004]*

Focused on the derivation of fragility curves using medium rise flat slab buildings with masonry infill walls. The study employed a set of earthquake records compatible with the design spectrum selected to represent the variability in ground motion. The study concluded that earthquake losses for flat slab structures are in the same range as for moment resisting frames. The study also showed that the differences were justifiable in terms of structural response characteristics of the two structural forms.

F. *[6] K. N. Mate [2015]*

Analyzed the flat slab system is simple structure of RCC which provide long clear space, a good height, simple formwork and no delay time in construction. It is shown the why the flat slab is more feasible and flexible in comparison to other slab. This study includes complete analysis and design of flat slab as per Indian code of practices IS456:2000.

G. [7] Naveen Kumar B. M and Priyanka S. [2015]

The present study covers the behavior of multistoried buildings having conventional RC frame building, flat slabs and to study the effect of height of the building on the performance of these types of buildings under seismic forces.

IV. RESEARCH METHODOLOGY

The proposed work is planned to be carried out in the following manner.

- To carry a relevant literature review paper by going through journal papers, conference proceedings, text/reference books, standard handbooks, BIS publications etc.
- Both the slab system will be analyzed by E-TABS software.
- The outcome of the design will be tabulated.
- The result so obtained will be discussed and conclusion will be drawn.

V. THEORY AND FORMULATION

Research is currently ongoing. Analysis will be done by using E-TABS model for different slab arrangements. The structure selected for this project is a simple Residential building. Different loads such as Dead Load, Live Load, and Earthquake Load will be applied on E-TABS model at appropriate location as per codes used for Loading. IS Code for Dead Load: - IS 875 Parts 1, IS Code for Live Load: - IS 875 Parts 2. For the present study following values for seismic analysis are assumed. The values are assumed on the basis of reference a step given in IS 1893-2002 and IS 456:2000. All the results obtain from E-TABS structural software and these results are compared in tabular form.

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Chief Editor

Agricultural Performance Enhancement by Identifying Suitability of Soil for Specific Type Crop Using Image Processing

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Abstract *: **Agricultural is one of the most important sector within the Indian economy. Over seventy percent of the agricultural households depends upon agriculture. Many farmers do not test their soil because they think it as a waste of time and money. Very few farmers rely on soil testing, done by governments labs which is not available near them. Many farmers don't have any knowledge about which is our soil color, which crop should be planted and which fertilizers could be beneficial for soil. The image processing is most recent technology for soil determination. We use digital image processing with computer-based algorithm techniques for performing image processing or digital photography. Our project aims to reduce farmer time and money and find them an easy way to testing their soil and let them know about their soil color and crop through this image processing.***

I. INTRODUCTION

India is know as one of the famous agriculture country. Farmers have high range of variety of crops so farmers can decide the crops which can grows more in their soil. This can be done when we know the properties as well structure of the soil.

Most of the farmers do not perform soil testing because existing method consume time and money. Very few farmers rely on soil testing done by government labs which is not available near them Soil image processing is way to know quantity of fertilizer to meet the necessity of the crop by taking advantage of the nutrients already present in the soil. It will also help to know the soil problems to overcome. The soil plays an important role in analysis. The important of soil testing plays an important role in the farmer's life. Just because of lack of available resources as well as time and money consuming , many farmers doesn't take advantage of the soil image processing.

II. PROPOSED SYSTEM

The proposed system is a desktop based application. Which can be used for finding color and texture of soil sample. The main project work is of soil testing. We are trying to implement it with database application. It is very useful for the farmers as well as for government laboratories.

The main Project work are as follows :

1) To identify types of soil.
2) To determine the required crop for soil.
3) To determine the properties of soil.
4) To determine which fertilizer would be useful for your type of soil
5) To make the soil testing simple and easy for farmers.

As per the requirement of the system we want to make software which process and give some intermediate results. So people who want to test their soil can easily test it by using software. Digital image processing is a term in which digital images will be taken and calculates some values from it to perform particular operation on it. As many algorithms are used to perform mathematical as well as scientific operation on digital image processing we can implement our system based on need.

III.ALGORITHM

At first we are going to add an option of uploading image then after you clicking on that button you'll have to select one picture of soil that you want to scan. Then after finishing upload process will continue directly towards scanning and then scanner will scan and rectify the texture and colour of soil. After detecting soil colour and shape that information which system got will directly get compared with database we have and after matching it's texture and colour it will check through another database and then that database will provide you required fertilizers for soil that you have in your photograph and here you'll get your type of soil and which fertilizers should be beneficial for your soil. We are using JUPYTER as a project designing tool.

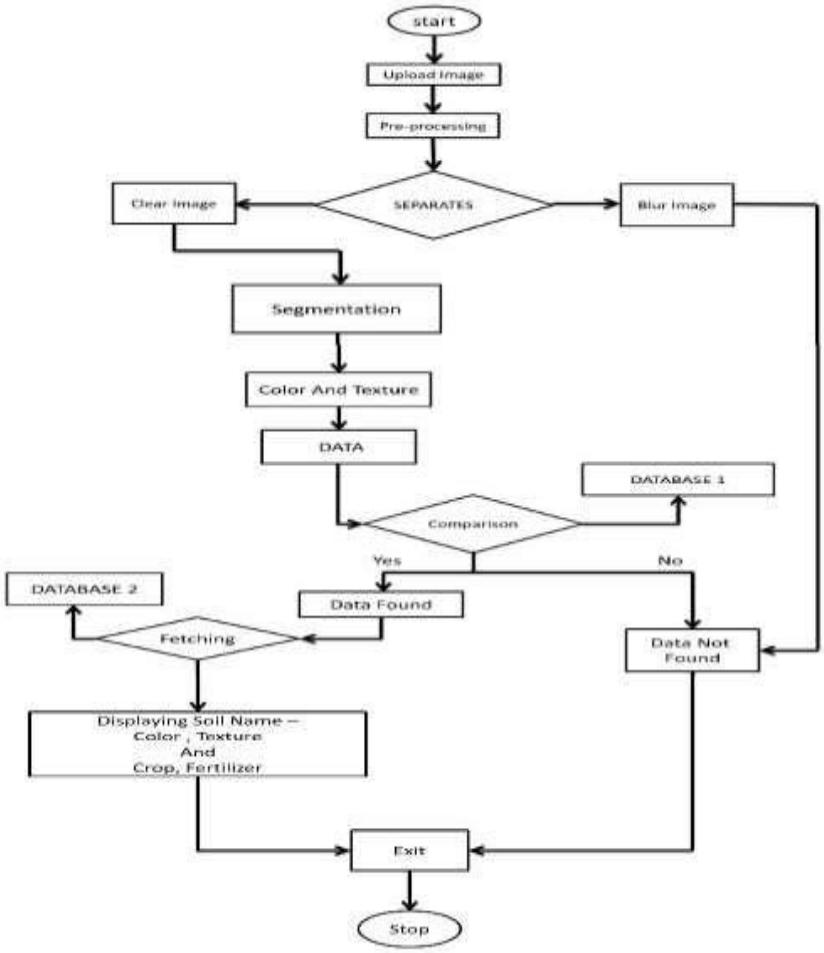

Figure:1.1

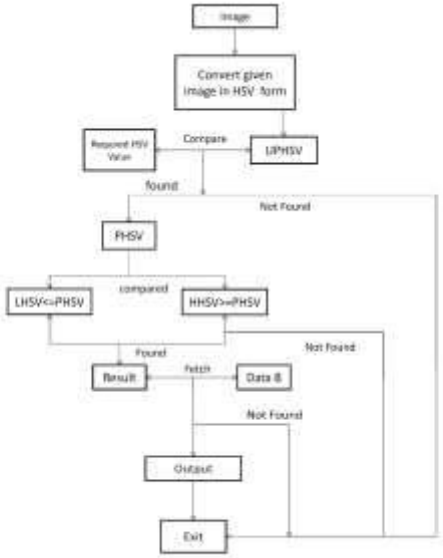

Figure:1.2

IV.RESULT

Our project is mainly based on soil related problem and the working is quite easy. So our project is going to detect the type of soil and after detection we will be able to explain you that which kind of fertilizer does your soil required. While if you want to design this type of program you'll require very less amount to build this project and however we are building it in simplified way so all you need is a good system to work on. Our project can determine type of soil and fertilizers which are going to be beneficial for your type of soil. Scanning system which we are designing that's going to scan soils colour and it's shape and by determining those we are going to identify the type of soil.

Figure:2.1 UI for initial working

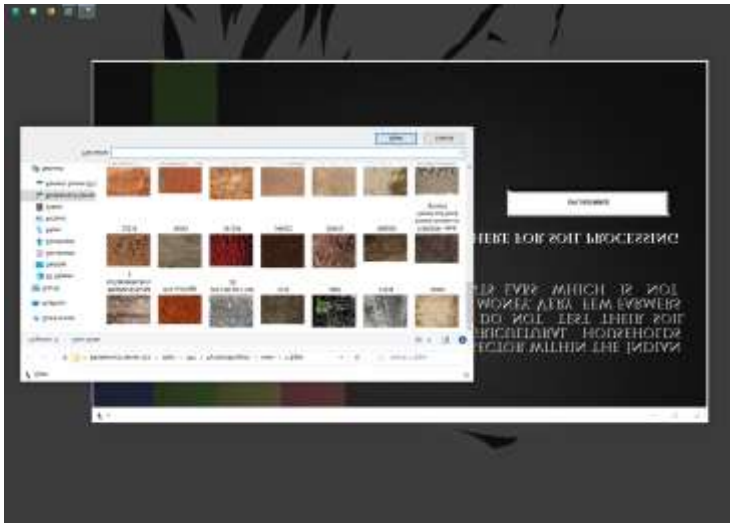

Figure:2.2 process of uploading image

Figure:2.3 processing on given image

Figure:2.4. Final Result (Output1)

Figure:2.5 Result {final output2}

V.CONCLUSION

This project based on digital image processing techniques by use of python language. We collect the digital photograph of soil sample where we use image processing for detecting soil photographs where we detect soil color their texture and because soil have different layers each layer has different texture, color, depth and composition. This layer of detection known as image processing.

We are applying algorithm for detecting and showing result respectively., we focus on various methods of soil acquisition and classification.. The advantage of this application is to find out which crop is suitable for certain soils that help increase agricultural productivity. This program depends on computerized picture preparing strategy in remote areas.

VI . ACKNOWLEDGMENT

I would like to express my special thanks of gratitude to our guide prof. A.R.Welekar as well as our project incharge prof. A.D. Gotmare who gave us the golden opportunity to do this wonderful project on the topic Agricultural Performance Enhancement by

identifying suitability of soil for specific type of crop using image processing, which also helped me in doing a lot of research and I come know about so many new thigs . and also I would thanks my project member I am really thankful them.

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A Review on Novel Approach for Designing Community Aware Ranking Algorithms for Expert Recommendation in Question Answer Forums

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ABSTRACT

Question and Answer forums play an important role in our daily lives of sharing information and knowledge. Users post questions and then select questions to answer in the system. Due to the rapidly growing number of users and the number of questions, it is unlikely that the user will accidentally trip over the question to answer. high quality responses during a short wait. The main purpose of this paper is to improve the effectiveness of Q&A systems by sending queries to competent and willing users to answer questions. To date, we have developed and implemented Q&A .Question and Answer Forums (QAF) are important platforms for disseminating informal information and play an important role in problem solving and learning. Expert identification is still limited and links analysis methods do not take into account the size of the community.

Keywords : Question-Answer forums, Expert identification, Overlapping community detection, algorithms, Query user network.

I. INTRODUCTION

The Internet is a huge wellspring of statistics, in which the degree of facts is large and usually developing. Clients depend upon internet crawlers to find specific statistics on this facts base. Web crawlers, for example, Google and Bing use watchwords gave via way of means of the customers to carry out look. As of late, contemporary-day revolutionary paintings exercises, for example, Microsoft and Facebook's social-highlighted Bing seek strive, strive to consolidate internet indexes and on-line casual groups for better hunt execution., Q&A frameworks have become being a huge asset for sharing aptitude and consequently are used by an huge quantity of Internet customers. Questions and solutions frameworks likewise shield all inquiries and solutions, consequently going approximately as a vault for statistics recovery Experts have a excessive stage of element and extra contextual facts approximately a

particular domain, consequently, isolating them from amateurs .Q&A, a web Q&A application that makes use of a social network, which forwards inquiries to the ones customers with the best capability and willingness to reply with information and hobby in questionnaires. The layout of Q&A is primarily based totally on social network structures. First, social pals frequently percentage comparable pursuits eg. lab members are very vital in pc systems. Second, social pals have a tendency to be loyal and dedicated due to the assets of "friendship promotes cooperation". Similarly, Q&A prefers interrogation amongst pals and identifies capability respondents of the query via way of means of thinking about metrics: a friend's hobby with inside the question and a friend's closeness to the questioner / forwarder. Therefore, recipients of responses have a better risk of providing incredible responses in a brief length of time.

For example, Yahoo! Answers was launch and attracted more than 10 million users in February of 2007 and hit 200 million users in December of 2009 . Q&A systems also preserve all questions and answers, thus acting as a repository for information retrieval. They are not only important for sharing technical knowledge, but also as a source for receiving advice and satisfying one's curiosity about a wide variety of subjects . With a vast population in a Q&A system, a large number of questions are posed online every day.

For example, there are 823,966 questions and answers posed to Yahoo! Answers per day . Then, when a user intends to answer a question, (s)he may be overwhelmed by the plethora of questions. Moreover, simply relying on altruistic users to provide answers cannot encourage all users to provide answers and to answer questions quickly. Considering that Social Q&A is based on informal communities. The asker and answerer are social close to each other. In this method, making certain the security is important and challenge. To handle this problem, we propose Social Q&A, an on the internet interpersonal organization based mostly Q&A framework, that efficiently advances inquiries to individuals of noting them with mastery and enthusiasm for the inquiries' subjects.

II. BACKGROUND AND RELATED WORK

The growing importance of Q&A forums systems requires an effort to better understand and develop these systems . Activities in studied the influence of various factors (e.g., task users, system interactions and social size) in social interaction in Q&A operations. Note that the existing social network based on responding relationships to current Q&A forum systems differs from the online social network based on social media, which is used in Social Q&A forum. activities are focused on finding competent professionals and users . Instead, Social Q&A forum aims to find general users who can answer questions including opinion type questions. Other studies have been conducted to create reputable models in Q&A programs to increase the reliability of responses, and to determine the relationship between users' reputation and the quality of the answers they provide.Social Q and A directly use social media-friendly social media tools to encourage users to provide feedback without relying on an additional reputation model. Some studies classify questions into categories that have already been done, making it easier for users to find questions that have already been asked and for professionals to find questions to answer. proposed three surveillance schemes for the surveillance of interrogative terminology, and examined each program using Yahoo! Answers.

Text mining techniques also have been used to provide better answers. These categorization and text mining methods can be used in Social Q&A to more accurately derive user interests and question interests. Li et al. proposed a language model by combining expertise estimation and availability estimation, and later proposed category-sensitive language models

for expert identification, which helps route questions to available and capable experts.
Zhou et al. classified the questions using a variety of local and global features of questions and users relationship in order to route a classified question to its potential answerers.

Caso et al. leveraged question category to enhance question retrieval in community-based Q&A systems.

Guo et al. proposed a topic-based model to identify appropriate answerers by calculating the similarities between questions topics and users specialists.

Researchers also began to check social networks within the area of search engines. Evans et al. identified searching as a group action and demonstrated that social interactions can help improve the search results.

Morris et al. discussed the growing trend towards posting queries as social network statuses rather than using web search engines. However, such question flooding to all or any of a user's friends may overburden the buddies, resulting in frustration.

Horowitz and Kamvar presented a social computer programme, which finds the proper person to satisfy a user's information need and provides trust supported social intimacy. Different from previous Q&A system works, this work focuses on system design by leveraging social network properties and shows its promises for performance enhancement. SOS is additionally a Q&A system supported a social network. However, SOS focuses on realizing a mobile Q&A system in an exceedingly very distributed manner and using knowledge engineering techniques. Also, it assumes that social closeness is already provided by users. Instead, SocialQ&A focuses on the thanks to leverage social network properties in better identifying potential answerers with predefined interest categories and showing its benefits through the analysis on real users' Q&A activities.

III. OBJECTIVES

1.1 To analyse the question and answer system behavior of system. Also anlysed the features of questions posted, the questioning and answering a time of activities of users.

1.2 To improve the performance of Q & A systems by actively forwarding questions to users who are capable and willing to answer the question.

1.3 To enhance social question and answer with security and proficiency upgrades by ensuring users protections and recongnizes and recovery answers naturally for queries.

1.4 To develop an effective forum under social networking and to provide high quality answer with short turnaround time.

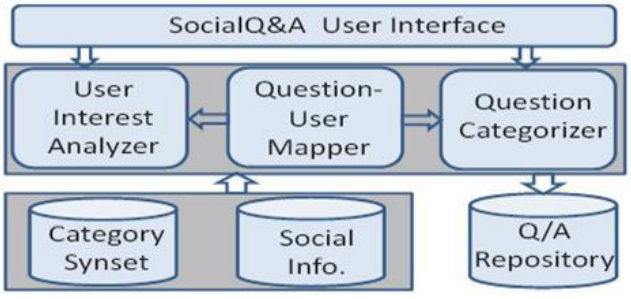
1.5 To connect the Q & A system with social interest and mutual relationship and to make social Q & A system a reliable source of information for all users.

IV. PROPOSED METHODOLOGY

The design of social Q&A consists of three components: user interest analyzer, question categorizer, and question user mapper. User interest analyzer associates each user with a vector of interest categories .question categorizer associates a vector of interest categories to each question. Then supported user interest and social closeness, question user mapper identifies potential answerers for each question. the planning of security and efficiency enhancement methods social question and answer incorporates three methods to enhanced its security and efficiency performance. The bloom filter based personal information exchange method protects users privacy including friendship and interest information.

The routing based mostly answer forwarding technique protects the identification of the verbalizer and responder from being exposed .The responder retrival for perennial queries mechanically notice the solution for the queries. Comparative trace driven experiments. Conducted the excellent massive scale simulations to guage social letter of the alphabet & A as compared with different strategies. result's urged that social letter of the alphabet & A improves the standard of answer and reduced the wait time for answer. the event of world social letter of the alphabet & A have a image the social letter of the alphabet & A system with user interfaces and conduct a true world tiny scale check with real users from Asian nation, the u k and united state for the amount of roughly one month.

The strategy of Social Q & A. Social Q& A is created out of three segments: User Interest, Question Categorizer, and Question-User Mapper. Client Curiosity Analyzer connects every single client with a vector of intrigue classes. Question Categorizer partners a vector of intrigue classifications to every single inquiry. At that point, in view of client intrigue and social closeness Question-User Mapper recognizes prospective answerers for every single inquiry.



To simply the question and answer systems by using social media to analysed user interest based on that forwarding questions to users who are capable and willing to answer the questions with the short span and high quality.

V. SYSTEM REQUIREMENT

- IDE : Visual Studio 2019
- DATABASE : Microsoft Sql Server
- TECHNOLOGY : .NET MVC
- FRONT END : Bootstrap Framework
- IMPLEMENTATION LANGUAGE : C#

VI.CONCLUSION

Question Answer Forum has changed how question and answer system used to work on social media . we have implement a system in which many user are getting the answer they really need maintaining complete privacy of the profiles. Also maximum user have found our system quite useful in comparison to other question and answer system out there. We have successfully implemented a complete question and answer system which can outperform its co petition keeping all factors integrated.

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A Design Model of Community Aware Ranking Algorithms for Expert Recommendation in Question Answer Forums

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For example, there are 823,966 questions and answers posed to Yahoo! Answers per day . Then, when a user intends to answer a question, (s)he may be overwhelmed by the plethora of questions. Moreover, simply relying on altruistic users to provide answers cannot encourage all users to provide answers and to answer questions quickly. Considering that Social Q&A is based on informal communities. The asker and answerer are social close to each other. In this method, making certain the security is important and challenge. To handle this problem, we propose Social Q&A, an on the internet interpersonal organization based mostly Q&A framework, that efficiently advances inquiries to individuals of noting them with mastery and enthusiasm for the inquiries' subjects.

II. BACKGROUND AND RELATED WORK

The growing importance of Q&A forums systems requires an effort to better understand and develop these systems . Activities in studied the influence of various factors (e.g., task users, system interactions and social size) in social interaction in Q&A operations. Note that the existing social network based on responding relationships to current Q&A forum systems differs from the online social network based on social media, which is used in Social Q&A forum. activities are focused on finding competent professionals and users . Instead, Social Q&A forum aims to find general users who can answer questions including opinion type questions. Other studies have been conducted to create reputable models in Q&A programs to increase the reliability of responses, and to determine the relationship between users' reputation and the quality of the answers they provide.Social Q and A directly use social media-friendly social media tools to encourage users to provide feedback without relying on an additional reputation model. Some studies classify questions into categories that have already been done, making it easier for users to find questions that have already been asked and for professionals to find questions to answer. proposed three surveillance schemes for the surveillance of interrogative terminology, and examined each program using Yahoo! Answers.

Text mining techniques also have been used to provide better answers. These categorization and text mining methods can be used in Social Q&A to more accurately derive user interests and question interests.

Li et al. proposed a language model by combining expertise estimation and availability estimation, and later proposed category-sensitive language models for expert identification, which helps route questions to available and capable experts.

Zhou et al. classified the questions using a variety of local and global features of questions and users relationship in order to route a classified question to its potential answerers.

Caso et al. leveraged question category to enhance question retrieval in community-based Q&A systems.

Guo et al. proposed a topic-based model to identify appropriate answerers by calculating the similarities between questions topics and users specialists.

Researchers also began to check social networks within the area of search engines. Evans et al. identified searching as a group action and demonstrated that social interactions can help improve the search results.

Morris et al. discussed the growing trend towards posting queries as social network statuses rather than using web search engines. However, such question flooding to all or any of a user's friends may overburden the buddies, resulting in frustration.

Horowitz and Kamvar presented a social computer programme, which finds the proper person to satisfy a user's information need and provides trust supported social intimacy. Different from previous Q&A system works, this work focuses on system design by leveraging social network properties and shows its promises for performance enhancement. SOS is additionally a Q&A system supported a social network. However, SOS focuses on realizing a mobile Q&A system in an exceedingly very distributed manner and using knowledge engineering techniques. Also, it assumes that social closeness is already provided by users. Instead, SocialQ&A focuses on the thanks to leverage social network properties in better identifying potential answerers with predefined interest categories and showing its benefits through the analysis on real users' Q&A activities.

III. OBJECTIVES

A. To analyze the Q & A forum behavior and features of question.
B. To develop effective forum under social networking.
C. To connect with social interest and mutual relationship and make reliable source of information for user.
D. To provide high quality answer with short time. And gives the ranking to experts.

IV. PROPOSED METHODOLOGY

The design of social Q&A consists of three components: user interest analyzer, question categorizer, and question user mapper. User interest analyzer associates each user with a vector of interest categories .question categorizer associates a vector of interest categories to each question. Then supported user interest and social closeness, question user mapper identifies potential answerers for each question. the planning of security and efficiency enhancement methods social question and answer incorporates three methods to enhanced its security and efficiency performance. The bloom filter based personal information exchange method protects users privacy including friendship and interest information.

The routing based mostly answer forwarding technique protects the identification of the verbalizer and responder from being exposed .The responder retrival for perennial queries mechanically notice the solution for the queries. Comparative trace driven experiments. Conducted the excellent massive scale simulations to guage social letter of the alphabet & A as compared with different strategies. result's urged that social letter of the alphabet & A improves the standard of answer and reduced the wait time for answer. the event of world social letter of the alphabet & A have a image the social letter of the alphabet & A system with user interfaces and conduct a true world tiny scale check with real users from Asian nation, the u k and united state for the amount of roughly one month.

The strategy of Social Q & A. Social Q& A is created out of three segments: User Interest, Question Categorizer, and Question-User Mapper. Client Curiosity Analyzer connects every single client with a vector of intrigue classes. Question Categorizer partners a vector of intrigue classifications to every single inquiry. At that point, in view of client intrigue and social closeness Question-User Mapper recognizes prospective answerers for every single inquiry.

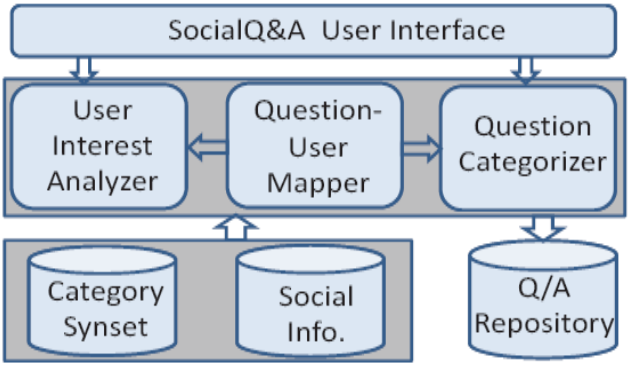

Fig 1: The architecture of Social Q&A

To simply the question and answer systems by using social media to analysed user interest based on that forwarding questions to users who are capable and willing to answer the questions with the short span and high quality.

V. SYSTEM REQUIREMENT

- IDE : Visual Studio 2019
- DATABASE : Microsoft Sql Server
- TECHNOLOGY : .NET MVC
- FRONT END : Bootstrap Framework
- IMPLEMENTATION LANGUAGE : C#

VI. RESULT AND DESCUSSION

1) The design of SocialQ&A. SocialQ&A is composed of three components: User Interest Analyzer Question Categorizer, and Question-User Mapper. User Interest Analyzer associates each user with a vector of interest categories. Question Categorizer associates a vector of interest categories to each question. Then, based on user interest and social closeness, Question-User Mapper identifies potential answerers for each question.

2) Comparative trace-driven experiments. We conducted comprehensive large-scale simulation to evaluate SocialQ&A in comparison with other methods. Our results suggest that SocialQ&A improves the quality of answers and reduces the wait time for answers.

3) The development of a real-world SocialQ&A. We have prototyped the SocialQ&A system with user interfaces, and conducted a real-world small-scale test with real users from India, the United Kingdom, and the United States for a period of approximately one month.

4) The analysis of the data from real SocialQ&A. We have analyzed the features of the questions posted, the questioning and answering activities of users, the quality of answers, and the wait time for answers. Analytical results show the benefits of SocialQ&A in enhancing answer quality and wait time.

Traditional recommendation algorithms use the predicted rating scores to represent the degree of user preference, called rating-based recommendation methods. Recently, ranking-based algorithms have been proposed and widely used, which we use ranking to present the user preference rather than rating scores.

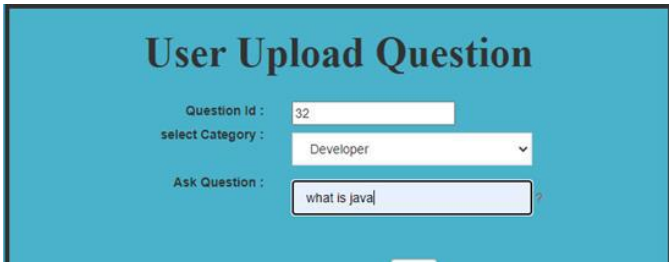

Fig 2 : Screenshots of user upload question

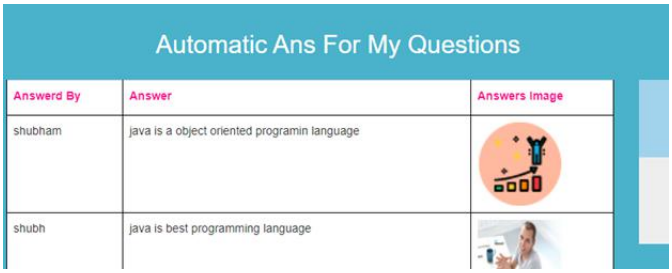

Fig 3 : Screenshots of automatic answer of user upload question

VII. CONCLUSION

Question Answer Forum has changed how question and answer system used to work on social media . we have implement a system in which many user are getting the answer they really need maintaining complete privacy of the profiles. Also maximum user have found our system quite useful in comparison to other question and answer system out there. We have successfully implemented a complete question and answer system which can outperform its co petition keeping all factors integrated.

VIII. ACKNOWLEDGEMENT

We would like to thank many people for A Design Model of Community Aware Ranking Algorithms for Expert Recommendation in Question Answer Forums. Also supported by 978-1-4799-9964-4/15/$31.00 ©2015 IEEE.

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To Design Novel Approach for IoT Based Patient Health Monitoring System Using Wearable Sensors

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ABSTRACT

Internet of Things (IoT) and cloud computing yield great benefits by providing remote and efficient services. The aim of the project entitled as "Novel approach for IoT based Patient Health Monitoring System Using Wearable Sensors" is to computerize the management of the former Hospital office to make simple, fast and affordable software. Work of data collection patient access information etc. The main function of the program is to register and maintain patient information and physician information and to obtain such information as required and to use this information by installing patient information, diagnostics information, while the program goes out to receive this information on screen. This system is used to monitor the patient's condition by a specialist remotely. And this program is used to locate a Covid-19 patient with neurological assistance.

Keywords : IoT (Internet of Things), Diagnosis, computer use, enroll, collection, expert, wearable

I. INTRODUCTION

Today, the use of technology to improve the quality of life has become quite common in today's society. When the technology is aimed at improving the Quality of Life (QoL), it is directed to the Internet of Things (IoT) [1]. To create a management plan for health facilities, we take care of patient registration, drug details and concerns such as queries and complaints. The project Hospital Management system includes patient registration, record keeping, and electronic payments at pharmacies, and laboratories. The software has a facility to provide unique id for all patients and automatically stores the details of all patients and staff. The remote specialist can monitor the patient condition anytime and anywhere by using sensors attached to the patient body. And this program helps to find Covid-19 patient.

II. PROPOSED SYSTEM

The Hospital Management System is designed for any hospital to replace their existing manual paper-based system. The new system is to control the information of patients. Room availability, staff and operating room schedules and patient invoices. These services are to be provided in an efficient, cost effective manner, with the goal of reducing the time and resources currently required for such tasks.

2.1 Implementation Plan:

The main plan for the system developed is to mimic the existing system as it is in the proposed system.

2.2 Study of the Existing System

The existing system is very complex as every work is done manually. By using the present system, work is done manually. So, each and every work takes much time to complete. Whenever the doctor needs the information it is very difficult for the employee to search for that particular opno details and the drug information to be ordered. Every time we should search the records at the shelves.

2.3 The Proposed system

The present system has obvious problems, inhibiting growth and more usage of man power. The present system which has been proposed is very easy to work. The computerization of every department in the health center will reduce the work that is done manually. The man power is reduced to the maximum extent. The patients at the registration office are registered within no time, because every time there is no need search for the particular opno in the shelf's. The drugs information are maintained without any complexity and all the calculations are made automatically by this system there is no need for the calculations.

Advantages

1. A fast and more efficient service to all patients. As there are thousands of patients records; Searching process is an easy task.
2. Saving in staff time in entering and manipulating data.
3. Easy input, deletion and manipulation of lot, patients' details.
4. Simple correction of input errors and we can assess the calculations accurately.

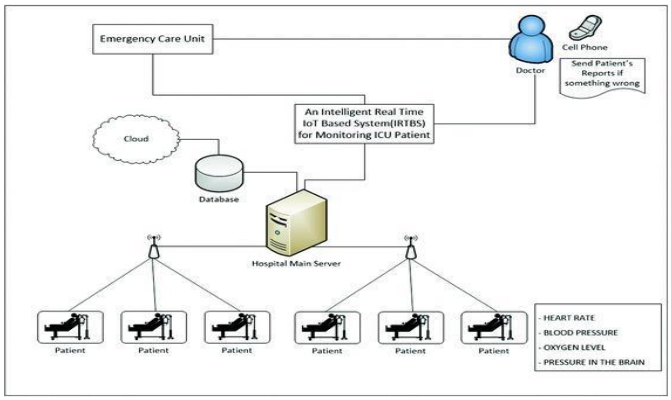

Fig.1 Block Diagram of Project

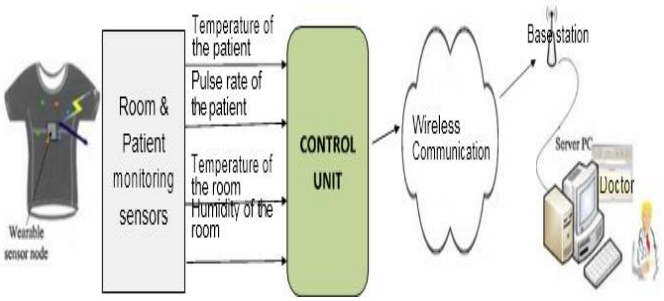

Fig.2 System Block Diagram (Journal of critical reviews 2020)

2.4 Objectives

1. To register patient, Nurse, Doctors and medicals in hospital system.
2. To monitor the patient condition Embedded technology will be use, and patients current condition monitor at doctor side.
3. To generate patient prescription and find the medicines for patient in medicals of that hospital premises the system will help for searching the medicine.

4. To detects the Covid-19 patient using temperature sensor and send their details to patient's relatives.

2.5 System Requirement:

- Software Requirement:

  Framework: Dot Net framework 4.5 Java Script Framework

  Technology: Dot Net (Desktop Technology) Android (Mobile Phone)

  Language : VB.Net, React Native (Java script)

  Database : MySQL 8.0

  Server : Apache Xampp Server

  IDE : Microsoft Visual Studio 2019

  Editor : Microsoft Visual Code

  OS : Windows 7, Windows 10

- Hardware Requirement:

  HDD : 160

  RAM : 2 GB

  Processor : Dual Core, Core 2 Due and higher version 2.20 ghz

- External Hardware:

Microcontroller: atmega328, Arduino Uno

Sensors : Pulse Rate Sensor, Temperature Sensor LM35, BP Sensor

Wires : Connectors, serial connector, adapter

III. FORMULATION

To design this system, I used the following materials:

- IoT (Internet of Things) : The Internet of Things (IoT) defines a network of materials – " embedded objects", software, and other technologies for the purpose of connecting and exchanging data with other devices & systems over the internet.
- WSN (Wireless Sensors Network) : Wireless sensors network (WSN) refers to a group of scattered and dedicated sensors for monitoring & recording the natural physical condition & organizing the data collected in a central location.
- Naive Bayes Algorithm: NB classifier are the collection of classification algorithm based on bayes theorem.

$$P(A|B) = P(B|A)\ P(A) / P(B)$$

- Pseudo Random Number Generator: Uses mathematical formulas to generate sequences of random numbers.

$$X_{n+1} = (aX_n + c) \bmod m$$

IV. RESULT

In a hospital health care monitoring system, it is necessary to constantly monitor the patient's physiological parameters. The project Hospital Management system includes registration of patients, storing their details into the system, and also computerized billing in the pharmacy, and labs. This system is also used to monitor the Covid-19 patient and inform the condition of Covid-19 patient to their relatives, an also it automatically recommend doctors list in the emergency condition.

4.1 Experimental Result

The following are the screenshots of the project, according to that the project flow:

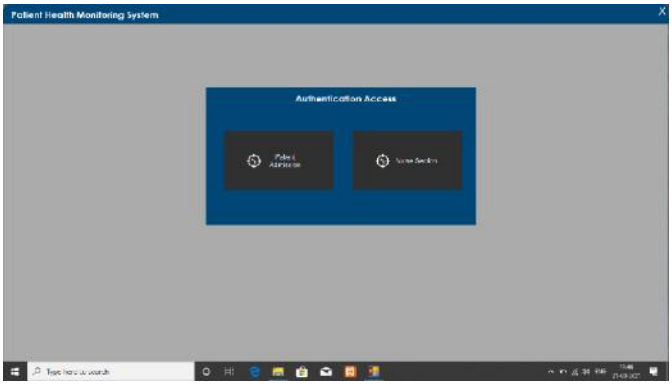

Fig 3. Main Page contain Admin section & Nurse section

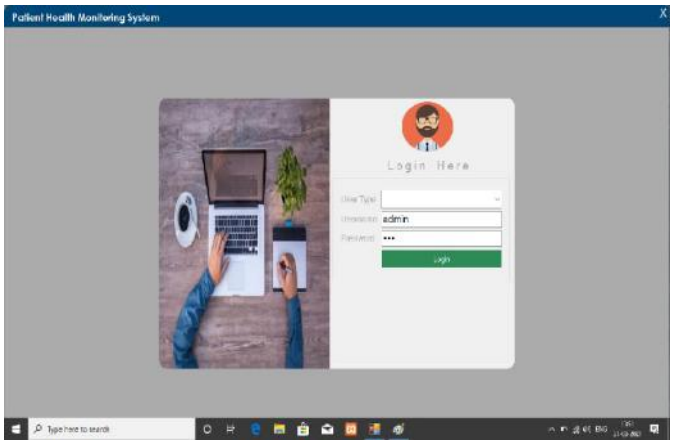

Fig 4. Login Page

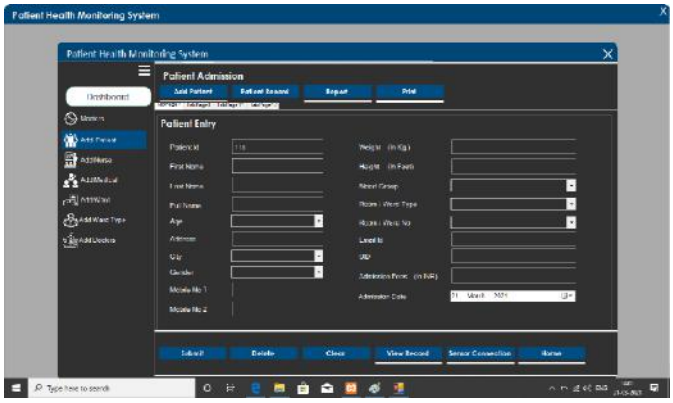

Fig 5. Patient Registration Page

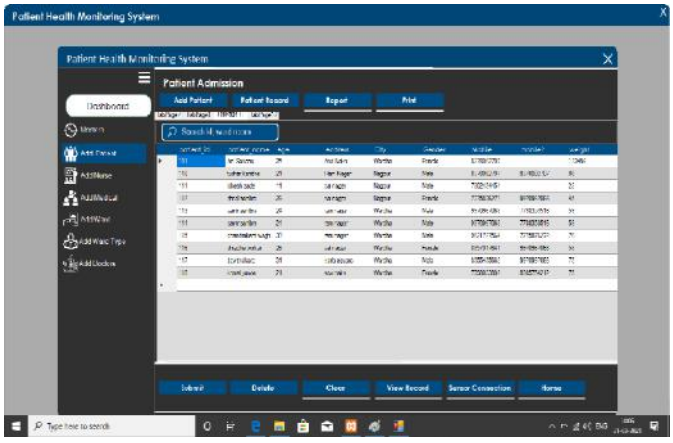

Fig 6. Patient Records

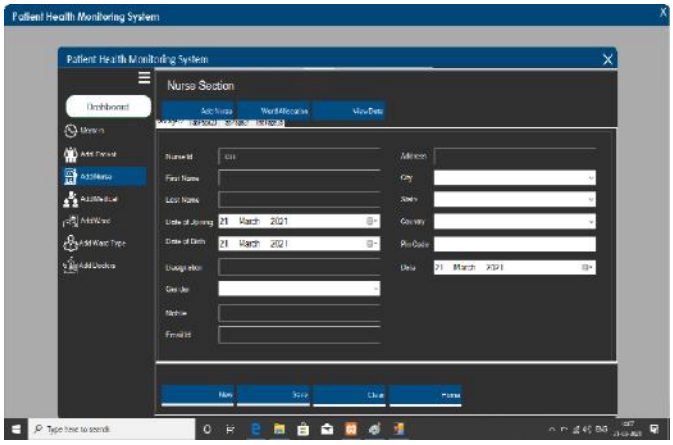

Fig 7. Nurse Registration

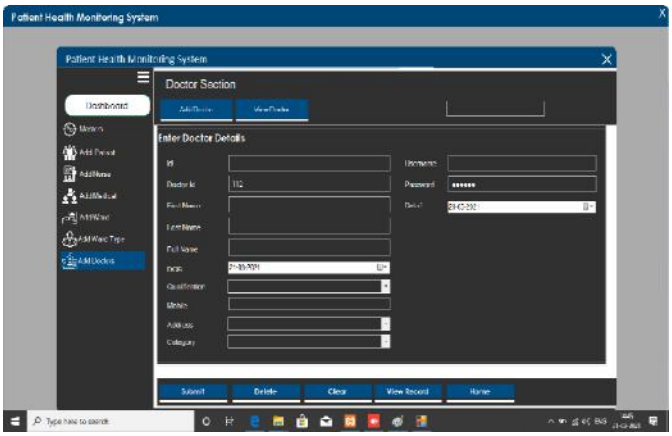

Fig 8. Doctor Registration

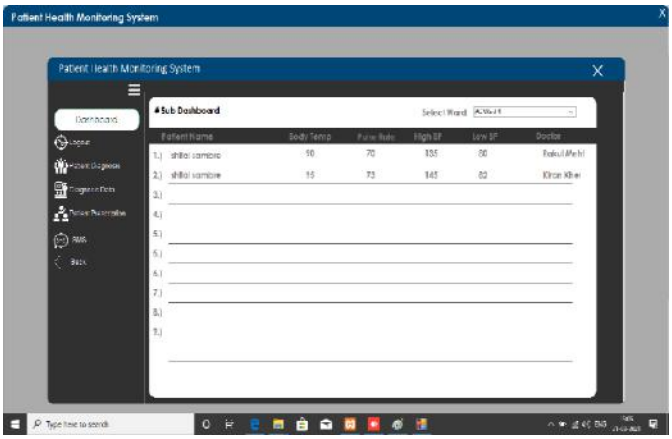

Fig 9. Patient Diagnosis Record

V. CONCLUSION

Since we are entering details of the patients electronically in the" Hospital Management System", data will be secured. Using this application, we can retrieve patient's history with a single click. Thus, processing information will be faster. It guarantees accurate maintenance of Patient details. It easily reduces the book keeping task and thus reduces the human effort and increases accuracy speed.

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A REVIEW ON DEEP LEARNING TECHNIQUES APPLIED TO DESIGN AN AUTOMATED FRONT-END DEVELOPMENT

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Abstract

An early stage of developing user-facing applications is creating a wireframe to layout the interface. Once a wireframe has been created it is given to a developer to implement in code. Developing boilerplate user interface code is time consuming work but still requires an experienced developer. In this dissertation I present two approaches which automates this process, one using classical computer vision techniques, and another using a novel application of deep semantic segmentation networks. I release a dataset of websites which can be used to train and evaluate these approaches. Further, I have designed a novel evaluation framework which allows empirical evaluation by creating synthetic sketches. My evaluation illustrates the deep learning approach outperformes the classical computer vision approach and I conclude that deep learning is the most promising direction for future research.

Keywords: *HTML, Mock-ups, Machine Learning, Image Processing, Augmentation*

The process of implementing client-side software based on a Graphical User Interface (GUI) mockup created by a designer is the responsibility of a developer. Implementing GUI code is however time consuming and prevent developers from dedicating the majority of their time implementing the actual functionality and logic of the software they are building.

While the design process varies from individual to individual, for many project it is often start as a digital or sketched wireframe. A wireframe is a document which outline the basic structure of the application. A wireframe is a low fidelity design document as it does not define specific detail such as colors. After the wireframe is created it is revied and more detail is added i.e. it becomes a higher fidelity mockup. After the design is finalized it is implemented by a developer. This process is complicated and involves multiple parties. If a designer wishes to create a website they must out all the details before having it implemented by a developer, as it is considerably easier to try out ideas in the design before they are converted into code. Automatic creation of web pages decreases programming time, process cost and source utilization. Because of the quicker dynamic plan arranges, the final site is delivered in a shorter time.

In this study, an approach has been created to automatically produce the HTML code for the mock-up of website pages. For that I am using the keras model. Keras model generate the HTML code from hand-drawn website mock-up. Implements an image captioning architecture to drawn source images. Keras is a powerful and easy-to-use free open source Python library for developing and evaluating deep learning models. It wraps the efficient numerical computation libraries Theano and TensorFlow and allows you to define and train neural network models in just a few lines of code.

Related Work

An algorithm named Reverse Engineering Mobile Applications User Interface(REMAUI) finds the element of the UI a mobile applications for example button, text boxes and pictures, it make the code for them from the screenshots of an application window. It transform to the code from the screen pictures or drawing for mobile platform, PC vision and optical character acknowledgement techniques are utilized. Although the REMAUI works efficiently, it does not assist cross-page transition and animation inside the page; the authors developed the P2A algorithm to cure the lack of the REMAUI algorithm; the author developed the pix2code algorithm which expect to change over the graphical interface for a website page to structured code using deep learning with convolution and repetitive neural network; the author developed the algorithm Redraw. The algorithm Redraw takes mock-ups of mobile applications screens and makes an organized XML code for it. In the first phase of their implementation PC vision procedure are utilized to distinguish singular GUI components. The second phase includes the order to recognize component as indicated by their function for example toggle button, text area, etc. In this stage deep convolutional neural networks are used. In the last stage, the XML code is generated by joining the K-Nearest Neighbor's(KNN) according to web programming hierarchy. These days open source code libraries; GitHub are utilized very common to share code and applications. It is a typical practice to explore these repository and reuse code when beginning or improving programming ventures.

The creator utilized an enquiry program; called SUISE in which the clients characterized a graphical interface with straightforward drawings and keywords. This interface is then finding in existence libraries to get comparative interface. These interface is transformed into operable codes and came back to the end client to choose the most reasonable interface. In this project I uses some of the libraries; A 15 Year Perspective on Automatic Programming consists not only of an automatic compiler but also some mean of acquiring the high level specification to be compiled, some mean of determining that it is the intended specification and some (interactive) mean of translating this high level specification into a lower-level one which can be automatically compiled; An Expert Code Generator using Rule-Based and Frames Knowledge Representation Techniques the creator create the ECG-RF system for generating a device driver program is presented and implemented with VBasic software; UML-Generator An Automatic system for Model Driven Development mainly focuses on automation of Unified Modeling Language(UML) diagrams from the analyzed requirement text using Natural Language Processing(NLP); Program Synthesis using Natural Language the author present a general framework for constructing program synthesizer that take natural language inputs and produce expression in a target DSL. From these it constructs a synthesizer by learning optimal weights and classifier that rank the

outputs of a keyword-programming based translation. Mockup To Web Page Conversion the creator processes the methodology called MODFM- Mockup Driven Fast-Prototyping methodology to help elicit and finalize system requirements, as well as facilitate adjustment to quickly changing user requirements typical to web application.

Praposed Work

The proposed application reduces the time and cost factor by directly translating a wireframe into application code. It may be argued that the lengthy design process is intended to focus discussion on the overall structure before details. However, tools such as Balsamiq [Balsamiq] or Wirify [Wirify] are widely used and add filters to digital mockups to reduce the details thus showing that this is not an issue. On top of saving time and cost, the benefits of a generated website include: Easier collaboration - a website can be instantly hosted and shared for others to review Interactivity - unlike digital images, a website can add interactivity such as buttons and forms No middle people - developers often have to interpret aspects missing from a design, by allowing a designer to directly implement the website the designer can add these details.

To develop the project we are using three techniques, these are as follow:

Deep Learning: Deep learning is an artificial intelligence (AI) function that imitates the workings of the human brain in processing data and creating patterns for use in decision making. Deep learning is a subset of machine learning in artificial intelligence that has networks capable of learning unsupervised from data that is unstructured or unlabeled. Also known as deep neural learning or deep neural network.

Image Processing: Image processing includes those methods that start with an image (an array of pixels, each with a brightness or "grey scale" value or perhaps with color information) and end with an image. Usually, the resulting image is of similar size (number of pixels and number of grey levels). The brightness of the resulting pixels will, in most cases, have been modified using rules that take into account the original value of the pixel and its neighbors, or perhaps its position or spatial relationship to many other pixels. Sometimes, several images are combined to produce a new image. The various principal methods of processing are often described as working in the spatial, time or frequency domains. For image processing we are using the TensorFlow library. TensorFlow is useful for object detection purpose. Object detection using TensorFlow is a computer vision technique in which a software system can detect, locate, and trace the object from a given image or video. The special attribute about object detection is that it identifies the class of object (person, table, chair, etc) and their location – specific coordinates in the given object. Face detection is one of the example of object detection.These object detection algorithm might be pre-trained or can be trained from scratch.

Augmentation: Image data augmentation is a technique that can be used to artificially expand the size of a training dataset by creating modified versions of images in the dataset. Training deep learning neural network models on more data can result in more skillful models, and the augmentation techniques can create variations of the images that can improve the ability of the fit models to generalize what they have learned to new images.

The Keras deep learning neural network library provides the capability to fit models using image data augmentation via ImageDataGenerator class. In this technique I am using Keras library. Keras is useful for developing the recurrent neural network. Keras is the most used deep learning framework.

Keras is a powerful and easy-to-use free open source Python library for developing and evaluating deep learning models

The proposed work is carried out by following system architecture:

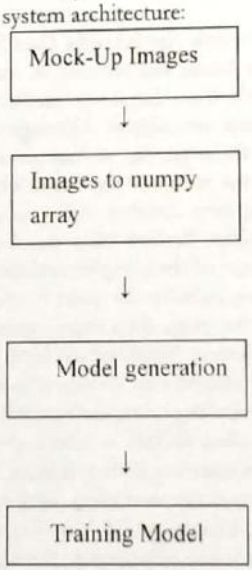

Fig. System Architecture

Mockup Images: Getting mock up images or wireframes from the user and passing it to the machine learning model; Images to numpy array: Here in this process I am generating wireframe images to numpy arrays so that convolutional neural networks can process that data to learn.

Model Generation: After converting images to numpy array in this part I am generating machine learning models using numpy array data to generate the code; Training Model: In this step I am training the neural network by examining many examples and attempting the model to minimize the loss and learning good values for all the weights.

Conclusion

Transforming websites mock-ups into mark-up code with less time along with development cost has been a crucial point. In this paper, we developed an approach which accepts web page mock-ups, process them and generate structured HTML code. Dataset comprising pictures, including different mockups of web page structures were utilized. This dataset is used to train the CNN model. Although my work exhibits the capability of such a framework to automate the procedure of executing GUIs, we just started to expose what is feasible. The model comprises generally not many limitations and is prepared on a comparable little dataset. The nature of the created code could be definitely enhanced via preparing a greater model on altogether more information for an increasing count of time- span.

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Determination of Attacks occurred on Dataset based on Intrusion Access System by using Machine Learning Techniques

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Abstract **- The effectiveness of any Intrusion Detection System (IDS) system is a complex problem because of its incompatibility with multi-featured network data distribution or measurement data. To remove this situation, several a variety of intrusion access methods have been suggested and shown with varying degrees of accuracy This is why the file Selecting an effective and efficient IDS) Systems are a very important aspect of data security. In this work we have created two models for differentiation. One is based on Support Vector Machine (SVM) and the other is based on Random Forest (RF). To finding dangerous work or breaking the law is often reported, collected locally using secure data and Event management system and can also block packets.**

Index Terms **- IDS, Machine Learning techniques, Network Based Attacks, Various types of Attacks, Various types of classifier.**

1.INTRODUCTION

Accessibility systems monitor dangerous activity networks, and they are discarded on false alarms. Therefore, companies need to adjust them properly when they first install their IDS products. This means setting up a login program to see how Compares normal traffic on the network with malicious work, and also monitors network packets entering the system detect malicious activity in which they are involved and at the same time send out alerts. Access to Partition Program:

IDS are divided into 5 types:
Network Access Program (NIDS):
Network Access Programs are installed on the network to monitor traffic on all devices on the network. It detects vehicles moving in the subnet and resembles a road passing through the subnet through known attacks. When an attack is detected or a strange character appears, a warning is sent to the controller. An example of NIDS in a subnet where firefighters are found to find out if someone is trying to crack a firewall.

Internal Access to Immunization Program (HIDS):
Internal access control programs (HIDS) work on private hosts or network devices. HIDS scans incoming and outgoing packages. It only leaves the device and notifies a supervisor when a suspicious or dangerous job is found. It takes a snapshot of existing program files and compares them with a previous image. When system files are modified or deleted, a warning is sent to the administrator for confirmation. An example of the use of HIDS can be found on complex machines which is not expected to change its structure. The process of intrusion detection model is as following figure:

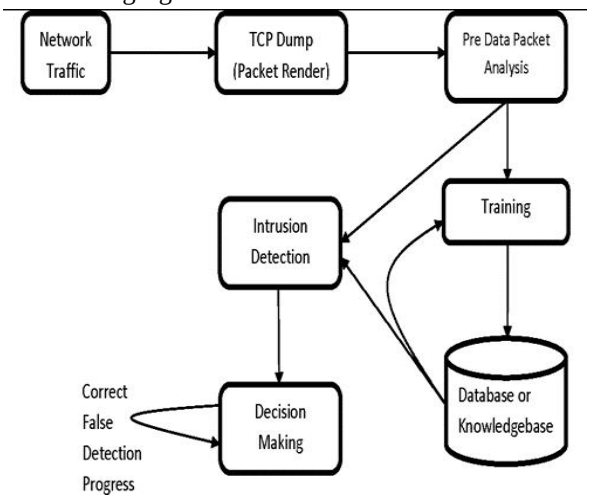


Fig 1: Architecture of Intrusion Detection

Protocol-based Intrusion Detection System (PIDS): A protocol-primarily based intrusion detection system includes a program or agent that resides at the stop of the server, retaining and interpreting the protocol among the consumer / device and the server. It seeks to defend the internet server via continuously monitoring https protocol and adopting the http protocol because https is not always encrypted and its net presentation layer must be in this connection, it is able to be used between applications before installing https.

Applications Access Applications (APIDS):
Application access (APIDS) program is a program or agent that resides within a group of servers. A particular application detects interference by monitoring and interpreting communications within the system. For example, it clearly looks at the SQL protocol displayed by Middleware because it works with a web server database.

Hybrid Access Detection System:
Hybrid intrusion detection systems are created by using combining or greater intrusion detection techniques. In a hybrid access detection system, the host agent or machine facts is blended with the network statistics to develop a complete assessment of the network system. The hybrid intrusion detection system works well compared to other intrusion detection systems. Introduction An example of a hybrid IDS.

2. TECHNIQUES FOR IMPLMENTING HIDS SYSTEM

Most intrusion prevention programs use one of three access methods: signatures, uncontrolled statistics, and explicit protocol analysis. We introduced how to use data to improve IDS in this study, known as IDS. Data processing has two components: sampling and job selection. First used sample data and a combination of Genetic Algorithm and RF to improve sample size. In job selection, Genetic Algorithm and RF combinations are also used to identify the best performance subset. Use RF to upgrade IDS to create isolation Data for intrusion detection.
IDS is a method of testing RF tested based on data usage; The IDS works on all subject-selected indicators much better than the RF classificatory, which demonstrates the importance of data usability in IDS. In addition, it reveals that RF segregation is a very robust division by comparing conventional machine learning methods, so the combined effect of data usage and RF classification makes IDS almost always the best, especially for non-compliant identification with lower records, those doses, analysis, back, and staff. However, enhancements are still possible, such as long-term costs in the field of data usage and online processing support.
Because the proposed use of data can effectively reduce the impact of unequal distribution of samples on IDS and indicate encouraging performance, additional areas of uncommon acquisition such as fraud detection can also be used. In addition, the search process may be improved as it takes more time to train classifiers. We first applied that we collect CICIDS dataset and then we train and test the dataset: The training and testing technique is shown in following figure:

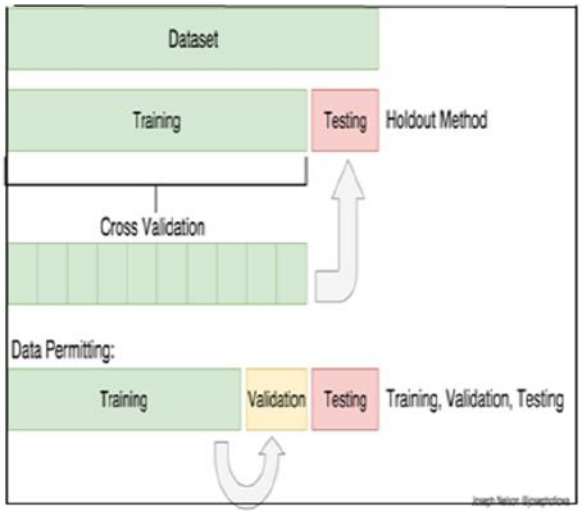


Fig 2: Process of Training and Testing Dataset

We split dataset i.e. 80% training data and 20% tested dataset. The training set is the one in which we trained and measure our model equally to fit the parameters and the tested data is only used to test the performance of the model. Training data releases are available for modeling and test data is unrecognized data for predictability points monitors all incoming and outgoing traffic flowing to or from network devices.
RF elegance feature is used as a subcommittee. The motive of the function selection is to find a hard and fast of features which could enhance the performance of the receiver.

3 RECOGNITION OF ATTACKS ON DATASET

According to the KDD database there are 21 types of attacks divided into four groups (DOS, R2L, U2R, and PROBE) with different numbers of cases and database appearances. Based on an in-depth analysis of KDD data the distribution event for different types of attacks has been saved. In other words, 79% of the data extracted to initiate DOS attacks with 19% of standard traffic while 2% of other types of entry (U2R, R2U and PROBE).

In networks, the general behavior of users exceeds the undesirable behavior, which makes the data-sharing of normal and unethical behavior unequal. To improve IDS acquisition performance, A hybrid information expansion approach is based totally on gadget getting to know algorithms. The records processing method consists of two elements: data sampling.

1. Data sampling: In this section, the iForest acquisition method is used for data collection, GA is used to increase the size of the global sample, and the performance of the RF section of student sample data is used as a test indicator. The purpose of the data model is to obtain an appropriate training database and reduce data inequalities.
2. Feature Selection: In this paper, the GA and RF integration technique is used to select homes. As a records version, GA is used as a seek method to determine subsets of an electoral responsibility, and RF elegance feature is used as a subcommittee. The motive of the function selection is to find a hard and fast of features which could enhance the performance of the receiver. The cause of the svm set of rules is to create a dotted line or boundary line that may divide n-dimensional space into a circle so that future.

4. MODEL CLASSIFIER

The steps of the proposed model can be summarized as follows:

1 Upload the database and export it to Distributed Database (RDD) and Data Frame in Apache Spark.

2 Pre-data.

3 Feature selection.

4 Train SVM and training database.

5 Explore and test KDD model and database.

4.1 Random Forest Classifier: The Random Forest is a well-known form of mechanized learning of supervised learning technology. It can be used for both tax problems and ML backlogs. In terms of mass learning, a process that involves many variables in solving a complex problem and improving model performance.

As the name suggests, "Random Forest is a subdivision that contains multiple decision trees in the lower set of a given database and takes a measure to improve the approximate accuracy of that database. "Instead of relying on a deciduous tree, the unplanned forest takes one of each tree.

We find out accuracy, precision, recall of dataset by using Random Forest algorithm and RF is best classifier than SVM algorithm. The Accurate classification of the proposed model is superior to models that use RF partitions where the parameters are selected therefore better performance of general performance than SVM we propose a novel framework called the hybrid internal detection system. The cause of the svm set of rules is to create a dotted line or boundary line that may divide n-dimensional space into a circle so that future.

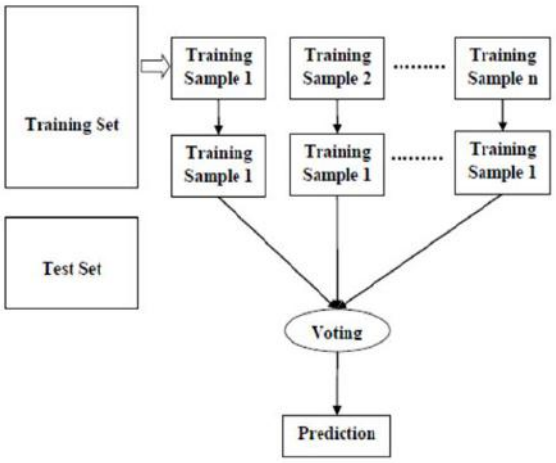


Fig3: Working of RF Classifier

4.2 Support Vector Machine Classifier: Vector Machine or SVM is one of the most widely studied algorithms used to diagnose and retrieve problems. The cause of the svm set of rules is to create a dotted line or boundary line that may divide n-dimensional space into a circle so that future new information points are without problems positioned in the precise orbit.

5. PERFORMANCE AND RESULT ANALYSIS

The performance of overall experiment is as follows:
5.1: Collection of CICIDS Dataset: We put CICIDS (Friday morning working hours) dataset from local area network. This dataset has various attacks such as DOS, R2L, SQL injection, etc.

5.2 Data Sampling: Data sampling is done by training dataset and testing dataset. Real-world data often contains sounds, lost values, and perhaps in an unusable format that cannot be used directly by machine learning models. Data processing is required for data refining operations and optimization of machine learning models, which also increases the accuracy and efficiency of machine learning models.

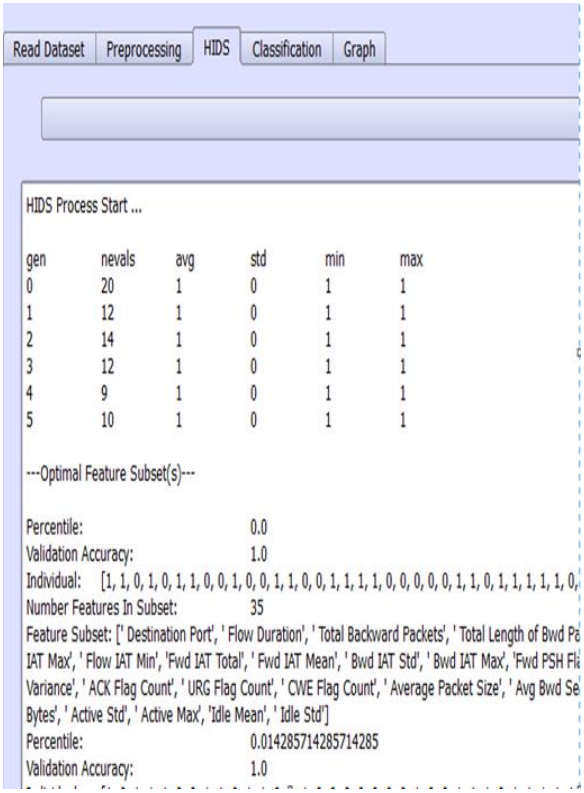
5.3 Feature Selection: Selection of feature in machine learning to find a set of features that allow one to create useful models for learning objects. There are some features selected out of 34 features. There are some features is shown in following table that we selected. Feature selection in machine learning to find a set of features Allow objects to create useful patterns for learning. Some of the 34 features were selected. The following table shows some of the features we have selected.

Feature name	Type	Description
Flow duration	continuous	duration of the flow in microsecond
total Fwd Packet	continuous	total packets in the forward direction
total Bwd packets	continuous	total packets in the backward direction
total Length of Fwd Packet	continuous	total size of packet in forward direction
total Length of Bwd Packet	continuous	total size of packet in backward direction
Fwd Packet Length Min	continuous	minimum size of packet in forward direction
Fwd Packet Length Max	continuous	maximum size of packet in forward direction
Fwd Packet Length Mean	continuous	mean size of packet in forward direction
Fwd Packet Length Std	continuous	standard deviation size of packet in forward direction
Bwd Packet Length Min	continuous	minimum size of packet in backward direction
Bwd Packet Length Max	continuous	maximum size of packet in backward direction
Bwd Packet Length Mean	continuous	mean size of packet in backward direction

Table 1: Selected Features from CICIDS Dataset

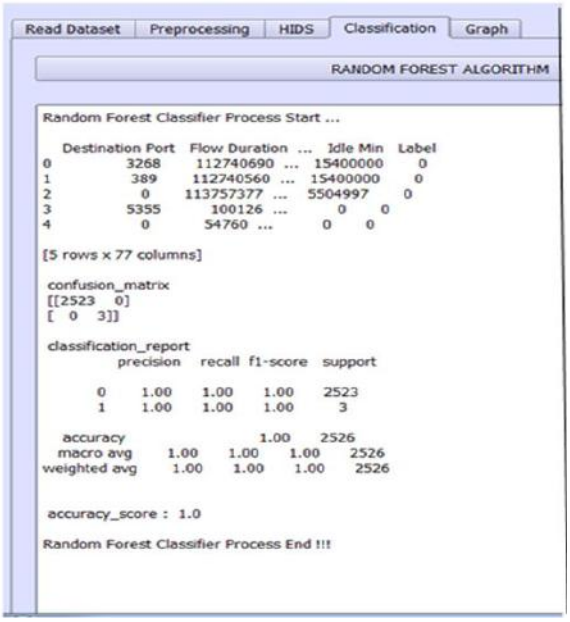
5.4 Implementation of Hybrid Intrusion Detection: We are proposing a new framework called Hybrid Intrusion Access System (H-IDS) to detect various attacks. In this system, we use both random-based identification methods and signatures to achieve more accurate identification Parameters.

The exact classification of the proposed model is better than the models using the selected RF segmentation, so we use the genetic algorithm for the selection of features for better performance of the generalization compared to SVM. And finding the dataset is malicious or not. The process of Intrusion detection system is shown in following result:



SCR 01: Process of Hybrid Intrusion Detection System

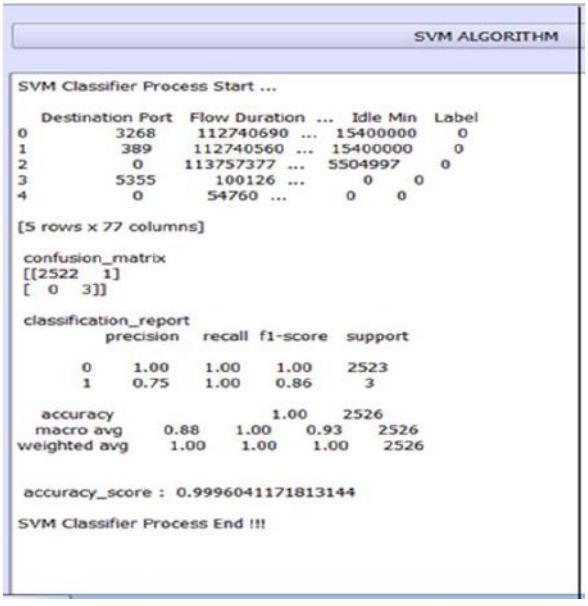
5.5 Classification of RF and SVM classifier:
The Accurate classification of the proposed model is superior to models that use RF partitions where the parameters are selected therefore better performance of general performance than SVM we propose a novel framework called the hybrid internal detection system.DOS, probe, U2R, R2L11. Random fore (RF) is a composite separator we use both random-based identification methods with the forest planning problem Random Forest offers you the opportunity to belong to a class. SVM takes you off the line, you still need to turn it into opportunities in some way if you need opportunities. In those cases, where SVM works, it works better than Random Forest. The result of RF algorithm is as follows:



SCR02: Process of IDS using RF Algorithm

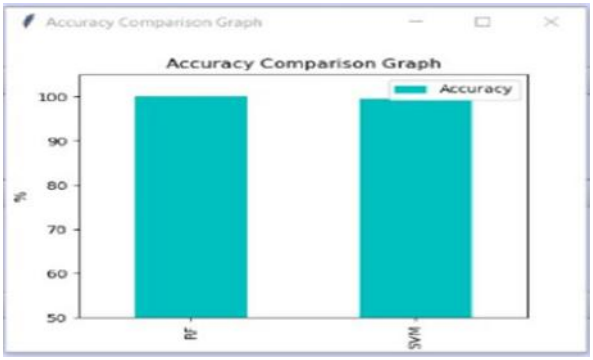
Support vector machines (SVMs) have become one of the most popular ML algorithms used to detect intrusion due to its aesthetic nature and ability to deal with curses of size. As cited by various researchers, the scale still affects the performance of SVM-based IDS. We find out that SVM classifier is very difficult for detection of intrusion on this dataset. RF algorithm used for partitioning and retrieval. But more often, they are used. We find out RF has more time than SVM for detecting intrusion on dataset. Therefore, we find SVM is better than RF algorithm for detect malicious data.

The time required for SVM is less than RF classifier.



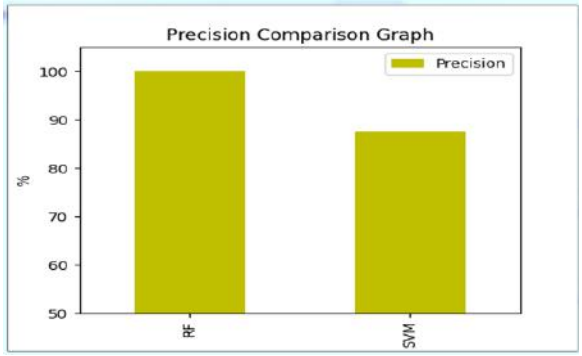
SCR03: Process of IDS using SVM algorithm

Accuracy comparison Graph the following Graph shows that the result of comparison between RF and SVM Classifier which is used for intrusion detection on dataset that shows Accuracy, precision, Recall, etc. The Accurate classification of the proposed model is superior to models that use RF partitions where the parameters are selected therefore better performance of general performance than SVM. We find accuracy of RF is 99.95 and SVM is 99.45 for detecting intrusion on the CICIDS dataset. The following graph shows that comparison between RF and SVM algorithm i.e., Accuracy, Precision, Recall etc. of intrusion detection system. we see is that the computer The complexity of support vector machines (SVMs) is much higher than that of random forests (RF). This means that SVM training is longer training than RFI when the amount of training data is high. This is shown in following:



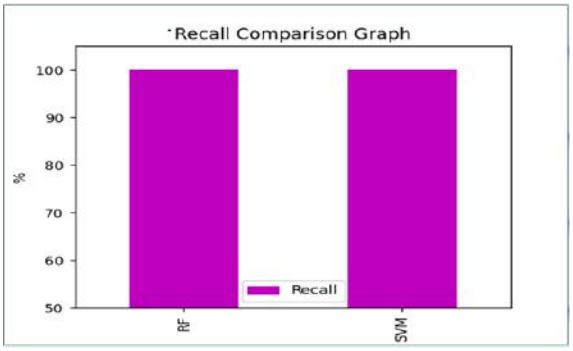
SCR04: Accuracy Comparison Graph

Precision Comparison Graph: We find out precision of RF partition is greater than SVM partition. The accuracy of the measurement system, which is related to reproduction and multiplication, is the rate at which repeated measurements under fixed conditions show similar results. The precision result is shown is as follows:



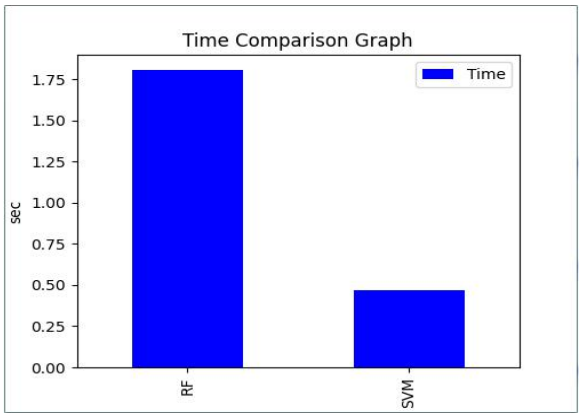
SCR06: Precision Comparison Graph.

Recall Comparison Graph: We find out RF has greater recall than SVM algorithm. while recollection (also known as sensitivity) is part of the appropriate conditions found Both accuracy and recall are based on correlation. We find out RF has greater recall. The comparison of recall of RF and SVM algorithm is shown in following graph:



SCR05: Recall comparison graph

Time Comparison Graph: We find out RF has more time than SVM for detecting intrusion on dataset. Therefore, we find SVM is better than RF algorithm for detect malicious data. The time required for SVM is less than RF classifier.

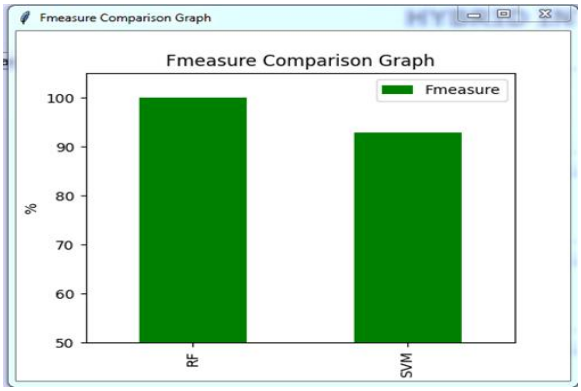


SCR07: Time Comparison Graph

F1 Comparison Graph: In the data model, chromosome sequence = x, 1, 2,. . . ,} K is the variety of classes of network behavior, zero.1, zero.2, zero.3, 0.4, 0.Five, zero.6, 0.7, 0. 8, zero. Nine a is the gene at the chromosome that determines the ratio of rectangular outliers to iforest. Inside the classification problem, the health characteristic is generally set to the accuracy of the type. Fitness characteristic is taken into consideration as f1 rating. The f1 rating is a harmonic feature that takes under consideration both accuracy and recall. The F1 score count is shown as follows.

1 score = 2 × precision recall
Precision + Recall
Precision =
+ (3)
Memory =
+ (4)

Among them, real fine (TN) is the number of authentic bizarre records categorized as inequalities, real poor (TN) is the variety of real ordinary statistics classified as ordinary, and fake positive (FPP) is classified as proper normal. Number of information. The wide variety of actual anomaly facts categorized as inequalities and fake bad (FN) are common.



SCR08: F1 Score Comparison Graph

6. CONCLUSION

We have presented a method of data optimization to develop IDS in this research, known as IDS. The optimization of information consists of components: sampling and choice of features. iforest is used for statistics sampling and integration of GA and RF for the optimization of the pattern ratio. In the choice of capabilities, GA and rf integration is once more hired to become aware of the fine feature subset. Use RF to develop IDS to carry out classification. The intrusion detection data CICIDS was appreciated for IDS. We also conclude that there are many types of attacks on dataset. and RF classifier is best for detection of intrusion on the CICIDS dataset than the SVM.

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Implementation of Traditional 2D Website into 3D by Using Augmented Reality

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Abstract **- The Web, as we know it has long history for design and creativity, and new level aim to wide range of emerging technologies to web AR, VR, IOT etc. We adding AR and Unity 3D capabilities to the web and using it try to level up standard of existing web sites. 3D modeling of Web in Augmented Reality the name itself is self-explanatory, It is a branch of augmented reality which makes us feel and experience the enhanced reality with the help of daily use devices like mobiles, tablets, etc. What we feel if we experience 3D Web in augmented reality by just surfing on device? Well, this is possible with the help of this technology. After Wearing Holo-lens web content viewable to user in real life.**

Index Terms **- Augmented reality, 3D modeling of web, Web AR, Holo-lens, world wide web, Unity 3D, Vuforia.**

INTRODUCTION

3D Modeling of websites using the concept of Augmented Reality is the use of the mobile camera to see the object in the real world. In this era, the technologies are rapidly developed, and it may give our lives a new interface and thus make it more accurate and snug, and precise. The technologies that capable to make this successful is Augmented Reality (AR) Technology. Currently, we are using 2D websites like e-commerce, Educational sites.

In this rapidly changing world, we need to upgrade web technology too. As we see user and website visitors want to know something new and interesting, as per user need we have to add new and emerging technology to the web. As a result of newly emerging demands, 3D modeling of Web in Augmented reality using unity 3D, Vuforia, Blender can satisfy all dynamic demands of the user. The use of augmented reality and Holo-lens shows us web content in real life. As we propose this paper is nothing but just a further advancement in marketing and it changes the whole era of using websites.

"Augmented reality" term started in the 90s, at that; it is used for navigation purposes. But nowadays it's used from the gaming industry to diff types of gadgets; it is gaining fame/eminence with changing times. Now we can use augmented reality in Web Development too.

The use of augmented reality and Holo-lens shows web content in real life. As we propose this paper is nothing but just a further advancement in marketing and it changes the whole era of using the website.

FEATURES OFSYSTEM

To change the edge of websites by converting them into 3D using unity 3D, Augmented reality, Blender. It gives real time experience to user.

You have to wear Holo-lens and web content appear in real life or we can say in front of your eyes.

OBJECTIVES

1. To design assets in 3d for website content with the help of blender software.
2. To apply that assets and markers in website with help of vuforia. (This could add a new interactive dimension to this conventional.)
3. To develop such website in unity 3D which gives immersive personalized and interactive experiences to real world.

LITERATUREREVIEW

Ramanujam R Srinivasa, Uthra P Veluchamy, Joy Bose Proposed "Augmented Reality Adaptive Web Content" (Feb 2016). In this paper they present the design of an Augmented Reality (AR) browser which

renders web pages without clog the view of the world, We can see things using an AF headset, for example, Oculus Rift, Gear VR, or Google Cardboard. The browser seamlessly overlays the contents of the web page on the user's view and is capable of adjusting the font size, colors, and layout of the web page in this way it render the user view of page. This technique differs from other AR apps such as Amazon Flow in that it is more customizable and functions as a true browser.[1]

Blair Mac Intyre and Trevor F. Smith proposed "Thoughts on the Future of Web XR and the Immersive Web" 2018. In this paper, they discovered the WebXR device API which brings the AR and VR technologies capability to the web

and allows that technology to be added to traditional websites. In the enhancement of the initial WebXr Device API to support a more extensive set of capabilities, additional web API and frameworks will be needed to create or expand to satisfy the theory of web-based AR and VR. So as part of this project they need to know and decide that what will not possible with web technology and In what fields web-based AR and VR will grow. [2]

METHODOLOGY

We propose this paper with the objective of, to give a new view to the traditional websites by converting the web into a 3D Web in Augmented Reality. By creating 3D assets and markers for the website. To change the edge of websites by converting them into 3D we are using unity 3D, Augmented reality, Blender Vuforia. It gives a real-time experience to the user. You have to wear Holo-lens and web content appear in real life or we can say in front of your eyes. Instead of Holo-lence we use AR camera for the same.

We had been using websites for a long time. Traditional websites have two Dimensional views. But traditional websites have limitations and it's high time to start a new era of websites. On traditional sites we have limitations, For example on shopping sites we buy any furniture for our home but after delivering we found that the purchased item is not suited for our house interior. But what if we can try the things without buying, well this is possible with Augmented Reality.

For 3D Modeling of websites, we have to use the blender for creating assets and markers for the web objects. Using blender we create 3D objects for our websites. General Flowchart/Architecture of proposed system for 3D modeling of Website is shown in Figure1.

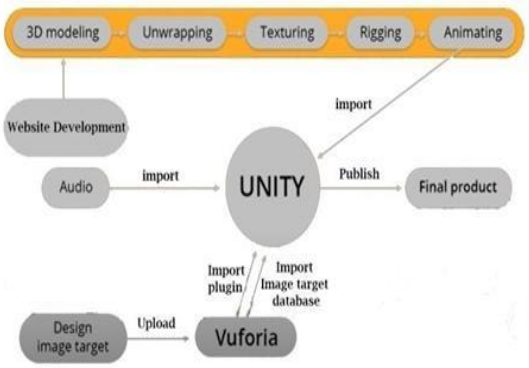

Fig. 1:- Work Flow of Proposed System

PROPOSED WORKFLOW

In this system, the content of websites appears in front of your eyes and you experience it in the real world. It is possible due to Augmented Reality, Unity, and Vuforia Engine.

At the core, AR is basically image tracking technology, therefore we added images to track 3d model.

Now Vuforia engine will actually convert image into The grayscale image inside their target image database.

In other words, the AR engine is actually color blind. So don't create an image that may look contrast in color but looks low contrast when converted to grayscale.

After that go to the Vuforia website which is Vuforia.com. We have to download three things from the Vuforia website i.e Vuforia plug-in for unity, the license key for the application, download database which contains the image targets.

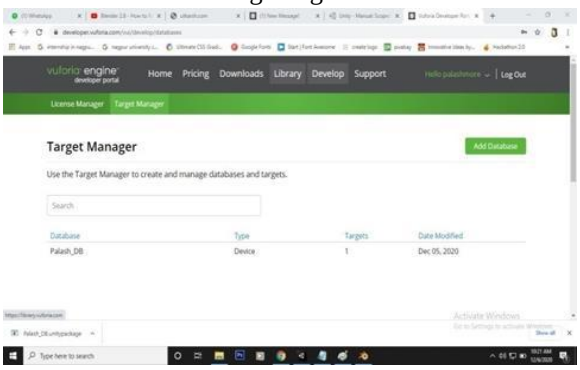

Fig. 2: Image Target Database in Vuforia Engine

As our project contains multiple image targets we can have a single database for all image targets. Now in unity, we have to open the unity plug-in. Then import the Vuforia plug-in. To do this simply go to assets menu > import package > custom package. Choose the file of the Vuforia plug-in and hit open and Press import.[*]

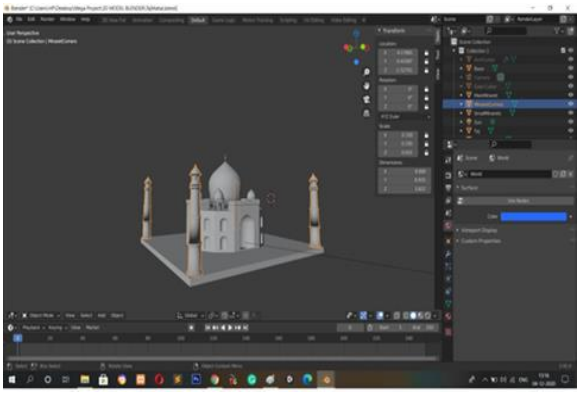

Fig. 3: 3D model of Taj Mahal in Blender

Now the Vuforia library is alive inside our project. Vuforia has their own dynamic camera which tracks and move dynamically in 3D space according to the movement of user's device when tracking the image target. There no need for the default unity camera, so delete it. Add Vuforia camera prefab into the scene. Browse to Vuforia > prefabs and choose "AR Camera", click and drag this to the hierarchy panel to the scene.

Next, we need to import the database into our project. Just do the same method as before. [*] After the database goes into the project. Go back to the camera and turn on "databasename_DB data" and then check on activate button. Now add the image target into the scene place in its proper position.

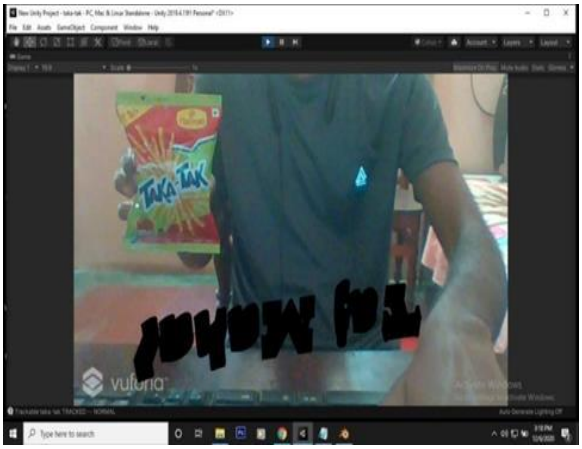

Fig.4 : Tracking of 3D model with image target in Unity Software

Importing 3D content from Blender to unity. For importing you have copied the ".blend" file and the texture file which is a ".png" image format. There are two things you usually need to do after importing 3d models to unity is, set up the material and texture and set up the animation.

First, we need to set up the material, by default, Unity will convert material from Blender to standard material.

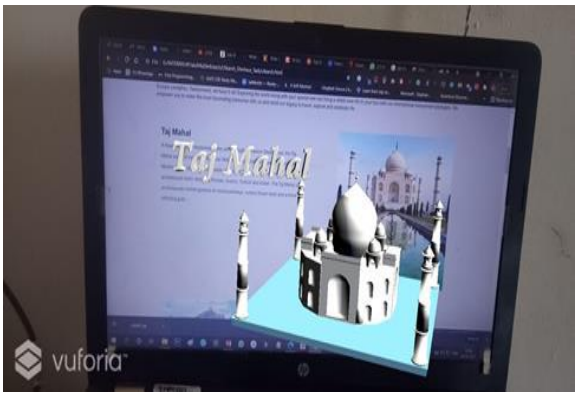

Fig-5: 3D View of Taj-Mahal in Real World.

Now as per website requirement we do the same procedure for multiple image targets on the website by arranging all 3D models in our application, our website is ready to view in AR with help of Holo-lens.

SYSTEM REQUIREMENTS

Hardware & software is the most essential part of any technology system. 3D Modeling of Website In Augmented Reality used following hardware & software system.

A) Hardware Requirements:

Holo-lens: It is based on augmented reality, which they call "mixed reality". Holo-lens use multiple sensors, advanced optics, and holographic processing which combine with the environment. These holograms are used to display information, blend with the real world, or simulate to the virtual world.

B) Software Requirements:

1. Blender: It is available for download on Windows Vista, 7, 8, 10 32-bit/64-bit; Mac OS X 10.6+ 64-bit, GNU Linux 32-bit/64-bit FreeBSD 64-bit. Graphics drivers must be up to date and OpenGL is should support them. Blender needs minimum requirements; so check requirements before installing Blender.

2. Unity: Unity is a cross-platform game engine for creating games in both 2D and 3D. Unity supports building games for many platforms such as Windows 7 SP1+, 8, 10, 64-bit versions only; Mac OS X 10.12+; Ubuntu 16.04, 18.04, and CentOS 7, Oculus Rift, and many more.
3. Vuforia Engine: It is a software development kit (SDK) for creating Augmented Reality apps. Developers can easily add advanced computer vision functionality to any application, it recognizes images and objects.

APPLICATIONS

1. With less potential for error than with wearable technology, AR is already starting to improve user experience on desktop and mobile.
2. E-commerce web designers can use this technology, making use of webcams or Smartphone cameras to help consumers choose their products.
3. In fashion retail, for example, AR is used as a "virtual dressing room" experience.
4. Users can point their desktop or Smartphone camera towards themselves and scroll through outfit choices that are displayed on the screen.
5. AR is not just improving the user experience in the retail – besides webcams or smartphones; it is also being used with headsets in the engineering, education, and aviation industries.
6. Visual representation is just one facet of AR – users can also interact with sound, touch.

RESULT

1. As a result of technology, It boosts the user experience of websites and more convenient to use. It can change the definition of surfing on a website.
2. Visitors get more details about the product and increase chances to buy a product or use the service given by the Website.
3. Due to the 3D modeling of websites there is a drastic change in digital marketing trends.
4. It also improves the online educational facilities and makes more efficient to the learner.

CONCLUSION

1. Augmented reality combining with web development will be an excellent way of providing an amazing user experience.
2. Using these techniques one can make his/her website more interactive.
3. Tech giants like Amazon, Flipkart, and many other companies can use this approach to catch more users and increase their revenue.
4. Our approach of adding AR to a Website is simple yet effective so that anyone can work on it.

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A Review on Recognition of Sentiment Analysis of Marathi Tweets using Machine Learning Concept

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ABSTRACT

Sentiment Analysis of Marathi Tweet using Machine learning Concept is done in this paper. The tweets are classified into Positive, Negative and Neutral by using different concepts. It is difficult to predict Marathi tweet results from tweets in Marathi language. So, we used different tool to get tweets in Marathi tweet. Sentiment Analysis also shows the higher accuracy of Marathi Tweet data. The proposed work explain Sentimental Analysis of Marathi tweets, which have been classified into positive, negative and neutral using different machine learning algorithms like NB, SVM, RF,NLP, DT, etc and shows the higher accuracy of text data.

Keywords : Machine Learning Algorithm, Sentiment Analysis, Marathi Tweets.

I. INTRODUCTION

Sentimental Analysis is the process of decide whether a piece of writing is positive, negative or neutral. Sentimental analysis is the technique to analyzes the text that imperfection polarity within text, whether a entire documents, passage, sentence or clause. Nowadays, due to the huge number of daily posts on social network people opinion is very critical for decision making millions of people gives their opinion in their other tongue through social media like Twitter, Blogs, Facebook, Instagram, etc. Sentimental Analysis plays essential role in the field of business, politics and Public Action. Text limitation of tweet massages with 280 characters per each. So, Sentiment level analysis is one of the main directions in sentiment analysis.

Maharashtra's mother tongue is Marathi is most commonly used language to express their opinion through twitter. The Sentimental Analysis of Marathi twitter message is unavoidable since there exists on automatic sentiment analysis in this language. Marathi language is very expressive language and the language is write in the form of text. Text contain word as well as hyperlink, special character, punctuation, number, symbols, etc. to removing such type of expression is the major task. The proposed work explain Sentimental Analysis of Marathi tweets, which have been classified into positive, negative and neutral using different machine learning algorithms such as NB, SVM, RF, NLP, TD, etc and shows the higher accuracy of text data.

Bag-of-words (BOW) is the most popular technique to model text in statistical machine learning approaches in sentiment analysis. However, the performance of BOW sometimes stand short due to some fundamental deficit in handling the polarity shift issue. For that we collect the Positive words, Negative words and stopwords in Marathi language. And make a dictionary of that words.

Objectives

Sentiment Analysis for the Marathi language is the new trending work research field as number of system is available for many other languages but for Marathi language not much research work has been done. Classifying and identifying sentiment in the form of text. Nowadays, social media a huge form of sentiment oriented rich data in the form of blog post, Facebook, twitter, etc. This user generated web oriented data may contain very useful information that helps for finding the sentiments of the crowed data or gating useful information from unstructured data. Sentiment Analysis is to predict the emotion. Emotions are the representation of different facial expression. For analyzing this expression we use different methods and algorithms. For that following are the defined objectives for SA on Marathi data.

1. To classify tweet data by using different methods.
2. To identify tweet data by using different algorithms, whether it is positive negative or neutral.
3. To shows accuracy of tweet data.

II. BACKGROUND AND RELATED WORK

SA has been studied and employed widely for the last two decades. Most of the works in SA are specific for the English language.

Pang and Lee proposed three different machine learning algorithms such as NB, Maximum Entropy, and SVM with unigram and bigram features for SA of movie reviews in English. They showed that SVM outperforms other two classifiers[1].

SA has been done in different Indian languages like Bengali, Hindi, Punjabi, Manipuri, Kannada, Tamil and Malayalam. Soumya S., Pramod K.V proposed Sentiment analysis of Malayalam tweets using machine learning techniques classified into positive and negative using different machine learning algorithms such as NB, SVM, RF [2]. Sentiment Analysis of Malayalam Tweets using Machine Learning Technique is done in this paper. By using different machine learning technique tweets are classified into positive and negative. And also shows the higher accuracy. Marathi language is very expressive language and the language is write in the form of text. Text contain word as well as hyperlink, special character, punctuation, number, symbols, etc. to removing such type of expression is the major task. In the Marathi language, there is multiple meaning of the one word when we are talking. In Marathi Language there are multiple pronunciation of one word buts its meaning is different. For that word is difficult calculate accuracy of Marathi word. For that we refer Hindi language paer. Charu Nanda, Mohit Dua, Garima Nanda proposed Sentimental Analysis for Movie Reviews in Hindi Language using Machine Learning. In this paper an approach to sentiment Analysis on movie review in hindi language is discussed for social websites like facebook, twitter are widely posting the user review about different thing such as movie, food, fashion etc. Review and opinion play a role in identifying the level of satisfaction of user [3].

Mohammed Arshad Ansari, Sharavari Govilkar,proposed Sentiment Analysis of mixed code. In that they transliterated Hindi and Marathi text The designed system is an effort which classifies Hindi as well as Marathi text transliterated documents automatically using KNN, NB and SVM and ontology based classification; and results are compared to in

order to decide which methodology is better suited in handling of these documents [4]. Mohd Sanad Zaki Rizvi Article on 3 Different NLP Library for Indian Language Analytics Vidya Article. In that they discuss about the different types of NLP library and how it works. This Article for indian language[5]. Parul Sharma and Teng-Sheng Moh proposed Prediction of Indian Election Using Sentiment Analysis on Hindi Twitter in that they used SVM, NB for prediction [6]. Binita Verma, Ramjeevan Singh Thakur proposed Sentiment Analysis using Lexicon and Machine Learning Based Approach [7]. Sentiment Analysis of Urdu Tweets is done in this paper. By using different Lexicon based and machine learning technique. Tweets are classified into positive and negative [8].

III. PROPOSED METHODOLOGY

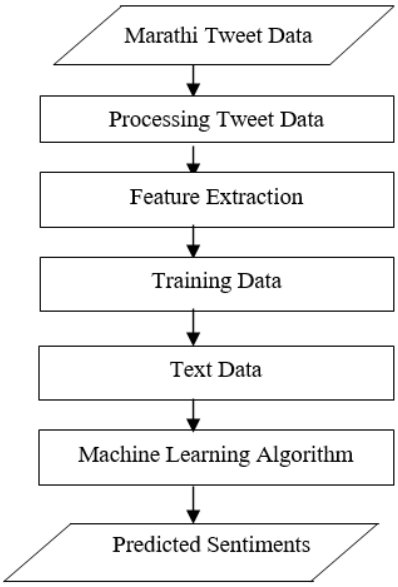

Fig 1. Proposed Architecture for SA

This section explains about the Dataset, Preprocessing Methods, Feature Selection, and Classifiers used in our experimental setup. The architecture of the proposed method is shown in Fig. 1.

3.1. Dataset

Due to the unavailability of the sentiment tagged dataset in Marathi, we have created the dataset in Marathi Language.

3.2. Preprocessing

The retrieved tweets contain hyperlinks, punctuations, special characters, etc., these have been removed using regular expressions in python language. In that we collect positive word, Negative word and Stopword in Marathi language. In that first we input data. In that doing tokenization the input data and then remove stopwords and special symbols of the input data.

3.3. Feature selection

Feature selection is the procedure of reducing the number of input variables when progressing a predictive model. It is used to calculate accuracy of input data set. BOW, TF-IDF, Unigram with sentiwordnet and Unigram with Sentiwordnet with negation word have been considered for feature vector formation of the input data set.

3.4. Machine Learning Approach

Machine learning is an application of artificial intelligence (AI) that gives systems the ability to automatically learn and better from experience cut off being direct programmed. In that different types of machine learning algorithms, such as NB, SVM, RF, NLP, DT, etc.

3.5. Fornulation

After this all process we calculate the polarity of that data it means it is positive, Negative or Neutral. For that we used percentage formula. And then we show it in the form of graph.

IV. CONCLUSION

Sentiment Analysis of Marathi tweets using machine learning algorithm such as NB, SVM, RF are proposed

in this work. Different feature selection method are considered for feature vector formation in the input data. And shows the better higher accuracy of Marathi tweet data.

V. ACKNOWLEDGEMENT

We would like to thank many people for designing on identification of sentiments by using machine learning algorithms for different language. A special thanks to Dr. A. N. Thakare for help with coordinating across different time zone and discussion with topic.

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A Design on Recognization of Sentiment Analysis of Marathi Tweets using Natural Language Processing

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ABSTRACT

Sentiment Analysis of Marathi Tweet using Machine learning Concept is done in this paper. The tweets are classified into Positive, Negative and Neutral by using different concepts. It is difficult to predict Marathi tweet results from tweets in Marathi language. So, we used different tool to get tweets in Marathi tweet. Sentiment Analysis also shows the higher accuracy of Marathi Tweet data. The proposed work explain Sentimental Analysis of Marathi tweets, which have been classified into positive, negative and neutral using machine learning algorithms like NLP. and shows the higher accuracy of text data.

Keywords :- Machine Learning Algorithm, Sentiment Analysis, Marathi Tweets.

I. INTRODUCTION

Sentimental Analysis is the process of decide whether a piece of writing is positive, negative or neutral. Sentimental analysis is the technique to analyzes the text that imperfection polarity within text, whether a entire documents, passage, sentence or clause. Nowadays, due to the huge number of daily posts on social network people opinion is very critical for decision making millions of people gives their opinion in their other tongue through social media like Twitter, Blogs, Facebook, Instagram, etc. Sentimental Analysis plays essential role in the field of business, politics and Public Action. Text limitation of tweet massages with 280 characters per each. So, Sentiment level analysis is one of the main directions in sentiment analysis.

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A Review on Hanabi Game for Multiagent Learning using Artificial Intelligence

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ABSTRACT

A popular board game Hanabi is a combination of cooperative gameplay with imperfect information. Partial observability makes the game, a challenging domain for AI research. Especially, when AI should cooperate with a human player. Imperfect information game is nontrivial due to complicated interplay of policies. The combination of cooperation, imperfect information, and limited communication make Hanabi an ideal challenge in both self-play and ad-hoc team settings. Ad-hoc team settings, where partners and strategies are not known in advance. In this paper, we are trying to review all such type of games, which is evaluated with the help of Artificial Intelligence and machine technique. We expect this article will help unify and motivate future research to take advantage of the abundant literature that exists to promote fruitful research in the multiagent community.

Keywords : Ad-Hoc Team, Communication, Cooperative, Imperfect Information

I. INTRODUCTION

Artificial Intelligence is the science of getting machines to thing and make decision like human beings do. Since the development of complex Artificial Intelligence algorithms, it has been able to accomplish this by creating machines and robots that are applied in a wide range of fields including agriculture, healthcare, robotics, marketing, business analytics, games and many more.

Artificial Intelligence has mastered some of the world's most complex games. Hanabi is different from the adversarial two-player zero-sum game where computers have reached superhuman skills, beating top player at chess[29,32], checkers[31], go[28], backgammon[27], two-player poker[25,26] and even starcraft-2[30], a real time strategy computer game. Artificial Intelligence stumbles in cracking some of the seemingly simple game once that required an ability to communicate and collaborate. Hanabi as a new challenge domain with novel problems that arise from its combination of purely cooperative gameplay.

A. Hanabi: the game

Hanabi is a cooperative card game created by French game designer Antoine Bauza (2010). In which players are aware of other's cards but not their own. To succeed, players must coordinate to efficiently reveal information to their teammates, however players can only communicate through grounded hint actions that point out all of a player's cards of a chosen rank or colour. So, everyone needs the advice of his fellow players and attempt to play a series of cards in a specific order to set off a simulated firework. Hanabi is a challenging benchmark problem for Artificial Intelligence. Hanabi an interesting multi-agent learning challenges [1] for both learning a good self-play policy and adapting to an ad-hoc team of players.

Source: James Goodman, 2019 IEEE

Figure 1 : A game of Hanabi in progress. The player at the camera's perspective can see the other player's cards, but not their own. The current score in the game is 12, from the sum of the top cards in each suit in the tableau.

B. Hanabi: the challenge

a. Challenge one: self-play learning

Self-play challenge is focused on finding a joint policy that achieves a high expected score entirely through self-play learning. Hanabi is difficult for current learning algorithm even when large amount of data and computation time, learning agents have trouble approaching the performance of hand-crafted rules in four player games, and fall far short of such rules for three and five players.

b. Challenge two: ad-hoc team play

In ad-hoc team play, the ultimate goal is agents that are capable of playing with other agents or human players. For this, a policy which achieves a high score in self-play is of little use if it must be followed exactly by teammates. good strategies are not unique, and a robust player must learn to recognise intent in other agent's actions and adapt to a wide range of possible strategies. We propose to evaluate ad-hoc team performance by measuring an agent's ability to play with a wide range of teammates it has never encountered before.

In the future we expect to see canonical agents pulls of pre-trend or hard-coded self-play agents be made available for training and hold-out sets to allow for consistent comparisons. To facilitate future research, the open-source Hanabi Learning Environment, propose an experimental framework for the research community to evaluate algorithmic advances, and assess the performance of current state-of-the-art techniques.

II. BACKGROUND AND RELATED WORK

Hanabi is a cooperative card game created by Antoine Bauza, a French game designer in 2010. Later in the same year Peter Stone et al. [22], work on ad-hoc human teams and ad-hoc autonomous agent teams, also give an example of human soccer and robot soccer with the ad-hoc team player. Game theory Leyton-Brown and Shoham provides a useful theoretical foundation for multiagent interaction. A good ad-hoc team player may need to make an explicit assumption that its teammates are observing and reacting to its actions.

Hanabi won the prestigious Spiel des Jarhes, Game of the year award in 2013. In 2015 Osawa [18], describes

experiment with two players only. It showed that simulated strategies (ideal, random, internal state, outer-state, self-recognition) that try to recognize the intention of other players performed better than a fixed set of static strategies. Later Cox et al. [20], developed the hat strategy. The result of simulating the recommendation and information strategies and also simulate a cheating strategy for the comparison purpose.

Bruno Bouzy [8], developed a set of players name Hannibal, in which each player being either a knowledge-based simulator or a tree search player using a simulator. Using Hat principle, they reported achieving 24.92 points and a perfect score 92%, in that an information move informs all the players at once, not only the targeted player. joseph et al. [5], implement a number of rule-based agents. In addition to an Information Set Monte Carlo Tree Search (IS-MCTS) agent. M. Eger et al. [6], presented AI agent for the two-player version of the cooperative card game Hanabi that is based on intentionality and communication theory. C. Martens and M. Eger [12], presented the cooperative card game, which allows users to play the game with a variety of Ais in a web browser. Additionally, GUI has the capability to watch replays of previously completed games, and to take over control of these replays at any point, these are some techniques to achieve strong Hanabi play.

Rodrigo Canaan et al. [4], describes a two-track competition of agents for the game will take place in the 2018 CIG conference. In this author develop a genetic algorithm that builds rule-based agents by determining the best sequence of rules from a fixed rule set to use as strategy, it uses evolution in three steps to get better playing agents than the human-created baselines. Eva T. Gottwald et al. [11], implemented the two-player version of Hanabi in Unity with support for a Tobii eye tracker. There were two tracks, called “Mirror” and “Mixed”. Using eye tracker, they are able to determine where a player’s gaze lingers with reasonable precision to determine which card they are focusing on.

Another work on ad-hoc teamplay using Hanabi is by N. Bard et al. [1], who independently trained reinforcement learning agents that scored 20 to 22 points in self-play, but only 0 to 5 when paired with one another. They also proposed an ad-hoc setting where self-play playtraces of the partner agent are provided prior to gameplay for learning, but no agent currently takes advantage of this. Pablo S. Chacon et al. [7], describes proposed approach for AI agents that can play the game(pandemic) with human players without requiring explicit communication. Andy Nealen et al. [3], showed that, using MAP-Elites, it is possible to generate a pool of Hanabi-playing agents that differs in two important behavioural dimensions: risk aversion and communicativeness. Jungkyu Park [15], results with default max relay buffer, in which they stop the training of all models at iteration 10000 and compare the best evaluation performance. Results with small max replay buffer, in which the best model not only outperforms model with bigger replay buffer but also deep mind reported performance of Rainbow agent on two-player Hanabi. James Goodman [16], used ISMCTS as a base algorithm coupled with a re-deterministation technique that re-samples consistent world states for everyone but the player acting at a node. This entry also used a neural network to represent a policy and value function trained via self-play. Jacob N. Foerster et al. [17], presented a BAD, a novel algorithm for multi-agent reinforcement learning in cooperative partially observable settings. It uses a factorized, approximate belief state that allows agents to efficiently learn informative actions, leading to the discovery of conventions. For more on multi-agent deep reinforcement learning, P. Hernandez-Leal et al. [19], provides a recent survey.

Recently, M. Eger et al. [2], performed two online experiments, one in which Eager demonstrate that the intentional behaviour leads to an increase in score

over a baseline agent, and another in which we demonstrate how taking timing into account can improve the agent's performance in games with unfavourable starting condition.

Now a day's deep reinforcement learning for multiagent system and its methods used by Thanh T. Nguyen et al. [9], Yuandong T. et al. [10], proposed a JPS, a general optimization technique to jointly optimize policy for multiagent collaborative agents in imperfect information efficiently. A survey of multi-agent strategy based on reinforcement learning by Liang Chen et al. [13], and introduces the basic methods of RL, the main method of single agent RL and multiagent RL. Rodrigo Canaan et al. [14] and Xianbo Gao et al. [21], evaluating RL agents in Hanabi with unseen partners and trained agents using the popular Rainbow DQN architecture in Hanabi using self-play, a single rule-based partner, and a mix of rule-based partners.

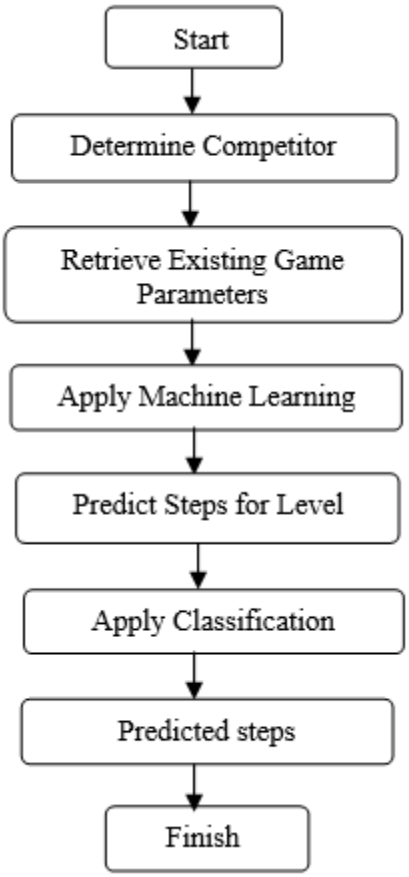

Fig. 2. Flowchart: steps involved in multiagent learning Hanabi game

III. PROPOSED METHODOLOGY

Ad-hoc team play is learning to play with a set of unknown partners, with only a few games of interaction. Ad-hoc team play's ultimate goal that is capable of playing with other agents or even human players. For this we propose an algorithm generation with the help of self-play is little bit in use. A robust player must learn to recognize intent in other agent's behaviour and adapt a wide range of possible strategies being played. Good strategies are developed by repeating the players by playing 1000 different random sets. The important aspect of ad-hoc team is to be recognizing or modelling the capabilities of one's teammates.

We propose to evaluate ad-hoc team performance by measuring an agent's ability to play with a wide range of teammates it has never done before. This performance is measured via score achieved by the agent when it paired with autonomous agents and then players exhibit a diverse strategy's which can be hard-coded or learned by self-playing.

It is possible to create the handcrafted program that plays this game well, as we humans already know good strategies, however this project is about getting several instances of an AI to learn new ways to communicate with each other effectively. Again, the goal is not to get a computer program that plays Hanabi well, the goal is to get an AI to learn to communicate effectively and work together towards a common goal.

IV. CONCLUSION

The combination of cooperative gameplay and imperfect information make Hanabi a compelling research challenge for Artificial Intelligence and machine learning techniques in multi-agent settings. This article briefly introduces about the multi-agent learning in different learning techniques, techniques to achieve a strong Hanabi play, best policies, and strategies. In ad-hoc team settings, where the agents must play with unknown teammates will help us to understand better the role theory of mind reasoning might play for AI systems that learn to collaborate with other agents and humans. Machine learning techniques used to simplify, which is based on AI technique, so is conclude that we try to find out feasible solution based on recent study. And the game becomes more playable as compare to existing. In future work, we are trying to design an algorithm for predicting multiagent learning method and check the performance analysis of design algorithm.

V. ACKNOWLEDGMENT

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Multiagent Learning Algorithm for Hanabi Game using Artificial Intelligence

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***Abstract*—** Hanabi is a cooperative game that tests current AI algorithms by focusing on modelling other players' mental states in order to interpret and anticipate their actions. While some agents can obtain near-perfect scores in the game by agreeing on a shared strategy, ad-hoc cooperation situations, where partners and strategies are unknown in advance, have made relatively little progress. In this paper, we show that agents trained through self-play using the popular Rainbow DQN architecture fail to cooperate well with simple rule-based agents that were not seen during training, and that these agents fail to achieve good self-play scores when trained to play with any individual rule-based agent, or even a mix of these agents. Hanabi appeals to humans because it is entirely focused on theory of mind, that is, the ability to properly reason over the intents, beliefs, and point of view of other agents while observing their behaviour. Reinforcement Learning (RL) has an unusual issue in learning to be informative when seen by others: at its core, RL requires agents to explore in order to identify appropriate policies. When done naively, however, this unpredictability will inevitably make their behaviour throughout training less informative to others. We introduce a new deep multi-agent Reinforcement Learning approach that exploits the centralized training phase to address this paradox.

***Keywords*—**ad-hoc team, communication, cooperative, imperfect information

I. INTRODUCTION

Due to the necessity to simulate other actors' mental states, cooperative multi-agent issues with hidden information are difficult for humans and AI systems to solve. This model can be used to forecast their future behaviour as well as deduce unknown aspects of the world from their observed conduct. Having a theory of mind is defined as the ability to attribute unique mental states to oneself and others. Hanabi is a cooperative card game that has piqued the interest of AI researchers due to the fact that its strategies strongly rely on theory of mind and communication. While agents that earn near-perfect scores in a self-play scenario utilising a common strategy have been built for the game, ad-hoc cooperation circumstances, where the conduct of other agents is unknown in advance, have seen comparatively less improvement. There are no Reinforcement Learning (RL) agents designed to play with humans or with basic rule-based agents inspired by human play, as far as we know.

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The behaviour of Reinforcement Learning agents taught using the Rainbow DQN architecture when combined with the aforementioned rule-based agents is investigated in this work. To do so, we re-implemented the agents from the Hanabi Learning Environment, which was where the Rainbow DQN agent was originally visible. Other successful Reinforcement Learning agents, such as the Bayesian Action Decoder (BAD) and the Actor-Critic Hanabi Agent (ACHA), have been noted to achieve high scores in self-play but perform poorly in the Ad-Hoc scenario, even when paired with independent instances of agents trained with the same procedures. The Rainbow DQN agent was chosen because other successful Reinforcement Learning agents, such as the Bayesian Action Decoder (BAD) and the Actor-Critic Hanabi Various instances of these agents have been observed learning policies based on various arbitrary conventions (such as using colour hints to indicate that a card in a certain slot is playable).

The primary concern thus is whether the Rainbow DQN agent from [8] can work successfully with partners who were not present during training. We respond negatively to this question in two ways: first, we demonstrate that Rainbow agents trained solely through self-play perform badly when partnered with the rule-based agents we choose. Second, we show that Rainbow agents who were taught with one or more rule-based agents as partners do not play well with one "unseen" partner in particular: themselves. In other words, despite being able to earn decent scores with its training partners, it fails to perform well in self-play. This demonstrates that, despite learning rules that function well in self-play and across independently trained instances, the Rainbow DQN agent is unable to perform well with agents it has not encountered during training.

Furthermore, we may train an auxiliary objective that predicts critical hidden game features from the intervention trajectories to ensure that these opportunistic actions and observations are transcribed into a meaningful representation. We use a distributed version of recurrent DQN to improve specimen efficiency, account for partial observability, and reduce the risk of local optima. While this idea is theoretically compliant with anything like prototype deep RL mechanism to negligible improvements to both the synthesis and characterization, humans have used a depending on a variety of reoccurring DQN to focus on improving sample efficiency, account for partial observability, and reduce the risk of local optima. In this multi-agent setting, we additionally use Value Decomposition Networks to train a simultaneous Q-function that consisting of the sum of per-agent Q-values that allow for off-policy learning (VDN).

II. LITERATURE REVIEW

The game of Hanabi is proposed as a new challenge area in this work [1], with fresh issues arising from its mixture of entirely cooperative gaming with two to five players and imperfect knowledge. Hanabi, according to the author, lifts thinking about other agents' beliefs and intentions to the foreground. They look forward to developing innovative methods for this kind of perceptual and cognitive reasoning will be critical not only for Hanabi's success, but also for the success of larger collaborative efforts, particularly those involving human partners. They established the transparent Hanabi Environment For learning and proposed an experimentation understanding of the proposed communities to examine algorithmic breakthroughs and evaluate the performance of existing state-of-the-art techniques in order to aid future research. The author demonstrated that such strategies fail to collaborate in an ad-hoc team context, wherein representatives would compete with unknown colleagues. Humans' ability to learn and play Hanabi appears to be influenced by theory of mind. We hope that improving both self-play learning and adapting to unfamiliar partners will help us better grasp the function of theory of mind reasoning for Artificial intelligence that begin to communicate with other agents including humans. We give a new open - source software architecture for Hanabi and propose evaluation approach for practitioners in order to facilitate effective and uniform comparison of methodologies.

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The authors of this study [2] described AI-based agents that are meant to compete with human players in a game. The agents in this system take advantage of the fact that international teams anticipate other players to act deliberately by establishing their own goals and devising strategies to attain them. They then transmit their strategy to the human player using the actions accessible to them. Our agents, on the other hand, read the human player's behaviours as conveying information about their intentions. They demonstrated two separate variants of the agents, each of which performs the interpretation in a unique way. They also demonstrate that their agents may use the timing of the human player's actions as extra information, as part of human communication occurs in subtle, indirect ways. They conducted two distinct trials in order to validate the agents. The first was used to validate the agents' intentional component, while the second was used to validate the agents' interpretation of received data. The approach we've shown here may be expanded to include facial expression recognition and gaze tracking in our agent. Facial expressions can reveal how the human player feels about the current game state, allowing the agent to assess how favourable their own cards are. Meanwhile, gaze can reveal additional information about the human player's intentions, allowing the agent to determine which action the human player wants them to take. Furthermore, while our agent only uses this information in the presence of hints, the collaborator's choice of action, such as whether to discard a card rather than give a hint, can also inform the agent about just the game state, and this information can be combined with timing information or other non-verbal communication.

Quality Diversity algorithms are proposed as a promising family of algorithms for generating populations for this purpose in this study [3], and an initial implementation of the an agent generator based on this idea is shown. The author described the criteria that may be used to compare these generators, as well as how the proposed generator may be utilised to assist in the development of adaptive agents for the game. Using a rule-based representation of Hanabi agents, a Quality Diversity algorithm has been optimised towards a set of behaviourally diverse, high-quality individuals. This system's results are consistent across multiple independent rearrangements of the experiment. Importantly, people in the same cell in successive rearrangements of both the trial have different numbers of neutrons and play different policies, yet they play well together, implying that the behavioural traits revealed are relevant markers of playstyle. The findings of this research point to a method for creating an ensemble-based (or hyper-heuristic) Hanabi agent that recognises a teammate's playstyle and finds a suitable match from its own repertoire.

The author of this paper [4] developed an optimization algorithms that focus on building rule-based entities by identifying the appropriate sequence of rules to use as a strategy from a fixed rule set. In three separate experiments, the author eliminates human assumptions about rule ordering, adds new, more expressive rules to the rule set, and evolves agents that specialise in specific game sizes independently. They started by changing the sequence in which regulations are implemented. They then added rules that account for their partner's intentions (assuming a hinted card has a greater tendency of becoming playable) and can choose which piece of information to give about a playable card in the least uncertain way possible, because the performance of an investigator depends not only on the ordering of the rules, but also on the articulation of the rule set. They noticed that the new rules were in general very effective, as they appeared at the head of many of the most successful chromosomes, and this not only improved our score quantitatively, but also qualitatively. Finally, they developed specialised agents for certain game sizes, and they found that employing their behaviour for any game size outperforms a generalized agent that is optimised for all game sizes. This demonstrates that the optimum Hanabi strategy is likely to be determined by the number of players. They looked at 30 of our best chromosomes to see if there were any trends that made particular tactics do better in different game sizes, as well as for mirror and mixed evaluations.

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The Bayesian action decoder (BAD) is a complex multi learning methodology that utilizes an approximated Bayesian update to get a public belief that conditional on the actions made by all agents in the environment, as described by the author in [5]. It introduces a new Markov decision process called the public belief MDP, in which the action space is made up of all deterministic partial policies, and it takes advantage of the fact that even an informant behaving just on this public factors constant could still learn to use its confidential details if the action space is expanded to include all temporary initiatives mapping confidential data into environment actions. The Bayesian update is strongly connected to the development of mind argumentation that humans use while witnessing the behaviour of others. They test BAD in a proof-of-concept two-step matrix game, where it outperforms policy gradient techniques; then they tested it in the challenging cooperative partial-information card game Hanabi, where it outperforms all recently recognized learning and hand-coded approaches in the two-player setting, establishing a new state of the art.

Based on communication theory and psychology research, the author introduced an agent in [6] that was meant to play better with a human cooperator than the prior results. They conducted an experiment in which 224 individuals played one or more games of Hanabi with various AIs in order to show that our agent performs better with a human cooperator. The results suggest that the AI outperforms previously published work in this situation. They stated that expanding the AI to more than two players would be a fun challenge because it would need them to choose who to provide hints to. The game logs might also be combined with machine learning techniques to learn human responses to specific hint actions in specific contexts, which could then be used as a prediction mechanism in our AI system. They also believed that the methodology we employed for our AI, as well as the findings we obtained from the experiment, may be applied to create AIs for future games involving human/AI interaction or communication.

In addition to an Information Set-Monte Carlo Tree Search (IS-MCTS) agent, the authors in [7] implemented a number of rule-based agents, both from the literature and from our own design. They were dissatisfied with the results of IS-MCTS and decided to create a new predictor version that uses a model of the agents with which it is paired. They also saw a considerable increase in game-playing strength from this agent when compared to IS-MCTS, owing to its consideration of what other agents in the game would do. They also developed a faulty rule-based agent to demonstrate the predictor's capability with such an agent. They attempted to address a number of limitations in the IS-MCTS predictor. The agent will need access to a precise model of the cooperators ahead of time. Instead of trying to learn agent strategies from observations in the game state, it would be preferable if the agent could try to learn agent strategies from observations in the game state. This would logically lead to a more complex agent with a more generic capability but the ability to build models of its team members and update those models as the game progressed. It would then be necessary to determine how much knowledge is required to learn enough to improve a team's scores significantly.

III. PROPOSED METHODOLOGY

Ad-hoc team play is learning to play with a set of unknown partners, with only a few games of interaction. Ad-hoc team play’s ultimate goal that is capable of playing with other agents or even human players. For this we propose an algorithm generation with the help of self-play is little bit in use. A robust player must learn to recognize intent in other agent’s behaviour and adapt a wide range of possible strategies being played. Good strategies are developed by repeating the players by playing 1000 different random sets. The important aspect of ad-hoc team is to be recognizing or modelling the capabilities of one’s teammates.

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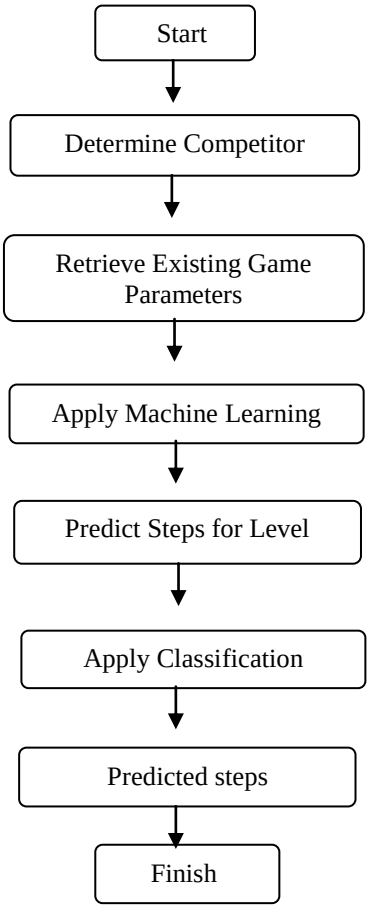

Fig. 2. Flowchart: steps involved in multiagent learning Hanabi game

We propose to evaluate ad-hoc team performance by measuring an agent's ability to play with a wide range of teammates it has never done before. This performance is measured via score achieved by the agent when it paired with autonomous agents and then players exhibit a diverse strategy's which can be hard-coded or learned by self-playing.

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We borrow certain concepts and insights from previous distributed Q-learning approaches, while also adding extensions and innovations to MARL to increase throughput and efficiency. To update the model, we utilise a centralised trainer that samples mini-batches from the replay buffer and a distributed prioritised replay buffer shared by N asynchronous actors. We execute K environments sequentially in each actor thread and combine their observations in a batch. After that, the observation batch is sent into an actor, which uses a GPU to compute a batch of actions. The trainer uses a second GPU for gradient computation and model updates, while all asynchronous actors share a single GPU. This differs from previous work, which used a CPU thread to execute a single actor and a single environment. With our strategy, we can conduct a huge number of simulations with limited computational resources. We execute all Hanabi tests on a single system with 40 CPU cores and 2 GPUs, with N = 80 actor threads

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and K = 80 environments in each thread. Without this architectural change, running 6400 Hanabi settings could require at least a few hundred CPU cores, requiring neural network agents and simulations to be distributed over numerous workstations, thus decreasing the reproducibility and accessibility of such research.

IV. RESULT ANALYSIS

We compare average scores and win rates across 13 independent SAD training runs and three distinct options to highlight the significance of the different components: IQL is a recurrent DQN agent with parameter sharing, VDN is the same agent, but it also learns a joint Q-function, and SAD & AuxTask is a SAD agent with an auxiliary task. While SAD greatly surpasses our baselines (IQL and VDN) in terms of average score and/or win rate for 2, 4, and 5 players, there is no significant difference for 3 players, where VDN equal SAD's performance.

Surprisingly, the auxiliary activity only has a major impact on 2-player performance, where it increases the average score and victory rate dramatically. For 3-5 players, on the other hand, it has a significant negative impact on performance, which opens up an intriguing area for further research. In Appendix B, we've supplied training curves for our techniques and ablations that indicate average scores and standard deviations throughout all training runs for every number of participants. For five players, we discovered that the auxiliary task significantly reduces SAD variation and occasionally leads to improved performance during training, but eventually results in inferior final performance. We can also see that, despite 72 hours of training and billions of samples consumed, the performance of the top 3-5 players has not plateaued, indicating that there is still room for development. The original Hanabi challenge numbers and BAD used population-based training, successfully reporting maximum performance across a huge number of distinct runs. As a result, we offer assessments of the best model from our numerous training runs for each approach for the sake of reproducibility. We construct a new SOTA for learning methods on the self-play component of the Hanabi challenge for 2-5 players, as shown, with the most drastic improvements being gained for 3-5 players, as shown in this reporting. On average, we outperformed both the ACHA agent from [1] and the BAD agent, despite the fact that both used population-based training and required more computation. While we follow the challenge paper's counting standard, BAD was designed to work with a different counting methodology, in which agents keep their scores even when they run out of life. This could explain BAD's greater victory rate (58.6%) and low mean score, both of which are outperformed even by our baseline approaches. Only the performance of two players is greatly enhanced by the auxiliary work, and the performance of three players is an exception in that SAD does not increase the best performance when compared to VDN.

Considering the two player game, the recommended hint by existing and proposed system is show in following tables.

Table 1: Hint Recommended By Existing

Card Play	Hint Recommended By Existing	Is Positive
1	Play Card 2	Yes
2	Play Card 1	Yes
1	Play Card 4	Yes
4	Play Card 2	No

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1	Play Card 1	No
5	Play Card 2	Yes
2	Play Card 4	yes
4	Play Card 5	No

Total Numbers of Hint Available for the user is 30, whereas total Number of Hint Recommended is 9. Positively Recommended Hint are 7, thus the recall for the existing system becomes 0.777.

Table 2: Hint Recommended By Proposed System

Card Play	Hint Recommended By Proposed	Is Positive
1	Play Card 2	Yes
2	Play Card 1	Yes
1	Play Card 4	Yes
4	Play Card 2	No
1	Play Card 5	Yes
5	Play Card 2	Yes
2	Play Card 4	Yes
4	Play Card 5	No

From the above table we can observe that the proposed system has 8 positively recommended hints. Thus making the recall ratio 0.88. The following graph shows the comparison of the recall ratio for proposed and existing system.

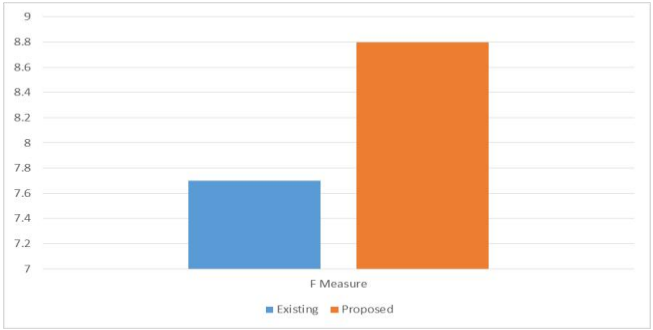

Figure 3. Comparative analysis of Existing and proposed system

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V. CONCLUSION

We developed a new method for estimating other agents' hidden states from their behaviour and used those estimations to choose actions in this paper. In both cooperative and competitive contexts, we demonstrated that the agents can estimate the hidden aims of other players, allowing them to converge on better policies and obtain bigger rewards. Using an explicit model of the other player instead of merely considering the other agent to be a part of the environment resulted in higher performance in the proposed challenges. Due to the fact that we back-propagate across the network at each step, SOM has a longer training period than the other baselines. Their ability to adapt to the behaviour of other agents in the environment, however, is dependent on their online character. The simplicity and adaptability of our system are two of its primary features. This technique does not require any additional parameters to simulate the other agents in the environment, and it can be taught using any reinforcement learning algorithm. It can also be simply integrated with any policy parameterization or network design.

ACKNOWLEDGMENT

We would like to thank the authors, many people in board games designing and Antoine Bauza, who designed Hanabi, a cooperative card game. A special thank for those who writing clear, readable code for the Hanabi research environment used in our experiments. Dr. A. N. Thakare for help with coordinating across different time zones, and discussion with cooperative games.

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A Review on Novel Approach for IoT Based Patient Health Monitoring System using Wearable Sensors

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ABSTRACT

Internet of Things (IoT) and Cloud Computing present great advantages by providing remote and efficient services. The purpose of the project entitled as "Novel Approach for IoT Based Patient Health Monitoring System using Wearable Sensors" is to computerize the Front Office Management of Hospital to develop software which is user friendly simple, fast, and cost-effective. It deals with the collection of patient's information, diagnosis details, etc. Traditionally, it was done manually. The main function of the system is register and store patient details and doctor details and retrieve these details as and when required, and also to manipulate these details meaningfully System input contains patient details, diagnosis details, while system output is to get these details on to the screen. The Hospital Management System can be entered using a username and password. It is accessible either by an administrator or receptionist. Only they can add data into the database. The data can be retrieved easily. The data are well protected for personal use and makes the data processing very fast. The main intention of introducing this system is to reduce the manual work at Health center counters. The system also facilitates the pharmacist to enquire about the drugs and about the stock to be ordered and about the expiry data. We expect this article will help unify and motivate future research to take advantage of the abundant literature that exists to promote the fruitful research in the multiagent community.

Keywords : IoT, Wearable Sensors, diagnosis, Multiagent Community

I. INTRODUCTION

The project Hospital Management system includes registration of patients, storing their details into the system, and also computerized billing in the pharmacy, and labs. The software has the facility to give a unique id for every patient and stores the details of every patient and the staff automatically. It includes a search facility to know the current status of each room. User can search availability of a doctor and the details of a patient using the id.

The Hospital Management System can be entered using a username and password. It is accessible either

by an administrator or receptionist. Only they can add data into the database. The data can be retrieved easily. The interface is very user-friendly. The data are well protected for personal use and makes the data processing very fast. Hospital Management System is powerful, flexible, and easy to use and is designed and developed to deliver real conceivable benefits to hospitals. Hospital Management System is designed for multispecialty hospitals, to cover a wide range of hospital administration and management processes. It is an integrated end-to-end Hospital Management System that provides relevant information across the hospital to support effective decision making for patient care, hospital administration and critical financial accounting, in a seamless flow.

Hospital Management System is a software product suite designed to improve the quality and management of hospital management in the areas of clinical process analysis and activity-based costing. Hospital Management System enables you to develop your organization and improve its effectiveness and quality of work. Managing the key processes efficiently is critical to the success of the hospital helps you manage your processes.

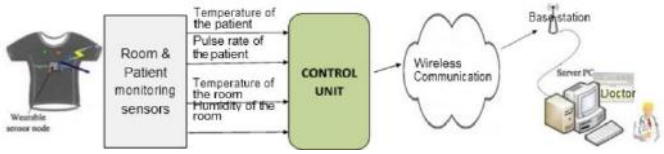


Fig.1 System block diagram (Journal of critical reviews 2020)

A. Patient Health Monitoring System: Need

To develop a Patient Heath Center Monitoring system as from manual system to computerized system, and to take care of Records of the various departments in the health center. The current manual system is slow laborious and error prone to computerize the same for quicker efficient results .

B. Patient Health Monitoring System: Goal

With every going day the need to be where the inflow of out patient request exceeds that which can be handled manually. Hence computerization of OP receipt request and maintenance of the drugs through the computerization brings better satisfaction and service oriented need.

C. Patient Health Monitoring System: Objectives

1. To implement embedded system and software can calculated and access the patient body records.

2. To design and implement the portable software for monitor or display patient health condition to the doctors and specialist.
3. To implement the recommendation system for find the medicals of that hospital premises of particular medicine that are prescribed to the patient.
4. To design a system for display the available doctors list and their live location automatic with the help of Kiosk screen and QR code which is present at entry point of that hospital at the time of emergency case.
5. To design a system which detect and inform Covid-19 patient to their relatives and doctors.

II. BACKGROUND AND RELATED WORK

Today, the use of technology to improve the quality of life is becoming a common attribute of modern society. When the technology is oriented to improve the Quality of Life (QoL), it is referred to the Internet of Things (IoT) [1]. IoT is a network of interconnected 'smart' devices, allowing collecting information and managing physical objects [1].

In the healthcare environment, the use of IoT technologies brings convenience to physicians and patients as they can be applied to various medical areas (such as constant real-time monitoring, patient information management, medical emergency

management, blood information management, and health management) [2]. The present paper describes the steps taken to design and build a low-cost modular monitoring system prototype. This system aims to offer mobile support in order to facilitate faster and better medical interventions in emergency cases and has been developed using low-power dedicated sensor arrays for EKG, SpO2, temperature and movement [3].

The core objective of this project is the design and implementation of a smart patient health tracking system that uses Sensors to track patient health and uses internet to inform their loved ones in case of any issues. The Internet of Things is considered now as one of the feasible solutions for any remote value tracking especially in the field of health monitoring. It facilitates that the individual prosperity parameter data is secured inside the cloud, stays in the hospital are reduced for conventional routine examinations and most important that the health can be monitored and disease diagnosed by any doctor at any distance[4]. Now days, heart diseases are exceeds up to dangerous level which leads to death of human being. Monitoring the patient constantly is difficult or doctors are also unable to monitor particular patient for total working hours. In many critical conditions such as patient is located far away from hospitals or also in case of old patient who suffering with heart diseases and physical disorders. This module consists of heart rate sensor and temperature sensor which measures the heart rate and body temperature and sends SMS through GSM module to the medical advisory for the preliminary precautions so that patient can be prevented from serious situations before reaching to the hospital. The data are stored in the cloud for the physician reference [5].

Remote wireless health monitoring systems are generally based on using wearable sensor devices for collecting medical data from patients residing outside health institutions and transferring the measured biomedical parameters to a central storage with the help of emerging communication and information technologies. The remote wireless health monitoring system was able to successfully monitor the change in the patient's health status and transmit vital signs via RS232 communication to a local PC for display and evaluation [6]. This device that is a heartbeat sensor would help them to keep track on heartbeat counts of a patient and check for any abnormalities. If any varied change takes place it is notified through the GSM, this notification would help to take an appropriate action at instant time. This would help for patients from the future health problems.

Here we have analyzed the health of the patient wireless by using heart beat and temperature sensor. If patient will not good it will sends a message through GSM Any abnormalities in health conditions are informed via SMS to the indicated mobile number through GSM. The hardware is implemented and the output is studied [7]. The development of wireless patient monitoring system has been quite intensive in the past decade. Hence, in the present study, a new approach of wireless patient monitoring system was proposed as a prototype to minimize the power consumption and the costing issue [8].

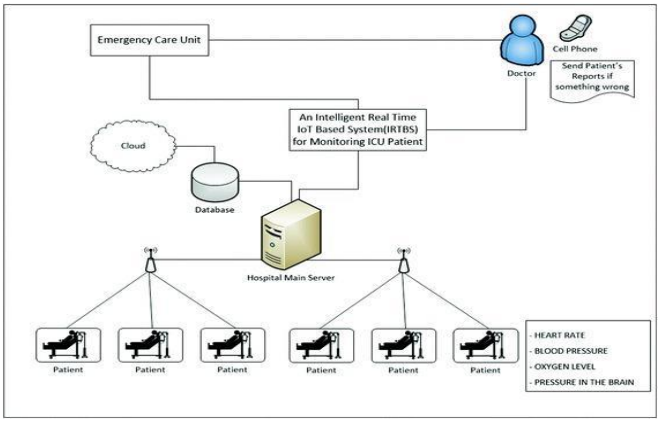
The proposed system can be used to extract information about human location, motion and health-critical posture features. According to the specific application of fall detection, the system is devised to enrich the range of sensors, which currently are the key-point of workers safety and protection in industrial applications. Monitoring the health status of patients is a very challenging issue. Remote healthcare monitoring can play an important role here. An effective remote healthcare monitoring system can reduce the workload on healthcare service providers. It can also reduce the workload on the public safety networks, charity, and governmental and non-governmental organizations.

The current designed system eliminates the need for utilization of expensive facilities, decreases the unnecessary back-and-forth patient visit to the healthcare centers, reduces the tasks for healthcare professionals, and provides the doctors with the information about their patients at anytime and anywhere. A healthcare system in the last decade was made possible due to the recent advances in wireless and network technologies, linked with recent advances in nanotechnologies and ubiquitous computing systems. The term telemedicine refers to the utilization of telecommunication technology for medical diagnosis, treatment, and patient care.

III. PROPOSED METHODOLOGY

1. PROPOSED SYSTEM:

The Hospital Management System is designed for any hospital to replace their existing manual paper based system. The new system is to control the information of patients. Room availability, staff and operating room schedules and patient invoices. These services are to be provided in an efficient, cost effective manner, with the goal of reducing the time and resources currently required for such tasks . The core objective of this project is the design and implementation of a smart patient health tracking system. Fig.1 shows the overview of the proposed system. The sensors are embedded on the patient body to sense the temperature and heartbeat of the patient. Two more sensors are place at home to sense the humidity and the temperature of the room where the patient is staying. These sensors are connected to a control unit, which calculates the values of all the four sensors. These calculated values are then transmitted through a IoT cloud to the base station. From the base station the values are then accessed by the doctor at any other location. Thus based on the temperature and heart beat values and the room sensor values, the doctor can decide the state of the patient and appropriate measures can be taken.



Sensors

The temperature sensor connected to the analog pin of the Arduino controller is converted into digital value with the help of ADC [10]. Using this digital data, the controller converts it into the actual temperature value in degree Celsius using the equation:

temperature (°C) = [raw ADC value*5/4095-(400/1000)]*(19.5/1000)

The heartbeat sensor is based on the principle of photo phlethysmography. It measures the change in volume of blood through any organ of the body which causes a change in the light intensity through that organ (a vascular region). The digital pulses are given to a microcontroller for calculating the heat beat rate, given by the formula:

BPM (Beats per minute) = 60*f, where f is the pulse frequency

A humidity sensor (or hygrometer) senses, measures and reports both moisture and air temperature. Humidity sensors work by detecting changes that alter electrical currents or temperature in the air. The relative humidity is calculated as given below:
Voltage = (ADC Value/1023.0)*5.0;
Percent relative humidity = (Voltage-0.958)/0.0307;

IV. FORMULATION:

To design this system I used the following materials:

- IoT (Internet of Things) : The Internet of Things (IoT) defines a network of materials – " embedded objects", software, and other technologies for the purpose of connecting and exchanging data with other devices & systems over the internet.
- WSN (Wireless Sensors Network) : Wireless sensors network (WSN) refers to a group of scattered and dedicated sensors for monitoring & recording the natural physical condition & organizing the data collected in a central location.
- Naive Bayes Algorithm: NB classifier are the collection of classification algorithm based on bayes theorem. $P(A|B) = P(B|A)P(A) / P(B)$
- Pseudo Random Number Generator: Uses mathematical formulas to generate sequences of random numbers. $X_{n+1} = (aX_n + c) \bmod m$

V. CONCLUSION

As we have already seen that the need cannot be emphasized for the further development of this system is only timely and helpful to Health Center, the system defined in the above script is up to date and caters to all kinds of request faced by the Health Center employees requirements to provide the better service to the patients, being developed in java it is also flexible modularized highly parameterized and hence can be easily deployed by any other application because of its componentized approach.

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A Novel Wearable Sensors Approach for IoT Based Patient Health Monitoring System

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Abstract

With the introduction of the new corona virus, every country now places a premium on healthcare. In this regard, an IoT-based health monitoring system is the greatest tool for dealing with such an epidemic. The Internet of Things (IoT) is a new internet revolution that is a rising research area, particularly in health care. Remote health care monitoring has progressed at such a rapid rate as the usage of wearable sensors and smart phones has increased. IoT health monitoring aids in illness prevention as well as accurate diagnosis of health status, even when the doctor is a long distance away. This study shows a portable physiological checking framework that can constantly monitor the patient's heartbeat, temperature, and other fundamental room data. We presented a continuous monitoring and control instruments to screen the patient's status and save the patient's information on a server using Wi-Fi Module-based remote communication. A remote health monitoring system based on IoT is presented, in which authorised individuals can access data stored on any IoT platform, and ailments are diagnosed by doctors from a distance based on the values received.

Keywords: *: Internet of Things, Health, Sensors*

1. Introduction

The use of technology to improve one's quality of life is becoming a widespread feature of modern civilization. The Internet of Things (IoT) refers to technology that is aimed at improving one's Quality of Life (QoL) (IoT). In a hospital health care monitoring system, the patient's physiological parameters must be regularly monitored. Because ward evaluation does not usually involve constant physiological parameter monitoring, patient relapse is not unusual. Because of its superior technology, the patient monitoring system is a significant enhancement in hospitality.

IoT in healthcare entails a variety of low-cost sensors (wearable, implanted, and environmental) that allow older people to receive medical treatment anywhere, at any time. To monitor the patient's condition, a temperature sensor and a heart rate sensor are linked. Body sensor network systems can assist people by offering healthcare services such as medical monitoring, memory enhancement, medical data access, and emergency communication with healthcare providers via SMS or GPRS. We came up with a system that contains modular sensor blocks and is primarily made up of off-the-shelf hardware modules.

The following are the benefits of the described prototype. First and foremost, it enables clinicians to monitor patients even when they are not physically present in front of a wired medical monitoring station. This is especially important when medical workers are only available to support emergency medical services. Remote patient monitoring (RPM) is a technology that allows patients to be monitored outside of traditional clinical settings (for example, at home), potentially increasing access to care and lowering healthcare delivery

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Design and Modelling of Hanabi-Playing Agents using Artificial Intelligence

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ABSTRACT

In order to affect your own activities, agent modelling entails thinking about how other agents will behave. In this work, we look at how agent modelling is used in the collaborative card game Hanabi, which is based on concealed information. In addition to an Information Set-Monte Carlo Tree Search (IS-MCTS) agent, we implement a variety of rule-based agents from the literature as well as our own inventions. We see that IS-MCTS produces poor results, so we create a new predictor version that incorporates a model of the agents with whom it is matched. This agent outperforms IS-MCTS in terms of game-playing strength, owing to its consideration of what the other agents in the game would do. We also develop a faulty rule-based agent to demonstrate the predictor's capability with such an agent.

Keywords : Set-Monte Carlo Tree Search, Hanabi-Playing Agents, Artificial Intelligence

I. INTRODUCTION

Hanabi is a partially-observable [1] cooperative board game that earned the prestigious Spiel des Jahres award for best board game of the year in 2013. It has been mentioned in a number of recent scholarly articles for the reasons indicated below. The purpose of this article is to see if using agent modelling may increase the strength of the game's agents. Hanabi offers a number of unique characteristics that make it an excellent candidate for agent modelling research. To begin with, the domain is a cooperative one, requiring the agents to collaborate in order to attain a common goal. This disadvantages greedy agents: for example, assisting another player in scoring a point is preferable to playing a hazardous card that may finish the game. Second, it incorporates well-defined communication acts into its rules. These make use of a communication resource that must be handled by the agents. Finally, the game contains secret information, with no single participant having access to the complete state of the game. Because faulty information must be intelligently reasoned about, this adds to the complexity of agents' tasks. Even when players have perfect knowledge, Hanabi has been demonstrated to be NP-Complete [2]. In the literature, a variety of rule-based ways for developing Hanabi-playing bots have been given, but there have been few attempts to utilise more general tactics. This study contributes to the redressing of this imbalance. Furthermore, because knowledge about other players' methods might assist human participants in

cooperative games, we investigate if such knowledge may assist our general agents in making judgments.

A. Hanabi

Hanabi is a cooperative card game in which two to five players work together to complete five stacks of consecutively numbered cards (one for each of the game's five suits). A deck of 50 cards, each with a suit and a rank, is used to play the game. White, yellow, green, blue, and red are the colours of the outfits. There are three cards of rank 1, two cards of rank 2, three cards of rank 3, and one card of rank 5 in each suit. There are also two sorts of tokens in the game: an information token and a life token. The game begins with each player having three life tokens and eight information tokens. Every player starts with a five-card hand dealt at random. Players can't see the suit or rank of their own cards since they're held facing away, but they can see the suit and rank of the cards held by the other players. The cards that were not handed out at the start of the game are placed face down in a draw deck that will be accessible throughout play.

Play proceeds with each player taking it in turn to perform an action of their choice. There are three different types of action available:

Tell Select a player and point to all their cards of a given number or suit. This costs one information token.

Play Choose a card from the player's own hand and play it.

Discard Choose a card from the player's own hand and add it to the discard pile

A set of cards may only be recognised by their suit or their rank in a single Tell action; they cannot be recognised by both. Furthermore, cards must be present in the hand to be identified; it is not permissible to claim that another player does not have any cards of a particular suit or rank. When you play a card, it goes into the stack with the same suit as the one you just played. It is not necessary for the player to know which stack the card belongs to; for example, it is allowed to play a 1 that has been indicated to you blindly at the start of the game. Each card in the stack must be of the same suit as the card below it and have a rank one higher than the one below it (except for 1 cards, which are used to start a stack). The group loses one life token if a card is not played in the correct order. Obtaining an additional information token by completing a stack of cards connected with a specific suit (if the team does not already have the maximum number, eight).

Discarding is only allowed if at least one information token can be obtained. This means that you can always do either a Tell or a Discard action.

The player then draws a replacement card from the draw deck after discarding or playing a card. All players may see the cards that have been discarded. When you discard a card, the amount of information tokens you have increases to the maximum. After all of the cards in the draw deck have been pulled, all players are given one more turn before the game is declared over. If a team's life tokens are depleted, the game is also over.

The top card of each stack that has been appropriately played is added together to determine the score. In the normal game, the highest potential score is 25, which is reached by finishing the stacks for all five suits; remaining life or information tokens are not tallied towards scoring in the normal game.

B. Multi-agent domains

Multi-agent domains can be categorised as either centralized or distributed. A centralized system features a single controller controlling multiple agents; a distributed system has each agent in the world controlled by a separate controller. In this paper, we consider only the distributed approach.

Existing work in this space includes: attempting to reason about what the other agent knows using

answer set program- ming [3]; iterating on a plan that is communicated between agents [4]; and attempting to use plan recognition to allow one agent to assist another in a planning task [5].

Another possibility involves co-operative, multi-agent learn- ing. Within this area, there have been attempts to learn models of teammates in order to make more informed decisions about which action to take. For a review of the literature, see Panait & Luke [6].

The use of embedding agent models into Monte Carlo Tree Search (MCTS) has previously been looked at by Barrett et al in the pursuit domain [7]. They made the assumption that all agents except for their modelling agent would be using the same, fixed strategy, and embedded perfect knowledge of this strategies into their agent. One of their findings was that the system did not perform well with models that didn't represent the behaviour of the agent.

The use of Theory of Mind (ToM) (reasoning about what the other agents know and will do in a given situation) has proven useful in competitive games such as Rock Paper Scissors [8]. In these games, higher-order ToM agents were able to out- perform lower-order ToM players.

C. Co-ordination in Hanabi

In Hanabi all agents have access to different information; because of this, a centralised approach to multi-agent planning would not make sense in this domain as private information must not be shared between agents.

The fact that the Tell action has an associated cost (an in- formation token) means that information about a player's hand needs to be communicated efficiently. Also, because Hanabi players are limited to a set of well-defined communication actions, communication between them is very limited. This makes using communication between agents to co-ordinate their actions a challenging prospect — which is one reason why Hanabi is increasingly becoming the object of research. The understanding of other players' strategies forms a core component of a great number of games and has been studied widely [8]. Existing Hanabi research assumes that all agents are playing the same pre-agreed strategy. The ability to reason about the actions that a player would take and their reasons for taking these actions can be used as part of the reasoning process of an agent.

Our approach is to assume that we have access to a model which, given a state, will be able to return a possible action that an agent would perform in that state; if the agent may make multiple moves, then a single action from the set of possible actions will be returned. Given this model, we are able to incorporate the behaviour of the other agent into our model without understanding of that agent's reasoning process. A point to note is that Tell actions can convey more information than just the obvious: because all cards of a given suit or rank must be identified, cards which are not identified therefore must not satisfy the criterion. This negative information can be used to inform the possible values for a given card. Negative information can add up over a few turns, providing enough information to determine what a card is — or at least that it is playable. In the end game, such knowledge becomes very powerful.

Human players of Hanabi often make additional use of Tell actions. In particular, they can restrict their Tell actions by convention only to identify certain cards as playable. For example, suppose that Player 2 had the hand (R, 1), (B, 1),. . . and the current stacks on the table were (R, 1), (B, 0), (G, 0), (W, 0), (Y, 0) . Player 1 may elect to tell Player 2 about the suit rather than the number, to avoid identifying the non-playable red card. Player 2 could then infer that the card being identified was indeed a playable card, as they would know that Player 1 would not have identified a non-playable card. As they were told the suit rather than the number, they could further infer that they have a non-playable 1 in their hand

(although they would not know the location of this card). The use of information in this way requires an understanding of how the player will use the provided information as part of their policy.

D. Monte Carlo Tree Search

MCTS [9] is a widely-used tree-search algorithm that can operate without domain-specific knowledge. This gives MCTS the anytime property: the algorithm can be stopped at any time and can provide an answer for the next move. Given more time, it will typically produce a more accurate answer.

MCTS proceeds using multiple iterations of the four main stages shown in Figure 1. The iterations typically continue until a predetermined end condition is met, such as running out of time. In the selection stage, the current tree is traversed using the tree policy to select the best child of each node. In the expansion stage, a new node is added to the tree. In the main, simulation phase, a simulation (rollout) of future moves is undertaken from the state represented by the new node until an end condition is met. Moves are selected according to the default policy (which is often to select at random from all possible moves). In the backpropagation phase, nodes in the tree that were selected are updated with the result of the rollout.

E. Monte Carlo Tree Search and Theory of Mind

Zero-order theory of mind [8] agents are capable of using an agent's history in order to inform future actions. A first- order theory of mind agent is capable of using a model of a zero-order theory of mind agent to inform its own future decisions. Our selection of MCTS for use in this domain came from a particular desire to find an algorithm that could be easily modified to operate with predictions of what other agents would do. This makes it a zero-order agent.

This approach has been tested before in the Tiny Co-op domain [11] by Walton-Rivers, who found that prediction worked best with a deterministic agent that did as it was instructed [12]. The Tiny Co-op domain is a simple, grid-based world containing a number of agents, goals, doors and buttons. Each agent must visit each goal individually for successful completion. Doors separate different areas in which the agents can move, and each door will only open if an agent is standing on its associated button. This forces the agents to co-operateto succeed overall.

While MCTS was a good performer in Tiny Co-op when paired with itself (and even with random agents), it struggled when trying to co-operate with a particular agent that was de- signed to follow direction indications. Essentially, this follower agent moved to where it was instructed to move, but MCTS didn't pick up on this. The root cause was that it didn't model such behaviour in its search tree, leading to inaccurate states in the majority of the search space. The author added agent modelling to MCTS and found that the performance of MCTS when paired with the follower agent improved significantly. In this paper we used this approach to create a Hanabi-playing agent to assess the effectiveness of agent modelling in this domain.

F. Previous research

1) Imperfect Information AI: Games with imperfect information are a complex challenge for AI. Poker is often chosen as an application, because it is a game that many people are familiar with on some level. Poker contains an unusual dynamic for games, as a strong player doesn't so much play the game as play the opponents. Winning requires a player to understand their opponents and to adopt a strategy that will counter their strengths while exploiting their weaknesses. Rule-based agents feature strongly in this, as do simulation- based agents such as MCTS. Poker has been extensively studied — see the review conducted by Rubin & Watson [13]; one of their notable finds was that a simulation-based approach is inferior to the formula-based approach, despite expectations. Whitehouse et al [14] looked into using MCTS for the card game Dou Di Zhu, which (like

Hanabi) also features imperfect information. Here, they apply determination and IS-MCTS to the problem and conclude while the IS-MCTS is superior in some cases, no overall difference was observed.

2) Hanabi AI: There has been a small amount of research into using artificial intelligence techniques to play Hanabi. Osawa [15] devised a number of rule-based agents for the 2-player version of the game, the mechanisms for which are described in Sections II-A2 and II-A3. Osawa found that the incorporation of consideration of the other agent's strategy and why they did what they did allows an agent to perform better than do the other non-cheating agents.

Cox [16] derives strategies for the game of Hanabi using the hat guessing game as inspiration. The agents all use an agreed encoding strategy to indicate what any particular Tell action specifically means, enabling them to co-operate so as to work around the limited view of their own hands. The encoding strategy does require the 5 player version of the game, however, as it won't work unless the hand size matches the number of other players in the game. We considered using this agent in the tests, as its unique strategy could have been the perfect test for agent modelling. However, there is an issue with the encoding strategy: every agent must know what every other agent has in their hands. This is cannot be used in agent modelling. If the Predictor IS-MCTS is agent 1, then it has access to the hands of agents 2, 3, 4 and 5 — which in Hanabi it does indeed have. Unfortunately, its internal copy of agent 2 needs access to the hands of agents 1, 3, 4 and 5. Agent 1 cannot give this information without breaking the rules of Hanabi. For this reason, we did not run tests with this agent. Van den Bergh et al [17] analyse Hanabi and define a number of rules for the game. The amount of time it would take to test every possible combination of these rules was too large, however, so they used an iterative approach to explore the search space intelligently. They note that some rules are far more effective than others, as well as observing that a risk- taking rule does have some value. They found that the use of a Discard action when there is a possible hint is not optimal. In a follow-up paper [18], the authors present their best rule-based agent along with one using a Monte Carlo search.

I. Artificial Intelligence

A number of the controllers used in this experiment were implemented as production rule agents. Many of these share individual rules, so each rule will be described here independently. All rules have additional pre-conditions that ensure they can only fire if it is legal to do so within the game rules (for example, a Discard action would necessitate a check that an information token was available). To avoid verbosity, we assume that the rules of Hanabi will be properly followed (so, for example, if the rule says to inform a player about a card, then the player will also be informed about other cards that satisfy the Tell's stated criterion).

- **PlaySafeCard:** Plays a card only if it is guaranteed that it is playable

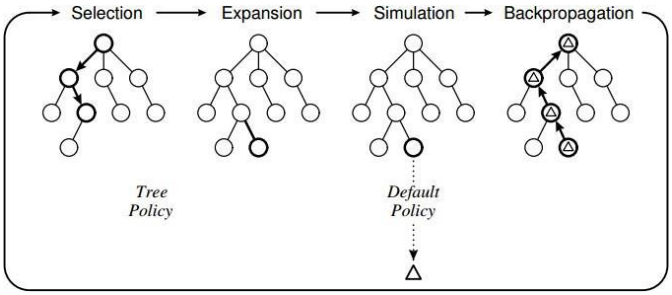

Fig. 1: The four steps of Monte Carlo Tree Search [10]

- **OsawaDiscard:** Discards a card if it cannot be played at the end of the turn. This will discard cards that we know enough about to disqualify them from being playable. For example, a card with an unknown suit but a rank of 1 will not be playable if all the stacks have been started. This rule also considers cards that can not be played because their pre-requisite cards have already been discarded.

- **TellPlayableCard:** Tells the next player a random fact about any playable card in their hand.
- **TellRandomly:** Tells the next player a random fact aboutany card in their hand.
- **DiscardRandomly:** Randomly discards a card from the hand.
- **TellPlayableCardOuter:** Tells the next player an un- known (to that player) fact about any playable card in their hand.
- **TellUnknown:** Tells the next player an unknown fact about any card in their hand.
- **PlayIfCertain:** Plays a card if we are certain about whichcard it is and that it is playable.
- **DiscardOldestFirst:** Discards the card that has been heldin the hand the longest amount of time.
- **IfRule(λ) Then (Rule) Else (Rule):** Takes a Boolean λ expression and either one or two rules. The first rule will be used if the λ evaluates to true. If it is false, and a second rule was provided, then that will be used instead.
- **PlayProbablySafeCard(**Threshold ∈ [0, 1]**):** Plays the card that is the most likely to be playable if it is at leastas probable as Threshold.
- **DiscardProbablyUselessCard(**Threshold ∈ [0, 1]**):** Discards the card that is most likely to be useless if it isat least as probable as Threshold.
- **TellMostInformation(**New? ∈ [True, False]**):** Tells whatever reveals the most information, whether this is the most information in total or the most new information.
- **TellDispensable:** Tells the next player with an unknown dispensible card the information needed to correctly iden- tify that the card is dispensible. This rule will only target cards that can be identified to the holder as dispensible with the addition of a single piece of information.
- **TellAnyoneAboutUsefulCard:** Tells the next player with a useful card either the remaining unknown suit of the card or the rank of the card.
- **TellAnyoneAboutUselessCard:** Tells the next player with a useless card either the remaining unknown suitof the card or the rank of the card.

∧ ¬

A. Agents

1) Legal Random: This agent makes a move at random from the set of legal actions available to it at any given time step.

2) Internal: This is a clone of the agent presented by Osawa that shares the same name. It features memory of the information it has been told about its own hand but does not remember information about what other players have been told. The rules used in order are:

- PlaySafeCard
- OsawaDiscard
- TellPlayableCard
- TellRandomly
- DiscardRandomly

3) Outer: This is a clone of the agent presented by Osawa with the same name. It features knowledge of what the other agents have been told already, to avoid repeating Tell actions. The rules used in order are:

- PlaySafeCard
- OsawaDiscard
- TellPlayableCardOuter
- TellUnknown
- DiscardRandomly

4) Cautious: This is an agent derived from human game- play. The agent plays cautiously, never losing a life. The rules used in order are:

- PlayIfCertain
- PlaySafeCard
- TellAnyoneAboutUsefulCard
- OsawaDiscard
- DiscardRandomly

5) IGGI: This agent is a modification of Cautious. The alteration to a deterministic Discard function greatly aids the predictability of this player. The rules used in order are:

- PlayIfCertain
- PlaySafeCard
- TellAnyoneAboutUsefulCard
- OsawaDiscard
- DiscardOldestFirst

6) Piers: This is an agent designed to use IfRules to improve the overall score. Otherwise, it is similar to IGGI.The rules used in order are:

- IfRule (lives > 1 deck.hasCardsLeft) Then (PlayProb-ablySafeCard(0.0))
- PlaySafeCard
- IfRule (lives > 1) Then (PlayProbablySafeCard(0.6))
- TellAnyoneAboutUsefulCard
- IfRule (information < 4) Then (TellDispensable)

- OsawaDiscard
- DiscardOldestFirst
- TellRandomly
- DiscardRandomly

The first IfRule is designed as a hail Mary in the end game: if there is nothing left to lose, try to gain a point. This derives from human play, when typically during the end game we make random plays if we know there is a playable card somewhere in our hand. This rule is more accurate, as it uses all the information it has gathered to calculate probabilities.

The second IfRule simply risks playing a card if there is a reasonable chance of its being safe.

The third IfRule is designed to try to provide more intelli- gent Tell conditions. If there is nothing useful to Tell and we are low on information, we set another agent up to be able to discard cards that are not needed. This means that the agents can burn through cards that are not helpful so as to try to obtain useful cards from the deck.

7) Flawed: This is an agent designed to be intelligent but with some flaws: it does not possess intelligent Tell rules, and has a risky Play rule as well. Understanding this agent is the key to playing well with it, because other agents can give it the information it needs to prevent it from playing poorly. Therules used in order are:

- PlaySafeCard
- PlayProbablySafeCard(0.25)
- TellRandomly
- OsawaDiscard
- DiscardOldestFirst
- DiscardRandomly

Giving information is the key to getting this agent to work intelligently. Without information, the intelligent rules can't fire, thereby leaving this agent to Tell randomly and Discard randomly — not a great strategy.

8) Van den Bergh Rule: This is the best rule-based agent from [18]. It was created by observing from human play that there are four main tasks:

- If I'm certain enough that a card is playable, Play it.
- If I'm certain enough that a card is useless, Discard it.
- Give a hint if possible.
- Discard a card.

Van den Bergh et al used a Genetic Algorithm (GA) to evolve the best options for each section, resulting in the following rules as an implementation:

- IfRule (lives > 1) Then (PlayProbablySafeCard(.6)) Else(PlaySafeCard)
- DiscardProbablyUselessCard(1.0)
- TellAnyoneAboutUsefulCard
- TellAnyoneAboutUselessCard
- TellMostInformation
- DiscardProbablyUselessCard(0.0)

9) MCS: This agent is a simple Monte Carlo Search (MCS) that uses a provided agent for the rollout phase. MCS is a technique that uses the Upper Confidence Bound (UCB) equation to select actions in a single step lookahead, with policy informed rollouts to evaluate those positions. It is essentially MCTS with a tree depth limit of one turn. In this paper, we name the agent MCS-[agent] to indicate which agent provided the rollout policy. For example, a MCS agent using IGGI as a policy would be named MCS-IGGI. The agent has a one-second time limit to return a move.

10) IS-MCTS: This agent uses a MCTS technique for handling games with partial observability as described in the paper by Cowling et al [19].

11) IS-MCTS is a modification to MCTS in which, on each iteration through the tree, the partially-observable game state is determined into a possible fully-observable state. This state remains consistent for the selection, expansion, rollout and BackPropagation phases before being replaced by a new determination. The implementation uses a time limit for returning moves of one second per move.

12) Predictor IS-MCTS: This agent was provided with a copy of each of the agents that it was paired with to use in its prediction. The predicted agents were initialised with random seeds: this corresponds to the predictor's having knowledge of each agent's overall strategy but no knowledge of its internal workings.

The Predictor IS-MCTS agent modifies the selection, expansion and rollout phases of MCTS

when considering nodes for other agents turns. The modifications remove Upper Confidence bound for Trees (UCT) for other agents' turns and replaces it with a query to the agent model to discover what that agent would do in that situation. The rollout phase is similarly modified. When making moves for its own turn, the predictor agent defaults to the legal random selection method used by IS-MCTS. The implementation maintains the one- second-per-move limit of IS-MCTS.

II. METHOD

A. Validation

In order first to validate our framework and AI implementations, we performed experiments using re-implementations of the Osawa and Van den Bergh agents. This involved recreating the experiments that they described in their papers and checking that we obtained similar results.

B. Full Test

The set of agents under test contained a mix of current research on Hanabi as well as some rule-based agents of our own. There is also a mix of strong and poor agents for balance. We tested all the agents from this list:

- Legal Random
- Outer
- IGGI
- Piers
- Flawed
- Van den Bergh Rule
- MCS-Legal Random
- MCS-IGGI
- MCS-Flawed
- IS-MCTS
- Predictor IS-MCTS

In each experiment, one of the agents was selected from the list above and the remaining agents were selected as a group from the list below. For example, in the first experiment the Legal Random agent would be alone among four IGGI agents a concept we call pairing. The agents above were all paired in turn with:

- IGGI
- Internal
- Outer
- Legal Random
- Van den Bergh Rule
- Flawed
- Piers

200 random seeds were chosen, and for each seed every agent under test played two games with every agent with which it was paired. It did this for standard Hanabi rules with 2, 3, 4 and 5 players. Each agent under test played from a randomised position (first, second, third, fourth or fifth) determined by the seed. This ensured that each agent under test was in the same position for the same seed. Every agent therefore played 200(nSeeds) 4(2, 3, 4or5Players) 7(nAgentPaired) 2(reruns) = 11200 games.

The configuration, final score and other basic state information were logged to a file upon completion of the game. The results were collated per agent and the mean score and number of turns taken were calculated. We also stored additional information about the final state of each game including the number of lives remaining and the information tokens remaining. When there are no lives remaining at the end of the game, this indicates that the players ran out of life tokens. The full (human readable) game traces for each game are also stored, for evaluating agent behaviour and the effectiveness of strategies.

Finally, the configuration and results of each game are processed to obtain the mean score, mean number of moves per game and the mean remaining life and information tokens.

III. CONCLUSION

In conclusion, we found that agent modelling improves playing strength for tree search algorithms such as MCTS in the game of Hanabi. These results are consistent with the findings of [7].

IV. FUTURE WORK

There is a lot of scope for future work in this area. Hanabi has some additional variants in its rules that focus on the addition of a multi-coloured suit of cards. This suit also contains 3 1's, 2 2's, 3's and 4's as well as a single 5. The different variants are:

Variant 1 Add the multi-coloured suit as a sixth suit to the game. Maximum score is boosted to 30.

Variant 2 Same as Variant 1, but only a single tile of each number from the multi-coloured suit is added to the game.

Variant 3 The multi-coloured suit now functions as a wild card in Tell actions, and cannot be di- rectly called out. For example, if Player 1 tells Player 2 (M, 2), (Y, 2), (B, 5), (B, 3) about

all the blues, then cards 1, 3 and 4 will be indicated. With this setup, the multi-coloured cards can only be identified by contradicting information given, requiring 3 pieces of infor- mation to fully identify one.

Variant 1 would be simple to implement and test, but was omitted from this paper as being too off-topic. Variant 2 adds a little extra strategy, but is very similar to Variant 1. Variant 3 would require some additional work to implement, as well as appropriate modifications to the AI agents.

The Predictor IS-MCTS has a number of limitations that we aim to address. The agent requires access to an accurate model of the co-operators in advance. It would be better if the agent could instead attempt to learn agent strategies based on observations in the game state. This would lead naturally to a more complicated agent that started with a more generic capability but was able to build models of its team members and update those models as games go on. Testing how much information is needed to learn enough to significantly improve the scores that a team achieve would then need to be done.

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A Survey on Multiclass Image Classification based on Inception-v3 Transfer Learning Model

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Abstract: ***Transfer learning is the reuse of a pre-trained model for a new problem, it is very popular nowadays in deep learning because it can train deep neural networks with relatively little data, and it is very useful in data science because of most real problems., you don't have millions of data points marked to train these complex models. Let's take a look at what transfer learning is, how it works, why and when to use it. Includes several resources for models that have been previously trained in learning transfers for example, when you train the classifier to predict whether an image contains food, you can use the knowledge gained during training to recognize drinks, for example, if you trained a simple classifier to predict, if the image includes a backpack, you can use the knowledge gained by the model during training***
Index Terms: Food image, Transfer learning, Inception-v3.

I. INTRODUCTION

Several approaches have been done to classify food from images. In previous years many feature based model is being used to classify food images. SCD , EFD , GFD and LBP are the common features that has been used to classify food images. In modern literature there are neural networks especially convolutional neural networks have been used to classify food images.

A. Feature Representation Transfer

Feature representation level knowledge transfer is a popular transfer learning category that maps the target domain to the source domains exploiting a set of meticulously manufactured features. Through this type of feature representation level knowledge transfer, data divergence between the target domain and the source domains can be significantly reduced so that the performance of the task in the target domain is improved. Most existing features are designed for specific domains and would not perform optimally across different data types. Thus, we review the feature level knowledge transfer techniques according to two data types:

1) cross-domain knowledge transfer and 2) cross-view knowledge transfer.

Feature recognition is quite different from various object recognition algorithms. These algorithms are based on one type of feature-edge. Since the world is full of edges that look pretty much the same, the set of edges extracted from the image must first find the mapping (matching) from the edge of the image to the edge of the model before making a direct comparison with the set of edges extracted from the model object.

In each case, meaningful calculations are required, and instead of trying to get rid of the matching problem, FBR builds a representation of the model that can be compared directly to the image, allowing perception to be viewed as a distribution problem. It proceeds through the computing and various properties of the input image and combines them into feature vectors. An object model is a set of feature vectors related to a set of representative images of an object. New images are categorized by calculating the image's feature vector and comparing it directly with the model vector. If the object model contains a feature vector that is closest to the feature vector of the image, then the image is cited as an object instance.

Scale Invariant Feature Transformation (SIFT) is a computer vision algorithm for finding and describing local features in an image. Glossary tree 42 implemented with the closest adjacent food category k and 1453 images. For distance measurements, the Euclidean distance (L2 norm) of the L1 norm DCD function selected for the SCR, EFD, and GFD characteristics. The combination of DCD, MDSIFT, SCD and SIFT.

functions resulted in 64.5% Top 1 accuracy and 84.2% Top 4 accuracy. In the SVM classifier, a method has been proposed to use the SIFT and LBP functions with a PFI data set, the SIFT function is used to find and describe local features in an image, and LBP is a kind of visual descriptor, many LBPs are easy to calculate and are sensitive to lighting changes Unaffected Support Vector Machine is a supervised learning model with associated learning algorithms for analyzing data used for classification and regression analysis.

There is a way to classify food images using spherical surfaces. Machines that support vector machines efficiently perform nonlinear classification using kernel tricks, apply this method to a food log data set consisting of 6512 images, and split using an FCM algorithm similar to the k-means clustering algorithm. Can be applied to food images. , The coefficient is assigned. For each data point in the cluster, the centroid is calculated randomly for each cluster and a coefficient is calculated for each data point. After applying the FCM to segment the food image, I used a spherical support and the accuracy for classifying the Food 101 data set is 95 .Classifier. The Random Forest or the Random Forests is a collaborative way of dividing, retreating, and other activities that involve building a series of decision-making trees during training and taking classes in class mode (phases) or intermediate predictions (retreat). with an accuracy of 50.76 using the RFDC method.

Learning is a tool for improving the performance of model domain targets in that case the target domain label is not enough, otherwise the moving knowledge is meaningless. So far, most studies of learning are focused only on small scale of data, which cannot also reflect the potential of learning on the machine regularly learning techniques. Future challenges of learning should be in two aspects: 1) how to exploit information that will be useful for regional targets from high noise source data domain and 2) How to expand the current transfer of learning methods to deal with large scale of Data Domain sources.

B. Deep Learning Based Model

Nowadays in-depth reading is very popular in computer vision. Deep reading (also known as deep reading or sequential reading) is part of a wider family of machine learning methods based on the representation of learning data, unlike task-algorithms. such as deep neural networks, deep belief networks and duplicate neural networks used in fields including computer vision, speech recognition, natural language processing, sound recognition, social network filtering, machine translation, bioinformatics, drug production and board game programs, where they produce comparable results and, in some cases, superior to human professionals. In recent publications there are many methods that have used the deep convolution network neural network edit food images. A neural network of food image classification. In-depth study was used to classify the UEC-256 food image analysis of a computer-assisted testing program. CNN was used to classify food images in

order from the food-11 dataset to build a dietary management system.

A pretrained deep neural networks were applied. Deep convolutional neural networks were pretrained on ImageNet with 1000 food-related categories than fine-tuned. To classify the UEC-FOOD100 dataset, we achieved 78.77% top-1 accuracy.

We used Google Net to classify Thai fast-food images on the TFF food dataset. We achieved 88.33° Curacy for 11 classes. Implemented and compared several convolutional neurons. I got 70 network models with the food-11 dataset. We find that the

deep learning approach with an accuracy of 12% on the proposed approach, 80.51% on the Caffe net, and 82.07 on the Alex net yields better results than traditional feature-based models with larger datasets. 11 datasets. I tried a convolutional neural network built from scratch and transfer learning using the Inception V3 model.

C. Inception- Overview

In this paper, Inception, it was developed according to the Google Net architecture seen in ILSVRC 2014. It is also inspired by the method based on primate visual cortex dictated by Serre et al. , which can capture scales. many sizes, one of the key criteria of fund-forming architecture, is the adaptation of the network "in the network" method. Lin et al, which increases the power of artificial neural networks. reduction in size is 1 × 1. the purpose of fund architecture is to reduce the use of resources to classify. Accurate images use deep learning. they focus on finding the best position between traditional methods of optimization. This increases the size and depth, and use sparsity in layers depending on the theoretical area set by Arora et al.. It itself can pay a lot of calculated resources for deep learning systems such as establishing funds which use filters, in their 22 layers architecture, which is the main goal to achieve them, emphasizing the approach ofArora et al.to generate a correlation statistical analysis to generate groups of higher correlation to feed forward to the next layer. And they took the idea of multiscale analysis of visual information in their 1 × 1 , 3 × 3 and 5 × 5 convolution layers. All of these layers then go through dimension reduction to

end up in 1 × 1 convolutions .

The Inception architecture used in ILSVRC 2014 had the following structure as denoted by Szegedy et al.:

1) An average pooling layer having 5 × 5 filter size and stride 3.
2) A 1 × 1 layer with 128 filters for dimension reduction and rectified linear activation.
3) A fully connected layer having1024 units and rectified linear activation.
4) A dropout layer having 70% ratio of dropped outputs.

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II. DESCRIPTION OF PLANNED SYSTEM

In the proposed system we used a part of the original food-101 dataset with 101 food categories. All images are rescaled to a maximum side length of 512 pixels. Use a subset of the four food categories [Chicken Curry, Hamburger, Omelet, Waffle]. The data consists of three main subfolders: training, validation, and testing. The training data consists of 1000 images per class, with up to 500 validation images and up to 500 test images per class. The dataset has not been (intentionally) cleaned up and therefore contains some noise. It is mainly displayed in dark colors and in some cases has the wrong label. The dataset is not complete, which makes the problem even more difficult. However, it uses the assigned label. We developed a CNN from scratch to classify food images. We also used transfer learning from Inception v3 model which was pre-trained with ImageNet method in our work.

We have taken some image pre-processing technique to increase efficiency to our system. First, we re-sized all our images to 224 x 224 x 3 to increase processing time and also to fit in our convolutional neural network model. After that we applied following image pre-processing techniques.

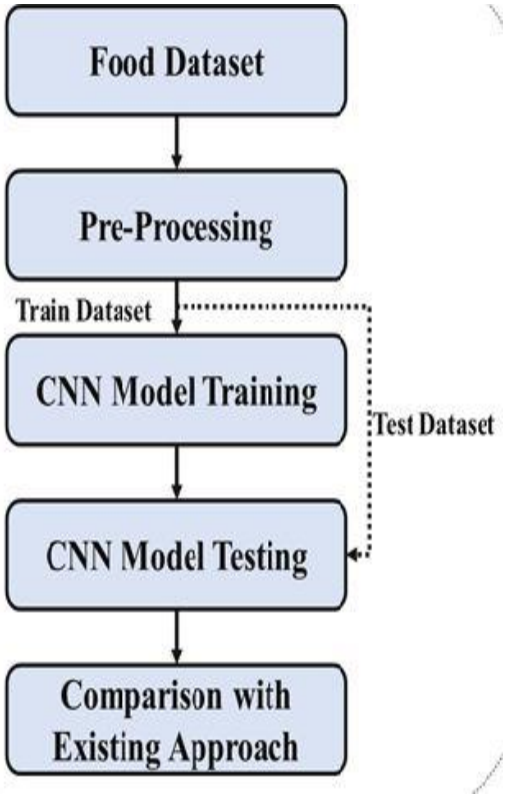

Fig 1: Methodology of food image classification.

Neural Networks often try to detect edges in earlier layers, shapes in the middle layer, and some features specific to tasks in the following layers. It helps leverage the labeled data of the task for which it was originally trained. The model has learned to recognize objects, so we will only retrain the following layers.

During transfer learning, we try to transfer as much knowledge as possible from the previous task that the trained model has to the new task at hand. This knowledge can take many different forms depending on the problem and the data. For example, it could be the way models are constructed, allowing us to more easily define new objects. , a lot of data is needed to train a neural network from scratch but not always have access to that data available - this is where transfer learning becomes useful. because the model has been trained in advance. This is especially valuable in natural language processing since most of the expertise is required to create large-labeled datasets. Also, training time is reduced because it can sometimes take days or even weeks to train a deep neural network from scratch for a complex task.

III. SCOPE AND LIMITATION

This model can be used to classify any food image in just seconds, we can also classify any food image by using this approach. Future work would involve more optimization on hyperparameters and model aspects such as which layers to freeze versus make trainable during transfer learning. Due to computing resource and time constraints, most model implementation decisions were made by examining the convergence of the model and relative metrics from training versus validation but an exhaustive hyperparameter search would have been a more empirical approach.

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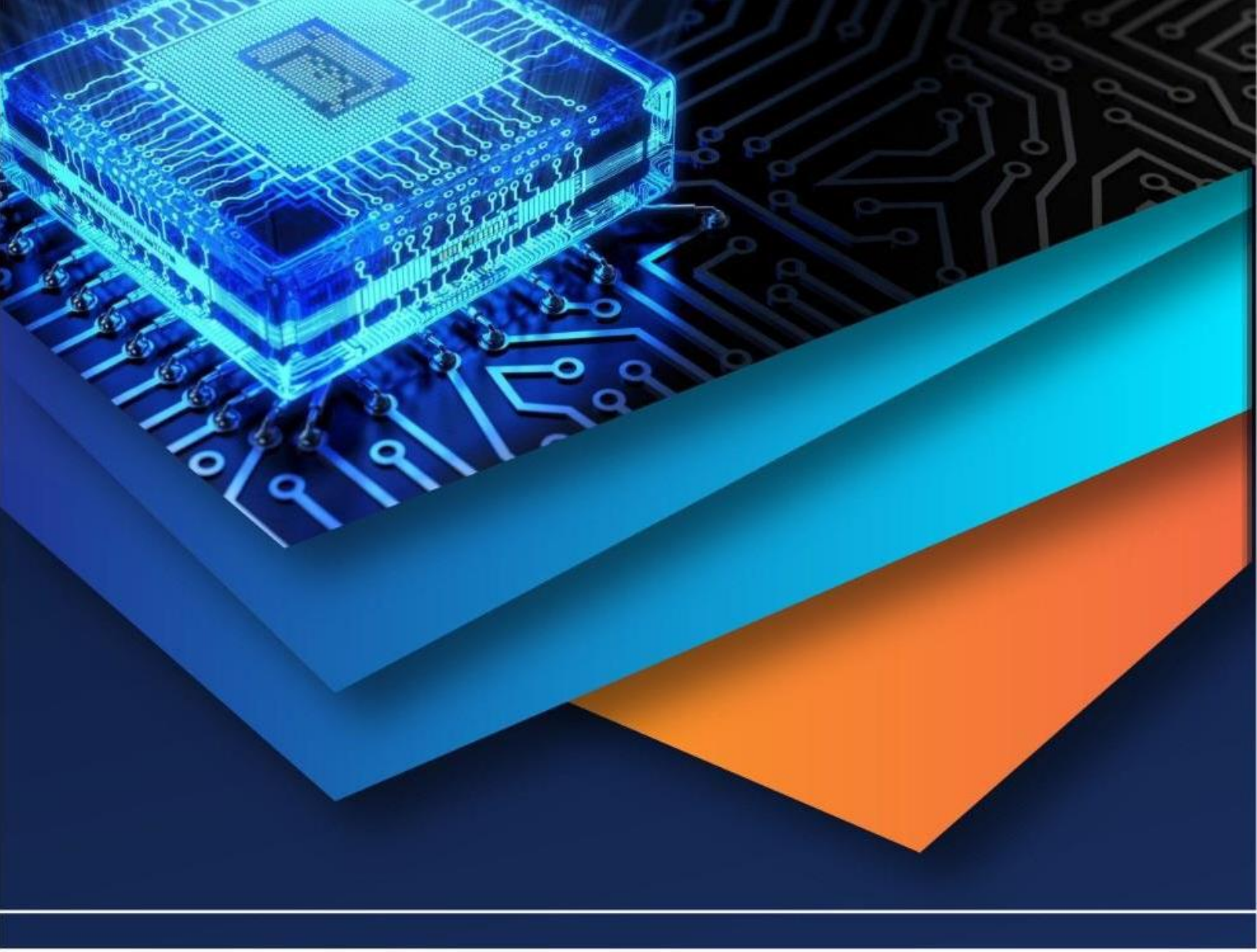

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Review and Analysis of Crack Detection and Classification Techniques based on Crack Types

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ABSTRACT

Cracks are highly widespread in buildings, bridges, roads, pavement, railway tracks, automobiles, tunnels, and planes in the real world. Because the presence of a crack reduces the value of civil infrastructure, it is vital to determine the severity of the fracture. Crack detection and classification techniques combined with quantitative analysis are essential for determining the severity of a crack. The length, width, and area are the different quantitative measures. The quantity of photos acquired for analysis is rapidly increasing as a result of rapid technological advancements. As a result, systems for automatically detecting and classifying cracks in civil infrastructure are critical. The following three goals are the subject of this paper: I A comparison of different crack detection and classification techniques based on crack kinds. (ii) Implementation of Otsu's based crack detection thresholding method (iii) Design of proposed system.

Keywords: *Crack types, crack detection, crack classification, image processing,and machine learning.*

I. INTRODUCTION

A crack is the result of the breaking or fracturing of concrete into two or more portions, which might be complete or partial. Buildings, bridges, roads, pavements, railway tracks, autos, tunnels, and aircraft are just a few examples of surfaces where cracks might appear. Active and dormant cracks are the two types of cracks that can be found. In active cracks, the direction, width, or depth of the crack changes with time, but in dormant cracks, the direction, width, or depth remains constant. Both active and dormant fractures give access for moisture entry, which can lead to future harm if left unaddressed. Longitudinal cracks, transverse cracks, various fractures, crocodile cracks, and reflection cracks are some of the active cracks. In nature, dormant cracks are exceedingly fine, and they mend on their own over time. Micro cracks, thin cracks, sealed cracks, mixed cracks, line-like cracks, minor cracks, tiny cracks, medium cracks, huge cracks, and complicated cracks are some of the different types of cracks based on their structure. The research challenges and advancements in the field of fracture detection and classification approaches are discussed in this paper.

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Design and Analysis of Bridge Crack Detection using CNN

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ABSTRACT

Even though there have been incidents in the past, it is critical to keep an eye on the bridges in our country or state. The reason for these tragedies is that there is no system in place that will alert people if a bridge is in poor condition when unexpected events such as floods or earthquakes occur. It indicates that the bridge is not in good repair. When this type of condition occurs, the bridge may collapse, resulting in a variety of losses such as accidents, human deaths, and so on. According to a 2016 report by the National Crime Records Bureau, Maharashtra had the second-highest number of deaths (4,237) due to structural failures between 2001 and 2015. All of these figures demonstrate that disregarding structure safety results in human lives being lost. Zig-Bee technology is employed in the present system, and the TCP/IP protocol was utilised, which is suitable for all sorts of bridges. In this article, we'll delve deeper into the methods for detecting bridge cracks.

Keywords : Convolutional Neural Network, Deep Learning, Digital Recognition, Bridge Crack, Image Processing.

I. INTRODUCTION

The density of highway networks has steadily expanded, and large-span bridges have continued to arise, owing to India's rapid development of the transportation industry. However, additional risk issues will undoubtedly arise as a result of the bridge project [1]. These risk factors are likely to have negative impacts on bridges and even cause bridge collapse, putting people's lives in danger and causing property damage. As a result, it is critical to conduct damage detection and early warning of the bridge structure, as well as to determine the health state of the bridge operation in a timely manner. Engineering and academia are presently debating how to diagnose the health of modern bridges. Many bridges require immediate safety inspections, health assessments, and maintenance strengthening.

People have recognized the necessity of health diagnosis since the 1950s, but they have been limited in its use due to the backwardness of early detection technologies. However, several countries and research organisations have recognized the necessity and necessity of studying bridge structural health diagnostics in recent decades [2]. The use of efficient methods for evaluating and assessing the health of existing bridges, repairing and controlling damage, and implementing long-term safety inspection, vibration, and damage control systems.

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LITERATURE REVIEW ON DESIGN, MODELLING AND ANALYSIS OF VEGETABLE CLEANING MACHINE FOR AGRICULTURE USE

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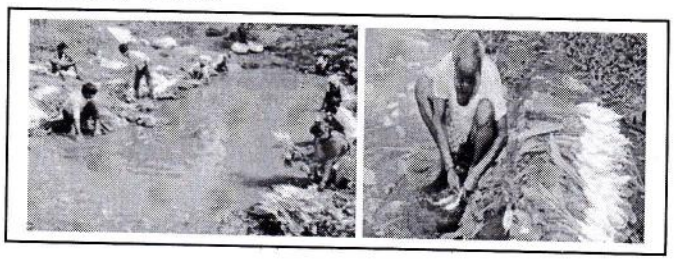
ABSTRACT

Tubers such as radishes, carrots, potatoes, etc. should be removed from soil particles and loam after harvest, and then moved from the field to the market. Usually, Indian farmers follow the traditional peeling method of carrots and radishes, which is to wash the roots with hands and feet. The processing seems to be time-consuming and laborious. The best solution to this problem. In the design of this vegetable peeler, vegetables can be peeled correctly. The focus of this research is the design of the vegetable peeler. In this project, we create a CAD model of the machine and execute FEA on the machine. Help us understand tensions and displacement.

Keywords: CAD model, finite element analysis.

I. INTRODUCTION

Vegetable washing is an important step in any technical process that makes vegetables attractive and chemical-free. The roots and stems of tomatoes, potatoes, onions, carrots, and radishes must be cleaned of soil particles and clay after harvest. Indian farmers usually use traditional methods to peel the carrots and radishes where the roots are before transporting them from the fields to the market. Indian farmers need an inexpensive rotary vegetable peeler that anyone can afford. Flushing is a basic operation of the main processing unit, used to remove dirt, harmful chemicals, foreign matter and microorganisms on the surface before being sold on the market. The added value of the company's first-class products. Usually, vegetable pollution is an unhealthy harvest and sales habit. Due to lack of time, farmers did not peel them properly. From a public health point of view, because they may be harmful to health.



Aim And Objective

- Develop a conceptual plan for the development of clean vegetables.
- Calculate the design of vegetable cleaners.
- CAD modeling of the conceptual design. Reduce labor costs; reduce the energy and time required for peeling.
- Peel vegetables thoroughly and remove unwanted particles.
- Bring vegetables to the market as soon as possible.

II. LITERATURE REVIEW

This paper developed a model of a vegetable washing machine with a limit of 50 kg and evaluated its efficiency. The effects of various rotors at speeds of 1466 rpm, 1476 rpm and 1486 rpm were evaluated. During the execution at the limit of 20 cm (110 liters), the water depth was convincingly recorded. The washed fruit is used to assess the exposure of potatoes. The cost ratio of manual and mechanical cleaning of potatoes is 5.89:1. The average cost of mechanical cleaning is Rs.24.80 per ton. The cost of this car is 14,650 rupees, including the electric motor. The external dimensions of this configuration are 1000 x 560 x 750 mm. Experiments show that the washing efficiency of all rotors used for washing potatoes is between 96.36% and 98.18%. The installation limit is between 340.87 and 892.11 kg h-1. PI is between 2.25 and 3.26. On rotor C at 1486 rpm, the maximum PI value kg/h of potatoes is 3.26. R.N.Kenghe [1].

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A REVIEW PAPER ON DESIGN AND FAILURE ANALYSIS OF CONCRETE MIXER MACHINE BLADES USED IN WAINGANGA SPUN PIPE INDUSTRIES PVT. LTD, SEWAGRAM

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ABSTRACT

The horizontal shaft concrete mixer machine is used to make concrete used for making spun pipe. While mixing cement , sand & gravel material machine blades does not mix mixture uniformly and pull all material on one side cause high stresses induced in blade & blade get breaks. Also ununiformed mixture decreases the efficiency of concrete machine. Present design of blades is not strong enough to bead stresses & not satisfactory for making mixture.so the purpose of this study is to Design And Failure Analysis Of Concrete Mixer Machine Blades For Making It More Effective & Strong. Study done on existing concrete machine blades & with the help of existing blades, modified blades design.by making this study blades work more effectively, uniformly mixes all material & increases efficiency of machine.

Keywords: single shaft concrete mixer machine, design blades of concrete machine , analysis of concrete mixer blades, concrete mixer machine.

I. INTRODUCTION

Concrete mixer machine is used for making concrete mixture for making spun pipe in Wainganga spun pipe industries pvt. Ltd , Sewagram road ,MIDC Wardha. RCC pipes are categorized as Pressure and Non Pressure pipes like np1, np2, np3, and specific conditions p1, p2, p3 is use . RCC spun pipes are mostly used for irrigation, water drainage, sewerage, and culverts. These pipes are made up of cement, coarse and fine aggregate, sand, Mild steel and HT rods and bars. A cement mixer machine is a device that homogeneously combines cement, aggregate like sand or gravel, and water to make concrete. concrete mixer machine uses a revolving blades on shaft to mix all concrete mixtures homogeneously . In Wainganga Spun Pipe Industry, To supply continuously concrete mixture for pipe making its necessary that the concrete mixer should be effectively working, but it has been observed that the blades of mixer not mix concrete mixture uniformly. present design of blade is not effective & stronger. mixture between blades is not evenly mixed While working of machine & blade design such that it pulls all material on one side causes high stresses on one blade & blade get break. So in this project I am researches to identify the different causes of blade failure & design such blade which is effective & strong. So This study Researches To

1) Identify The Different Causes Of Blade Failure & non uniformity of mixtures.

2) Design Such Blade Which Is Effective & Strong.

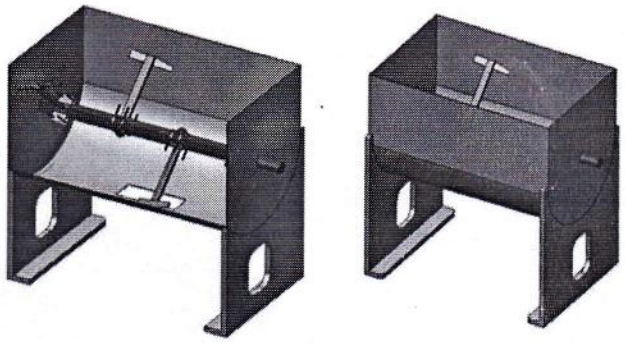

Figure: Concrete Mixer Machine

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Research Methodology On Design, Modelling And Analysis Of Vegetable Cleaning Machine For Agriculture Use

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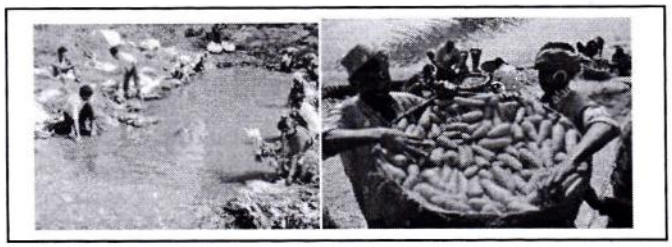
ABSTRACT -

Tubers such as radishes, carrots, and potatoes must be removed from soil particles and clay after harvest, and then transported from the field to the market. Indian farmers usually follow the traditional method of peeling carrots and turnips, which includes washing the roots with hands and feet. Editing requires a lot of time and energy. The best solution to this problem. The design of this peeler allows vegetables to be peeled correctly. The focus of this research is on vegetable design. In this project, we create a CAD model of the machine and run FEA on it. Help us understand pressure and displacement.

Keywords: CAD model, finite element analysis,

I. INTRODUCTION

Washing vegetables is an important step in any technical process that makes vegetables attractive and chemical-free. After harvest, the roots and stems of tomatoes, potatoes, onions, carrots and radishes need to be cleaned of dirt and clay particles. The method of peeling carrots and radish roots before transporting them from the field to the market. Indian farmers need a cheap peeler that everyone can afford. Cleaning is the main operation of the main processing unit to remove harmful chemicals, foreign matter and microorganisms from the surface before putting them on the market. The added value of the company's high-quality products. Plant infestation is usually a collecting and selling habit. bad. Because of lack of time, farmers do not peel. correct.



1. AIM AND OBJECTIVE

- Develop a conceptual plan for the development of organic vegetables.
- Calculate the layout of the vegetable cleaner.
- CAD modeling of sketch projects. Reduce labor costs; reduce the energy and time required for cleaning.
- Peel vegetables and remove unwanted particles.
- Bring vegetables to the market as soon as possible.

II. RESEARCH METHODOLOGY

The following techniques can be used to create cheap peeler designs: A deep understanding of previous agricultural research points you in the right direction. Minimal load, CAD model, design and manufacturing optimization.

• Collect data and research literature on peeled vegetables.

• Concept development based on collected data and market demand.

• Design Conceptual calculation.

• Project statics and optimization

• Discussion of results

• Design revision

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Design, Modelling Andanalysis Ofvegetaable Cleaningmachine Foragriculture Use.

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A B S T R A C T: The root greens like radish, carrot and potatoes, etc., after harvesting need to be wiped clean off the soil and clay debrisearlier than transporting them from discipline to market. Normally Indian farmers comply with a conventionalapproach of cleansing the carrots, radish wherein the roots are washed manually via way of means offingers and feet. which appears to be very time ingesting and calls forgreaterwide variety of labours to process. In this venture the CAD version of vegetable cleansingsystemturned into generated and layout calculations turned intofinished. After the CAD version generation, Finite Element Modelling and Finite Element Analysis turned intofinished and the consequenceshave beenmentionedwith a purpose to finalize the layout for fabrication of bodilyversionwith a purpose tosmoothgreens at inexpensive rate.

Keywords:Rotating Veg. cleaner
Root crops cleaning machine

I. INTRODUCTION

Washing of greens is critical step in any processing operation, which offersappealing and chemical loosegreens. The greens like potatoes, tomatoes, cabbage, carrots, radish, etc., after harvesting had to be wiped clean off the soil and clay debrisearlier than transporting them from subject to the market.

Figure 1.1 Traditional method of vegetable cleaning

Normally many Indian farmers observe a conventionalapproach of cleansing the carrots, radish wherein the roots are washed manually with the aid of usingarms and feet. There is want to layout a rotary kind vegetable cleanser which each farmer in India can afford. Washing of root vegetationearlier thanpromoting it into the market is an vital process, which reduces the floor microbial load, at the same time aseliminatingthe sector soil, dirtor even residual pesticides, which ends up in the fee addition of the produce on the farm level.

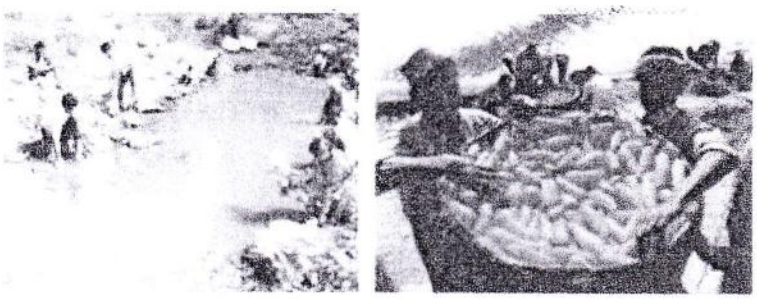

Figure 1.2 Unwashed root crops

Contamination of veggies is typicallybecause of unsanitary cultivation and advertising and marketing practices. The microorganisms and insecticidesconcerned with the meals if remained un-sanitized, may bevital from a public fitnessfactor of view, due to the factthey couldresult infitness hazard.

1.1Objectives:

- To conceptualize a layout for vegetable cleansing machine.
- To carry out layout calculations of vegetable cleansing machine.
- To carry out CAD modeling of the idealayout.
- To lessen labour requirement and time for vegetable cleansing.

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A REVIEW PAPER ON DESIGN MODIFICATION & MODELING OF MANUALLY OPERATED CAGE WINDING MACHINE USED IN THE MANUFACTURING OF R.C.C. SPUN PIPE AT NEELAM ENTERPRISES

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ABSTRACT

Cage Winding Machine machine is used to form a Cage which is used in manufacturing of R.C.C.Spun Pipe manufacturing. The reinforcement cage is initially prepared on the cage-winding machine manually. The cage is then placed and arranged inside the pipe mould which is then mounted horizontally on the turn unions to manufacturing of R.C.C. Spun pipe. First of all The reinforcement cage is prepared on the cage-winding machine. In a Cage Winding Process 2 Labours are required for complete the process, One labor operate the machine by rotating a handle which directly rotate a cylindrical structure of machine and another labor adjust a HB wire on cylindrical structure to form a cage. We are developing Design Modification & Modeling of Manually Operated Cage Winding Machine currently used in the Manufacturing of R.C.C. Spun Pipe at Neelam Enterprises MIDC Sevagram Wardha. The aim of this paper is to redesign and modify the existing Cage Winding Machine by Study of existing design, working and operation and to modify manual operation by electromechanical operation for ease in operation and to increase productivity of existing machine.

Keywords: Cage Winding Machine, Winding of HB wire, Cage Formation, Manual Winding machine, R.C.C. Spun Pipe.

I. INTRODUCTION

Spun is the concrete pipe manufacturing process using the centrifugal process and also widely known as spun process in many regions. This is the most conventional method of producing the RCC pipes. RCC Spun pipe refer to Reinforced Concrete cement pipe. The spun process is widely used in developing underdeveloped countries. Reinforced cement concrete spun pipes are widely used for water drainage, sewerage, culverts and irrigation. RCC pipes are catagorized as pressure and non-pressure pipes P1, P2, P3, NP1, NP2, NP3, for use in sperticular conditions. These pipes are manufactured with cement, mild steel, sand, coarse and fine aggregate, HT rods and bars. The cement admixture for the RCC spun pipe is prepared in proportion of 1:2:5:2:5 of cement stone, metal and sand respectively. The cement admixture is then fed into the moulds throughout rotation for evenly spreading of mixture inside mould. The time requirememt for completion of this process depends upon the size, diameter and class of the spun pipe. The RCC spun pipes are retained in the mould for aproximately 24 hours for setting of concrete. The Spun pipe manufacturing process is more labour intensive, exhaustive, less productive and quality is mostly depend on worker's skill. The reinforcement cage is first prepared on the cage-winding machine by hand process. . In a Cage making process 4mm HB wire is used. In a Cage Winding Process 2 Labours required for complete process. Our aim of project is to improve the performance of the machine by studying and analysing the existing machine. To design the new Cage Machine with modified parameters and develop Cad Model of machine, analyse it and make simulation the machine to enhance productivity.

II. LITERATURE REVIEW

1. The Research paper clarifies that The Spun pipe manufacturing process is more labor intensive, less productive. According to BUREAU OF INDIAN STANDARDS concrete pipe shall be classified as under., NP2:- Reinforced concrete non-pressure pipes. Used For:- Light-duty drainage and irrigation /water transportation use, cross drains/ culverts carrying heavy traffic. [1]

2. This Indian standard was adopted by Bureau of Indian Standard on 15Nov 1988. This Standard gives guidelines regarding Reinforcement Cages . It states that Reinforcement cages for Spun pipes shall extend throughout the pipe barrel.Cages shall consist of spirals and rings and straights of of hard drawn steel wire or

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Ultrasonic Investigation of Binary Solutions of Petrolium And Its Products

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ABSTRACT

Experiment values of densities and ultrasonic speed of petroleum product Gasoline (Petrol) and 2T Oil were taken in different volume concentrations from 5%, 10%-----, and 95% at different temperatures from 298.15K to 318.15K having difference of 5K. From the experimental data, Apparent Molar Compressibility (ϕ_K), Relative Association (R_A), Solvation Number (S_n), Free Energy of Activation (ΔE), Excess Adiabatic Compressibility ($\beta_{ad}{}^E$), Excess Volume (V^E), Excess Free Length ($L_f{}^E$) have been computed. These parameters are used to focus light on the nature of component molecules of binary liquids and the excess functions are found to be sensitive to the nature and extent of the intermolecular interactions taking place in these binary mixtures.

Keywords: Ultrasonic velocity, Acoustical Parameters, Binary system, Molecular interactions.

I. INTRODUCTION

Knowledge of acoustic properties reveals the presence of molecular interactions between the component molecules in the multi-component liquid systems interaction plays an important role in the development of molecular sciences. [1-6] Gasoline or petrol is a petroleum-derived liquid mixture consisting mostly of hydrocarbons and enhanced with benzene or iso-octane to increase octane ratings, used as fuel in internal combustion engines. For decades, Chevron Oronite has been a leader in the development of premium additive systems specifically designed to meet the unique lubrication demands of air-cooled, two-stroke cycle engines. In air-cooled applications, two-stroke cycle engines require an oil to provide reliable lubrication during high engine temperatures and under the most severe operating conditions. In continuation of our earlier work we have evaluated the acoustic Parameters, namely the Apparent Molar Compressibility (ϕ_K), Relative Association (R_A), Solvation Number (S_n), Free Energy of Activation (ΔE), Excess Adiabatic Compressibility ($\beta_{ad}{}^E$), Excess Volume (V^E), Excess Free Length ($L_f{}^E$) for the binary mixtures Gasoline+ 2-T Oil. The results are discussed in terms of molecular interactions.[7-15]

II. METHODS AND MATERIAL

The ultrasonic velocities were measured at temperature at different temperatures and atmospheric pressure by using a single crystal variable

path ultrasonic interferometer (F-81) operating at a frequency of 2 MHz. The temperature of the solution was maintained constant within ±0.010 C by circulation of water from thermostatically regulated water bath through the water- jacketed cell. The velocity measurements were precise to ±0.5 m s-1. Densities of the experimental liquids can also be measured by the hydrostatic plunger method, calibrated with deionised double distilled water with 0.9960×103 kg m-3 as its density at temperature 303.15 K. The precision of density measurement was within ±0.0003 kg m-3. Different thermo-acoustical parameters such as apparent Molar Compressibility (ϕ_K), Relative Association (R_A), Solvation Number (S_n), Free Energy of Activation (ΔE), Excess Adiabatic Compressibility (β_{ad}^E), Excess Volume (V^E) and Excess Free Length (L_f^E) have been evaluated from the experimentally measured values of density, ρ and ultrasonic velocity, U [16-21]

$$V = \frac{M}{\rho}$$

$$\beta_{ad} = \frac{1}{u^2 \rho}$$

$$L_f = K \times \beta^{1/2}$$

$$\Phi_K = \left(\rho_0 \beta_{ad} - \rho \beta_{ad}^0\right) \times \frac{1000}{\rho_0 C} + \frac{\beta_{ad}^0 M_2}{\rho_0}$$

$$R_A = \left(\frac{\rho}{\rho_0}\right)\left(\frac{u_0}{u}\right)^{1/3}$$

$$S_n = \frac{n_1}{n_2}\left(1 - \frac{\beta_{ad}}{\beta_{ad}^0}\right)$$

$$\Delta E = \text{Slope} \times R \times 2.45$$

$$\beta_{ad}^E = \beta_{(Expt)} - \beta_{(Ideal)}$$

$$V_a^E = V_{(Expt)} - V_{(Ideeal)}$$

$$L_f^E = L_{f(Expt)} \_ L_{f(Ideal)}$$

III. RESULT AND DISCUSSION

The apparent molar compressibility (ϕ_K) which decreased linearly with percentage volume concentration of mixtures at all five different temperatures have been shown in fig. 1.The positive value of ϕ_K shows strong electrostatic force in the vicinity of ion, causing electrostatic solution in ions. Fig.2 reveals the variation of relative association (R_A) with percentage volume of mixture at five different temperatures which increased linearly. The increase in R_A with concentration suggests that salvation of ions predominates over the breaking up of the solvent aggregates on addition substance. The variation of salvation number (S_n) with percentage volume concentration of mixture at five all five temperatures exhibit in fig. 3. The value S_n decrease with increase in percentage volume and temperatures. The positive salvation number of solution suggests that the compressibility of the solution will be less than that of solvent.

The free energy of activation (ΔE) varies with percentage volume of mixtures shown in Fig. 4. It has been found that ΔE increase nearly exponential as increase of percentage volume of mixture. Fig. 5 and 6 showed the variation of excess adiabatic compressibility and excess volume with percentage volume of mixture at five different temperatures. The figure show variation of β_{ad}^E negative and V^E positive with increase of percentage volume of mixture at all temperatures indicate an attractive interaction between two component liquid molecules in the mixture leading to an association between them. Fig.7 showed the variation of excess free length L_f^E. The symmetrical positive variation of L_f^E at all temperatures supports attractive interaction.

Table 1 : Apparent Molar Compressibility (ϕ_K) cm^3 mol^{-1}

x %	298.15 K	303.15 K	308.15 K	313.15 K	318.15 K
1	3.828E-08	4.005E-08	4.211E-08	4.423E-08	4.648E-08
2	3.812E-08	3.988E-08	4.192E-08	4.404E-08	4.627E-08
3	3.796E-08	3.971E-08	4.174E-08	4.384E-08	4.607E-08
4	3.780E-08	3.954E-08	4.156E-08	4.365E-08	4.587E-08
5	3.764E-08	3.938E-08	4.139E-08	4.347E-08	4.567E-08
6	3.748E-08	3.921E-08	4.121E-08	4.328E-08	4.547E-08
7	3.733E-08	3.905E-08	4.104E-08	4.310E-08	4.528E-08
8	3.718E-08	3.889E-08	4.087E-08	4.292E-08	4.509E-08
9	3.703E-08	3.873E-08	4.070E-08	4.274E-08	4.490E-08
10	3.688E-08	3.858E-08	4.054E-08	4.256E-08	4.471E-08

Table 2 : Relative Association (R_A)

x %	298.15 K	303.15 K	308.15 K	313.15 K	318.15 K
1	1.002488	1.002343	1.002609	1.002315	1.002581
2	1.003649	1.003492	1.003737	1.003423	1.003673
3	1.004810	1.004641	1.004864	1.004532	1.004764
4	1.005971	1.005789	1.005991	1.005640	1.005855
5	1.007131	1.006937	1.007118	1.006748	1.006945
6	1.008290	1.008084	1.008244	1.007855	1.008036
7	1.0094	1.0092	1.0093	1.0089	1.0091
8	1.010607	1.010378	1.010496	1.010070	1.010216
9	1.011765	1.011524	1.011621	1.011176	1.011305
10	1.012923	1.012670	1.012746	1.012282	1.012395

Table 3 : Solvation Number (S_n)

x %	298.15K	303.15K	308.15K	313.15K	318.15K
1	0.334896	0.334331	0.348606	0.343639	0.359397
2	0.298314	0.299256	0.308440	0.307930	0.317591
3	0.283456	0.284866	0.292296	0.293218	0.300796
4	0.274055	0.275677	0.282187	0.283787	0.290285
5	0.266861	0.268590	0.274515	0.276491	0.282312
6	0.260786	0.262572	0.268081	0.270283	0.275629
7	0.255368	0.257181	0.262370	0.264714	0.269700
8	0.250372	0.252195	0.257125	0.259557	0.264256
9	0.245670	0.247491	0.252203	0.254688	0.259150
10	0.241183	0.242994	0.247518	0.250032	0.254291

Table 4 : Free Energy of Activation (ΔE) J mol^{-1}

x %	Δ E
1	7387.734
2	7422.859
3	7455.061
4	7484.692
5	7512.041
6	7537.370
7	7560.890
8	7582.790

9	7603.232
10	7622.358

Table 5 : Excess Adiabatic Compressibility (β_{ad}^{E}) cm^2 $dyne^{-1}$

x %	298.15K	303.15K	308.15K	313.15K	318.15K
1	-4.77E-13	-4.91E-13	-5.54E-13	-5.56E-13	-6.32E-13
2	-7.51E-13	-7.81E-13	-8.65E-13	-8.89E-13	-9.88E-13
3	-1.02E-12	-1.06E-12	-1.17E-12	-1.21E-12	-1.33E-12
4	-1.28E-12	-1.33E-12	-1.46E-12	-1.53E-12	-1.67E-12
5	-1.53E-12	-1.60E-12	-1.74E-12	-1.83E-12	-1.99E-12
6	-1.77E-12	-1.86E-12	-2.02E-12	-2.12E-12	-2.31E-12
7	-2.00E-12	-2.10E-12	-2.28E-12	-2.41E-12	-2.61E-12
8	-2.23E-12	-2.34E-12	-2.54E-12	-2.68E-12	-2.91E-12
9	-2.45E-12	-2.58E-12	-2.79E-12	-2.95E-12	-3.19E-12
10	-2.66E-12	-2.80E-12	-3.03E-12	-3.21E-12	-3.47E-12

Table 6 : Excess Volume (V^{E}) cm^3 mol^{-1}

x %	298.15K	303.15K	308.15K	313.15K	318.15K
1	1.008E+0	1.028E+00	9.921E-01	1.038E+00	9.978E-01
2	2.165E+0	2.193E+00	2.163E+00	2.215E+00	2.181E+0
3	3.256E+0	3.290E+00	3.266E+00	3.324E+00	3.296E+0
4	4.284E+0	4.325E+00	4.306E+00	4.370E+00	4.347E+0
5	5.252E+0	5.299E+00	5.285E+00	5.354E+00	5.337E+0
6	6.164E+0	6.215E+00	6.206E+00	6.281E+00	6.268E+0
7	7.021E+0	7.077E+00	7.073E+00	7.152E+00	7.144E+0
8	7.826E+0	7.888E+00	7.888E+00	7.971E+00	7.967E+0
9	8.582E+0	8.648E+00	8.652E+00	8.740E+00	8.740E+0
10	9.291E+0	9.362E+00	9.370E+00	9.462E+00	9.465E+0

Table 7 : Excess Free Length (L_f^{E}) cm

x %	298.15K	303.15K	308.15K	313.15K	318.15K
1	1.907E-11	2.109E-11	2.023E-11	1.949E-11	1.650E-11
2	4.229E-11	4.529E-11	4.522E-11	4.565E-11	4.350E-11
3	6.412E-11	6.804E-11	6.872E-11	7.025E-11	6.888E-11
4	8.464E-11	8.943E-11	9.080E-11	9.337E-11	9.272E-11
5	1.039E-10	1.095E-10	1.115E-10	1.151E-10	1.151E-10
6	1.220E-10	1.284E-10	1.310E-10	1.355E-10	1.361E-10
7	1.390E-10	1.461E-10	1.492E-10	1.546E-10	1.558E-10
8	1.549E-10	1.627E-10	1.663E-10	1.725E-10	1.743E-10
9	1.697E-10	1.782E-10	1.823E-10	1.893E-10	1.915E-10
10	1.837E-10	1.927E-10	1.973E-10	2.050E-10	2.077E-10

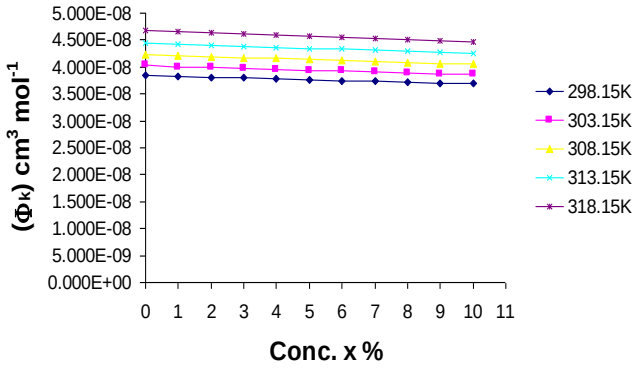

Figure 1 : Volume conc. x % versus Apparent Molar Compressibility (ϕ_K)

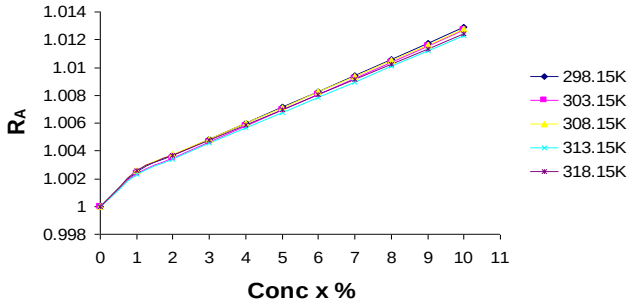

Figure 2 : Volume conc. x % versus Relative Association (R_A)

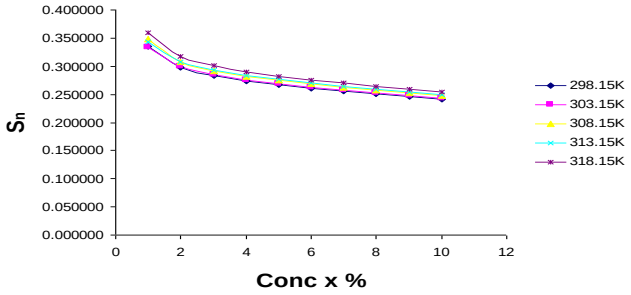

Figure 3 : Volume conc. x % versus Solvation Number (S_n)

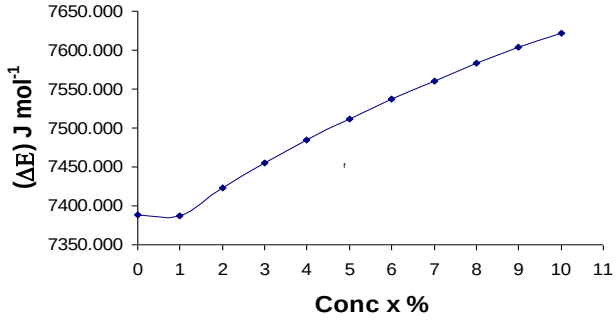

Figure 4 : Volume conc. x % versus Free Energy of Activation (ΔE)

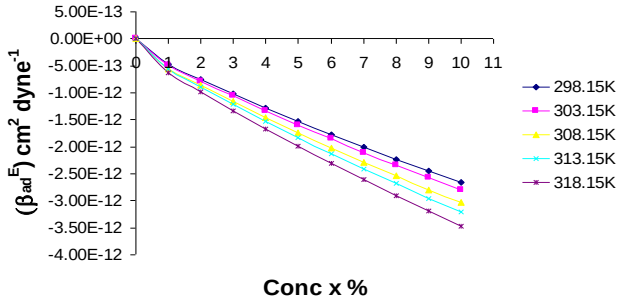

Figure 5: Volume conc. x % versus $\beta_{ad}{}^{E}$

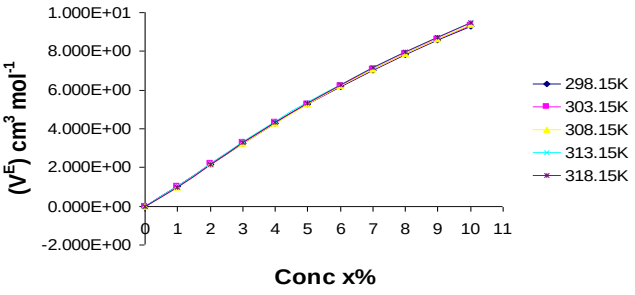

Figure 6: Volume conc. x % versus V^{E}

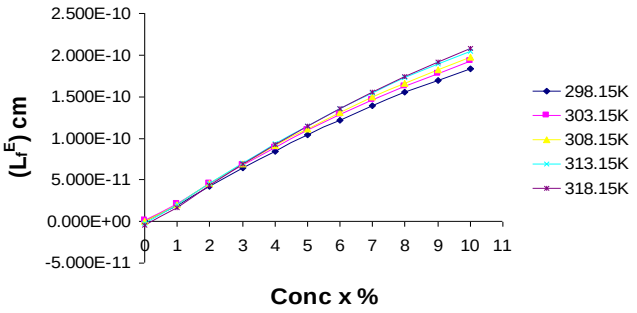

Figure 7 : Volume conc. x % versus $L_f{}^{E}$

IV. CONCLUSION

The 2T Oil (fuel oil's) which we used are non polar solvents and miscible in gasoline and there are weak interaction unto lower level of % concentration, the negative value of V^{E} show that the molecules set free from the original cluster and rate of broken of cluster depends on nature of $\beta_{ad}{}^{E}$ and V^{E}. Free Length Theory works not so well when applied to mixtures.

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Original Article

Knowledge and Preventive Measures Adopted by Allied Health Care Professional Students to Control Transmission of COVID-19 Pandemic Infection During Lockdown

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Abstract

Introduction: After declaration of COVID-19 infection as pandemic by World Health Organisation (WHO), various preventive strategies have been intended to mitigate disease spread and control the infection rate such as isolation of patients, social distancing, hygienic practices; covering mouth and nose, restriction of mass gathering in society. Hence we planned this survey to assess the knowledge and preventive measures adopted by students to control COVID-19 infection during lockdown.

Methods: This cross sectional study was conducted among students of School of Allied Health Sciences, DMIMS, Wardha during April-May 2020. First year was selected randomly and all 168 students were approached by internet for sharing questionnaire after IEC approval. Received responses is analysed in the form of descriptive statistics.

Results: Total 139 students responded. 38.85% students understood the relationship between mass gathering and transmission of COVID-19 infection at community level. Only 34(24.46%) students were aware about safe social distance. Less than half of the students 66(47.48%) were aware about minimum 20 seconds needed to hand-rub by the alcohol based sanitizer. About 108(77.7%) students maintained the social distancing sincerely, only 74(52.5%) students always used to wear the mask and; 100(71.94%) participants always used to wash their hands.

Conclusions: Though some of the students adopted standards practices, others observed to be considering it as less important. Such survey can be conducted among in various institutions to assess the awareness and shortfall in practices. Awareness level can be raised through dedicated online awareness program.

Key words: *Allied Health Sciences, COVID-19, Lockdown, Pandemic, Preventive measures, Students*

Introduction

COVID-19 infection was declared as pandemic by the World Health Organisation (WHO) on 11th March 2020.[1,2] Thereafter, it changes the world scenario and life of human being. In the present century, this infection causes global crisis for human species.[3]

Main source of this infection is patients with COVID-19 and most common routes of transmission are droplets and close contact. Patients are recovering by providing symptomatic and palliative care.[4,5] As no specific vaccines and treatment is available till date, only implementing and adopting preventive measures at individual and community level is the golden rule

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to reduce the morbidity and mortality by COVID-19. Various preventive strategies are isolation of patients, social distancing, hygienic practices; covering mouth and nose, restriction of movements and mass gathering in society.[6,7]

As virus is highly infectious; to date, COVID-19 has affected over 5,701,337 people worldwide, resulting in over 3,57,688 reported deaths.[8] As of 1st June 2020, confirmed cases of corona virus infection were noted as 1,93,473 in India; out of these 94,963 were active cases. Though 93,062 patients recovered, there were 5,437 deaths in the country.[9] Mass gathering leads to close contacts of people and maintaining the social distance is the first one step to curtail the spreading of infection. [10] Wearing of mask is the second essential action, if person has to go in society for the unavoidable task. [11] As the virus may get inculcated, if infected hands come in contact with mucosal surface such as eyes, nose and mouth, so the importance of hand hygiene can't be neglected.[12] There is need to assess the preventive measures adopted in the community to ensure the control of spread of infection safety.

Objectives: To assess the knowledge and preventive measures adopted by Allied Health Care professional students to control the transmission of COVID-19 infection during the period of lockdown.

Material and Methods:

This cross sectional study was conducted in School of Allied Health Science, DMIMS during April-May 2020. One of the graduation years i.e. first year was selected randomly and all 168 students were approached by internet. Questionnaire was prepared by referring guidelines from World Health Organization (WHO) [13,14,15] and Ministry of Health and Family welfare, Government of India.[16,17] Questionnaire was shared among students through internet after taking their informed consent. Received responses is analysed in the form of descriptive statistics frequency and percentage.

Results: Out of 168 students, 139 had responded to the shared questionnaire. Out of total responded, male participants were 60(43%) and 79(57%) were female students and; most of the students (33.09%) were of 18 to19 years. Maximum participants i.e. 100(72.50%) students were residing in the green zone. Social media was observed to be the commonest source of information for 109(78.42%) students.[Table I]

Table I: Basic information about Allied Health Science students

Variable		Frequency (n=139)	Percentage
Age (Years)	17-18	36	25.9
	18-19	46	33.09
	19-20	30	21.58
	20-21	15	10.79
	>22 & above	12	8.63
Gender	Male	60	43
	Female	79	57
Residential area	Rural	49	34.5
	Urban	90	65.7
City or town declared as risk zone of COIVID-19 by Government	Red	23	15.9
	Orange	12	8.7
	Green	100	72.5
	Nothing	4	2.9
Source of information*	Social Media	109	78.42
	Friends	42	30.22
	Health staff	44	31.65
	Family members	52	37.41
	Other	32	23.02

(*Note: Multiple response allowed)

Table II: Knowledge about spreading of COVID-19 infection among the students

Various mode of spread of COVID-19 infection	*Infection spread in the community/human -Response (%)	*Main route of COVID 19 transmission – Response (%)
Through coughing/sneezing	91(65.47)	85(61.15)
Contact with contaminate objects	51(36.70)	52(37.41)
Mass gathering	54(38.85)	59(42.45)
Close contacts	70(50.36)	71(51.08)
Other	22(15.83)	15(10.79)
Preventive measures to control spread of COVID-19	**Measures can be taken by general public- Response(%)**	**Most essential preventive measure should be adopted by everybody– Response(%)**
Hand hygiene	19(13.67)	23(16.55)
Cough etiquettes	0(0)	5(3.60)
Social distancing	104(74.82)	81(58.27)
Use of mask	14(10.07)	27(19.42)
Avoiding cold food/drinks	0 (0)	2(1.44)
Use of Goggles/spectacles	2(1.44)	2(1.44)

(*Note: Multiple response allowed)

In the present study we assessed the knowledge regarding the spread, preventive and control measures of COVID-19 infection. 91(65.47%) participants responded for coughing/sneezing, followed by 70(50.36%) participants responded for close contacts as a mode of spread of COVID-19 infection in the community. About similar pattern of distribution of responses was noted for route of transmission in a human i.e. 85(61.15%) for coughing/sneezing and for close contacts 71(51.08%).

Most of the students i.e. 104(74.82%) were found to be aware that most essential preventive measures can be taken by general public is social distancing. However, only 81(58.27%) of students believed that social distancing should be adopted by everybody as a preventive measure.

According to 23(16.55%) of the students, hand hygiene and; 27(19.42%) students, use of mask is the most essential measures that should be adopted by everybody.[Table II]

Table III: Knowledge about Covid-19 virus among the Allied Health Science students

Social distance to prevent COVID-19 inf.	Number (%)	minimal time for alcohol-based hand rub to kill Cov-19 virus	Number (%)	Effective vaccine Available	Number (%)
1 foot	37(26.62)	5 sec	18(12.95)	Yes,	9 (6.47%)
2 feet	15(10.79)	10 sec	39(28.06)	No,	58 (41.73)
3 feet	34(24.46)	20 sec	66(47.48)	Don't know	72 (51.80)
4 feet	13(9.35)	30 sec	13(9.35)		
>4 feet	41(29.50)	>30 sec	3(2.16)		

We also tried to uncover the basic and common knowledge about the corona virus among the participants. It is noted that, only 34(24.46%) students were aware about 3 feet (one meter) social distance should be maintained to prevent COVID-19 infection. Most of the students i.e. 41(29.50%) believed that social distance of more than four feet would be safe. Whereas, 37(26.62%) and 15(10.79%) students pointed for 1 foot and 2 feet as a safe social distance in these COVID pandemic. Minimal time take for alcohol-based hand rub to kill Cov-19 virus is 20 seconds and same time for soap rubbing.[14] Only 66(47.48%) responded this theme correctly, other 18(12.95%) and 39(28.06%) students ticked the 5 and 10 seconds required time to kill the virus respectively. 16(11.51%) students choose safer side for the same question i.e. time require to disinfect hands is more than 20 seconds.[Table III]

Table IV: Practices adopted by Allied students to prevent COVID-19 infection

Practices	Always (%)	Most of the time (%)	Sometimes (%)	Rarely (%)	Never (%)
Social distancing	108 (77.7)	24 (17.3)	4 (2.9)	0 (0)	3 (2.2)
Wearing mask for outdoor	74 (52.5)	45 (32.4)	6 (4.3)	10 (7.2)	5 (3.6)
Washing hands after returning from outside	100 (71.94)	26 (18.70)	5 (3.6)	6 (4.32)	2 (1.44)
Wear eye protection for outdoor	66 (47.48)	44 (31.65)	17 (12.23)	4 (2.88)	8 (5.75)

In the present study, 108(77.7%) students maintained the social distancing always and 24(17.3%) students maintained it most of the time. Only 74(52.5%) students always used to wear the mask for outdoor activity and 45(32.4%) students followed this practice most of the time. After returning from outside at home, 100(71.94%) participants always used to wash their hands and 26 (18.70%) students followed this practice most of the time.[Table IV]

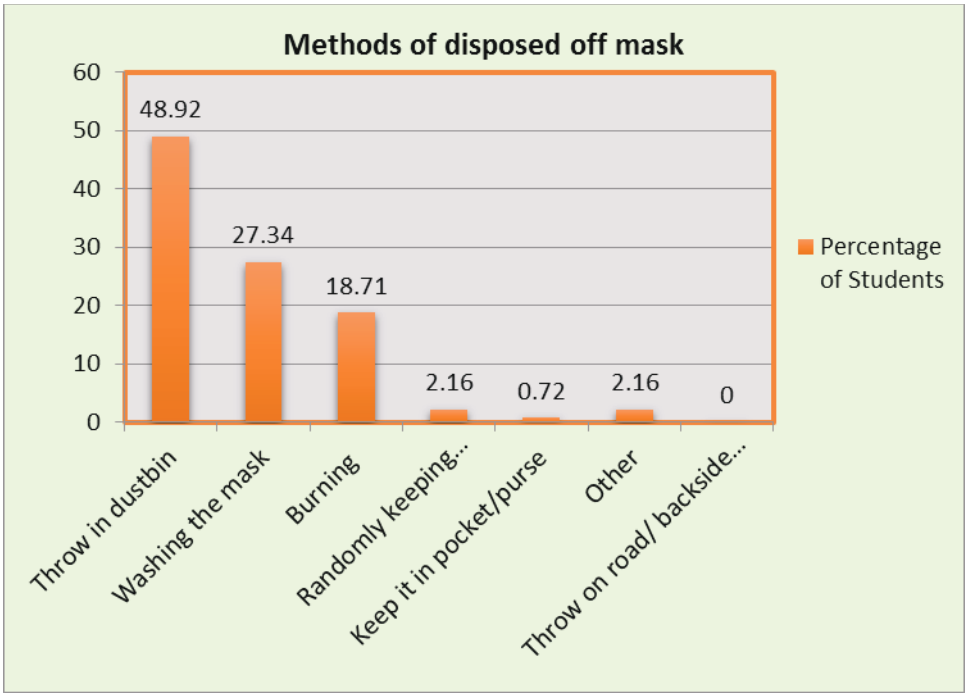

Fig:1– Methods of disposed off used mask by the students during COVID-19 pandemic

About 48.92% students followed the practice of throwing the mask in dustbin and 27.34% students used to wash the mask for reuse.[Fig-2]

Table V: Frequency and Purpose of going outside during Lockdown Period

Frequency of moved out from home	Number (%)	Purpose of going outside from home*	Number (%)
Daily	14(10.1)	Purchasing vegetables	65(46.76)
Alternate day	4(2.9)	Purchasing groceries/ stationery/milk/fruits	38(27.34)
Twice /thrice a week	7(5)	Meeting people (friends, neighbours, relatives)	2(1.44)
Once in a week	27(19.4)	Office work	5(3.6)
Occasionally	41(29.5)	Exercise	13(9.7)
Never	46(33.1)	Not applicable	46(33.1)

(*multiple response allowed)

When we asked the participants about frequency of going outside, it is noted that one third of them i.e. 46(33.1%) follows the rules of lockdown sincerely by remaining at the home. 41(29.5%) students moved out of home occasionally, whereas 27(19.4%) once in a week and only 14 (10.1%) students moved out daily. Common purpose of going outside was observed for purchasing vegetables/groceries/stationary/milk/fruits by 65(46.76%) and 38(27.34%) the students respectively. [Table V]

Discussion

We have received responses from almost all the participants in first half of the May 2020. Type of risk zone for Novel corona virus is observed to be very dynamic; it changes anytime during the week. Wardha district was declared green zone up to the 10th May 2020, where most of the students are residing during the lockdown. This may be the reason for maximum students responded for green zone during the data collection period. Social Media is playing the major role in making the community aware about the status of COVID-19.

Mass gathering is prohibited to avoid community transmission. This should be clear among the people. Only 38.85% students of Allied health sciences understood the relationship between mass gathering and transmission of infection at community level. It is equally important for a healthy individual to protect from droplets in the air by covering nose and mouth and, for the patient by adopting cough etiquettes. In present study, 61.15% participants responded correctly for coughing and sneezing main route of COVID-19 transmission at individual level. There is need to improve the specific awareness regarding mode of transmission among the students.

Social distancing is core strategy during this lockdown period. Important advice for general public by World Health Organization is to maintain the social distance at least three feet and so everybody should be aware of and follow it sincerely.[6,9] About three fourth (74.82%) of the participants believed that most essential preventive measures can be taken by general public is social distancing. However it is equally important to understand that everybody is involved in general public and it is the responsibility of each and every person to maintain the said social distance as a preventive measure. Students were observed to be not sure about personal level responsibility of social distancing and hence only 58.27% students could mark it correctly.

Less than half of the students (47%) were aware about the particular time needed to hand rub by the alcohol based sanitizer i.e. 20 seconds. Though very few students (11%) had chosen safer time i.e. 30 or >30 seconds for hand rub, still near about half of the students were unaware of it and might be practicing unsafe hand hygiene. Such unsafe practices may increase the chances of getting corona virus infection to an individual and community further. No specific vaccine is available for the COVID-19 infection till date. Most of the students were unaware the exact status of vaccine availability, so basic knowledge about COVID-19 disease needs to improve among students.

Various types of information are accessible on social media. However, not all students were accessing this information. Students have common tendency of following academic instructions sincerely. This may be the reason that, few students remain ignored from some of the facts published or shared through social media. In such situation, institution can plan the online session for these students to increase the particular knowledge.

Most of the students responded that, they were maintaining the social distancing. However, first of all one should know the standard or required distance to be maintained to avoid the catch of corona virus infection. As per the guidelines, minimum 3 feet social distance is to be maintained for prevention of corona virus infection.[10,18,19] More than 3 feet distance is safer, but less than 3 feet distance promotes the transmission of corona virus infection from person to person. In our study, 52(37.41%) were observed to be unaware of minimum social distance to be maintained in the society.

Hand hygiene and use of mask plays vital role in preventing of getting infection. As per WHO, wearing of mask is compulsory for the COVID-19 positive patient to control the diseases spread.[20] But it is equally important to protect our self from getting infection. One of the measures for it is wearing the mask by healthy or apparently healthy individual to cover nose and mouth.[21] In the present study only half of the participants were sincerely using mask every time for outdoor activity and about one third (32.4%) were trying to keep up

this practice by following it most of the time. But other students were taking it casually by allowing themselves going outside without covering their nose and mouth. This practice may be harmful for the individual and so for the community. However, students were following safe practice of mask disposal.

WHO recommended frequent hand washing not only at the home but also in outdoor settings.[22] However, about two-third of studied participants were following the practice of hand hygiene at home sincerely. Some of the students moved out during this lockdown and reason for outing was very rational i.e. for obtaining daily needs.

Conclusion: During this pandemic of COVID-19, it is important to follow some of the practices sincerely and always rather than missing any time. Students are needed to be aware of standard guidelines along with motivate the participants for adoption of safe practices. Our team has shared the important health awareness information which is published by WHO as an 'Advice for Public' among the students of Allied Health sciences.

Research in this area is observed very rare during literature search. It is recommended that, such survey can be conducted among the students of various institutions to assess the awareness and shortfall in practices adopted by them for prevention of COVID-19. So that gap in the knowledge, understanding and practices can be recognised and corrected further through academic learning session. Nowadays, teaching institutions are closed, still online academic teaching is going on. So, we can grab this opportunity to raise the awareness level among the students through dedicated online awareness program.

Ethical Clearance: Done

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Text To Audio Conversion And Automation For Blind Person Using Raspberry Pi

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Abstract- *Human communication is based on Speech and text. To access text, a person needs to have vision. However those who have poor vision can gather information from voice.The system helps visually impaired person to hear the text. Also it is very difficult for blind people to operate electrical devices this paper offers Google Home's voice recognition with the conception of machine-learning to prove the feasibility analysis about fulfilling the users' needs by a smart home. The idea involves two methods optical character recognition and text to speech conversion. This is a prototype for blind people to recognize the products in real world by extracting the text on image and converting it into speech. The method is carried out by using Raspberry pi and portability is achieved by using a battery backup. Thus theuser can carry the device anywhere and able to use at any time.*

Keywords- Optical character recognition, Text to speech conversion, Raspberry Pi, Raspbian OS.

I. INTRODUCTION

In humans day to day life speech plays an important role to explain one's thoughts. One of the most significant difficulties for a visually impaired person is to read. Recent developments in mobile phones, computers, and availability of digital cameras make it feasible to assist the blind person by developing camera based applications that combine computer vision tools with other existing beneficial products such as Optical Character Recognition (OCR) system. In this system text recognition is done by Open Computer Vision (Open CV), a library of functions used for implementing image processing techniques. The binary image is converted to text by Tesseract library in OCR. In this system the conversion of text to voice output is by e-Speak algorithm. The e-Speak is a Text- To-Speech (TTS) system which converts text into speech. This paper aims to build an efficient camera based assistive text reading device This is carried out by using Raspberry pi where the portability is the main aim, which is achieved by providing a battery backup. Along with this paper consist of voice based home appliances control system for blind people.

II. RELATED WORK

There are a lot of devices which assist the visually challenged for navigation indoor and outdoor. A couple of them are [1]autonomous walking stick helps visually impaired person to hear the text in which text file converted into audio signal using MTLABB16.This system is cost effective and user compatible without use of internet connectivity. System Consume more power to operate. [2] Serves an electronic long cane for blind person. This system was designed using haptic sensors that are used to detect obstacles above the waistline. But this system can detect obstacles only above the waistline. Late years have seen various text to speech conversion system for visually impaired people.[3] system is developed to help visually impaired person to hear the text.An optical character recognition technology is used. An algorithm development is done with the help of MATLAB16 software. Product label reading and speech conversion system is developed for blind person. Which serves a productive and efficient motion based technique for defining a region of interest (ROI) in the video by shaking the object in the image. Gaussian based background subtraction method is used for extracting region of movement of an object. Optical character recognition technique is used for recognizing text character. Augmented reality based multimodal system is developed which used (OCR) and text to speech technology used.

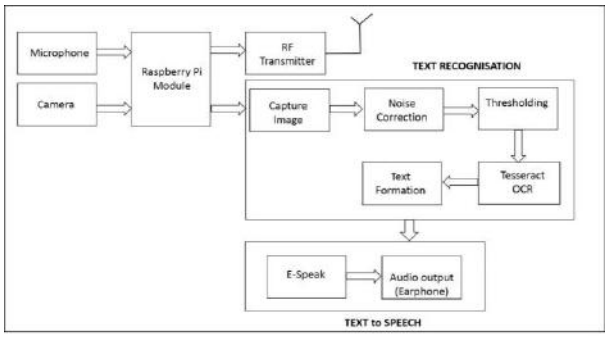
III. SYSTEM ARCHITECTURE

The system helps blind person in reading the text present on the text labels, printed notes and products as a camera based assistive text reader. The system has two different modes the text modes and automation mode.

Text mode and automation mode

Text mode involves the text recognition and text to speech conversion process. In the beginning Image is captured with the help of raspberry pi camera. Captured image is loaded to the tesseract OCR so as to perform text recognition. Output of the Tesseract OCR will be text file which is the input of the e-Speak.Captured image is converted into gray scale image .every character from the image is then extracted and feed to

the OCR engine to obtained the complete text present in the image. In the next step extracted text is converted into speech using speech synthesizer named as TTS engine.



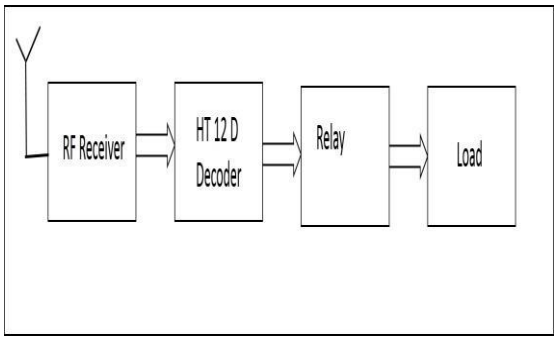


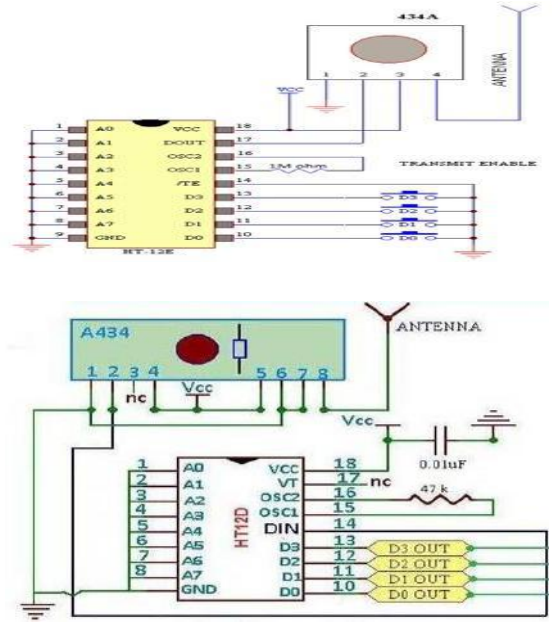
Fig.1: System Architecture

Text to speech conversion is performed using E-speak software. An analog signal produced by the e-Speak is then given to ahead phone to get the audio output signal. System uses OCR and TSS methods along with raspberry pi as operating system for text to speech conversion as basic tools.In the automation mode by providing voice command to the device person can easily control the home socket. With the help of microphone blind person give command to the module in the form of audio signals. These audio signal processed in the raspberry pi module at receiver side using RF transmitter. RF receiver decoded the signals with the help of HT 12 D decoder and transfer the signal to the relay. Using verbal command device ON/OFF is carried out.

IV. PROJECT IMPLEMENTATION

Our system involves of image capturing, text extraction and text to speech conversion. We can easily operate this system using pc or mobile for using with mobile we have to use VNC viewer app An image is taken with the help of camera. Captured imager is fed to the raspberry pi module where text extraction is done with help of OCR engines. Tesseract OCR engine is used which helps to extract the recognized text.The extracted text is then firstly converted into speech with the support of speech synthesizer named as TTS engine.

TTS engine having the ability to convert text into speech using predefined libraries. E-speak software is used for carried out the text to speech conversion process. Person can get the speech signals using earphones.



Block diagram for home automation

In the automation block blind people gives the voice command. Audio signals are processed in to the raspberry pi module Using RF transmitter signal are send to the receiver side where RF receiver received the signal decode them using HT 12 decoder IC. Decoded signal is then fed to the relay. Using relay the particular device get ON/OFF with the help of voice command.

V. APPLICATION

Visually impaired person can easily access the text reading service. Provide a platform for blind person to do their daily task more easily like controlling the switches of home with voice command.The device is compact and helpful to the society. This system is an economical as well as efficient device for the visually impaired people.Visually impaired person can easily access the text reading service.It is useful in both the places official as well as domestic.

VI. RESULT

For text to speech conversion and Automation mode

When the person gives the command CAPTURE, camera will capture the image with the help of USB web camera System can compare the captured image character with stored database in OCR algorithm. Tesseract OCR algorithm extract the character from image.Then the

recognized character converted into audio using TTS tool that is PY TT SX algorithm .this algorithm is used for speech conversion. This extracted feature compared with stored database with PY audio speech recognition algorithm and gives the voice output through speaker. Person can control the home appliances like fan, lights with the help of voice command. For that the separate circuit is used.

Fig. setup for text to speech conversion an automation mode

A person gives light ON command through microphone that audio signals passed to the RF transmitter. RF transmitter encode the signal using HT 12 encode IC and supply to the RF receiver where audio signals get decoded using HT 12decoder IC that signal then fed to relay and light gets ON.Vice versa using the light OFF command light gets OFF.

VII. CONCLUSION

We have made the system text reading and automation for blind person using raspberry pi system is more suitable to use for visually impaired person. Image is captured using raspberry pi camera and text extraction is done using OCR tesseract engine and text to audio signal is done using TTS from e-speak software. The home devices can be easily process ON/OFF function using voice command. With the help of microphones audio signal applied to the module using relay the home control operation is possible.

VIII. FUTURE SCOPE

Travel aid project can be implemented using this system to assist visually impaired people in the unknown and known area as well as indoor and outdoor zone.In future we can generate text to speech conversion for different languages. Can be developed in android app.

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Design and Performance Evaluation of 32-bit Floating Point Multiplier Using Vedic Multiplier

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Abstract:- **Floating point multiplication is a common operation in advance Digital Signal Processing (DSP) applications. This paper explains a 32-bit binary Floating Point Multiplier (FPM) architecture using an Vedic multiplier. The proposed multiplier generates only the needed MSB bits of the product mantissa by making use of Divide and Conquer (D&C) algorithm with a modified Full Adder (FA) to increase the speed of multiplication. The pipeline architecture is also proposed to improve the performance of the multiplication in terms of reduced delay and power. The proposed FPM is compared with booth recoding based FPM and the various performance measures such as area, power and delay are analyzed.**

Keywords:- **Vedic Mathematics, Urdhva-triyakbhyam sutra, Floating Point multiplier.**

I. INTRODUCTION

Multipliers are key components of many high performance systems such as microprocessors, FIR filters, digital signal processors, etc. Performance of a system is generally determined by the performance of the multiplier because the multiplier is generally the slowest element in the system. Since multiplication dominates the execution time of most DSP application so there is need of high speed multiplier. Furthermore, it is generally the most area consuming. Hence, optimizing the area and speed of the multiplier is a major design issue. However, speed and area are usually conflicting constraints so that improving speed results mostly in larger areas. As a result, a whole spectrum of multipliers with different area-speed constraints has been designed with fully serial multipliers at one end of the spectrum and fully parallel Multipliers at the other end. These multipliers have moderate performance in both speed and area.

Binary floating point numbers multiplication is one of the basic functions used in digital signal processing (DSP) application. The IEEE 754 standard provides the format for representation of Binary Floating point numbers in computers. The Binary Floating point numbers are represented in Single and Double formats. The Single precision format consists of 32 bits and the Double precision format consists of 64 bits.
The formats are composed of 3 fields; Sign, Exponent and Mantissa. A typical central processing unit devotes a considerable amount of processing time in implementing arithmetic operations, particularly multiplication operation. Most high performance DSP systems rely on hardware multiplication to achieve high data throughput. Multiplication is an important fundamental arithmetic operation. Performance constraints can also be addressed by applying alternative technologies. A change at the level of design implementation by the insertion of a new technology can often make viable an existing marginal algorithm or architecture.

This project deals with the “Design of high speed floating point multiplier using ancient technique”. In this project Vedic Multiplication Technique is used to implement IEEE 754 Floating point multiplier. For calculation of mantissa unit The Vedic sutra is used. A change at the implementations level of design by the insertion of a new technology can often make viable an existing marginal algorithm or architecture. Performance constraints can also be addressed by applying alternative technologies.

II. LITERATURE REVIEW

According to Aniruddha Kanhe [1] Vedic Multiplication Technique is used to implement IEEE 754 Floating point multiplier. The Urdhva-triyakbhyam sutra is used for the multiplication of Mantissa bit. The inputs to the multiplier are provided in IEEE standard 754, 32 bit format. The floating point multiplier is implemented in VHDL and Virtex-5 FPGA is used. Multiplication of two floating point numbers represented in IEEE 754 format is done by multiplying the normalized 24 bit mantissa, adding the 8 bit exponent and resultant is converted in excess 127 bit format, for the sign calculation the input sign bits are XORed. In this paper, propose algorithm is the Vedic Multiplication algorithm for multiplication of 24 bit. The performance of Mantissa calculation Unit dominates overall performance of the Floating Point Multiplier. The Exponent Calculation Unit is implemented in this paper using 8 BIT Ripple Carry Adder consume more delay.

According to Honey Durga Tiwari [2] a Vedic multiplier and square architecture is proposed based on algorithm of ancient Indian Vedic Mathematics, for high speed and low power applications. This Paper shows how the computational complexity is reduced in the case of Vedic multipliers as compared to the conventional multipliers. The Vedic multiplication formulae, Urdhva tiryakbhyam and Nikhilam, have been investigated in detail. Due to its structure, it suffers from a high carry propagation delay in case of multiplication of large numbers. This problem has been solved by introducing Nikhilam Sutra which reduces the multiplication of two large numbers to the multiplication of two small numbers. The FPGA implementation result shows that the delay and the area required in proposed design is far less than the conventional booth and array multiplier designs making them efficient for the use in various DSP applications.

Jain, Jenil, and Rahul Agrawal et al. [3] this paper presents design of high speed floating point unit using reversible logic. In recent nanotechnology, Programmable reversible logic design is trending as a prospective logic design style for implementation and quantum computing with low impact on

circuit heat generation. There are various reversible implementations of logical and arithmetic units have been proposed in the existing research, but very few reversible floating-point designs has been designed. Floating-point operations are used very frequently in nearly all computing disciplines. The analysis of proposed reversible circuit can be done in terms of quantum cost, garbage outputs, constant inputs, power consumption, speed and area.

Gopal, Lenin, Mohd Mahayadin et al. [4] in the paper, eight arithmetic and four logical operations has been presented. In the proposed design 1, Peres Full Adder Gate (PFAG) is used in reversible ALU design and HNG gate is used as an adder logic circuit in the proposed ALU design 2. Both proposed designs are analyzed and compared in terms of number of gates count, garbage output, quantum cost and propagation delay. The simulation results show that the proposed reversible ALU design 2 outperforms the proposed reversible ALU design 1 and conventional ALU design.

Nachtigal, Michael, Himanshu Thapliyal et al. [5] In this work, a new reversible design of single precision floating point multiplier has been proposed based on operand decomposition approach. Furthermore, a new reversible design of the 8x8 bit Wallace tree multiplier has proposed that is optimized in terms of quantum cost, delay, and number of garbage outputs. Wallace tree multiplication consists of three conceptual stages: Partial product generation, partial product compression using 4:2 compressors, full adders, and half adders, and then the final addition stage to generate the product. In this work we perform optimization at each of these three stages.

Dhanabal, R., Sarat Kumar Sahoo et al. [6] presents a design using reversible gates. Reversible gates namely TSG gate performs 1-bit addition with carry. This is the first reversible gate which alone can acts as full adder. Gate is used to perform logical operations like AND, OR. In this works, designing 1-bit alum has also been presented using pass transistor with virtuoso tool of cadence. Based on analysis of the result, this design using reversible gates is better than that using the irreversible gates.

III. PROPOSED METHOD

A. Floating point multiplication algorithm

The multiplier for the floating point numbers represented in IEEE 754 format can be divided in four different units: Exponent Calculation Unit Mantissa Calculation Unit, Sign Calculation Unit, Control Unit.

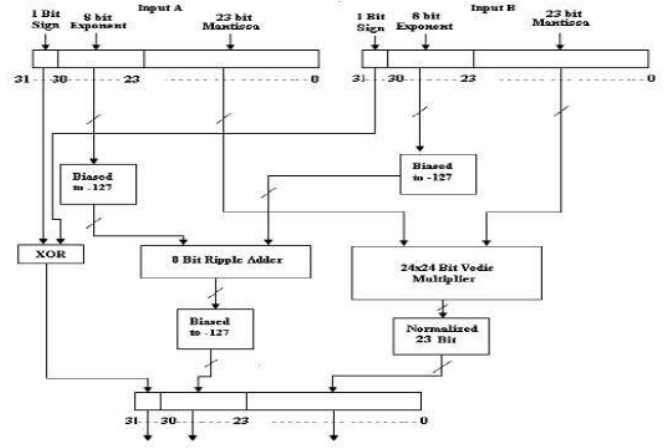

Fig.1. Architecture for Floating point multiplier.

1. Multiplying the significand; i.e. (1.M1*1.M2)
2. Placing the decimal point in the result
3. Adding the exponents; i.e. (E1 + E2 – Bias)
4. Obtaining the sign; i.e. s1 xor s2
5. Normalizing the result; i.e. obtaining 1 at the MSB of the results' significand
6. Rounding the result to fit in the available bits.
7. Checking for underflow/overflow occurrence.

B. URDHVA-TIRYAKBYHAM SUTRA

The multiplier is based on an algorithm Urdhva Tiryakbhyam (Vertical & Crosswise) of ancient Indian Vedic Mathematics. Urdhva Tiryakbhyam Sutra is a multiplication formula which is applicable to all cases of multiplication. It literally means "Vertically and crosswise". It is based on a concept through which the generation of all partial products can be done with the concurrent addition of these partial products. The generation of partial products and their summation is obtained using Urdhava Triyakbhyam explained in fig 2 since the pat1ial products and their sums are calculated in parallel, the multiplier is independent of the clock frequency of the processor. Thus the multiplier is independent of the clock frequency because it will require the same amount of time to calculate the product. The main advantage is that it reduces the need of microprocessors to operate at increasingly high clock frequencies. While a increased in processing power is due to higher clock frequency. generally results in its disadvantage is that it also increases power dissipation which results in higher device operating temperatures. By adopting the Vedic multiplier, microprocessors designers can easily handle these problems to avoid catastrophic device.

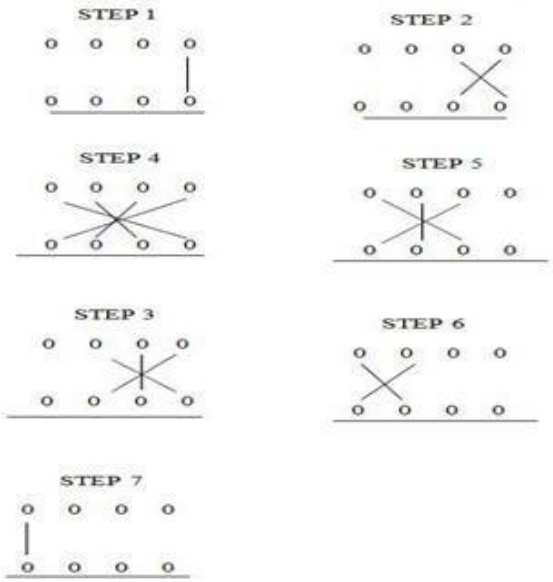

Fig.2. Line diagram of the multiplication.

The performance of Mantissa calculation Unit dominates overall performance of the Floating Point Multiplier. This unit use unsigned multiplier for multiplication of 24x24 BITs. The ancient Multiplication technique is chosen for the implementation of this unit. The Vedic multiplication system is based on 16 Vedic sutras which describes simple natural ways of solving a whole range of mathematical problems. The Urdhva- triyakbhyam sutra is suitable for this purpose out of these 16 Vedic Sutras. In this method the partial products are generated simultaneously which itself reduces delay and makes this method fast. Consider the numbers A and B where A = p2p1p0 and B = q2q1q0. The LSB of A is multiplied with the LSB of B: s0=p0q0;

Then p0 is multiplied with q1, and q0 is multiplied with p1 and the result are added together as: c1s1=p1q0+p0q1;

Here c1 is carry and s1 is sum. Next step is to add c1 with the multiplication results of p0 with q2, p1 with q1 and p2 with q0.

c2s2=c1+p2q0+p1q1 + p0q2;
Next step is to add c3 with the multiplication results of p1 with q2 and p2 with q1. c3s3=c2+p1q2+p2q1;
Similarly the last step c4s4=c3+p2q2;
Now the final result of multiplication of A and B is c4s4s3s2s1s0.

IV RESULT AND DISCUSSIONS

The proposed 32 bit Floating Point Multiplier has been designed with Modified Vedic Multiplier. The simulation is performed by using Xilinx ISE 13.4 - Virtex 7 device (xc7vx330t-2-ffg1157). Figure 3 shows the simulation results.

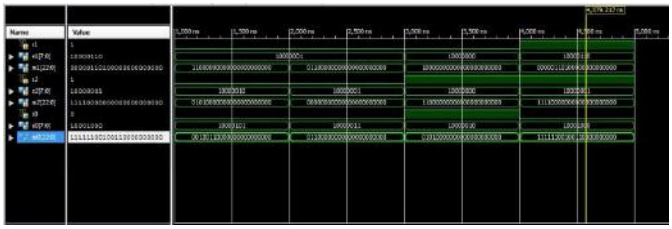

Fig.3. The Synthesis Results on Xilinx ISE 13.4 - Virtex 7 device (xc7vx330t-2-ffg1157)

In Table I simulation result shows that it required 956 slices, 96 IOB and Delay is 17.330ns.

Table I: Simulation Results

Sr. No.	Parameter	FPM – 32 bit (Vedic Multiplier)
1	Number of Slices	956
2	Number of bonded IOBs	96
3	Delay	17.330ns

Table II shows the comparison of proposed FPM with FPM using Booth Multiplier and FPM using Array multiplier with Modified FA in divide & conquer approach. It reduces the delay by 45.65 % and area by 75 % respectively as compare to FPM using Booth Multiplier. It also reduces the delay by 25.19 % and area by 74.49 % respectively as compare to FPM using Array multiplier with Modified FA in divide and conquer approach.

Table II: Comparison

Sr. No	Parameter	FPM using Booth Multiplier [15]	FPM using Array multiplier with Modified FA in divide & conquer approach [16]	Proposed FPM
1	Number of Slices	1759	1278	956
2	Delay (ns)	69.493	69.123	17.330

V. CONCLUSION

This paper presents a Floating Point Multiplier (FPM) architecture using Vedic multiplier. This proposed multiplier was designed URDHVA-TIRYAKBYHAM SUTRA. Implementation of the existing FPM designs and the proposed FPM shows that, the proposed FPM outperforms in terms of reduced area, delay. It reduces the delay by 45.65 % and area by 75 % respectively as compare to FPM using Booth Multiplier. It also reduces the delay by 25.19 % and area by 74.49 % respectively as compare to FPM using Array multiplier with Modified FA in divide and conquer approach. The proposed FPM can be used extensively in high speed DSP applications.

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Women Safety Night Patrolling Robot

Komal Muraskar [1], Devendra Bire [2] Sakshi Dafare [3], Renuka Bhoyar [4], Shital Parate [5]

D. M. Khatri [6]

[1,2] B.E. Students, [3] Assistant Professor Department Of Electronics and Telecommunication,
Rashtrasant Tukdoji Maharaj University, Nagpur, Maharashtra, India

ABSTRACT:

Today in the ongoing universal synopsis the first and foremost questions in every girls mind, considering the ever build up circumstances on women moles ration in present time is mostly about their safety and security. This device is extremely portable and can be triggered by the victim being assaulted by just clicking the button to capture the assailant's image via the Raspberry pi camera. In light of the present situation of the metro cities and other big cities, women security has emerged as one of the most important requirements in our country. In this world of advanced technology and smart electronics it is required to have a simple and cost-effective safety gadget that helps the victims during unforeseen dangers. This paper covers descriptive details about the design and implementation of prototype for an electronic gadget which has the potential to serve as a safety wear in the coming years.

Keywords: Night vision, patrol robot, sound sensor, IOT, security, machine learning, line follower, image processing.

1. INTRODUCTION:

In the existing situation, women keep up with men throughout all walk of life, but at the detriment of being victimized, Harassment, public abusive behavior or even at their own becomes. They cannot return to their homes at any time could not even go to work in peace. There is some kind of the restriction that women are subjected to which not only their sense of freedom but also their belief and expectation are destroyed. This project focuses on women safety in a network that is explicitly built to provide women safety and security. It's quite very clear from the reason mentioned that there is a growing need for women's defense in the country. In today's world, women safety has become a major issue in our country as women can't step out of their house at any time, especially during night. It is primarily due to fear of violence against them or being physically or sexually abused. The fear of harassment against women is not only the condition at outside but it may also happen at homes. The best way to reduce probability of becoming a victim of violent crime (robbery, sexual assault, rape, domestic violence) is to recognize, defense and look up resources to help you out of hazardous situations. If a women is in dilemma or get split from friends during a night out or someone is following with bad intention (sexual assault) or don't know how to find back residence then this device with her will guard her and bring assistance when she needs it by giving her current location and health conditions to her associates and control center through SMS and call. This device not only provides family and police support but also helps in getting medical support as fast as possible.

2. PR0POSED METHODOLOGY:

In this proposed device, Node MCU is equipped with the night vision camera That helps the user to go for automation and helps to find the person or any problem Detected using the sound sensor and automatically goes to that area and captures the Image and sends it to the user using IOT technology according to the sound Generated. The robot has a range of knowledge to protect the greater region. When the barrier does is at the front of the robot it changes its direction to The opposite side of it. The live photos and videos are recorded by the Vision system. Two generators are enough to power the module for robot Movement. Because the number of gears in the motor is small, less power Consumption will be received. This robot will be moving front and backwards with the help of wheels with the use of Dc engine. Dc engine Transforms electrical power into mechanical power. This motor

consists of 60 Torque, this torque helps to move the wheels. Here a 12volt battery is used to supply the power to the MCU-node. Where the MCU node is used to connect to the Wi-Fi. After connecting to the Wi-Fi the captured pictured and will be visible in the Operators mobile. Where the operator can turn the camera 360 degrees to check out The whole street. There is a sound sensor using in the robot. This video and the audio file will Be monitored by the operator who is having with robot.

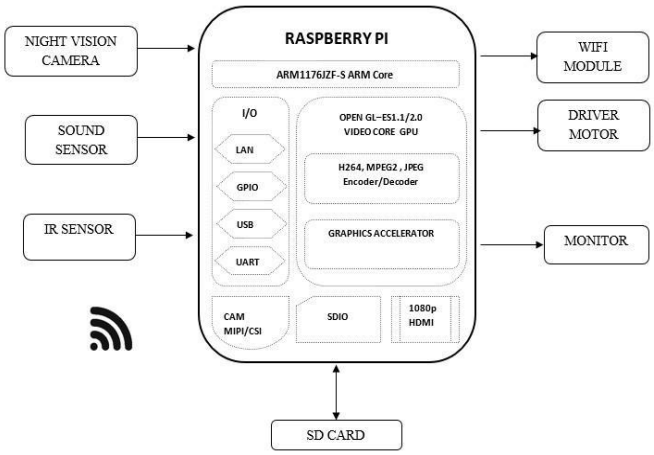


Figure :1 Block Diagram Of Night Vision Patrol Robot

2.1BLOCK DIAGRAM DESCRIPTION:

In this project IR sensor is used to make the robot move automatically following a specific path. Sound sensor is used to know the sound in the particular area.

IOT is used to send the capture image to the person.

Raspberry Pi - Low-cost credit-card-sized machine that connects into a computer display or television, and uses a keyboard and mouse. It is an accomplished little device that enables populace of all ages to walk around computing and to study how to program in Scratch and Python languages

Night Vision HD Camera - Infrared night vision combines infrared enlightenment of spectral range between 700 to 1,000 nm with HD cameras perceptive to this light. The result, which is apparently dim to a human viewer, appears as a monochrome figure on a usual display tool.

Sound Sensor - Used to notice the sound, this sensor is used to notice the intensity of sound. IR Sensor - Specific light sensor to find a light wavelength in the Infra-Red range.

DC Motor (Robot module) - Designed to change the electrical present into power that will force the workings to a robot by apply a firm degree of torque to the motor beam. Raspbian Jessie - Operating system and Raspbian is extremely optimized for the Raspberry Pi lines low recital ARM central processing unit.

3 HARDWARE REQUIREMENTS

- Raspberry Pi
- Night Vision Camera
- DC Motor (Robot module)
- Monitor
- Ultrasonic sensor

SOFTWARE REQUIREMENTS

- Python
- HTML

4 HARDWARE COMPONENTS USED:

Raspberry pi

The micro SD card us used for installing OS and the complete project will be done with python coding. Raspberry Pi is a small single-board Computer developed in UK by Raspberry Pi foundation to promote the teaching of computer science in schools and in developing countries.

]

Night Vision Camera

The raspberry pi camera board contains a 5 M Pixel sensor, and connects via a ribbon cable to the CSI connector on the Raspberry pi. In rasppbian can be enabled by the installing or upgrading to the latest version of the so and then Raspi-config and selecting the camera option.

Ultrasonic sensor

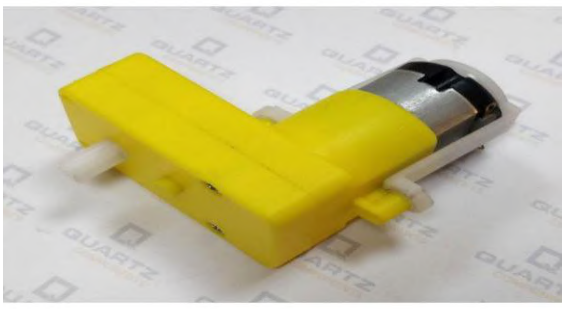
This sensor is a high performance ultrasonic range finder. It is compact and measures an amazingly wide range from 2cm to 4m.

5v Adapter power supply

Raspberry pi power source to turn it on. 5v adaptor power supply is enough to power up.

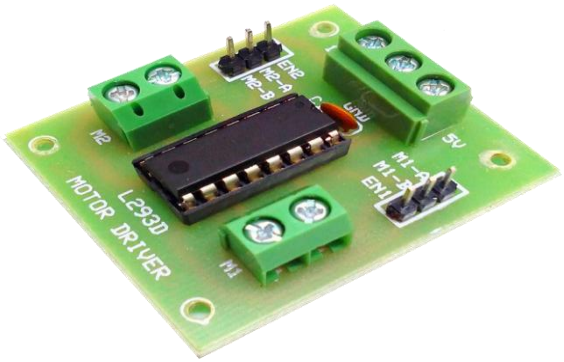
DC motor

Almost every mechanical movement that we see around us is accomplished by an electric motor. Electric machines are means of converting conventional energy. Motor take electrical energy and produce mechanical energy.



L293D Motor Driver IC

A very easy and safe is to use popular L293D chip. It is a 16-pin chip. he L293D is designed to provide bidirectional drive currents of upto600-ma at voltage from 4.5v to 36v.



5. SOFTWARE USED:

In this system python software is used to program the microcontroller. The python programming is similar to C programming.

PYTHON:

Python is a high-level, interpreted, interactive and Object-oriented scripting language. Python is designed tube highly readable. It uses English keywords frequently where as other languages use punctuation, and it has fewer syntactical constructions than other languages.

Python is interpreted: Python is processed at Runtime by the interpreter. You do not need to compile your program before executing it. This is similar to PERL and PHP.

Python is Interactive: You can actually sit at a Python prompt and interact with the interpreter directly to write your programs.

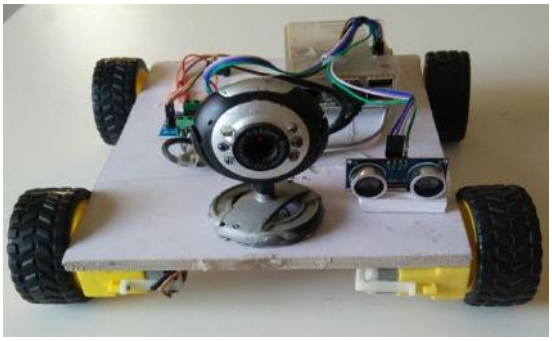
Python is Object-Oriented: Python supports Object-Oriented style or technique of programming that encapsulates code within objects.

Python is a Beginner's Language: Python is a great language for the beginner-level programmers and supports the development of a wide range of applications from simple text processing to WWW Browsers to games

6 RESULT

The proposed design will deal with critical issues faced by women during night and provide security with advanced technology. While the society may or may not change its mind set but this device will help to feel women independent.

IR Sensor reading	Accepted
Webcam Video display	Accepted
Move Forward	Accepted
Move Reverse	Accepted
Turn Left	Accepted
Turn Right	Accepted
Stop	Accepted
Ultrasonic sensor	Accepted



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Seismic Behaviour of Multistory Building with And Without Soft Story Effect Using Masonary Strut in ETABS Software

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Abstract— Many low-rise and medium-rise framed buildings have been constructed in the recent past, without proper attention paid in their design for wind or earthquake loads. This serious shortcoming in structural design and detailing has been exposed by failure that has occurred in the recent earthquakes in various parts of the country. Nowadays reinforced cement concrete frames are most common in building construction practices around the globe. The vertical gaps in reinforced cement concrete frames that are created by column & beam are generally filed by brick masonry. If these gaps are not filled by brick masonry, then the structure is known as a bare frame structure. Due to gaps, the bare frame has a very low resistance to lateral forces, which fail structure. Openings are provided in structure for doors, windows, etc. In this work, to provide stiffness to the structure, we provide an infill wall strut of 230 mm thick brick masonry & effective depth under compression calculated by equivalent diagonal strut method. Infill wall act as compression strut between column & beam & forces is transferred from one node to another. Such as a building in which the upper story has a brick-infill wall panel and an open ground story is called a stilt building and an open story is called a stilt floor or soft story. A soft story is also known as the weak story it is the story in which that has less substantial resistance than the above story or below. The G+6 storied residential building with different models is considered. In each case, we provide a bare frame and infill wall at different positions with different types of struts & then studied the behavior of the structure under seismic forces. Based on that, parametric studies on story displacement, story drift, time period shear force, and moments have been carried out using equivalent static analysis & response spectrum analysis to investigate the influence of this parameter on the behavior of buildings with soft story.

Keywords— Story Drift, Story Displacement, Time Period, Response Spectrum Analysis, Soft Store

I. INTRODUCTION

Earthquakes are the most destructive and life threatening phenomenon of all the times. Earthquakes are caused due to the large release of strain energy during a brittle rupture of rock. The force generated by seismic action of earthquake is different than other sorts of loads, such as, gravity and wind loads. It strikes the weakest location in the whole 3D building. The purpose of seismic resistant building is to provide comfort and safety which is done because of control on internal forces. Commonly, to protect structure damping has done i.e., to reduce the whole seismic energy by structural members which provides the capacity to resist against earthquake. An earthquake is the result of a rapid release of strain energy stored in the earth's crust that generates seismic waves. Structures are susceptible to earthquake ground motion and damage the structures. In order to take precaution for the damage of structures due to the ground motion, it is important to know the characteristics of the ground motion. The most important dynamic characteristics of earthquake are peak ground acceleration (PGA), frequency content, and duration. These characteristics play predominant rule in studying the behaviour of structures under the earthquake ground motion. Earthquakes produce almost instantaneous response leading to destruction of buildings and wind forces are also detrimental to structures if they are not designed for it. The effect of earthquake forces and wind forces goes on increasing with the height of the building and governing factor for design also depends on various factors from location of the building to the geometry of the building and also soil conditions. The key problem is to scale back the structural response by decreasing the dissipation of input energy due to earthquake.

A. Soft Story Behaviour

Construction of multi-storey building with open first story is common practice in India. This is unavoidable feature and is generally adopted for parking or reception lobbies. Such as building in which the upper story have brick infill wall panel and open ground story is called as stilt building and open story is called stilt floor or soft story. A soft story is also known as weak story it is the story in which that has less substantial resistance than above story or below. Stability of earth is usually disturbed due to internal forces and as a results of such disturbance, vibrations or jerks in crust takes place, which is understood as an earthquake. Earthquake produces low and high seismic waves which vibrate the base of structure in various manners and directions, so that lateral force is developed on structure. In such buildings, the stiffness of the lateral load resisting systems at those stories is quite but the stories above or below.

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Figure 1: Soft Story for Parking Floor

II. Objectives Of Study

The primary objectives of this plan can be shortening as follows:

1) To observe seismic analysis using equivalent static analysis method & dynamic analysis using response spectrum method in ETABS.
2) To study the different seismic parameters like story displacement, story drift, center of mass.
3) To find the optimum result of with and without infill wall having soft story effect in RC structure during earthquake.

III. Method Of Analysis used

A. Equivalent Static Analysis.

It is one among the methods for calculating the seismic loads. The high rise structures are not considered for the planning simple static method. In practical because it doesn't take into account all the factors that are the importance of the foundation condition. The equivalent static analysis is used to design only for the small structures. During this method only one mode is taken under consideration considered for each direction. The earthquake resistant designing for the low rise structures the equivalent static method is enough. Tall structures are needed quite two modes and mass weight of every story to design earthquake resistant loads. This is permitted in most codes of practice for normal, low-to medium-rise buildings.

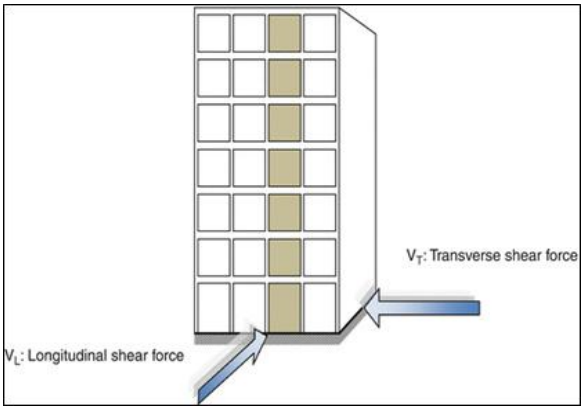


Figure 2: Base Shear along Longitudinal and Transverse Direction

B. Response Spectrum Method

The representation of the maximum response of idealized single degree freedom system having certain period and damping, during earthquake ground motions. The maximum response plotted against of un-damped natural period and for various damping values and can be expressed in terms of maximum absolute acceleration, maximum relative velocity or maximum relative displacement. For this purpose response spectrum case of study are performed consistent with IS 1893.

The response "design acceleration spectrum" which refers to the max acceleration called spectral acceleration coefficient Sa/g, as a function of the structure for a specified damping ratio for earthquake excitation at the base for a single degree freedom system. The revised IS 1893-2016 uses the dynamic analysis by response spectrum. During this method takes under consideration all the five important engineering properties of the structures.

1) The elemental natural period of vibration of the building.
2) The damping properties of the structure.
3) Sort of foundation provided for the building.
4) Importance factor of the building.
5) The ductility of the structure represented by response reduction factor.

C. Modelling and Analysis

In the present study, the buildings are modelled by using the software ETABS and different infill wall locations are used for improving seismic performance of the building. Walls are modelled by equivalent strut approach and wall load is uniformly distributed over beams. The diagonal length of strut is same as the brick wall diagonal length with the same thickness of strut as brick wall, only depth of strut is derived. Walls are considered to be pinned connected to the columns and beams. The Span Length in longitudinal direction is 15 m and in transverse direction 9 m .The c/c distance between floor to floor is 3m and soft story height is 3m. Different loads such as dead load, live load, roof live

load, wall load, and earthquake load is applied on building at appropriate location as per codes used for Loading. This model are analyzed by using equivalent static analysis and response spectrum analysis. Design is completed firstly by Indian Codes (i.e. IS 456-2000, IS 1893-2016).

The multi-story building are modelled in five different configurations are as follows-

Model 1: Model with bare frame.
Model 2: Model with in-filled frame single strut approach from 1st story.
Model 3: Model with in-filled frame single strut approach with soft story effect.
Model 4: Model with in-filled frame double strut approach from 1st story.
Model 5: Model with in-filled frame double cross strut approached with soft story effect.

D. Building Prameters Considered in this Work

Structure	SRMF (R=5)
Floors	G + 6
Ground storey height	3 m
Typical storey height	3 m
Height of building	21 m
Length of building	15 m
Width of building	9 m
Tx	0.487 Sec
Ty	0.630 Sec
Damping	5%
Soil type	Medium (II)
Seismic zone	III
Importance factor	1.2
Live load	3 kN/m^2 (Typical Floor) 1.5 kN/m^2 (Terrace Floor)
Floor finish	1 kN/m^2
Wall load	External wall - 12.74 kN/m Internal wall - 6.371 kN/m Parapet wall - 4.6 kN/m
Size of beam	300 X 450, 300 X 600
Size of column	450 X 450
Size of strut	Width – 230 mm Height – 390 mm
Outer Wall	230 mm
Inner Wall	115 mm
Parapet (1m height)	230 mm

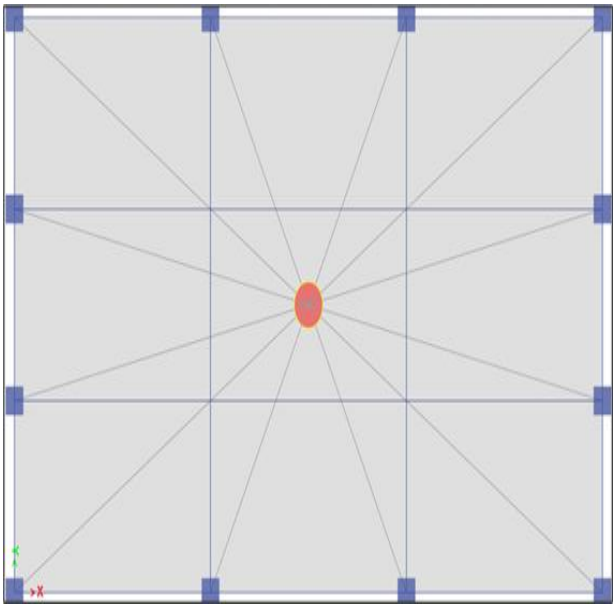
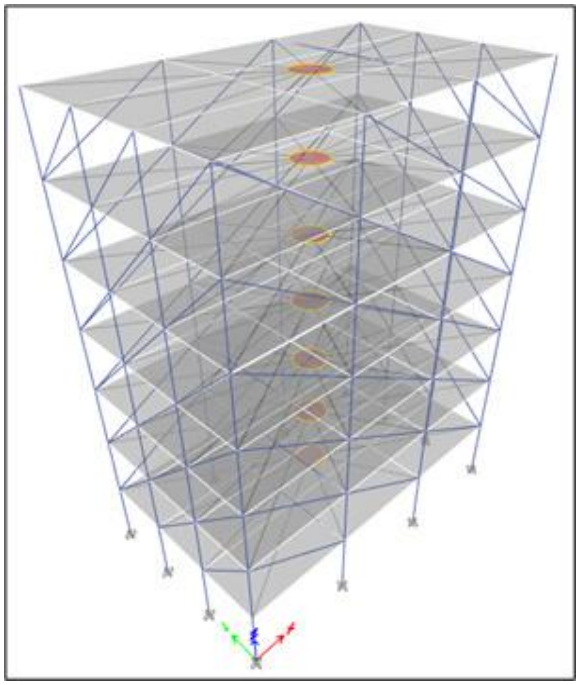
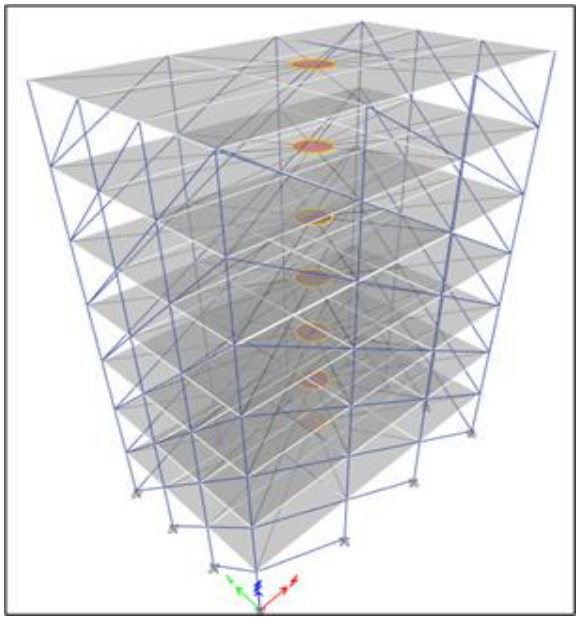


Figure 3: Plan View for All Buildings

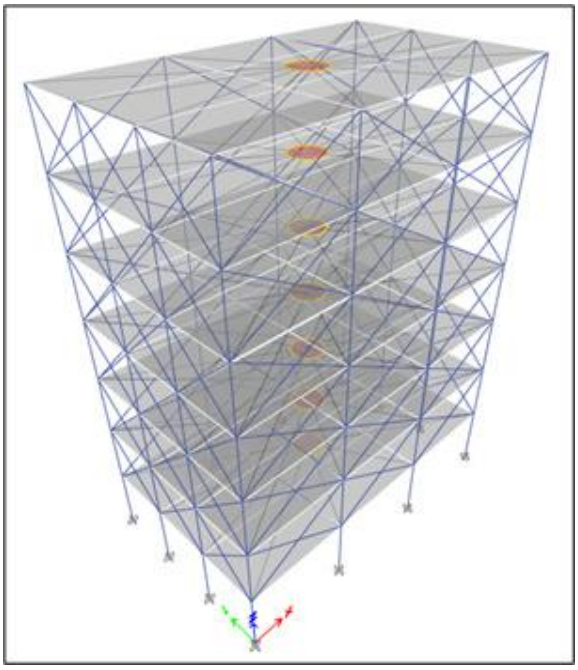
Figures 4: Shows Building With Bare Frame. (Model-1)



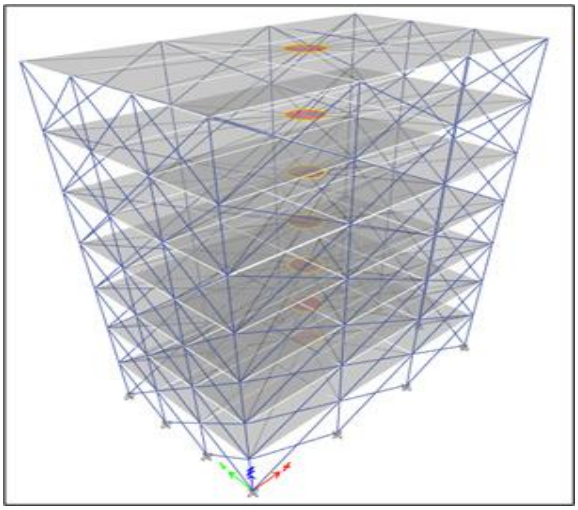
Figures 5: Shows In-Filled Frame Single Strut Approach from 1st Story (Model-2).



Figures 6: Shows In-Filled Frame Single Strut Approach from Soft Story Effect. (Model-3).



Figures 7: Shows In-Filled Frame Double Strut Approach from 1st Story. (Model-4).

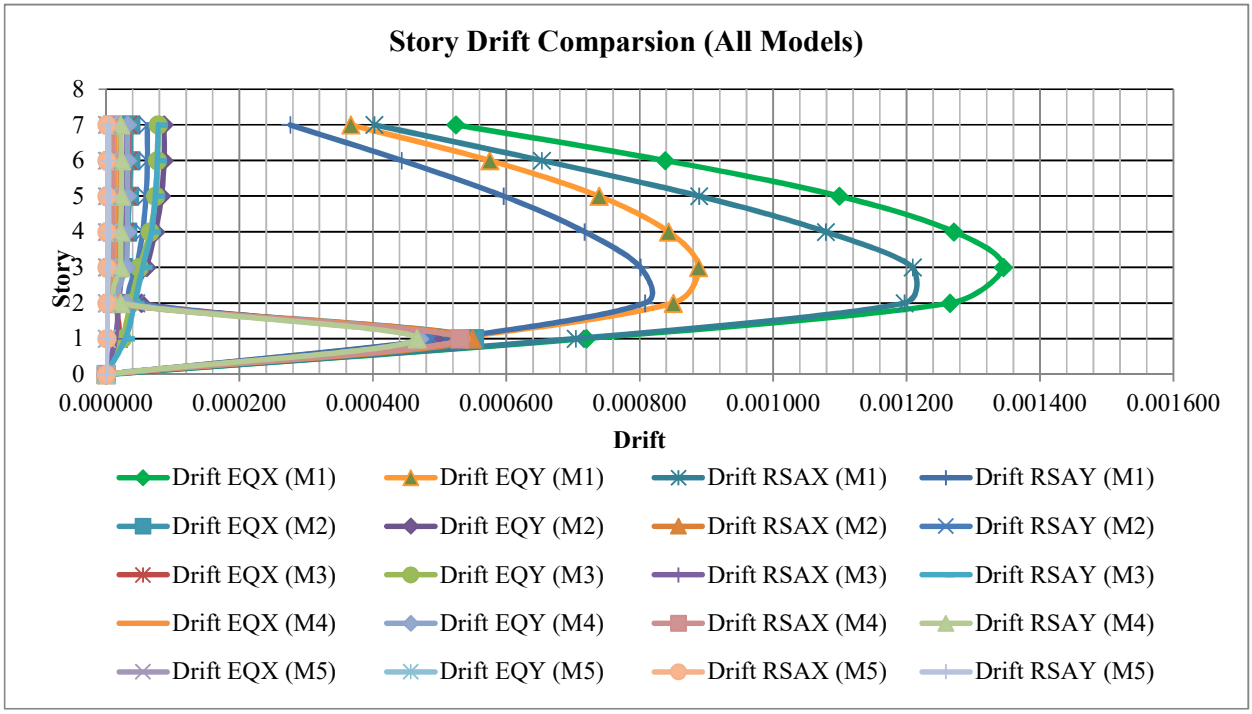


Figures 8: Shows In-Filled Frame Double Strut Approach from Soft Story Effect (Model-5)

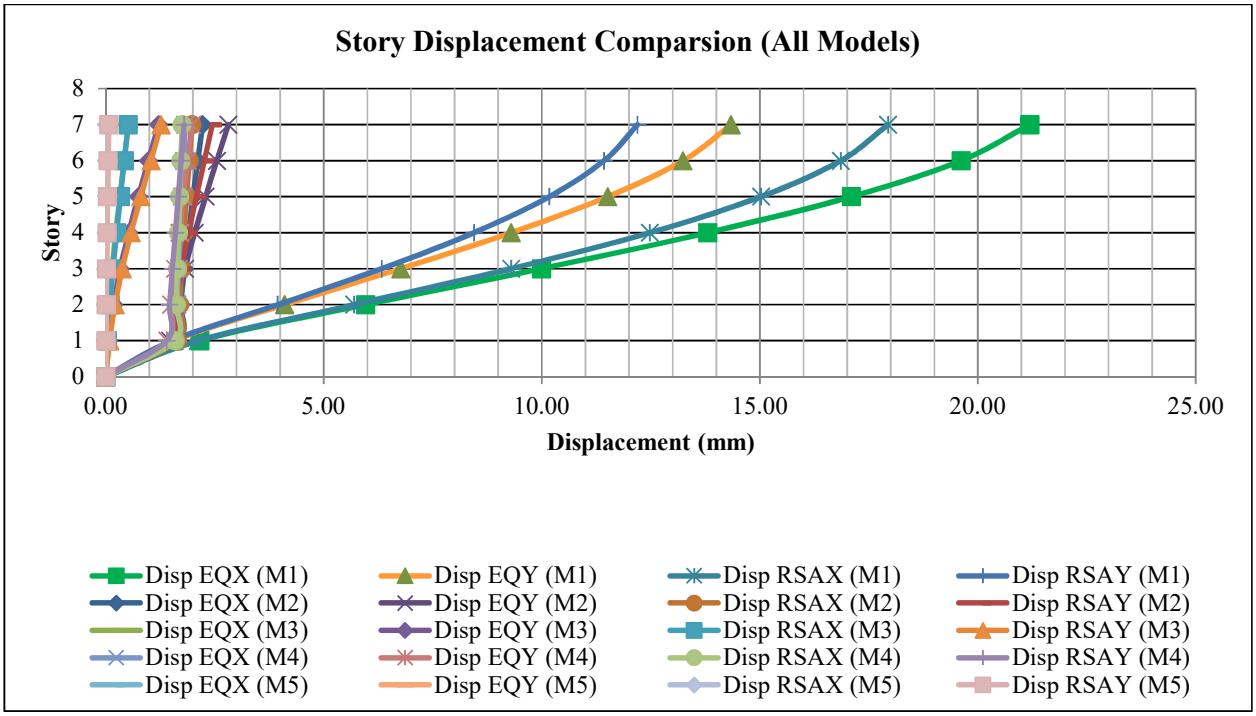
IV. RESULTS AND DISCUSSION

An attempt is made to find the vulnerability location of soft storey by considering the soft storey at the ground levels with and without using struts

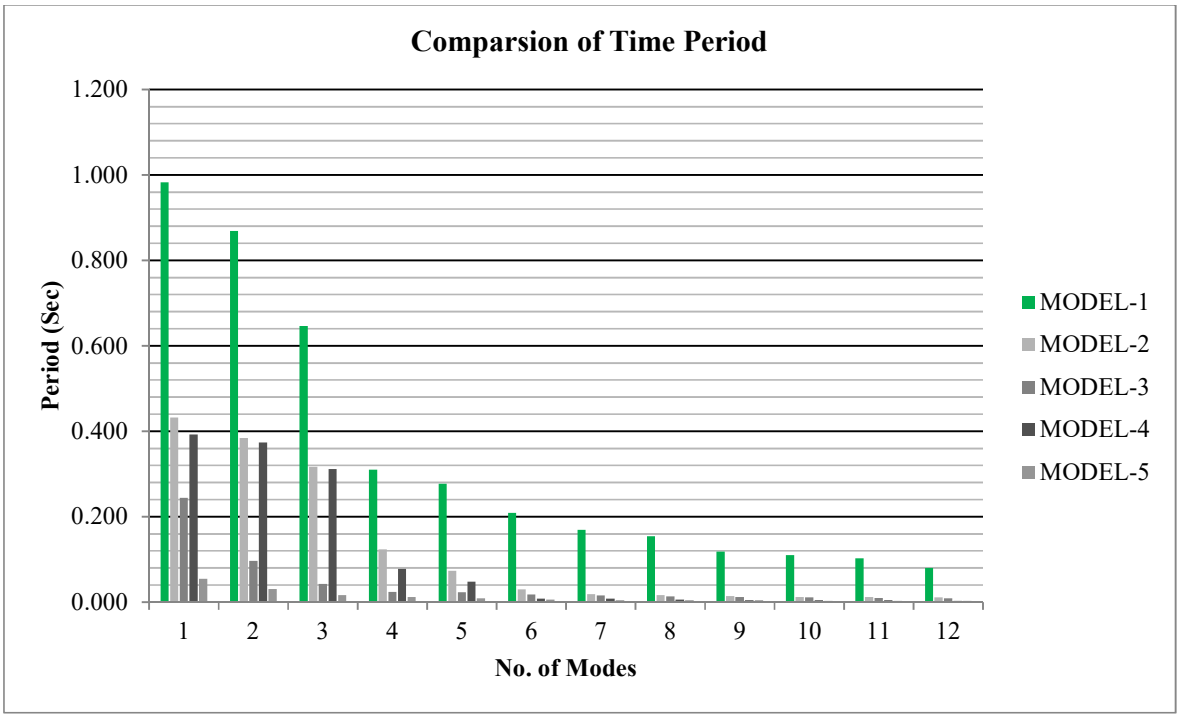
A. Results of Storey Drift



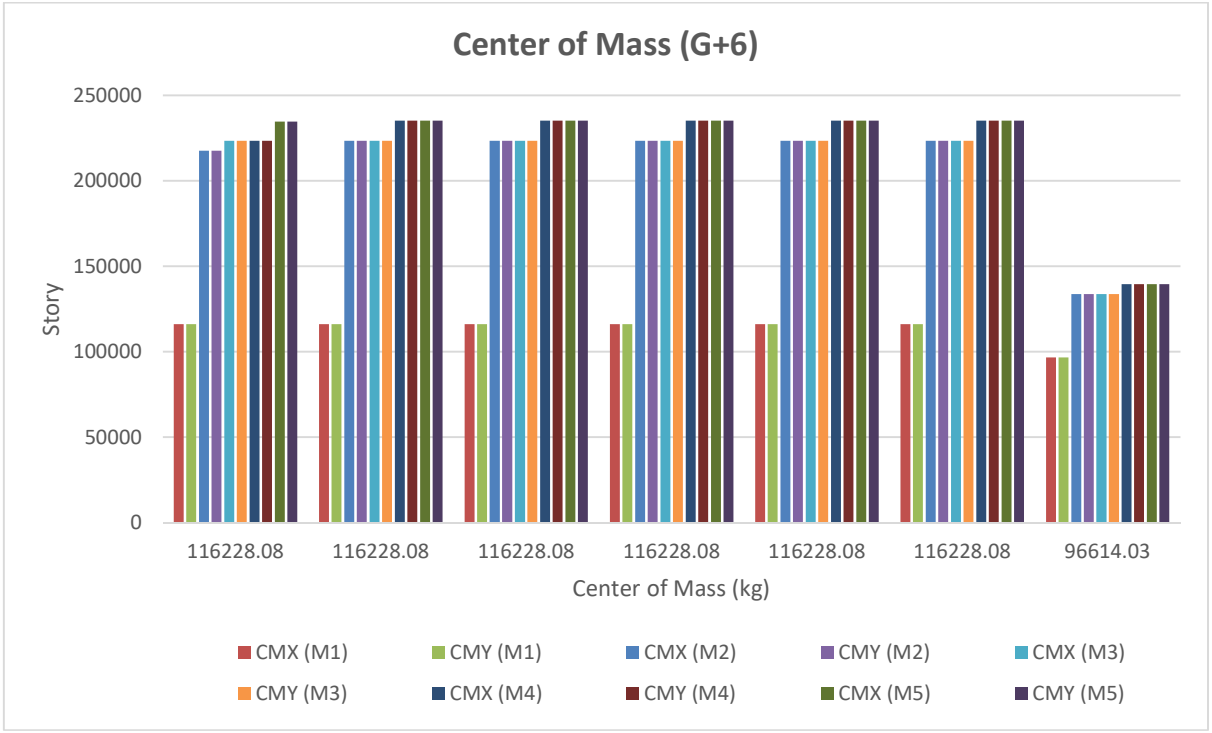
B. Results of Storey Displacement



C. Results for Time Period



D. Results for Center of Mass



V. CONCLUSION

In the present work attempt has been made to compare the seismic analyses of different buildings and following are the conclusions drawn.

- In case of an open first storey frame structure, the storey drift & displacement is very large than the increasing upper storeys, which may cause the collapse of structure during strong earthquake shaking. The necessary measures should take to improve capacities of the columns in the soft first storey.
- Drift and displacement of the structure are more in the case of bare frame. And these can be lowered by making the provision of strut at the level of soft storey.
- From the analysis it is seen that, deflection is more in case of bare frame as compare to that of infill frame, because presence of infill contributes to the stiffness of building. This effect is clear from comparison of all models with Model 1.
- Time duration of the structure is more in bare frame, whereas it reduces in case of strut frame. Fundamental time period decreases when the provisions of different types of strut are considered.
- Stiffness of the soft storey in case of bare frame is less than the upper storey. And it is seen that stiffness of the storey increases by providing the bracings at soft story level.
- Behaviour of square column is better than rectangular column, in terms of storey drift & story displacement. It is also observed that due to double strut used in building column force are reduced drastically.
- Moments & Shear forces in bare frame are always maximum as compare to infill wall & strut in all Models.
- It also concludes from the observation cross (X-type) strut is very effective in case of infill wall building as compare to other type used. It should be considered in soft story at some location in outer periphery to strengthen the column.

VI. FUTURE SCOPE

- To observe the effect of soft storey in a building at different level with different shapes of shear wall throughout the height of the building and also the shear wall at the center of the building.
- Study the effect of soft storey at different level for structure having irregularity in plan.
- Study the effect of soft story and the floating column due to soft story.
- The structure can be analyzed in different soil type and seismic zone and also study in hilley terrain area.

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Experimental Investigation on Effect of Fiber on properties of Concrete

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Abstract **- Concrete is one of the most widely recognized development materials for the most part delivered by utilizing locally accessible ingredients. The present trend in concrete technology is towards increasing the strength and durability of concrete to meet the demands of the modern construction. Plain concrete possesses very low tensile strength, limited ductility, and little resistance to cracking. Internal micro cracks are inherently present in concrete and its poor tensile strength is due to propagation of such micro cracks. Fibre reinforced concrete has the high tensile strength and fire-resistant properties thus reducing the loss of damage during fire accidents. In the present work the strength studies are carried out to compare the steel and glass fibre concrete. The FRC is added 0%, 1.25%, 1.5%, 1.75% & 2% are added for M30 grade concrete. Result shows the percentage increase in compressive strength for 28days. To obtain the maximum compression strength for addition of steel fibres and glass fibre is found to be greater than the convention.**

The main aim of the study is to study the effect of steel fibre and glass fibre in the concrete. The present paper outlines the experimental investigation conducts on the use of steel fibres and glass fibres with structural concrete.

I.INTRODUCTION

Concrete is a composite material containing cement, water, fine aggregate, and coarse aggregate. Concrete is a hard material which is brittle. These concretes are strong in compression, but very weak in tension. To increase the tensile strength of concrete a technique of interaction of fibres in concrete is being used. These fibres act as a crack arrestor and prevent the propagation of cracks. The main reason for adding fibres concrete is to improve post cracking response of concrete. Glass fibre is a recently introduced fibre in making fibre concrete. It has very high tensile strength of 1020 to 4080 Mpa. Concrete has better resistance in compression, while steel has more resistance in tension. Conventional concrete has limited ductility, low impact and abrasion resistance and little resistance to cracking. A good concrete must possess high strength and low permeability. Addition of fibres improve the post peak ductility performance, pre crack tensile strength, toughness, impact resistance, fatigue performance etc. High strength concrete has been improved in mechanical properties. Concrete is used more than any other manmade material in the world Concrete, has relatively high compressive strength, but much lower tensile strength. Concrete has a very low coefficient of thermal expansion and shrinks as it matures. The use of admixtures is mainly to modify the setting and hardening of cement by influencing the rate hydration of cement. Different types of admixtures are there to reduce the water content by reducing the surface tension of water; other admixtures are used to increase the durability of concrete decrease the thermal cracking.

II. METHODOLOGY

The experimental investigation was carried out in five phases. The first phase is to study of various properties of ingredients of concrete such as cement, sand, aggregate etc. the second phase is to design M-30 mix as per IS code method IS 10262:2009) and add 516-1959 code use for steel fibre Addition of different percentage of steel and glass fibres into the mixture of concrete is scheduled, from which optimum percentage of all type of fibres available for experimental investigation was to be found out. The

third phase addition of fibres (steel & glass fibres) in different proportion such as 0%, 1.25%, 1.5%, 1.75% & 2%. The fourth phase preparation of cubes for compressive strength of concrete for different proportion. The fifth phase to analysis the results based on experimental data. Specimens will be computed by conducting compressive strength tests into the laboratory.

1. A mix design of M-30 grade concrete is adopted. Cubes were casted & cured for a period of 7, 14, 28 days. These cubes were tested for compression strength.
2. A total 90 number of cubes were casted by addition of fibres such as steel and glass fibres in different percentage into the concrete by volume, such as 0%, 1.25%, 1.5%, 1.75% and 2%.
3. By adding different percentage of fibres like steel, glass fibres into the concrete, its optimum percentage quality will be obtained.

III. MATH

CEMENT CONTENT

Cement can be calculated by = cement content / water cement ratio

(Adopted w/c Ratio = 0.45)

Cement Content = 186/0.45 = 413 kg/m^{3s}

= 413 kg/m^3 > 340 kg/m^3 hence ok.

Volume of coarse aggregate and fine aggregate content

From Table 3 of (IS 10262:2009) volume of coarse aggregate corresponding to 20 mm size aggregate and fine aggregate (Zone I) for water-cement ratio of 0.50 =0.60.

Volume of coarse aggregate = 0.60

Fine aggregate = 1-0.60

= 0.4

IV. UNITS

a) Volume of concrete = 1 m^3

b) Volume of cement = [Mass of cement] / {[Specific Gravity of Cement] x 1000}

= 400/ {3.15 x 1000}

= 0.126m^3

c) Volume of water = [Mass of water] / {[Specific Gravity of water] x 1000}

= 186/ {1 x 1000}

= 0.186m^3

d) Volume of all in aggregate = [a - (b + c)] G

V. HELPFUL HINTS

Keywords:

- Water
- Cemet
- Sand
- Glass fier
- Steel fiber
- Coarse and Fine aggregate

EXPERIMETAL ANALYSIS

Table 1. compressive strength of FRC (for 7 days)

COMPRESSIVE STRENGTH (N/ mm ^{2})			
Sr no.	% of addition	Glass fibre	Steel fibre
1.	0%	30.53	32.75
2.	1.25%	38.83	39.71
3.	1.5%	39.13	41.64
4.	1.75%	41.49	43.71
5.	2%	41.50	51.72

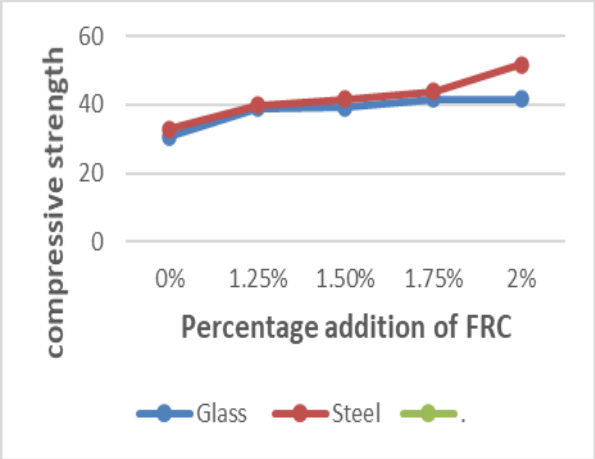
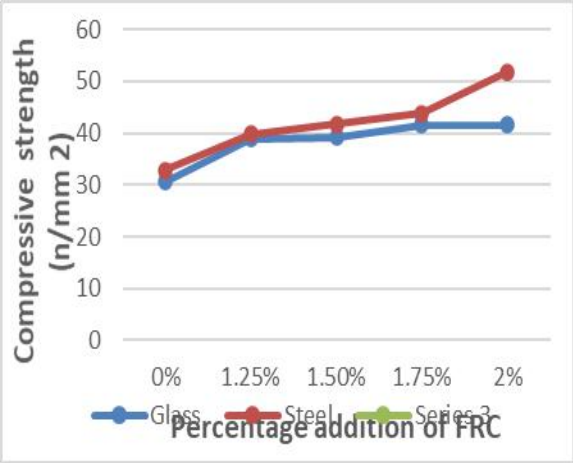


Table 2. Compressive strength of FRC (for 28 Days)

COMPRESSIVE STRENGTH (N/ mm ^{2})			
Sr no.	% of addition	Glass fibre	Steel fibre
1.	0%	33.06	34.68
2.	1.25%	39.86	41.05
3.	1.5%	40.76	42.39
4.	1.75%	42.10	46.38
5.	2%	40.90	50.97



VI. CONCLUSION

Experimental investigation was carried out on the behavior of steel and glass fibre reinforced concrete material using end hooked steel and glass fibre with different volume fractions of the fibres consisting of 0%, 1.25%, 1.5%, 1.75% and 2% as well as plain concrete with no fibres for comparison. Tests included the cube compression test to evaluate the basic material behaviour.

It is concluded that the strength is increasing while increasing the percentage of steel fibre but in the case of glass fibres, the strength is increasing up to 1% after 1% the strength is reducing.

The results showed that the use of fibres enhanced all aspects of material. This was more evident with the increase in the amount in the amount of fibres.

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Study on Effects of Plastic Waste in Paver blocks

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Abstract **- Most of the developing nations lack a proper solid waste management system owing to the difficulties faced during the sample collection and treatment phases. Low-density polyethylene (LDPE) contribute as a major source of such pollution due to the widespread use of its products which include water sachets, thin bags, wrapping paper etc. Improper disposal of this waste in the form of landfilling can not only cause environmental impact but also negatively harm the surrounding soil and water bodies. A relatively simple technology has been proposed in this paper that produces LDPE-bonded sand blocks and pavers. Developing countries (DCs) typically have inadequate solid waste management, with low waste collection rates, disposal primarily by dumping and limited outlets for reusing potentially recyclable materials. It was observed that LDPE-bonded sand is a strong, tough material with compressive strengths up to 17 MPa when produced under optimum processing conditions. The density and compressive strength were found to be increased as the particle size of the sand was decreased. The samples also exhibited far superior impact resistance as compared to traditional clay paver blocks.**

Index Terms **- Plastic waste, low density polyethylene, polyethylene properties, plastic sand paving block, paving block; LDPE bonded sand.**

I.INTRODUCTION

Generally, the level of plastics in waste composition is high. The largest component of the plastic waste is polyethylene, followed by polypropylene, polyethylene Terepthalate and polystyrene.

Among different waste fractions, plastic waste deserves special attention on account non-biodegradable property which is creating a lot of problems in the environment. In India approximately 40 million tons of solid waste is produced annually. This is increasing at a rate of 1.5 to 2% every year. Plastics constitute 12.3% of total waste produced most of which is from discarded water bottles. The plastic waste cannot be disposed off by dumping or burning, as they produce uncontrolled fire or contaminate the soil and vegetation.

Considerable researches and studies were carried out in some countries like USA and UK on this topic. However, there have been very limited studies in India on plastics in concrete. Hence an attempt on the utilization of waste Low Density Polyethylene (LDPE) as partial replacement of coarse aggregate is done and its mechanical behaviour is investigated.

The purpose of this project is to evaluate the possibility of using plastic waste materials to partially substitute for the fine aggregate composites.

Following are some literature reviews on various national and international papers on Paver Block and improvement on the paver block characteristic by adding various waste material into paver block.

Zainab Z. Ismail et al. (2007) [43] to determine the feasibility of reusing plastic sand as partial replacement of fine aggregate in concrete.

R L Ramesh et al (2009) [44] used waste plastic of low-density polyethylene as replacement to coarse aggregate.

Praveen Mathew et al. (2013) [45] investigated the suitability of recycled plastic as partial replacement to coarse aggregate in concrete mix.

Raghatate Atul M. (2014) [37] Investigated the tensile strength of concrete by adding up to 0.8% of plastic bag pieces in the concrete mix.

Youcef Ghernouti et al. (2017) [41] to determine the amount of Fine aggregate in the mix proportion of concrete to be replaced with plastic bag waste sand at 10%, 20%, 30% and 40%.

II.OBJECTIVES OF THIS STUDY

To determine the suitability of waste plastic bags in the development of pavement blocks for construction

and to reduce the burden of waste plastic by reusing into pavement.

b. To evaluate the performance of plastic concrete for paver blocks for use in pavements and other application areas.

c. To evaluate compressive strength and durability for ordinary concrete paver blocks, the same have been studied for various plastic paver block.

d. To produce cost-effective paver block which a common person can afford easily

III.MODELING AND ANALYSIS

PROPRTIES OF MATERIAL

Plastic waste (LDPE)

Plastic waste used in making paver block was collected from the surrounding locality LDPE is indicated by resin number 4. It includes plastic bags. The plastic bag used is of about 50 microns. The basic properties are provided below

Table -1: properties of LDPE

SL NO	PARTICULARS	. VALUE
1	Melting Point	150˚c
2	Thermal Coefficient of Expansion	100-200x10-6
3	Density	940 kg/m3

Sand

Sand is a granular material composed of finely divided rock and mineral particles. The properties of sand were determined by conducting test as per IS:2386 The results indicate that the sand conforms to zone II of IS:383-1970.

Table 2 -Physical Properties of Sand

SL NO	PARTICULARS	. VALUE
1	Specific gravity	2.64
2	Fineness modulus	2.923

Fig 1: Plastic Paver blocks prepared

IV.METHODOLOGY

In all, the samples were categorized in to five categories based on the adopted plastic: sand ratio as listed below in Table 3.

Table 3: Batch Designation

S.No.	*Batch Designation*	*Plastic: Sand Ratio*
1	*PB1*	*1: 2.5*
2	*PB2*	*1: 3.0*
3	*PB3*	*1: 3.5*
4	*PB4*	*1: 4.0*
5	*PB5*	*1: 4.5*

Step 1 - Material Procurement was done from local scrap vendors. Special care was taken to avoid collecting plastics of HDPE grade (Figure 2). Also, locally available sand of size smaller than 2.36mm was used. Wood logs were used as fuel source.

Fig.2: Waste LDPE collected from scrap vendors

Step 2 - A setup for heating the sand was prepared using bricks and wood logs (Figure 3).

Fig.3: (a) Setup, (b) Adding the filtere sand to the mixing container, (c) Heating it to180oC

Step 3 - After heating the sand to the predetermined temperature, LDPE plastics were added over it uniformly (Figure 4). Following this, a thorough mixing was done so as to intimately mix the sand and molten plastics together. Proper safety gears such as gloves, boots, masks etc were used during the testing phase.

(a) (b) (c)

Fig.4: (a) Heating the sand, (b) Adding LDPE over heated sand, (c) Mixing the batch

Step 4 - Once the mixture is ready, it is transferred to the cuboidal moulds directly without any significant delay. Size of the moulds adopted for this study was 30cm x 15cm x 10cm (Figure 5). The moulds were properly oiled to avoid any sticking of plastic to the surface

Fig.5: Transferring the mixture of sand and plastic to the mould

Step 5 - Once the mixture is transferred to the mould, it is allowed to cool down. During this time, entrapped air bubbles get released from the mould which lead to the formation of capillaries and minor surface cracks (Figure 6). These need to be filled using a trowel. Thus, a constant degree of supervision was needed during the initial 30 minutes of cooling. After almost 4 hours, the samples were demoulded (Figure 7).

Fig.6: Releasing air bubbles from the mould by minor shaking and tamping

Fig.7: Set paver block just before demoulding

Step 6 - After the paver blocks are hardened i.e. after 4 hours of setting, they were demoulded and kept in a cool dry place for 20 hours. The final end product is a dark colored, dense and hard composite material with smooth even surfaces and well defined edges. This sample is now ready for testing. The following array of tests were carried out to determine the efficiency of recycled LDPE bonded sand paver block in contrast to the traditional clay paver blocks-Compressive Strength Test; Tensile Strength Test; Water Absorption Test; Drop Impact Strength Test; and Heat Resistance Test.

V.RESULTS & DISCUSSIONS

A total of 75 samples (characterized into 5 batches) were evaluated for their performances. Five samples each were tested for their compressive strength, tensile strength, water absorption, impact resistance, and thermal resistance, for varying plastic: sand ratio of 1:2.5, 1:3, 1:3.5, 1:4 and 1: 4.5. The results of the above-mentioned tests are listed ahead-

Compressive Strength Test

It can be clearly seen from Figure 9 that the compressive strengths obtained for PB2 batch were the highest and the strength kept decreasing for further batches with larger sand proportions. This can be attributed to the fact that with increase in sand content, it becomes difficult for the plastic binder to uniformly spread out and bind all the sand grains together, thereby forming a strong cohesive mass. The samples were tested 4 hours after molding and an average compressive strength of 8.14 N/mm2 was observed for

a plastic: sand ratio of 1:3 i.e. PB2 batch, after just a small cool down period of 4 hours. This means the samples are suitable for rapid production and distribution making it an ideal end product in terms of market supply.

Fig.8: Crushed paver block sample of PB2 after CTM testing

It was also observed that the paver block only deformed around the contact area i.e. the area surrounding the actual contact area of load bulged and cracked, whereas the actual area under the load remained more or less unaffected. The only visible difference was the change in color from black to white over the contact area (Figure 8).

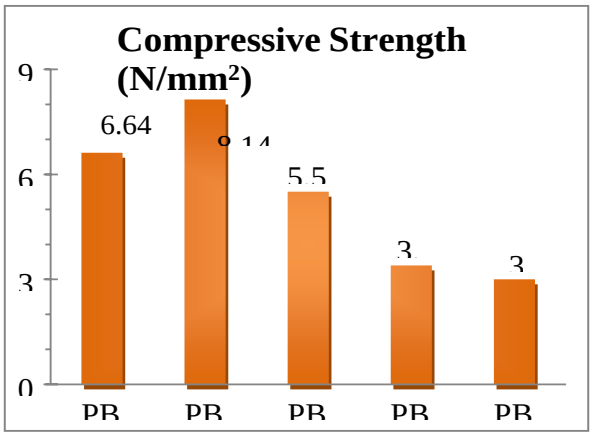

Fig.9: Results of compression strength test

Tensile Strength Test

As observed in Figure 10, a total of 15 samples were evaluated for their tensile strength too. Three briquette samples were tested for each batch. Similar to the previous results, the tensile strengths obtained for PB2 batch were the highest and the strength kept decreasing for further batches(Fig.10).

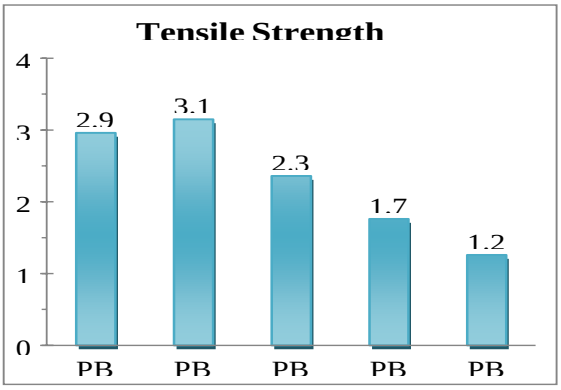

Fig.10: Results of tensile strength test

Water Absorption Test

Five samples of each batch were immersed in cold water for 24 hours straight, to determine their water absorption. It was found that the water absorption was extremely small for PB1 which increased with increase in the sand content (Figure 11). This can be attributed to the fact that higher sand content in the mix leads to more number of voids. The plastic binder itself becomes insufficient to uniformly cover up the entire surface are of the sand grains, which not only reduces the sample's strength, but also leads to an increased water absorption characteristic.

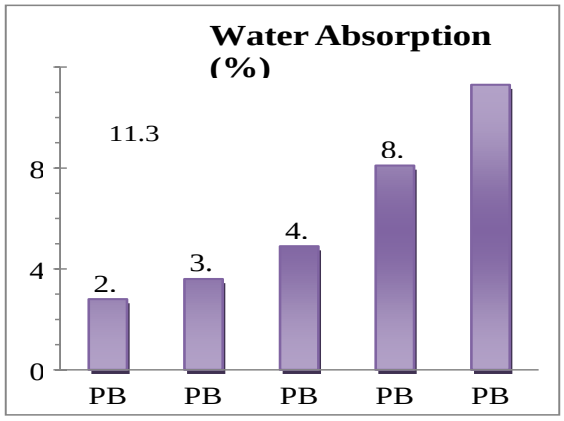

Fig.11: Results of water absorption test

Efflorescence Test

The presence of alkalis in blocks is harmful and they form a grey or white layer on block surface by absorbing moisture. To find out the presence of alkalis in blocks, this test is performed. In this test a block will immerse in fresh water for 24 hours and then it's taken out from water and allowed to dry in shade, And then surface of block will be check out .

Fire Resistance Test

To check the fire resistance capacity, the plastic paver block will be placed in oven for an increasing temperature up to 1800 degree centigrade . To observe effects of higher temperature on block such as crack development or melting of plastic.

Drop Impact Strength Test-

Table 4: Results of Drop Impact Strength Test

Batch	Plastic: Sand Ratio	Observations for varying drop heights		
		Drop Height = 4 m	Drop Height = 7 m	Drop Height = 10 m
PB1	1 : 2.5	No visible deformations	No visible deformations	Surface disintegration at edges
PB2	1 : 3	No visible deformations	No visible deformations	No visible deformations
PB3	1 : 3.5	No visible deformations	No visible deformations	Surface disintegration at edges
PB4	1 : 4	No visible deformations	Surface disintegration at edges	Sample broke in two halves
PB5	1 : 4.5	No visible deformations	Surface disintegration at edges	Total failure (sample crumbled and broke)

Three samples of each proportion were used for this test. One sample each from PB1, PB2, PB3, PB4 and PB5 batch was dropped from a height of 4m, 7m and 10m to evaluate their resistance against impact (Table 4). It was observed that no visible dents or deformations occurred on any of the sample for a drop height of 4m.

However, when dropped from higher heights, slight dents were formed and, in some cases, the sample of paver broke down in two pieces (Figure 12). The samples of PB2 batch displayed the highest impact resistance with no visible deformations on the surface even for a drop height of 10m.

Fig.12: Breaking of PB4 batch sample when dropped from a height of 10m

VI.CONCLUSIONS

- The above findings suggest that recycled LDPE bonded-sand paver blocks can be an effective alternative to the traditional building materials, with the optimum results being obtained for a plastic: sand ratio of 1:3.[2226]
- In drop impact test, all sample shows no dent when it drop from 4m, but when drop from higher height slight dent is observed ,the sample of PB2 with ratio 1:3 shows
- higher impact resistance even drops from 10m than other sample
- The waste plastic used for experiments is of LDPE (Low Density Polyethylene), 5-7mm size and specific gravity of waste plastic is found to be 0.92.
- The mechanical properties of the test concrete did not display any notable differences depending on the color of the plastic waste.

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ANALYSIS OF FLOATING COLUMN WITH LATERAL LOAD RESISTING SYSTEM BY USING STAAD PRO

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Abstract : Many urban multistorey buildings in India today have open first Storey as an unavoidable feature. This is primarily being adopted to accommodate parking or reception lobbies in the first Storey. Whereas the total seismic base shear as experienced by a building during an earthquake is dependent on its natural period, the seismic force distribution is dependent on the distribution of stiffness and mass along the height. The term floating column is a vertical member which ends at its lower-level rests on a beam which is a horizontal member. The beams in turns transfer the load to other column below it. In present scenario buildings with floating column is a typical feature in the modern multistory construction in India. In present paper effort has been taken to decide proper position of floating column. G+4, G+10 and G+20 buildings were analyzed and it is found that the building with floating column at central position behaves well.

Index Terms **- Multistorey, seismic, floating column.**

I. INTRODUCTION

A column is supposed to be a vertical member starting from foundation level and transferring the load to the ground. The term floating column is also a vertical element which (due to architectural design/ site situation) at its lower level (termination Level) rests on a beam which is a horizontal member. The beams in turn transfer the load to other columns below it.

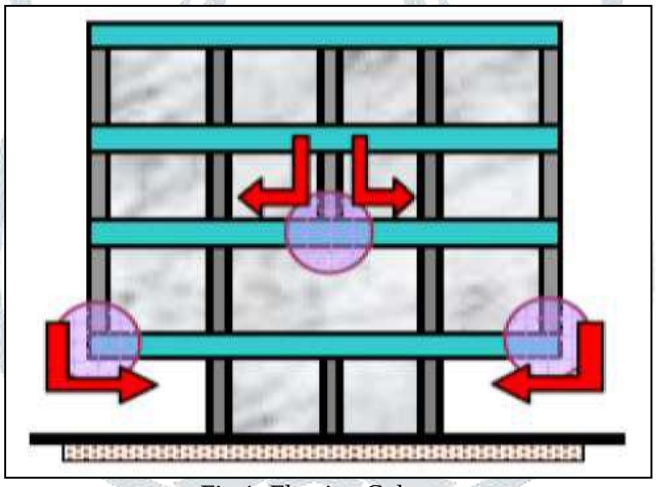

Fig.1: Floating Column

There are many projects in which floating columns are adopted, especially above the ground floor, where transfer girders are employed, so that more open space is available in the ground floor. These open spaces may be required for assembly hall or parking purpose. The transfer girders have to be designed and detailed properly, especially in earth quake zones. The column is a concentrated load on the beam which supports it. As far as analysis is concerned, the column is often assumed pinned at the base and is therefore taken as a point load on the transfer beam. STAAD Pro, ETABS and SAP2000 can be used to do the analysis of this type of structure.

II. Objective of Study

The aim of the present work is to study the behavior of multistory buildings with floating columns under normal loading and earthquake excitations.

Following are the objectives of present work:

- To study the behavior multistory building with floating column under normal loading condition.
- To study changes in behavior multistory building with floating column with earthquake excitation.
- Study the possible failure pattern of multistory building with floating column.
- Suggest the methods of strengthening of floating column (Bracing) and study its impact.
- Compare and find out effective method of strengthening floating column.

III.PROBLEM DEFINITION

In the present study seismic response of regular multi-storey buildings with and without floating column has been studied using response spectrum analysis approach. G+4, G+10 and G+20 storey frame models have been analyzed using STAAD Pro V8i. Position of floating column has been varied to find the critical position of floating column.

Various input parameters have been used to evaluate the effect of floating column on seismic response of RC framed structure. A detailed information of input parameters has been shown in table 1

Table 3.1 Structural and Material Data

Sr. No.	I	II	III	IV			V
1	Structure	Beam	Slab	Column			Wall
2	Storey	---	---	G+4	G+10	G+20	---
3	Size	350x730mm^2	150mm	350x350mm^2	500x500mm^2	660x660mm^2	300mm
4	Material	M20	M25	M25	M30	M35	Brick

Table 3.2 Architectural Data

Sr. No.	I	II
1	No. of stories	G+4, G+10, G+20
2	Floor Height	3m
2	Dimension of plan	25m x 22.5 m

Table 3.3 Seismic Data

Sr. No.	**I**	**II**
1	Seismic zone	III
2	Importance factor(I)	1
3	Response reduction factor(R)	3
4	Zone factor	0.16

- Models have been prepared using above data in STAAD Pro V8i**.**

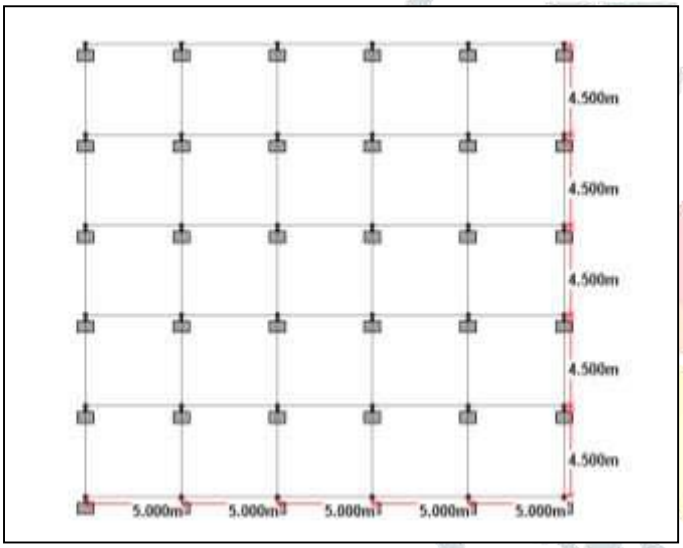

Fig. 2 Plan of G+4, G+10 and G+20 Building

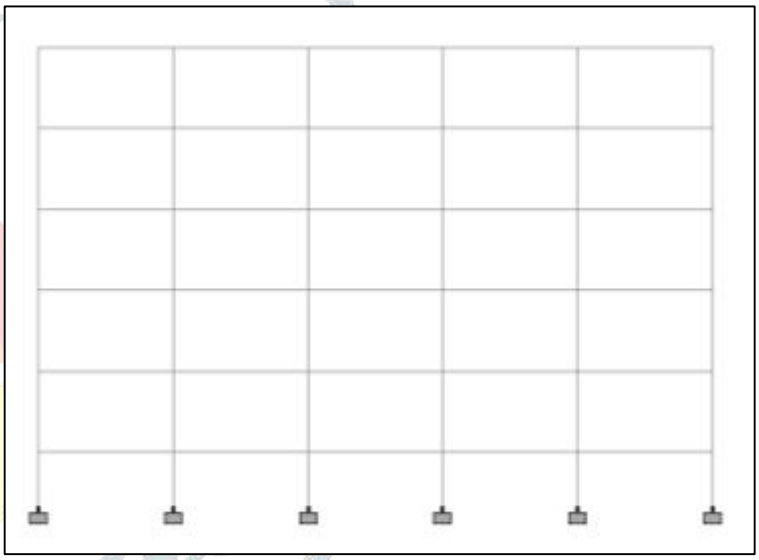

Fig. 3 Front view of G+4 Building

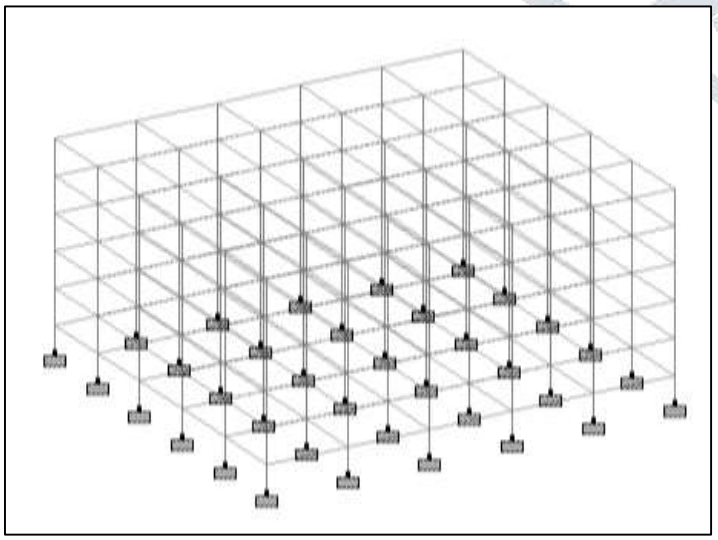

Fig.4 3D view of G+4 Building

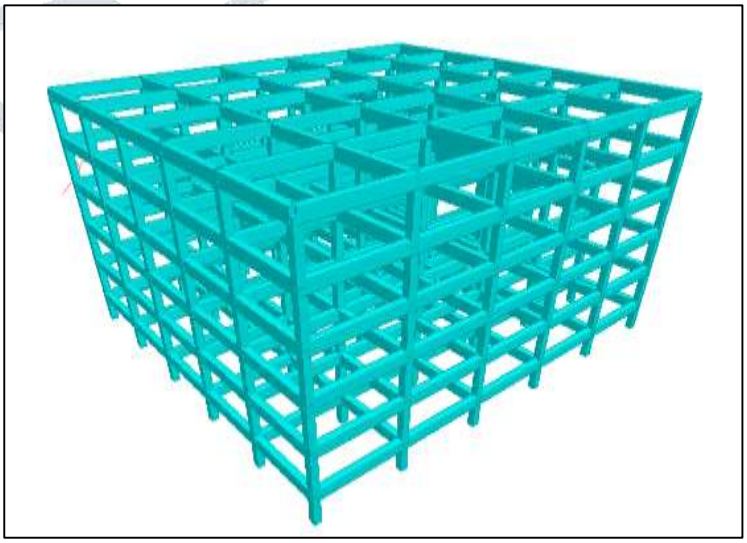

Fig.5 3D view of G+4 Building (Rendering view)

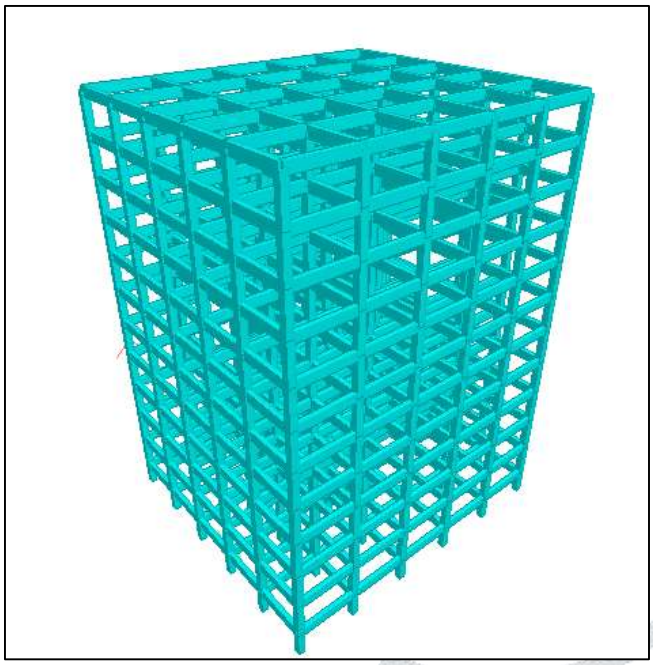

Fig. 6 3D view of G+20 Building (Rendering view)

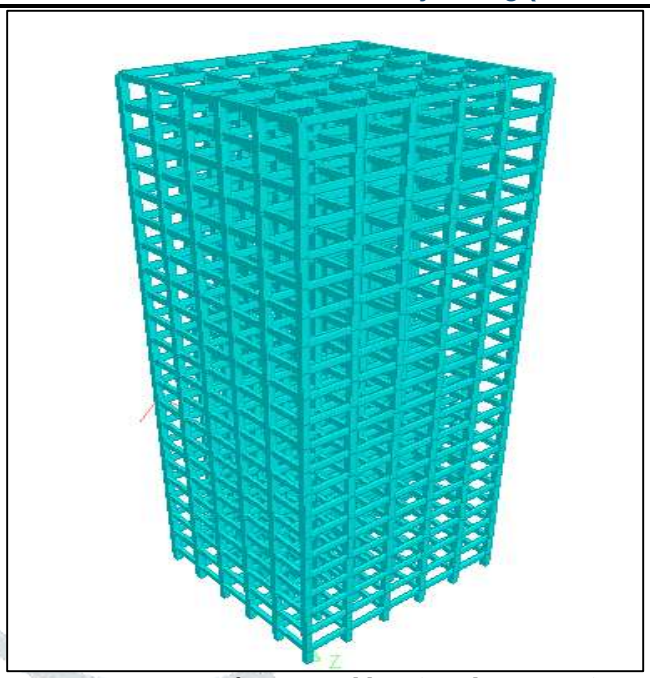

Fig. 7 3D view of G+10 Building (Rendering view)

Table 3.4: Loading Calculations for Static Analysis

Type Load	Particulars	Calculations
Dead Load	Weight of slab	= 25 *D = 25*0.15 = 3.75 KN/m^2
	Weight of partition wall	= 20*t*h = 20 *0.3*(3.0- 0.73) =13.62 KN/m
	Weight of parapet wall	= 20*t*h =20*0.3*0.9 =5.4 KN/m
	Floor Finish	= 1 KN/m^2
Live Load	Live load	= 3.00 KN/m^2 (As per IS 875 part II)

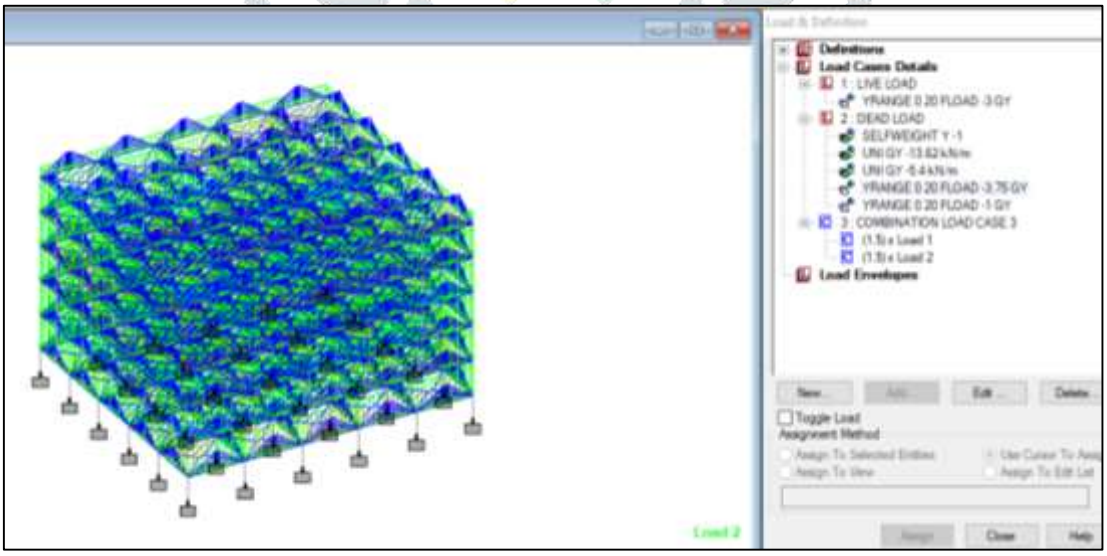

Fig. 8 G+4 Structure with loading

IV. RESEARCH METHODOLOGY

Initially G+4. G+10 and G+20 structures were analyzed for the static and dynamic analysis in order to find out most efficient position of floating column. In order to compare the results displacement of corners column is taken as a basis.

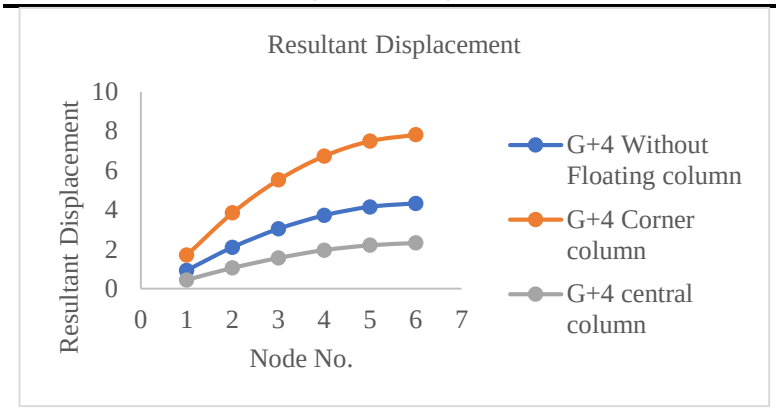

Chart4.1: Resultant displacement for G+4 Building (Static)

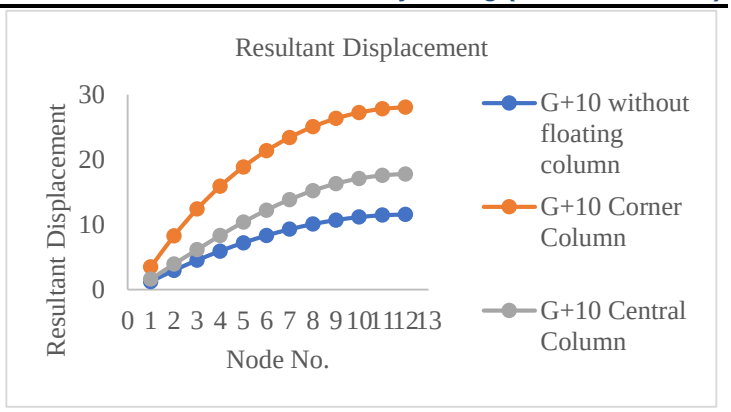

Chart 4.2: Resultant displacement for G+10 Building (Static)

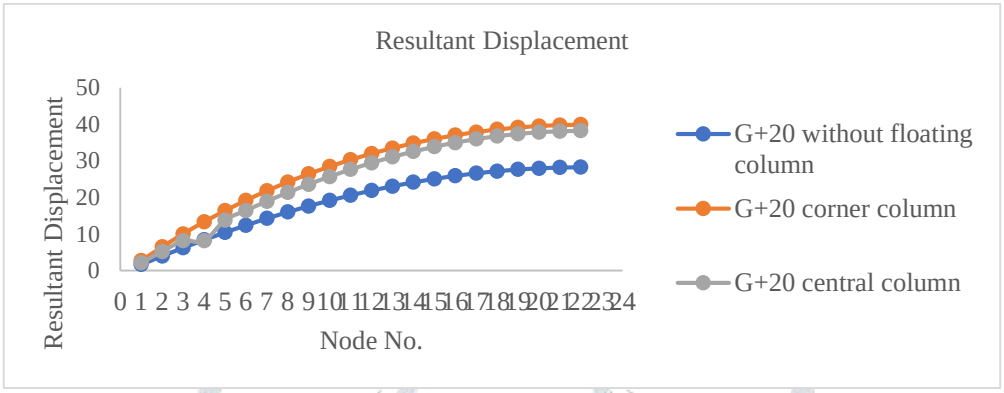

Chart 4.3: Resultant displacement for G+20 Building (Static)

Structures has been analyzed for the combinations of dead load and live load and graph plotted between node according to their heights and displacements. From the data acquired it is seen that the displacements in the structures having no floating column is minimum. Displacements in the structures increases with introduction of floating column and for the arrangement when the floating column is at corner displacements are maximum.

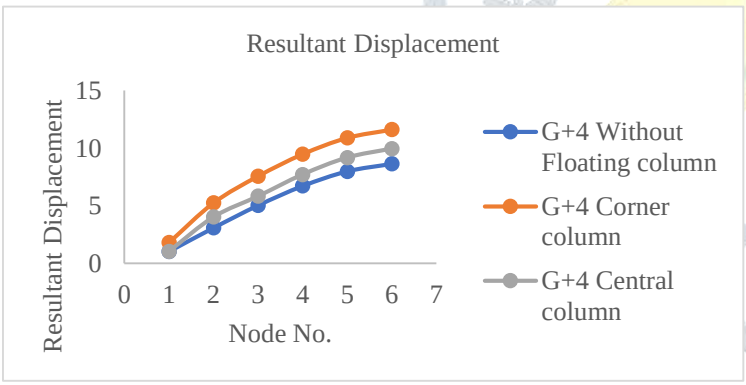

Chart 4.4 Resultant displacement for G+4 Building (Dynamic)

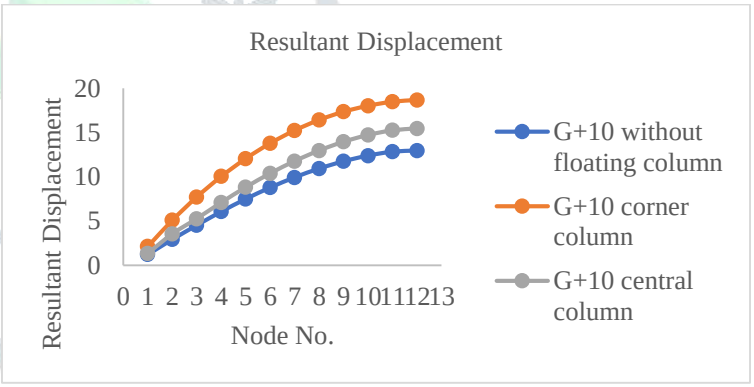

Chart 4.5: Resultant displacement for G+10 Building (Dynamic)

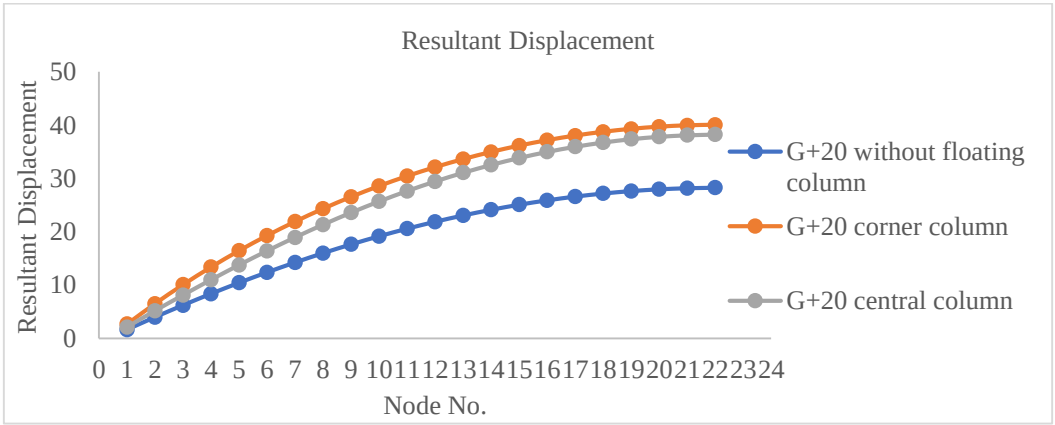

Chart 4.6: Resultant displacement for G+20 Building (Dynamic)

In case of dynamic analysis same trend is continues i.e., when floating columns are introduced at the corner displacement values are increases. Thus, it is observed that structure with floating column provided at center behaves good as compare to corner columns. So detailed investigation has been carried out for the structure with floating column is ta center.

V. EFFECTIVENESS OF BRACING SYSTEM

Bracing system used as a lateral load resisting element. In STAAD Pro V8i structure with floating column and bracing system have been modelled. Then corner columns have been selected for the comparison of displacements and graph showing the displacement for the various bracing system have been plotted as shown below.

- Diagonal System
- Cross System
- Inverted V System
- V- System
- K-System

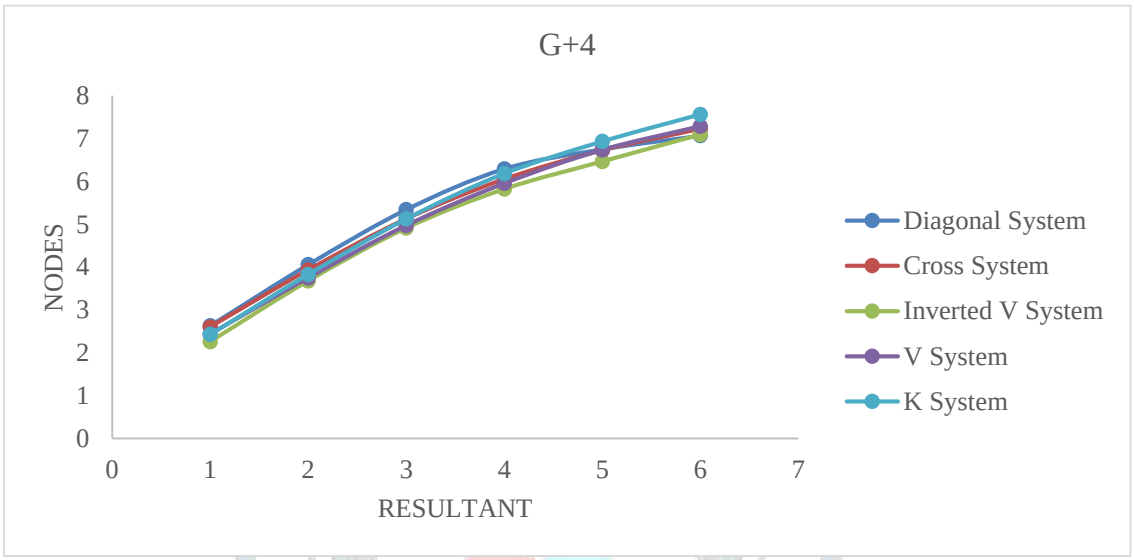

Chart 4.7 Resultant displacement for G+4 Building (Bracing System)

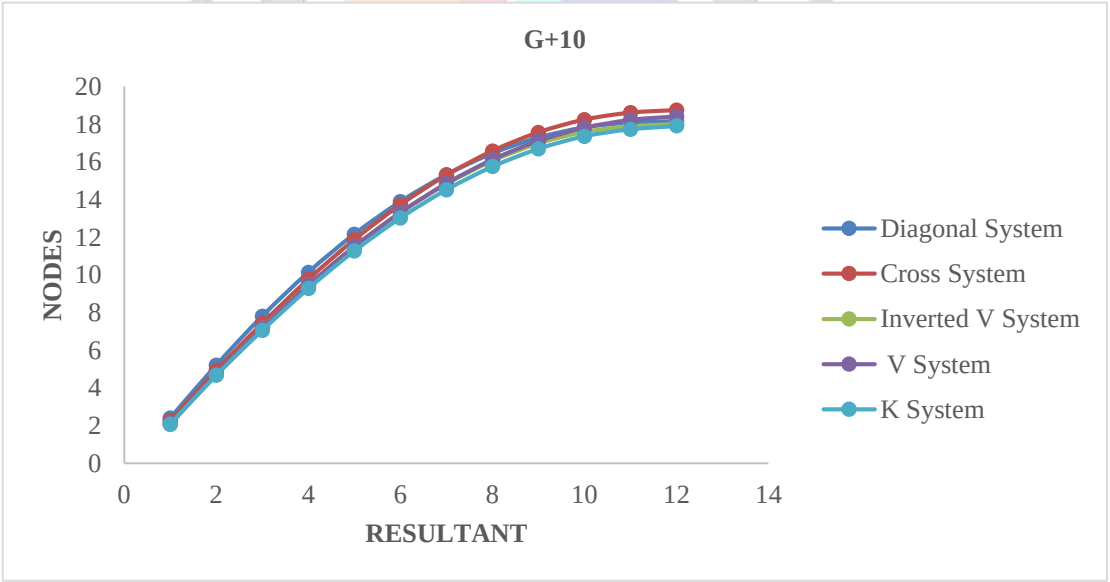

Chart 4.8 Resultant displacement for G+10 Building (Bracing System)

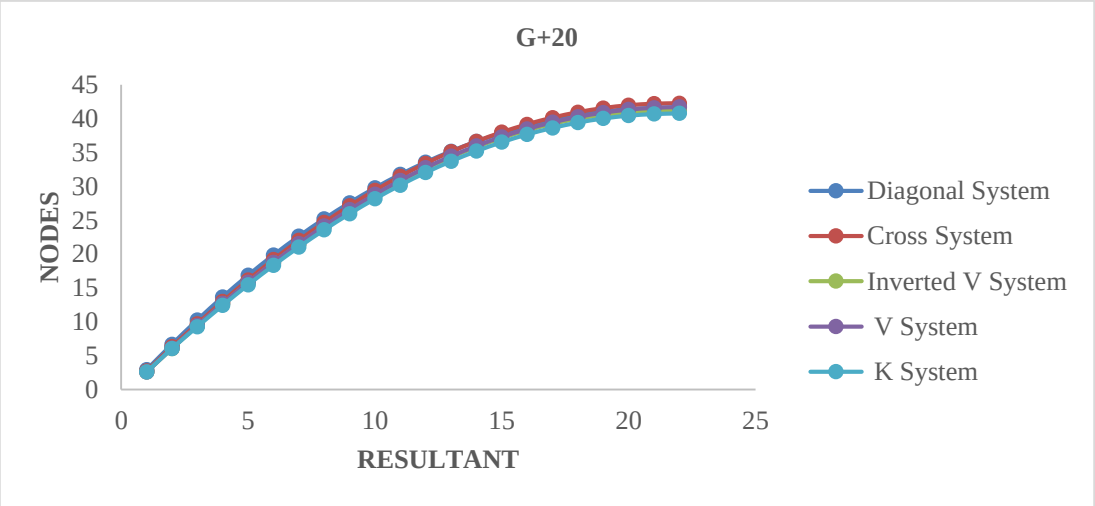

Chart 4.9 Resultant displacement for G+20 Building (Bracing System)

It is observed that each bracing system gives different values of displacement for the same configuration of floating column structures. This is may be because of difference in the geometry created due to introduction of bracing system.

VI. CONCLUSIONS

- As height of building increases resultant displacement also increases.
- An introduction of floating column in symmetrically loaded structure increases its displacements for static loading.
- For Static analysis structure with floating column provided at central portion behaves good as compare to floating column provided at corner.
- For dynamic analysis it is found that building with central floating column behaves good as compare to building with corner floating column.
- Values of base shear using STAAD Pro V8i and manual calculations are closely matching.
- Centre of mass is located just above the geometrical centre of the building.
- The displacement of the building decreases depending upon the different bracing system employed.
- Inverted V system gives least displacement for the G+4 structure.
- K-type bracing systems proves efficient for the G+10 and G+20 structure.
- Additional investigation is also carried out for the structures ranging from (G+5) to (G+9) and it is found that Inverted V system is efficient upto (G+4), thereafter K system is efficient.
- Adoption of bracing system improves behaviors of the structure against lateral loads.

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EXPERIMENTAL INVESTIGATION ON GLASS FIBRE REINFORCED CONCRETE

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Abstract : In this paper, we have seen that now days Construction industry is always trying to find new, better and economical material to manufacture new product, which is very beneficial to the industry. Today a significant growth is observed in the manufacture of composite material. With this energy conservation, corrosion risk, sustainability is important when a product is changed or new product is manufactures. Glass fibre (GF) is one of the high performance non-metallic fibres made by fusing (co-melting) silica with minerals. Glass fibre reinforced concrete (GFRC) offers more characteristics such as light weight, good fire resistance and strength. In future it is very beneficial for construction industry. Many applications of glass fibre are residential, industrial, highway and bridges etc.

Most of the studies preferred parameters like addition of glass fibres into the concrete with various proportions represented the positive as well as negative improvements in mechanical properties of concrete. However, the researchers could not exhibit the improvement in properties like compressive strength, modulus of elasticity, flexural strength, tensile strength, toughness, early age cracking etc. Even though these properties are important for desired quality of concrete, to overcome this, use of optimum percentage glass fibres in concrete. In present work different percentages of glass fibres were added for M-30 grade of concrete. The experimental study were carried out by casting the cubes in different proportions of glass fibres and glass fibre mesh and the results were obtained to find out optimum percentage of glass fibres. The glass fibres were added into the concrete in proportion of 0, 0.5 %, 1.0 % and 1.5 % by volume at an increment of 0.5 %. A comparative study of various experimental results was carried out.

***IndexTerms* - cement, coarse aggregate, fine aggregate, water, steel bars and glass fibre.**

I. INTRODUCTION

Industry is always trying to find new, better and economical material to manufacture new product, which is very beneficial to the industry. In the recent days, the various fibres develop and used in the construction, industrial and highway engineering. The steel is mainly used in that various application. Also fibre glass polythene fibres, carbon fibres, polyamide fibres are now developed and also used in construction, industrial and infrastructure development. In that list new one fibre is added, called as glass fibres.

Today a significant growth is observed in the manufacture of composite material. With this in mind energy conservation, corrosion risk, the sustainability and environment are important when a product is changed or new product is manufactures. Glass fibre is a high-performance nonmetallic fibre Glass melts are made by fusing (co-melting) silica with minerals, which contain the oxides needed to form a given composition. The molten mass is rapidly cooled to prevent crystallization and formed into glass fibres by a process also known as fibreization. The glass fibres do not contain any other additives in a single producing process, which gives additional advantage in cost. Glass fibres have no toxic reaction with air or water, are non-combustible and explosion proof. When in contact with other chemicals they produce no chemical reaction that may damage health or the environment. Glass fibre has good hardness and thermal properties. Glass fibres have been successfully used for foundation such as slabs on ground concrete.

By industrial production of glass fibres on the basis of new technologies their cost is equal and even less than cost of basalt fibre. The glass fibres and materials on their basis have the most preferable parameter ratio of quality and the price in comparison with glass, carbon fibres, and other types of fibres. It can also be mixed with other materials, when compacted it develops a high degree of mechanical particle interlock which results in high shear strength partly due to its texture.

In this modern age, civil engineering constructions have their own structural and durability requirements, every structure has its own intended purpose and hence to meet this purpose, modification in traditional cement concrete has become mandatory. It has been found that different type of fibres added in specific percentage to concrete improves the mechanical properties, durability and serviceability of the structure. It is now established that one of the important properties of Fibre Reinforced Concrete (FRC) is its superior resistance to cracking and crack propagation and which containing fibrous material which increases its structural integrity. It contains short discrete fibres that are uniformly distributed and randomly oriented. Fibres include steel fibres, basalt fibres, glass fibre, synthetic fibres and natural fibres – each of which lends varying properties to the concrete. In addition, the character of fibre reinforced concrete changes with mixing fibre materials, geometries, distribution, orientation, and densities. The weak matrix in concrete, when reinforced with fibres, uniformly distributed across its entire mass, gets strengthened enormously, thereby rendering the matrix to behave as a composite material with properties significantly different from conventional concrete. Because of the vast improvements achieved by the addition of fibres to concrete, there are several applications where FRC can be intelligently and beneficially used. These fibres have already been used in many large projects involving the construction of industrial floors, pavements, highway overlays, etc. in India. These fibres are also used in the production of continuous fibres and are used as a replacement to reinforcing steel. High percentages of steel fibres are used extensively in pavements and in tunnelling. Fibres are usually used in concrete to control cracking due to plastic shrinkage and to drying shrinkage. They also reduce the permeability of concrete and thus reduce bleeding of water. Some types of fibres produce greater impact, abrasion, and shatter– resistance in concrete. Glass fibres can be considered environmentally friendly and non-hazardous materials. It is not a new material, but its applications are surely innovative in many industrial fields, from building and construction to energy efficiency, from automotive to aeronautic, thanks to its good mechanical, chemical and thermal performances. Hence, glass fibre has gained increasing attention as a reinforcing material. The production process, even if it is very similar to the glass fibres one, does not require additives and a lower amount of energy is needed with benefits in terms of environmental impact, economics and plants maintenance. The base

cost of glass fibres depend on the quality and the chemical composition of the raw material and this leads to have several kind of fibres with different thermal, chemical and mechanical properties.

II. AIM AND OBJECTIVE

The aim of the experimental investigation is to analyse the properties of concrete by adding the most suitable combination of glass fibre percentage into the concrete. This optimum percentage of glass fibre is used for further investigation.

I. To check the behaviour of GFRC under compression.

II. To determine the optimum percentage of glass fibre quantity into the concrete.

III. To increase the toughness of the concrete.

III. LITERATURE REVIEV

A significant amount of research work on various structural aspects of use of structure and their mechanism has been published by many investigators. Review of some of the technical papers are briefed below:

2.1" Glass Fibre Reinforced Concrete to study the Properties of the Concrete"

Md.Abid Alam (2015)

For experiment Cem-Fil Anti-Crack, HD 12mm, Alkali Resistant glass fibre were used for the work. The specific gravity of the fibre is 2.68 mm and the length 12 mm. For the experimentation, M-20 and M-30 Grade concrete is used under the proportioning procedure mentioned under IS 10262-2009. For M20 grade of concrete 0.50 W/C Ratio is used and for M-30 Grade of Concrete 0.42, W/C Ratio is used. Fibre is added in an increment of 0.02% from 0% to 0.06%. (0%, 0.02%, 0.04%, 0.06%). And according to the test result concrete attain higher strength that the target strength. An M-20 grade of concrete attains 41.28 Mpa of Compressive Strength and 5.76Mpa of Tensile Strength when 0.06% of fibre is added in concrete. And M-30 grade of concrete attain 62.29Mpa of Compressive strength and 7.17Mpa of Tensile Strength. Almost concrete attain 1 times of the target strength of the concrete.

2.2 "Conducted Durability Studies On Glass Fibre Reinforced Concrete"

Dr. P. Srinivasa Rao, 2015

The alkali resistant glass fibres were used to find out workability, resistance of concrete due to acids, sulphate and rapid chloride permeability test of M-30, M-40 and M-50 grade of glass fibre reinforced concrete and ordinary concrete. The durability of concrete was increased by adding alkali resistant glass fibres in the concrete. The experimental study showed that addition of glass fibres in concrete gives a reduction in bleeding. The addition of glass fibres had shown improvement in the resistance of concrete to the attack of acids.

2.3 "The Performance Of Glass Fibre Reinforced Concrete"

Yogesh Murthy 2015

The study revealed that the use of glass fibre in concrete not only improves the properties of concrete and a small cost cutting but also provide easy outlet to dispose the glass as environmental waste from the industry. From the study it could be revealed that the flexural strength of the beam with 1.5% glass fibre shows almost 30% increase in the strength. The reduction in slump observed with the increase in glass fibre content.

2.4 " Experimental Study On Behavior Of Steel And Glass Fibre Reinforced Concrete Composites"

Kavita Kene, 2012

The study conducted on Fibre Reinforced concrete with steel fibres of 0% and 0.5% volume fraction and alkali resistant glass fibres containing 0% and 25% by weight of cement of 12 mm cut length, compared the result.

2.5 "The Strength Aspect Of Glass Fibre Reinforced Concrete"

Avinash Gornale, 2012

The study had revealed that the increase in compressive strength, flexural strength, split tensile strength for M-20, M-30 and M-40 grade of concrete at 3, 7 and 28 days were observed to be 20% to 30%, 25% to 30% and 25% to 30% respectively after the addition of glass fibres as compared to the plain concrete.

IV. METHODOLOGY

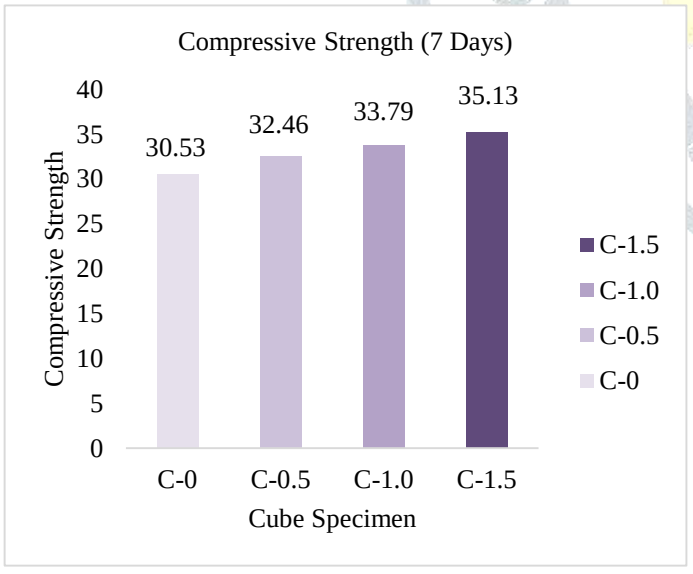
The experimental investigation was carried out in six phases. The first phase is to study of various properties of ingredients of concrete such as cement, sand, aggregate etc. The second phase is to design M-30 mix as per IS code method (IS 10262:2009). Addition of different percentage of glass fibres into the mixture of concrete is scheduled, from which optimum percentage of glass fibres available for experimental investigation was to be found out. The third phase addition of glass fibres in different proportion such as 0 %, 0.5 %, 1.0 % & 1.5 % at an increment of 0.5 %. The fourth phase preparation of 48 cubes for compressive strength of concrete for different proportion. The fifth phase preparation of 48 beams for flexural strength of concrete for different proportion of GF. The sixth phase to analyse the results based on experimental data. Specimens will be computed by conducting compressive and flexural strength tests into the laboratory.

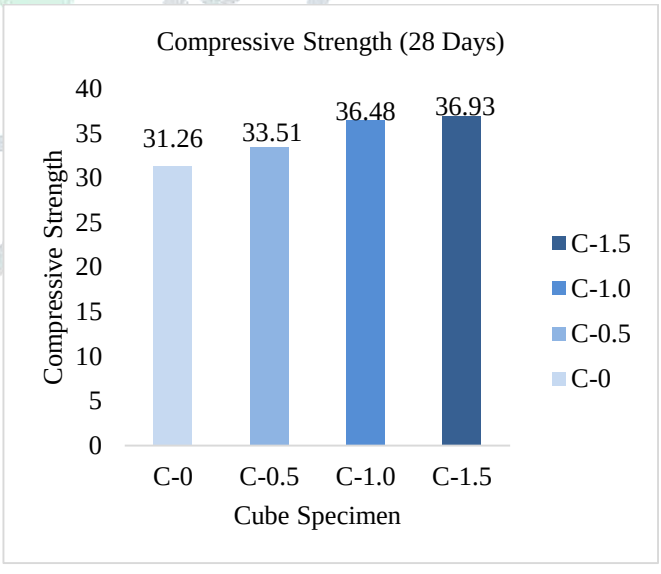
1. A mix design of M-30 grade concrete is adopted. Cubes were casted & cured for a period of 90 days. These cubes were tested for compression strength.
2. A total 48 number of cubes were casted by addition of glass fibres in different percentages into the concrete by volume, such as 0 %, 0.5 %, 1.0 % and 1.5% at an increment of 0.5%.
3. By adding different percentage of glass fibres into the concrete, its optimum percentage quantity will be obtained.
4. Further beam specimens were casted by using optimum percentage glass fibres and steel bars as a Glass Fibre Reinforced Concrete (GFRC). A total number of 48 beams were casted for flexural strength test. After the test, load-deflection data and flexural strength of different beams specimens was compared with normal concrete specimens.
5. A beam using glass fibre mesh is also casted of size 700 X 150 X 150 and tested for flexural strength.

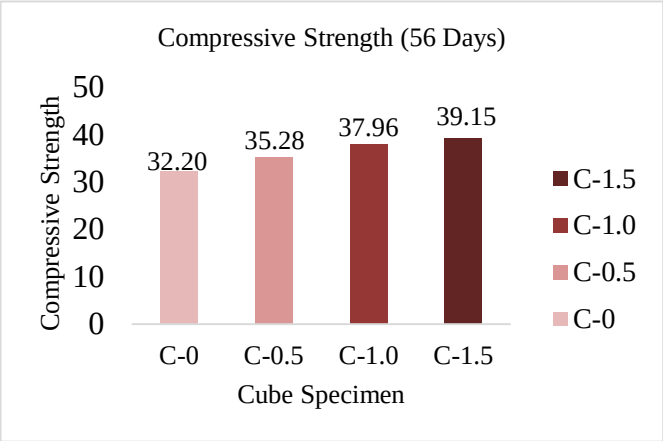
V. RESULT AND CONCLUSION

Table No-1: COMPRESSIVE STRENGTH

S.NO	M-30 + GF	Compressive Strength (N/mm^2)			
		7 days	28 days	56 days	90 days
1	0%	30.53	31.26	32.20	33.21
2	0.5%	32.46	33.51	35.28	37.21
3	1.0%	33.79	36.48	37.96	39.30
4	1.5%	35.13	36.93	39.15	41.36







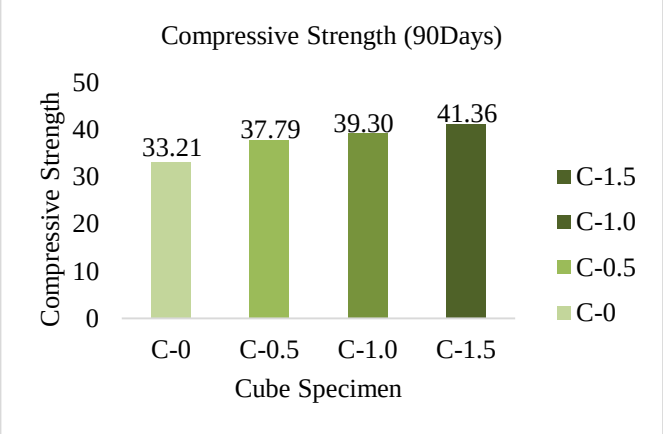
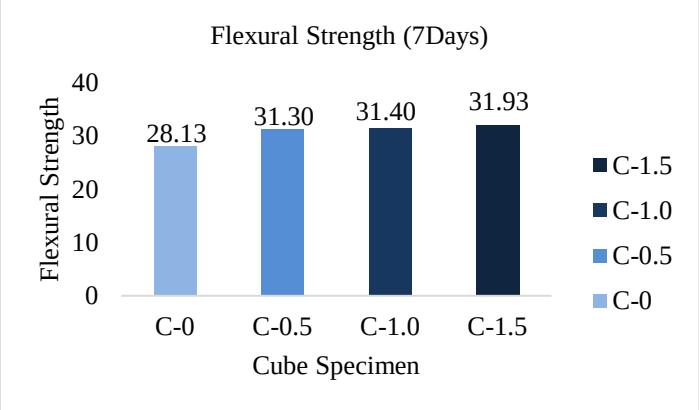
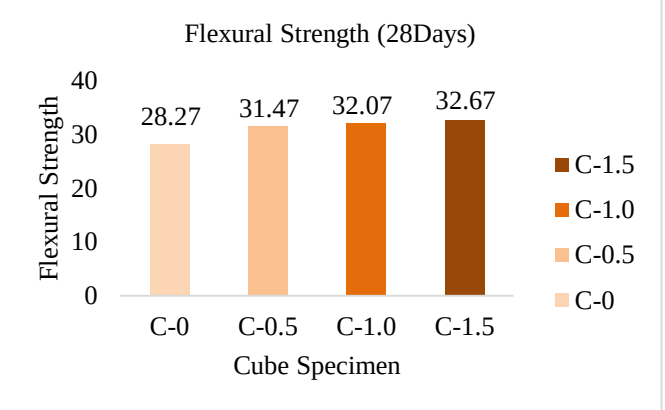
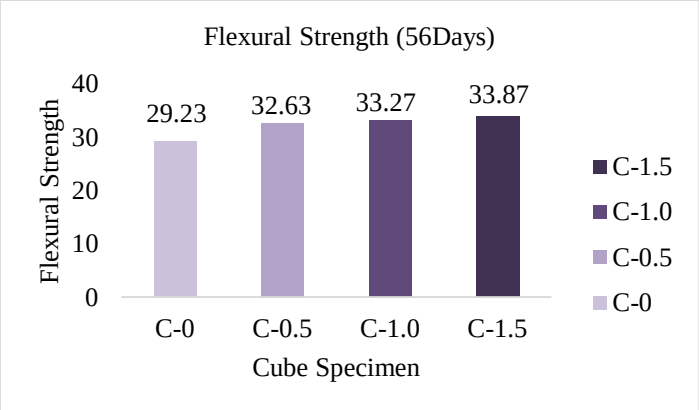


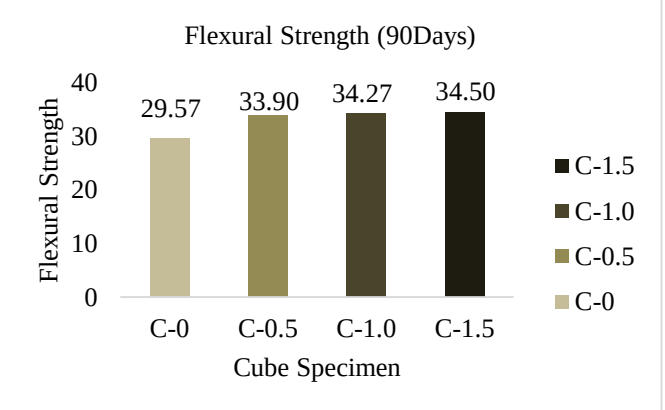
Table No-2: FLEXURAL STRENGTH

S.NO	M-30 + GF	Flexural Strength (N/mm^2)			
		7 days	28 days	56 days	90 days
1	0%	28.13	28.27	29.23	29.57
2	0.5%	31.30	31.47	32.63	33.90
3	1.0%	31.40	32.07	33.27	34.27
4	1.5%	31.93	32.67	33.87	34.50









CONCLUSION

The present experimental investigation was carried out to study behaviour of glass fibre reinforced concrete. In experimental work varying percentage of glass fibre content from 0.5 to 1.5 at an increment of 0.5 % by volume were added into the concrete. The main parameters evaluated in this study were compressive strength and flexural strength of glass fibre reinforced concrete. The following conclusions were drawn.

1. Based on the experimental analysis it has been found that adding glass fibre in concrete in different proportions there was gain in strength in all aspect of concrete like compression.
2. From the compression test, it has been observed that the maximum increase in compressive strength at 1.5% of glass fibre content into the concrete which was increased by 24.54% as compared to the control specimens.
3. The maximum compressive strength was obtained at 1.5 % glass fibre content mixed into the concrete.
4. A reduction in bleeding is observed by addition of glass fibers in the concrete mixes.
5. Addition of glass fibers reduces bleeding and it improves the surface integrity of concrete. Also it increases the homogeneity and reduces the probability of cracks.
6. From the results analysis of flexural strength test it has been observed that there is increase in flexural strength of 1.50 % specimen as compared to controlled specimen.

VI. FUTURE SCOPES

1. The glass fiber concrete is good in road construction, if it is used in road construction the number of joints will be less or reduce.
2. As total output of these properties one of the kay features of GFRC has been its versatility in use. GFRC is widely and reliably used in architecture i.e., cladding, mouldings, and buildings i.e., roofing, walls, windows, renovation, foundations and floors.
3. And permanent i.e., formwork, utilities, acoustics, bridges and tunnels, roads, water and drainage.

VII. REFERENCES

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ACCESSING SUITABILITY OF PINNED BASE AND FIXED BASE PEB STRUCTURE WITH PILE FOUNDATION BY USING STAAD PRO

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ABSTRACT- *Pre Engineered Buildings (PEB buildings) nowadays are majorly used in industrial areas for its economy and time optimization. In PEB structures, column base provided can be pinned or fixed. It is a general practice in PEB design that when the piles are provided or when the soil strata is weak, PEB column base selected is a pinned base. In such a condition, economy when compared with a fixed base is generally ignored in Indian practice. In this research, Two different industrial PEB sheds are analyzed and designed according to the Indian standard code IS 800-2007 with two different column base conditions; one being the pinned base and another one being the fixed base, both resting on the piles. In this project the economy of structural steel and piles is evaluated for these two column end conditions. The soil under the PEB shed is simulated by the springs of varying stiffness at varying depth. The springs are assigned with the property of soil subgrade reaction obtained from the soil report. Thus bending moment, shear force, and deflection of a pile is found out and the soil can be simulated more accurately.*

KEYWORDS- *PEB shed, pinned base, fixed base, pile, soil simulation, spring subgrade*

1. INTRODUCTION:

India is a developed country and massive house building construction is happening in various parts of the country. Since 32% of Indian population lives in towns and cities; hence constructional activity is more within the urban places. The requirement of housing is extreme but there'll always be a shortage of accommodation availability because the present masonry and conventional construction technology cannot meet the rising demand year by year . Hence theres a need to think for alternative construction system for steel or timber buildings, but timber is anyway unsuitable to tropical countries like India. In structural engineering, pre-engineered building is designed by a manufacturer in factory and is to be fabricated using a pre-determined inventory of raw materials and manufacturing methods that can efficiently compensate a wide range of structural and aesthetic design requirements. Within some geographic industry sectors these buildings are also called Pre-Engineered Metal Buildings. Historically, the primary framing structure of a pre-engineered building is an assembly of I shaped members, often referred as I beam. In PEB, I section beams used are usually formed by welding together 3 steel plates to make of I section. I section beams are then field- assembled and fabricated (e.g. bolted connections) to form the whole frame of the pre- engineered building. Cold formed Zee and C- shaped members 9 could also be used as secondary structural elements to lock and support the external cladding and facias. Roll-formed profiled steel sheet, tensioned fabric, wood, masonry block, precast concrete, glass curtain wall or other materials could also be used for the external cladding of the building. In order to

accurately design a pre-engineered building, engineers consider the clear span between bearing points, roof slope , bay spacing, live loads, wind uplift, dead loads, collateral loads, deflection criteria, internal crane system and maximum practical size and weight of fabricated members. Historically, preengineered building manufacturers have developed pre calculated tables for different structural elements in order to allow designers and engineers to select the most efficient and economic optimal I beams size for their projects. In pre-engineered building concept the entire designing is completed at the factory and the building components are delivered to the location of site in Completely knock down condition or full ready form. These components are then fixed / jointed at the location and raised with the assistance of cranes. The pre-engineered building involves in no time construction of buildings and with aesthetic looks and good quality construction. Pre-engineered Buildings are often used extensively for construction of commercial and residential buildings and industrial sheds. The buildings are often multi storied (4-6 floors). These

buildings are suitable to varied environmental hazards. Pre-engineered buildings are often adapted to suit a good sort of structural applications; the best economy are going to be realized when utilizing standard details. An efficiently designed pre-engineered building are often lighter than the traditional steel buildings by up to 30%. Lighter weight equates to less steel and a possible price savings in structural framework.

2. AIM & OBJECTIVE:

AIM: To access suitability of pinned base/fixed base PEB structure with pile foundation.

OBJECTIVE:

- To access suitability of a PINNED base for PEB shed.
- To access suitability of a FIXED base for PEB shed.
- To design a pre-engineered building frame using IS 800- 2007 LSD
- To design a pile foundation for fixed base that carries a moment along with compressive and uplift force.
- To design a pile foundation for pinned base that carries compressive and tensile force.

3. TECHNICAL PARAMETERS OF PEB:

Pre Engineered Buildings are specially crafted to meet customer's necessities. PEB's are characterized for clear estimations. The created individuals fit to the planned measurements. Estimations are taken precisely for the necessities. The essential boundaries that can characterize a PEB are :

3.1 Width Or Span Of Building:

The inside to focus length from one end divider section to the opposite end divider segment of an edge is viewed as broadness or range of the structure. The width between two sections can be estimated as length. The range length for various structures differs. The plan is done on range length given by client. The fundamental range length begins from 10 to 150 meters or above with moderate sections. Airplane storages, producing businesses, Stadiums gangs significant range width. No adjustments or broadening range be finished.

3.2 Length Of Building:

The length of PEB is the all out length reaching out from one front end to the backside of the structure. The length of PEB can be extendable in future.

3.3 Building Height:

Building stature is the eave tallness which ordinarily is the good ways from the base of the principle outline segment base plate to the top external purpose of the eave swagger. At the point when segments are recessed or raised from completed floor, eave tallness is the good ways from completed floor level to head of eave swagger.

3.4 Roof Slope:

This is the edge of the rooftop as for the level. The most well-known rooftop slants are 1/10 and 1/20 for tropical nations like India. The rooftop incline in snow fall areas can go up to 1/30 to 1/60. Any viable rooftop slant is conceivable according to client's prerequisite.

4. STRUCTURAL CONFIGURATION:

Shed:

Overall dimension of a PEB shade = 35m X 62m
Bay spacing = 7.721m
Height of shade = 8.2 m
Dead load = 0.15 KN/m2
Live load = 0.75 KN/m2
Collateral load = N.A.
Basic wind speed = 44 m/s
Wind terrain category : 2
Wind class: C
Code used : IS-800-2007 LSD

Column base selected: in first trial, a pinned base in second trial, a fixed base

5. LITERATURE REVIEW:

5.1. U. D. Dabhade1, N.A.Hedaoo2, Dr. L. M. Gupta3 and Dr. G. N(2009)

They got to achieved the time saving of 55.3% after used of steel framed composite floor construction instead of using precast framed with precast concrete floor and 14.3% times than that of steel framed with pre concrete slab. After using steel framed composite floor building it saves time which definitely help us for saving in an overall net cost. The direct cost need steel framed with composite floor is 23.10% which is higher than precast concrete floor and only 0.52% higher than steel framed with precast concrete floor. After time saving, the cost need for steel framed with composite floor is 12.99% which is 2.32% is less than steel. The steel framed with precast concrete floor saves 35.83% construction time than precast framed with precast concrete floor.

5.2. S.D. Charkha and Latesh S (June 2014)

Has observed that reduction of steel quantity then PEB is better than CEB . PEB is useful for reduction of steel quantity. So there is reduction in steel quantity then definitely there will be reducing the dead load. if dead load is reduced then it will reduce size of foundation. Using PEB helps to increase the aesthetic view of structure.

5.3. Jatin D. Thaka r, 2 Prof. P.G. Patel

Observed that PEB are steel building on the framing member and other components are fully fabricated in the factory after designing mostly by nut bolts so resulting into steel structure of high quality accurate. It conventional steel construction site welding involved which is not case PEB using nut bolt mechanism for primary framing this kind of structure use for hot rolled tapered section and cold rolled tapered section.

Usually z and c section . in secondary framing wastage of steel get reduced self weight of structure and there will be lighter foundation international codes referred in this design as per the MBMA (metal

building manufacturing association). The tapered section concept was firstly adopted in US by keeping in mind the bending moment diagram. At locations of high bending moment values, greater depth is used while less moment encouraged the use of lesser depths. Further unlike the conventional steel sections, where Moment of inertia (I) remains constant, it is not so in case of P.E.B due to varying depths.

5.4. G. Sai Kiran , A. Kailasa Rao, R . Pradeep Kumar (Aug 2014)

In recent few years its observed that PEB concept in designing helped in improvement designing after adopting of PEB instead of CSB concept proved in many advantage include in their economy and easier fabrication In this study, an industrial structure (Ware House) is analyzed and designed according to the Indian standards, IS 800-1984, IS 800-2007 and also by referring MBMA-96 and AISC-89. In this study, a structure with length 187m,width 40m,with clear height 8m and having R-Slope 1:10,isconsidered to carry out analysis& design for 2D frames (End frame, frame without crane and frame with 3 module cranes). The economy of the structure is discussed in terms of its weight comparison, between Indian codes (IS800-1984, IS800-2007) & American code (MBMA-96), & between Indian codes (IS800-1984, IS800-2007).

5.5. Aijaz Ahmad Zende 1, Prof. A. V. Kulkarni , et.al

They observed PEB structure provide structure clear span their weight is lesser than that of `conventional building and for sustainable development steel is the material that reflect the essential when there are structure life longer span conventional building are not suitable with clear span so therefore PEB are the best way for longer span structure without using interior column. PEB structure are costly as compared to conventional structure in case there are smaller span structure.

5.6. Anbuchezian et al [2013]

- Studied behavior of cold formed sections.
- Cold formed steel purlins are the widely used structural elements in India.
- Practically 'Z' sections are provided, where the span of the roof purlins is sloped and the length of the span is maximum.

5.7. Satpute et al [2012]

- He has done the detailed analysis of lndustrial building with Cold formed concept is carried out.
- A com pa rative study has also been ca rried out between Hot Roll steel lndustrial building and Cold formed lndustrial building and a conclusion has been drawn.
- In lndustrial building the material & cost of the building is minimized in case of cold formed steel while in case of conventional building it was be higher both in two cases.The saving in material and cost is about 25%.

5.8. Kumar et al [2014]

- studied the Pre-Engineered Bulking (PEB) concept in the design of structures which helped in optimizing design.
- The ability of PEB in the place of conventional steel building (CSB) design Concept resulted in many advantages, including economy and easier fabrication.
- The economy of structure is discussed in terms of its weight comparison. Between Indian codes (IS800-1984,IS800-2007).

6. CONCLUSION:

From the literature we can summarize the work in pre-engineered building “as below.

- The construction of steel framed composite floor building saves time, which leads to an overall savings in net cost.
- Pre-engineered building can be adopted to suit a wide variety of structural applications, the greatest economy will be realized when utilizing standard detailks in structural framework.
- To understand the importance of cost effectiveness.
- Minimum weight buildings that are targeted with simple fabrication process and easy erection to have maximum structural efficiency. Minimum weight of structure is proportional to minimum cost and lowers seismic and gravitational forces.
- In industrial the material and cost of the building is minimized in case of cold formed steel while in case of conventional building it was be higher both in two cases. The saving in material and cost is about 25% can be achieved.
- Design of one-story industrial building structure with larger clear spans by using PEB is more economical than truss framing design.
- As per all reviews it is observed that there is a scope of work in Comparing IS800:2007 (LSM) with international standard (LSM/LRFD), so Here an attempt is made to compare the same by designing actual building using IS800 2624.

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COMPARATIVE PUSHOVER ANALYSIS OF RCC, STEEL AND COMPOSITE HIGH RISE BUILDING FRAME (G+11) BY USING ETABS

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ABSTRACT- *The majority of building structures are designed and constructed in reinforced concrete which is mainly depends upon availability of the constituent materials and the level of skill required in construction, as well as the practicality of design codes. R.C.C is no longer economical because of their increased dead load, hazardous formwork. However composite construction is a new concept for construction industry. The use of modern composite systems, allowing the erection of multi-story structural frames to proceed at pace, can make it economically prohibitive to delay the construction of each floor while concrete columns are cast. In Japan, however, the superior earthquake resistant properties of composite beam-columns have been long recognized and have become a commonly used for construction in that region. It was therefore necessary to develop seismic design criteria for typically used Indian structural systems, to advance the use of this efficient type of mixed construction. This Project shows comparison of various aspects of building.*

In this project a residential of G+11 multi-story building is studied for Pushover Analysis using ETABS, assuming that material property linear, static and dynamic analysis is performed. These non-linear analysis are carried out and different parameters like displacement, storey drift, Performance point, base shear are plotted. Now it is the demand of time that every structure must be analyzed and designed for lateral forces such as earthquake and wind forces. But generally it is found that the cross sectional area of RCC structural member comes out very heavy with large amount of constituent material such as steel & concrete, which takes large space in construction of multistory building. Under such circumstances composite structure is one of the best options, which not only takes care for earthquake forces but also gives less cross sectional area of structural member and provides large space for utilization in economical way.

KEYWORDS- *Pushover, ETABS, Performance Point, Non-linear*

I. INTRODUCTION

1.1 Introduction to project work

The majority of building frames are designed and constructed in reinforced concrete structures, depending upon the availability of constituent materials and the workmanship required in construction industry along with practicality of the existing design codes. Now a day to fulfill the demand of increasing population there is need of high rise building construction and today in India RC construction is popular to fulfill demand of construction industry. But since from last two decades construction industry experiences drastic changes due to increasing population demand, market condition, and availability of resources (men, money & material) etc. which results new techniques of construction are introduces in industry by inventors which give alternative solution to conventional construction. These are mix type or hybrid construction called as a composite construction, which are make efficient use of constituent material which can be most effective than conventional RC construction. The composite structures is the structures in which sections are made up of building different types of materials such as steel and concrete which are used for construction of beams, columns, slabs etc. Numbers of the studies are carried out on composite construction techniques by different researchers in different parts of the world and found it to be better earthquake resistant and more economical as compared to RCC construction.

In composite or hybrid construction different types of sections are utilized as a encased or in filled sections.

1.2 Alternative construction Techniques-

There are various techniques are used for the fulfillment of demand of construction industry. Some of them are popular due to availability of men, material & money, some of them are popular due to their practicality of design.

There are mainly three types of Construction techniques used for the high rise buildings construction and these are:

- RCC Construction

- Steel Structures
- Composite or hybrid Construction

1.3 Composite construction

Now a day's composite is famous one in foreign countries due to their suitability in construction, also it overcomes the disadvantages of RCC & Steel construction which make the composite or hybrid beneficial for high rise construction though the composite resist lateral forces more effectively compared to the RCC & steel.

In composite structure the advantage of bonding property of steel and concrete is taken in to consideration so that they will act as a single unit under loading. These essentially different materials are completely compatible and complementary to each other; they have almost the same thermal expansion; they have an ideal combination of strengths with the concrete efficient in compression and the steel in tension; concrete also gives corrosion protection and thermal insulation to the steel at elevated temperatures and additionally can restrain slender steel sections from local or lateral-torsional buckling. In conventional composite construction, concrete rests over steel beam and under loading conditions these two component acts independently and a relative slip occurs at the interface of concrete slab and steel beam, which can be eliminated by providing appropriate connection between them. So that steel beam and slab act as composite beam and gives behavior same as that of Tee beam.

In steel concrete composite sections both steel and concrete resists external loads together and helps to limit sway of the building frame. It should be added that the combination of concrete cores, steel frame and composite floor construction has become the standard construction method for multi-story commercial buildings in several countries. The main reason for this preference is that the sections and members are best suited to resist repeated earthquake loadings, which require a high amount of resistance and ductility.

1.3.1 Composite Frame Element

A composite member is constructed by combining concrete member and steel member so that they act as a single unit. As we know that concrete is strong in compression and weak in tension on the other side steel is strong in tension and weak in compression. The strength of concrete in compression is complemented by strength of steel tension which results in an efficient section. By the concept of this composite member the concrete and steel are utilized in well-organized manner.

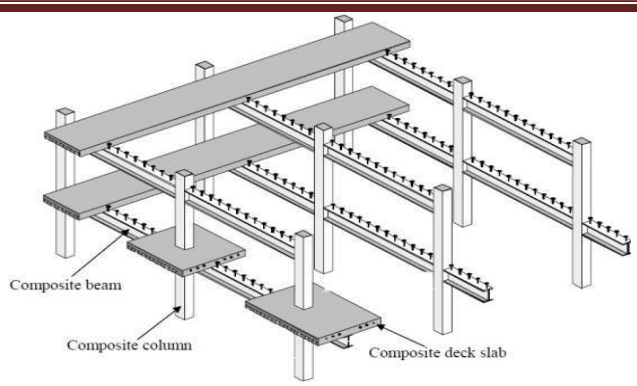

Fig no.1: Composite Frame

Composite Element-

The primary structural components used in composite construction consist of the following elements.

a. Composite Slab
b. Composite Beam
c. Composite Column
d. Shear Connector

II. AIMS AND OBJECTIVES

1. To evaluate the comparison of composite columns with concrete filled steel tubes and composite encased I section column.

2. To fing the structural behavior of multi-storey building for different plan configuration like Rectangular, C,L,and I shape with two different composite columns.

3 .To find out which building is performed good in each cases.

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IV. CONCLUSION

In elastic/pushover analysis of both RCC & Composite frame is carried out using ETAB. The outcome from the analysis is described with respective to various parameters in this chapters and comparative analysis is done with RCC frame. The results from above analysis shows that in case of dead load and base shear the sections of steel,EIS-SB,CIS-SB and CFT-SB gives minimum dead load as compared to RCC. The performance point of CFT-RC is maximum as compared to RCC .

Hence we can conclude that the composite section are more prefable than RCC for high rise building.

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ANALYSIS OF FLOATING COLUMN WITH LATERAL LOAD RESISTING SYSTEM BY USING STAAD PRO

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Abstract -: Many urban multistorey buildings in India today have open first storey as an unavoidable feature. This is primarily being adopted to accommodate parking or reception lobbies in the first storey. Whereas the total seismic base shear as experienced by a building during an earthquake is dependent on its natural period, the seismic force distribution is dependent on the distribution of stiffness and mass along the height.The term floating column is a vertical member which ends at its lower-level rests on a beam which is a horizontal member. The beams in turns transfer the load to other column below it. In present scenario buildings with floating column is a typical feature in the modern multistory construction in India. In present paper effort has been taken to decide proper position of floating column. G+4, G+10 and G+20 buildings were analyzed and it is found that the building with floating column at central position behaves well.

Keywords- Multistorey, seismic, floating column.

1.INTRODUCTION

A column is supposed to be a vertical member starting from foundation level and transferring the load to the ground. The term floating column is also a vertical element which (due to architectural design/ site situation) at its lower level (termination Level) rests on a beam which is a horizontal member. The beams in turn transfer the load to other columns below it.

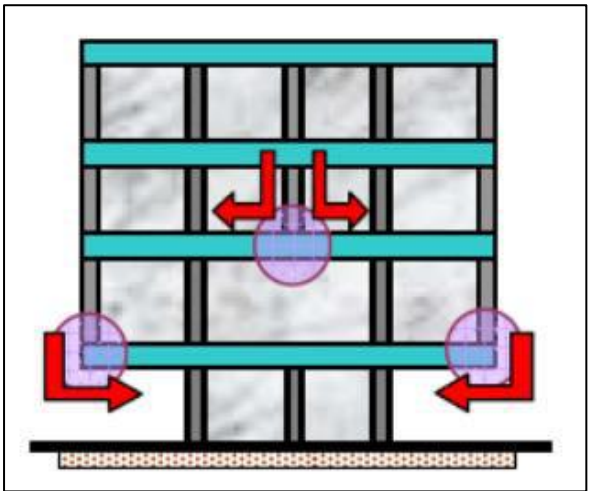

***Figure 1** : Floating Column*

There are many projects in which floating columns are adopted, especially above the ground floor, where transfer girders are employed, so that more open space is available in the ground floor. These open spaces may be required for assembly hall or parking purpose. The transfer girders have to be designed and detailed properly, especially in earth quake zones. The column is a concentrated load on the beam which supports it. As far as analysis is concerned, the column is often assumed pinned at the base and is therefore taken as a point load on the transfer beam. STAAD Pro, ETABS and SAP2000 can be used to do the analysis of this type of structure. Floating columns are competent enough to carry gravity loading but transfer girder must be of adequate dimensions (Stiffness) with very minimal deflection.

Looking ahead, of course, one will continue to make buildings interesting rather than monotonous. However, this need not be done at the cost of poor behavior and earthquake safety of buildings. Architectural features that are detrimental to earthquake response of buildings should be avoided. If not, they must be minimized. When irregular features are included in buildings, a considerably higher level of engineering effort is required in the structural design and yet the building may not be as good as one with simple architectural features. Hence, the structures already made with these kinds of discontinuous members are endangered in seismic regions. But those structures cannot be demolished, rather study can be done to strengthen the structure or some remedial features can be suggested. The columns of the first storey can be made stronger, the stiffness of these columns can be increased by retrofitting or these may be provided with bracing to decrease the lateral deformation.

Literature Review

Sreadha A R, Dr.C Pany study the nature of G+5 multistorey building analyse with and without floating column under earthquake forces and discuss the performance of structure with floating column in seismically active areas also establish the correlation without floating column by using designing software ETABS. Seismic analysis and response spectrum

method is done based on IS Code 1893(Part 1) 2002(10). For analysis 3 models considered for Zone 4. In model 1 structure without floating column is consider, In model 2 floating column is introduced at 1st floor and In model 3 floating column introduced at 5th floor. So it conclude that model 1 showing minimum Drift and Displacement and model 2 and 3 showing maximum Drift and Dispalcement.

Miss Priyanka S. Gunjal, Prof. M.N. Shirsath study G+5, G+7, G+9, G+11, G+13 RCC frame structure with floating column and without floating column isanalysed. The response spectrum method is carried out by using Stad Pro software. In earthquake analysis the response spectrum parameters such as storey displacement, storey drift, storey shear is evaluate and critical position of floating column building is studied. In regular or irregular building the effect of increasing section of beam and column has been studied in this critical position. To find whether the stuctures with floating columns are safe or unsafe in seismically prone areas also find out structures are economical or uneconomical as per commercial aspect.In the above study author conclude that building with floating column having more displacements and will make soft storey effect which is very worse than normal building. The torsional effect in earthquake excitation is more so as a result overturning effect cause in floating column building and structure become unsafe. In floating column the quantity of steel and concrete have to increase so as to keep it safe in earthquake excitation so floating column becomes uneconomical as compared to normal building.

MS Waykule S.B., Mr. kadam S.S., Mslale S.V. study G+5 storied building with and without floating column is studied for highly seismically active zone 5 as per IS Code (1893 Part 1):2002. Four models are studied as floating column at 1st, 2nd, 3rd floor and without floating column. By using SAP 2000V17 software modelling and analysis is done. For all the four models Linear static and Time history Analysis are carried out. From this analysis models result obtained are compared in the form of seismic parameters such as storey drift, storey displacement, time period and base shear by varying the location of floating column floor wise.In the above study author conclude that building with floating column has more time period, less base shear, more displacement, more storey drift as compared to building without floating column. It was also conclude that shifting of floating column from 1st storey towards top storey of the building results in increasing time period, base shear, storey displacement storey drift because of lateral stiffness of building.

Srikanth M.K., Yogendra R. Holebagilu carried out the comparison between having only floating column and having a floating column with complexities were considered for Ten Storey RC building for lower II and higher V seismic zones for medium soil condition at different alternative locations to find the optimum position and this analysis is carried out by using ETABS Version 9.7.4 software. The entire work consists of four models i.e. Model FC, FC+4, FC+HL, FC+4+HL. Where FC= floating column, HL= Heavy load. This four models is studied by changing the location of floating column firstly in the middle, outer and in edge of the frame of the building. In the above study author conclude that four models are not preffered in higher zone because of more displacement values. Because of magnitude of intensity will be more for higher zones the displacement of building increases from lower to higher zones. The value of displacement and drift is more for model FC+HL and FC+4+HL than FC and FC+4 due to the increament in weight. Displacement values increases when floating column is provided with middle and edge than the outer face of the frame. In model FC+HL, FC+4+HL there is sudden change in storey shear due to the heavy load on slab. In model FC+4+HL the drifts are deviated more compared to other models.

Arpit Shrivastav, Aditi Patidar work on the three cases of multistorey building along with 8 storey, 12 storey and 16 storey having floating column under seismic forces to observe the effect of shear wall. By using STAD-Pro software all the three cases consider having floating column provided with and without shear wall and analysed for zone III, zone IV and zone V. Due to the more magnitude of intensity for higher zones, the parameters lateral displacement, and storey drift of the building increases from lower to higher zones.

In the above study author conclude that the storey drift and lateral displacement is more for the building having floating column because columns are removed , the mass gets increased. For all the zones Displacement and drift values reduced by providing shear wall as compared to without shear wall models. Displacement value crosses the maximum permissible limit in case of without shear wall in zone IV 16 storey and zone V 8storey and 12 storey but it become safe incase of building with shear wall. In zone V 16 storey building is not safe for both with and without shear wall. To reduce the displacement values it is suggested to increase the size of column.

2.Problem Definition

The buildings considered to analysis regular G+4, G+10, G+20 of special moment resisting frames of plan dimension 22.5m×25m shown in fig 1, considered the buildings are situated in Zone- II as per IS 1893-2002. The buildings are modelled using the software STAAD Pro V8i.

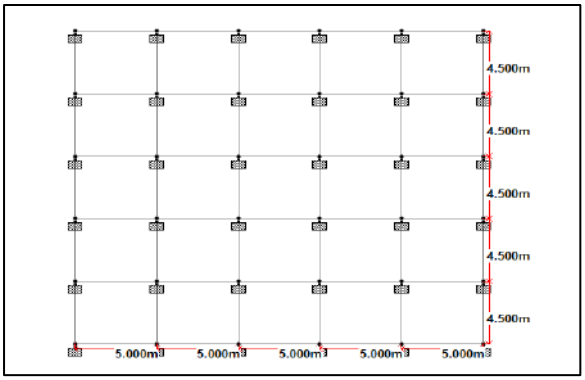

Figure 2: Plan of G+4, G+10 and G+20 Building

Various input parameters have been used to evaluate the effect of floating column on seismic response of RC framed structure. A detailed information of input parameters has been shown in table 1.

Table 1. Structural and Material Data

Sr. No.	I	II	III	IV			V
1	Structure	Beam	Slab	Column			Wall
2	Storey	---	---	G+4	G+10	G+20	---
3	Size	350x730 mm2	150 mm	350x350 mm2	500x500 mm2	660x660 mm2	300 mm
4	Material	M20	M25	M25	M30	M35	Brick

Table 2. Architectural Data

Sr. No.	I	II
1	No. of stories	G+4, G+10, G+20
2	Floor Height	3m
2	Dimension of plan	25m x 22.5 m

Table 3. Seismic Data

Sr. No.	I	II
1	Seismic zone	II
2	Importance factor(I)	1
3	Response reduction factor(R)	5
4	Zone factor	0.10

Modelling and Analysis of Structures

Procedure of Analysis of Structure Using STAAD Pro V8i consist of following steps:

- Modelling.
- Assigning member properties.
- Assigning supports.
- Applying loads.
- Analysis and design of structure.

Models have been prepared using above data in STAAD Pro V8i.

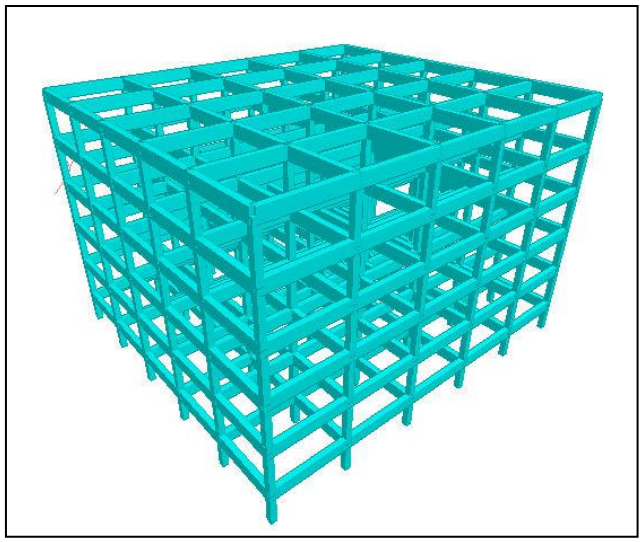

Figure 3: 3D view of G+4 Building (Rendering view)

Observations

In order to decide position of floating column in building, analysis of G+4, G+10 and G+20 models were carried out and displacements at extreme corner columns were observed and presented below.

Table 4. G+4 Without floating column, Corner Column and Central Column

Structure	Columns	Nodes	Displacement			Resultant
			X	Y	Z	
G+4 Without floating column	1	1	-0.004	-0.928	-0.004	0.928
		37	-0.011	-2.099	-0.01	2.099
		73	-0.008	-3.034	-0.007	3.034
		109	-0.006	-3.722	-0.005	3.722
		145	-0.003	-4.156	-0.003	4.156
		181	0.071	-4.332	0.058	4.333
G+4 Corner column	1	1	-0.016	-1.707	-0.004	1.707
		37	-0.016	-3.857	-0.014	3.857
		73	0.016	-5.532	-0.009	5.532
		109	0.01	-6.743	-0.006	6.743
		145	-0.009	-7.503	-0.005	7.503
		181	0.255	-7.819	0.076	7.824
G+4 central column	1	1	-0.032	-0.44	-0.003	0.441
		37	-0.159	-1.037	-0.009	1.05
		73	-0.032	-1.557	-0.007	1.557
		109	-0.023	-1.959	-0.005	1.959
		145	-0.013	-2.205	-0.003	2.205
		181	0.455	-2.275	0.055	2.321

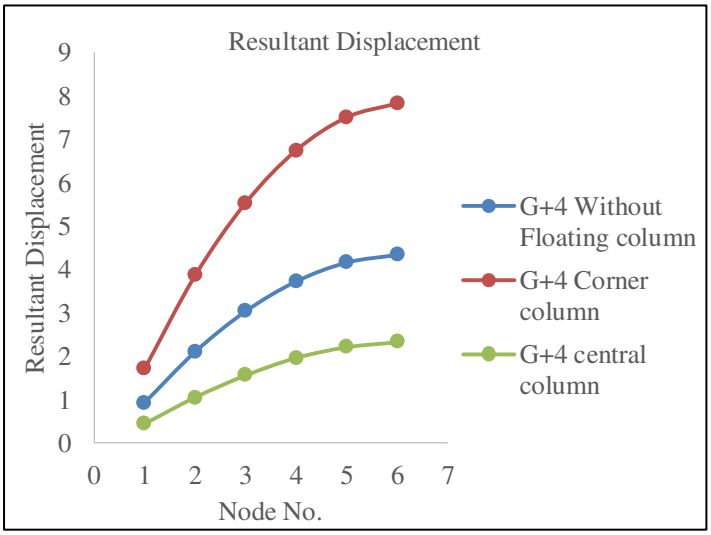

Figure 4: Resultant displacement for G+4 Building

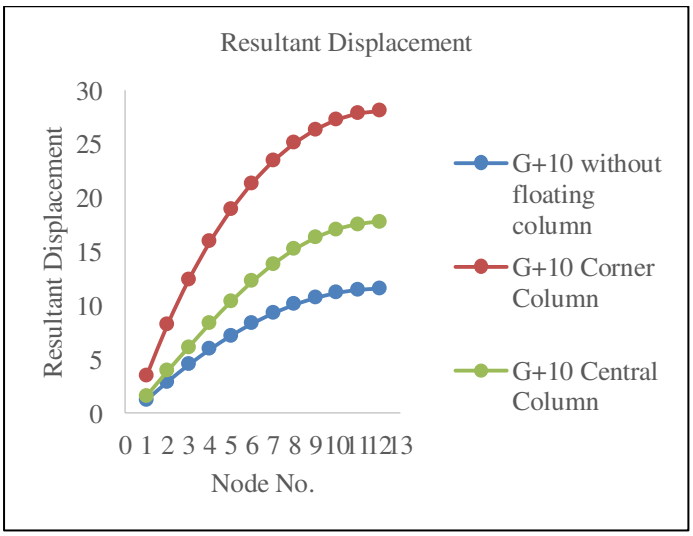

Figure 5: Resultant displacement for G+10 Building

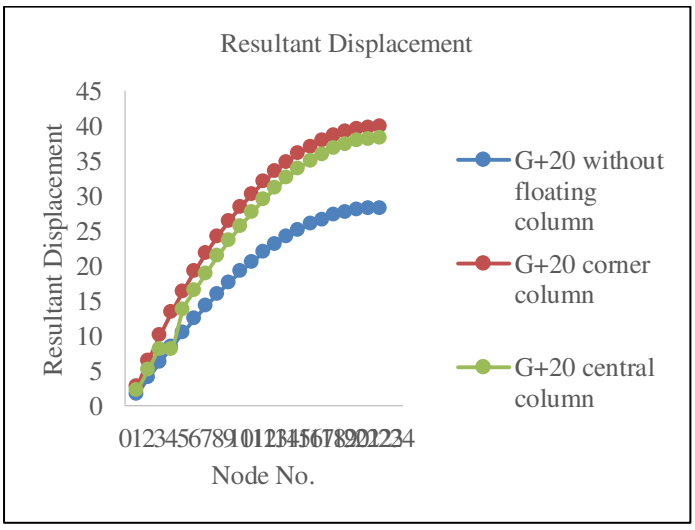

Figure 6: Resultant displacement for G+20 Building

3. CONCLUSIONS

Based on observations presented following conclusion have been drawn.

- As height of building increases resultant displacement also increases.
- An introduction of floating column in symmetrically loaded structure increases its displacements for static loading.
- Structure with floating column provided at central portion behaves well as compare to floating column provided at corner.

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EXPERIMENTAL INVESTIGATION ON GLASS FIBRE REINFORCED CONCRETE

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Abstract -In this paper, we have seen that now days Construction industry is always trying to find new, better and economical material to manufacture new product, which is very beneficial to the industry. Today a significant growth is observed in the manufacture of composite material. With this energy conservation, corrosion risk, sustainability is important when a product is changed or new product is manufactures. Glass fibre (GF) is one of the high performance non-metallic fibres made by fusing (co-melting) silica with minerals. Glass fibre reinforced concrete (GFRC) offers more characteristics such as light weight, good fire resistance and strength. In future it is very beneficial for construction industry. Many applications of glass fibre are residential, industrial, highway and bridges etc.

Most of the studies preferred parameters like addition of glass fibres into the concrete with various proportions represented the positive as well as negative improvements in mechanical properties of concrete. However, the researchers could not exhibit the improvement in properties like compressive strength, modulus of elasticity, flexural strength, tensile strength, toughness, early age cracking etc. Even though these properties are important for desired quality of concrete, to overcome this, use of optimum percentage glass fibres in concrete. In present work different percentages of glass fibres were added for M-30 grade of concrete. The experimental study were carried out by casting the cubes in different proportions of glass fibres and glass fibre mesh and the results were obtained to find out optimum percentage of glass fibres. The glass fibres were added into the concrete in proportion of 0, 0.5 %, 1.0 % and 1.5 % by volume at an increment of 0.5 %. A comparative study of various experimental results was carried out.

***Key Words*:**cement, coarse aggregate, fine aggregate, water and glass fibre

1.INTRODUCTION

Industry is always trying to find new, better and economical material to manufacture new product, which is very beneficial to the industry. In the recent days, the various fibres develop and used in the construction, industrial and highway engineering. The steel is mainly used in that various application. Also fibre glass polythene fibres, carbon fibres, polyamide fibres are now developed and also used in construction, industrial and infrastructure development. In that list new one fibre is added, called as glass fibres.

Today a significant growth is observed in the manufacture of composite material. With this in mind energy conservation, corrosion risk, the sustainability and environment are important when a product is changed or new product is manufactures. Glass fibre is a high performance nonmetallic fibre Glass melts are made by fusing (co-melting) silica with minerals, which contain the oxides needed to form a given composition. The molten mass is rapidly cooled to prevent crystallization and formed into glass fibres by a process also known as fibreization. The glass fibres do not contain any other additives in a single producing process, which gives additional advantage in cost. Glass fibres have no toxic reaction with air or water, are non-combustible and explosion proof. When in contact with other chemicals they produce no chemical reaction that may damage health or the environment. Glass fibre has good hardness and thermal properties. Glass fibres have been successfully used for foundation such as slabs on ground concrete.

By industrial production of glass fibres on the basis of new technologies their cost is equal and even less than cost of basalt fibre. The glass fibres and materials on their basis have the most preferable parameter ratio of quality and the price in comparison with glass, carbon fibres, and other types of fibres. It can also be mixed with other materials, when compacted it develops a high degree of mechanical particle interlock which results in high shear strength partly due to its texture.

In this modern age, civil engineering constructions have their own structural and durability requirements, every structure has its own intended purpose and hence to meet this purpose, modification in traditional cement concrete has become mandatory. It has been found that different type of fibres added in specific percentage to concrete improves the mechanical properties, durability and serviceability of the structure. It is now established that one of the important properties of Fibre Reinforced Concrete (FRC) is its superior resistance to cracking and crack propagation and which containing fibrous material which increases its structural integrity. It contains short discrete fibres that are uniformly distributed and randomly oriented. Fibres include steel fibres, basalt fibres, glass fibre, synthetic fibres and natural fibres – each of which lends varying properties to the concrete. In addition, the character of fibre reinforced concrete changes with mixing fibre materials, geometries, distribution, orientation, and densities. The weak matrix in concrete, when reinforced with fibres, uniformly distributed across its entire mass, gets strengthened enormously, thereby rendering the matrix to behave as a composite material with properties

significantly different from conventional concrete. Because of the vast improvements achieved by the addition of fibres to concrete, there are several applications where FRC can be intelligently and beneficially used. These fibres have already been used in many large projects involving the construction of industrial floors, pavements, highway overlays, etc. in India. These fibres are also used in the production of continuous fibres and are used as a replacement to reinforcing steel. High percentages of steel fibres are used extensively in pavements and in tunnelling. Fibres are usually used in concrete to control cracking due to plastic shrinkage and to drying shrinkage. They also reduce the permeability of concrete and thus reduce bleeding of water. Some types of fibres produce greater impact, abrasion, and shatter– resistance in concrete. Glass fibres can be considered environmentally friendly and non-hazardous materials. It is not a new material, but its applications are surely innovative in many industrial fields, from building and construction to energy efficiency, from automotive to aeronautic, thanks to its good mechanical, chemical and thermal performances. Hence, glass fibre has gained increasing attention as a reinforcing material. The production process, even if it is very similar to the glass fibres one, does not require additives and a lower amount of energy is needed with benefits in terms of environmental impact, economics and plants maintenance. The base cost of glass fibres depend on the quality and the chemical composition of the raw material and this leads to have several kind of fibres with different thermal, chemical and mechanical properties.

2. LITERATURE REVIEW

A significant amount of research work on various structural aspects of use of structure and their mechanism has been published by many investigators. Review of some of the technical papers are briefed below:

2.1" Glass Fibre Reinforced Concrete to study the Properties of the Concrete"

Md.Abid Alam (2015)For experiment Cem-Fil Anti-Crack, HD 12mm, Alkali Resistant glass fibre were used for the work. The specific gravity of the fibre is 2.68 mm and the length 12 mm. For the experimentation, M-20 and M-30 Grade concrete is used under the proportioning procedure mentioned under IS 10262-2009. For M20 grade of concrete 0.50 W/C Ratio is used and for M-30 Grade of Concrete 0.42, W/C Ratio is used. Fibre is added in an increment of 0.02% from 0% to 0.06%. (0%, 0.02%, 0.04%, 0.06%). And according to the test result concrete attain higher strength that the target strength. An M-20 grade of concrete attains 41.28 Mpa of Compressive Strength and 5.76Mpa of Tensile Strength when 0.06% of fibre is added in concrete. And M-30 grade of concrete attain 62.29Mpa of Compressive strength and 7.17Mpa of Tensile Strength. Almost concrete attain 1 times of the target strength of the concrete.

2.2 "Conducted Durability Studies On Glass Fibre Reinforced Concrete"

Dr. P. Srinivasa Rao, 2015

The alkali resistant glass fibres were used to find out workability, resistance of concrete due to acids, sulphate and rapid chloride permeability test of M-30, M-40 and M-50 grade of glass fibre reinforced concrete and ordinary concrete. The durability of concrete was increased by adding alkali resistant glass fibres in the concrete. The experimental study showed that addition of glass fibres in concrete gives a reduction in bleeding. The addition of glass fibres had shown improvement in the resistance of concrete to the attack of acids.

2.3"The Performance Of Glass Fibre Reinforced Concrete"

Yogesh Murthy 2015

The study revealed that the use of glass fibre in concrete not only improves the properties of concrete and a small cost cutting but also provide easy outlet to dispose the glass as environmental waste from the industry. From the study it could be revealed that the flexural strength of the beam with 1.5% glass fibre shows almost 30% increase in the strength. The reduction in slump observed with the increase in glass fibre content.

2.4 "Experimental Study On Behavior Of Steel And Glass Fibre Reinforced Concrete Composites"

Kavita Kene, 2012

The study conducted on Fibre Reinforced concrete with steel fibres of 0% and 0.5% volume fraction and alkali resistant glass fibres containing 0% and 25% by weight of cement of 12 mm cut length, compared the result.

2.5 "The Strength Aspect Of Glass Fibre Reinforced Concrete"

Avinash Gornale, 2012

The study had revealed that the increase in compressive strength, flexural strength, split tensile strength for M-20, M-30 and M-40 grade of concrete at 3, 7 and 28 days were observed to be 20% to 30%, 25% to 30% and 25% to 30% respectively after the addition of glass fibres as compared to the plain concrete.

2.6 "The Performance Of Glass Fibre Reinforced Plastic Bars As Reinforcing Material For Concrete Structures"

S. H. Alsayed, 2000

The study revealed that the flexural capacity of concrete beams reinforced by GFRP bars can be accurately estimated using the ultimate design theory. The study also revealed that as GFRP bars have low modulus of elasticity, deflection criteria may control the design of intermediate and long beams reinforced with FDRP bars.

2.7 Experiment On Concrete Which Is Added With Glass Fibre In It"

T.Sai Kiran 2016

Glass Fibre used in this project is an Alkali Resistance Glass Fibre, which has a specific gravity of 2.68 and in 14 microns diameter. For the experimentation M30 grade of concrete is used in this work with 0.45 W/C Ratio. Glass fibre is added with the concrete in 5%, 6%, 7%, and controlled concrete are also cast. In this work, the author has tested the concrete for compression and flexural test. In this work, the concrete is tested for different ages from 1 to 56 days (1 day, 3 days, 7 days, 28 days, 56 days). After curing for 28 days the concrete.

3. AIM AND OBJECTIVE

The aim of the experimental investigation is to analyse the properties of concrete by adding the most suitable combination of glass fibre percentage into the concrete. This optimum percentage of glass fibre is used for further investigation.

1. To check the behaviour of GFRC under compression strength.

2. To determine the optimum percentage of glass fibre quantity into the concrete.

3. To increase the toughness of the concrete.

4. METHODOLOGY

The experimental investigation was carried out in five phases. The first phase is to study of various properties of ingredients of concrete such as cement, sand, aggregate etc. The second phase is to design M-30 mix as per IS code method (IS 10262:2009). Addition of different percentage of glass fibres into the mixture of concrete is scheduled, from which optimum percentage of glass fibres available for experimental investigation was to be found out. The third phase addition of glass fibres in different proportion such as 0 %, 0.5 % , 1.0 % & 1.5 % at an increment of 0.5 %. The fourth phase preparation of cubes for compressive strength of concrete for different proportion. The fifth phase to analysis the results based on experimental data. Specimens will be computed by conducting compressive strength tests into the laboratory. A mix design of M-30 grade concrete is adopted. Cubes were casted & cured for a period of 0,7,28,56 and 90 days. These cubes were tested for compression strength. A total 48 number of cubes were casted by addition of glass fibres in different percentages into the concrete by volume, such as 0 %, 0.5 %, 1.0 % and 1.5% at an increment of 0.5%.By adding different percentage of glass fibres into the concrete, its optimum percentage quantity will be obtained.

5.RESULT AND DISCUSSION

Table -1: COMPRESSIVE STRENGTH

S.NO	M-30+ GF	Compressive Strength (N/mm^2)	
		7 days	28 days
1	0.5%	38.83	39.86
2	1.0%	39.13	40.76
3	1.5%	41.50	43.43

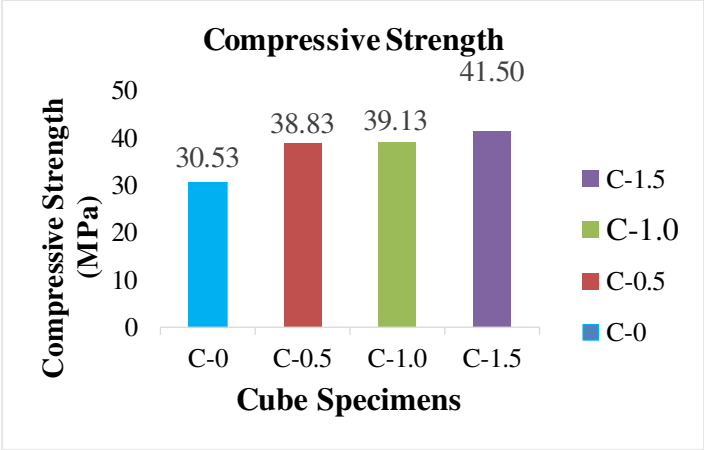

Figure 1: Compressive Strength of GFRC (7 days Curing)

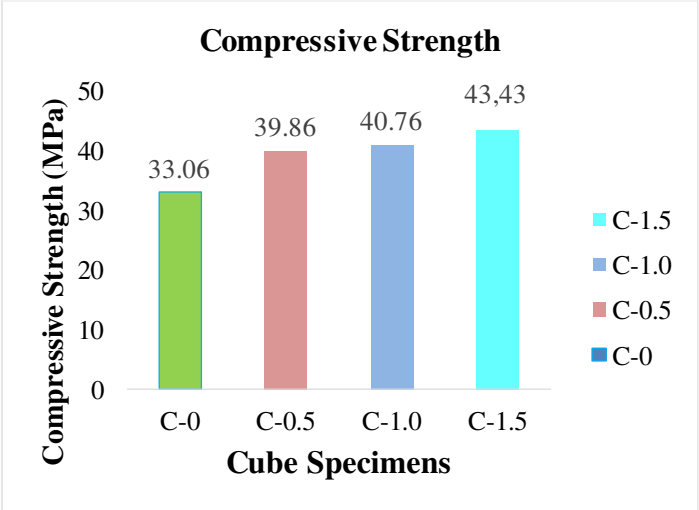

Figure 2: Compressive Strength of GFRC (28 days Curing)

6. CONCLUSIONS

Up to 28 days: -

- From the compression test, it has been observed that the maximum increase in compressive strength at 1.5 percentage of glass fibre content into the concrete which was increased by 31.37% as compared to the control specimens.
- Addition of glass fibers reduces bleeding and it improves the surface integrity of concrete. Also it increases the homogeneity and reduces the probability of cracks.
- It has been observed that the workability of concrete increases at 1.5% with the addition of glass fibre.
- The increase in compressive strength, flexural strength, split tensile strength for M-20 grade of concrete at 7 and 28 days are observed to be more at 1.5%. We can likewise utilize the waste product of glass as fibre.

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Seismic Behaviour of Multistory Building with And Without Soft Story Effect Using Masonary Strut in ETABS Software

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Abstract— Many low-rise and medium-rise framed buildings have been constructed in the recent past, without proper attention paid in their design for wind or earthquake loads. This serious shortcoming in structural design and detailing has been exposed by failure that has occurred in the recent earthquakes in various parts of the country. Nowadays reinforced cement concrete frames are most common in building construction practices around the globe. The vertical gaps in reinforced cement concrete frames that are created by column & beam are generally filed by brick masonry. If these gaps are not filled by brick masonry, then the structure is known as a bare frame structure. Due to gaps, the bare frame has a very low resistance to lateral forces, which fail structure. Openings are provided in structure for doors, windows, etc. In this work, to provide stiffness to the structure, we provide an infill wall strut of 230 mm thick brick masonry & effective depth under compression calculated by equivalent diagonal strut method. Infill wall act as compression strut between column & beam & forces is transferred from one node to another. Such as a building in which the upper story has a brick-infill wall panel and an open ground story is called a stilt building and an open story is called a stilt floor or soft story. A soft story is also known as the weak story it is the story in which that has less substantial resistance than the above story or below. The G+6 storied residential building with different models is considered. In each case, we provide a bare frame and infill wall at different positions with different types of struts & then studied the behavior of the structure under seismic forces. Based on that, parametric studies on story displacement, story drift, time period shear force, and moments have been carried out using equivalent static analysis & response spectrum analysis to investigate the influence of this parameter on the behavior of buildings with soft story.

Keywords— Story Drift, Story Displacement, Time Period, Response Spectrum Analysis, Soft Store

I. INTRODUCTION

Earthquakes are the most destructive and life threatening phenomenon of all the times. Earthquakes are caused due to the large release of strain energy during a brittle rupture of rock. The force generated by seismic action of earthquake is different than other sorts of loads, such as, gravity and wind loads. It strikes the weakest location in the whole 3D building. The purpose of seismic resistant building is to provide comfort and safety which is done because of control on internal forces. Commonly, to protect structure damping has done i.e., to reduce the whole seismic energy by structural members which provides the capacity to resist against earthquake. An earthquake is the result of a rapid release of strain energy stored in the earth's crust that generates seismic waves. Structures are susceptible to earthquake ground motion and damage the structures. In order to take precaution for the damage of structures due to the ground motion, it is important to know the characteristics of the ground motion. The most important dynamic characteristics of earthquake are peak ground acceleration (PGA), frequency content, and duration. These characteristics play predominant rule in studying the behaviour of structures under the earthquake ground motion. Earthquakes produce almost instantaneous response leading to destruction of buildings and wind forces are also detrimental to structures if they are not designed for it. The effect of earthquake forces and wind forces goes on increasing with the height of the building and governing factor for design also depends on various factors from location of the building to the geometry of the building and also soil conditions. The key problem is to scale back the structural response by decreasing the dissipation of input energy due to earthquake.

A. Soft Story Behaviour

Construction of multi-storey building with open first story is common practice in India. This is unavoidable feature and is generally adopted for parking or reception lobbies. Such as building in which the upper story have brick infill wall panel and open ground story is called as stilt building and open story is called stilt floor or soft story. A soft story is also known as weak story it is the story in which that has less substantial resistance than above story or below. Stability of earth is usually disturbed due to internal forces and as a results of such disturbance, vibrations or jerks in crust takes place, which is understood as an earthquake. Earthquake produces low and high seismic waves which vibrate the base of structure in various manners and directions, so that lateral force is developed on structure. In such buildings, the stiffness of the lateral load resisting systems at those stories is quite but the stories above or below.

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Figure 1: Soft Story for Parking Floor

II. Objectives Of Study

The primary objectives of this plan can be shortening as follows:

1) To observe seismic analysis using equivalent static analysis method & dynamic analysis using response spectrum method in ETABS.
2) To study the different seismic parameters like story displacement, story drift, center of mass.
3) To find the optimum result of with and without infill wall having soft story effect in RC structure during earthquake.

III. Method Of Analysis used

A. Equivalent Static Analysis.

It is one among the methods for calculating the seismic loads. The high rise structures are not considered for the planning simple static method. In practical because it doesn't take into account all the factors that are the importance of the foundation condition. The equivalent static analysis is used to design only for the small structures. During this method only one mode is taken under consideration considered for each direction. The earthquake resistant designing for the low rise structures the equivalent static method is enough. Tall structures are needed quite two modes and mass weight of every story to design earthquake resistant loads. This is permitted in most codes of practice for normal, low-to medium-rise buildings.

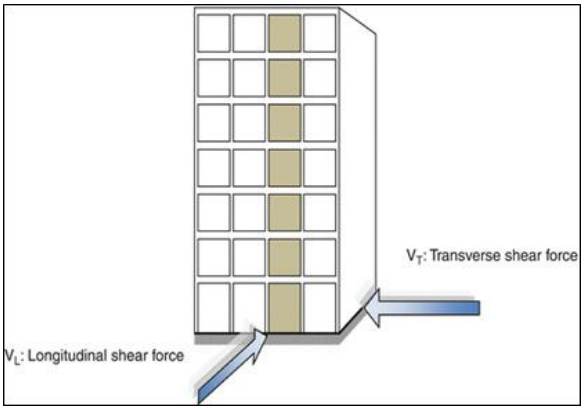


Figure 2: Base Shear along Longitudinal and Transverse Direction

B. Response Spectrum Method

The representation of the maximum response of idealized single degree freedom system having certain period and damping, during earthquake ground motions. The maximum response plotted against of un-damped natural period and for various damping values and can be expressed in terms of maximum absolute acceleration, maximum relative velocity or maximum relative displacement. For this purpose response spectrum case of study are performed consistent with IS 1893.

The response "design acceleration spectrum" which refers to the max acceleration called spectral acceleration coefficient Sa/g, as a function of the structure for a specified damping ratio for earthquake excitation at the base for a single degree freedom system. The revised IS 1893-2016 uses the dynamic analysis by response spectrum. During this method takes under consideration all the five important engineering properties of the structures.

1) The elemental natural period of vibration of the building.
2) The damping properties of the structure.
3) Sort of foundation provided for the building.
4) Importance factor of the building.
5) The ductility of the structure represented by response reduction factor.

C. Modelling and Analysis

In the present study, the buildings are modelled by using the software ETABS and different infill wall locations are used for improving seismic performance of the building. Walls are modelled by equivalent strut approach and wall load is uniformly distributed over beams. The diagonal length of strut is same as the brick wall diagonal length with the same thickness of strut as brick wall, only depth of strut is derived. Walls are considered to be pinned connected to the columns and beams. The Span Length in longitudinal direction is 15 m and in transverse direction 9 m .The c/c distance between floor to floor is 3m and soft story height is 3m. Different loads such as dead load, live load, roof live

load, wall load, and earthquake load is applied on building at appropriate location as per codes used for Loading. This model are analyzed by using equivalent static analysis and response spectrum analysis. Design is completed firstly by Indian Codes (i.e. IS 456-2000, IS 1893-2016).

The multi-story building are modelled in five different configurations are as follows-

Model 1: Model with bare frame.
Model 2: Model with in-filled frame single strut approach from 1st story.
Model 3: Model with in-filled frame single strut approach with soft story effect.
Model 4: Model with in-filled frame double strut approach from 1st story.
Model 5: Model with in-filled frame double cross strut approached with soft story effect.

D. Building Prameters Considered in this Work

Structure	SRMF (R=5)
Floors	G + 6
Ground storey height	3 m
Typical storey height	3 m
Height of building	21 m
Length of building	15 m
Width of building	9 m
Tx	0.487 Sec
Ty	0.630 Sec
Damping	5%
Soil type	Medium (II)
Seismic zone	III
Importance factor	1.2
Live load	3 kN/m^2 (Typical Floor) 1.5 kN/m^2 (Terrace Floor)
Floor finish	1 kN/m^2
Wall load	External wall - 12.74 kN/m Internal wall - 6.371 kN/m Parapet wall - 4.6 kN/m
Size of beam	300 X 450, 300 X 600
Size of column	450 X 450
Size of strut	Width – 230 mm Height – 390 mm
Outer Wall	230 mm
Inner Wall	115 mm
Parapet (1m height)	230 mm

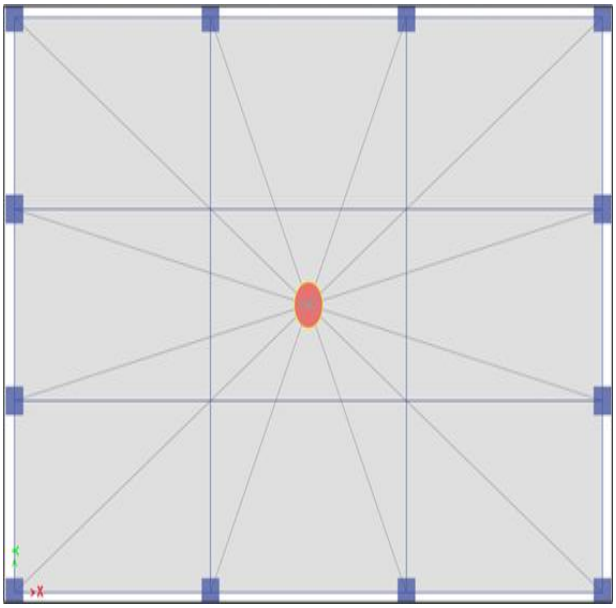
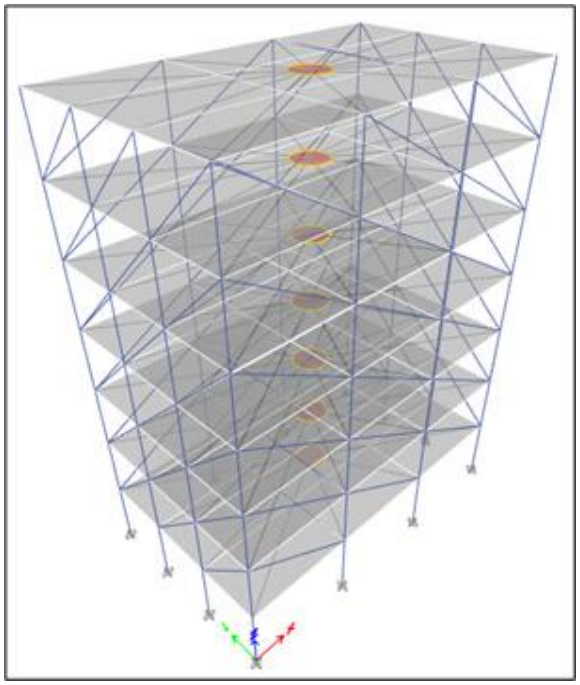
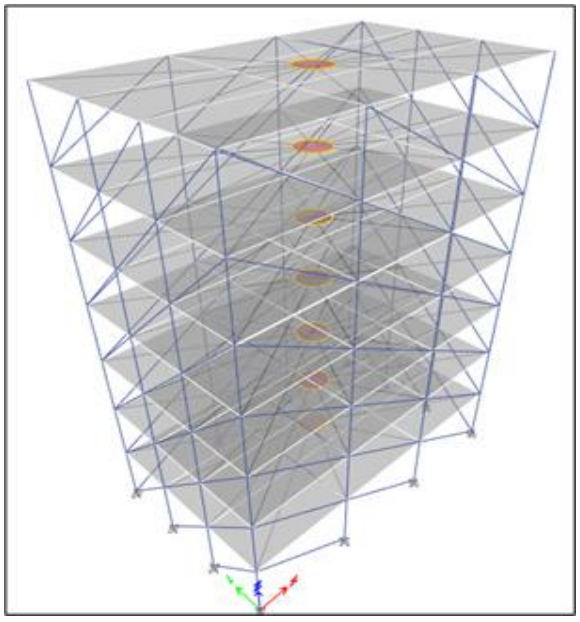


Figure 3: Plan View for All Buildings

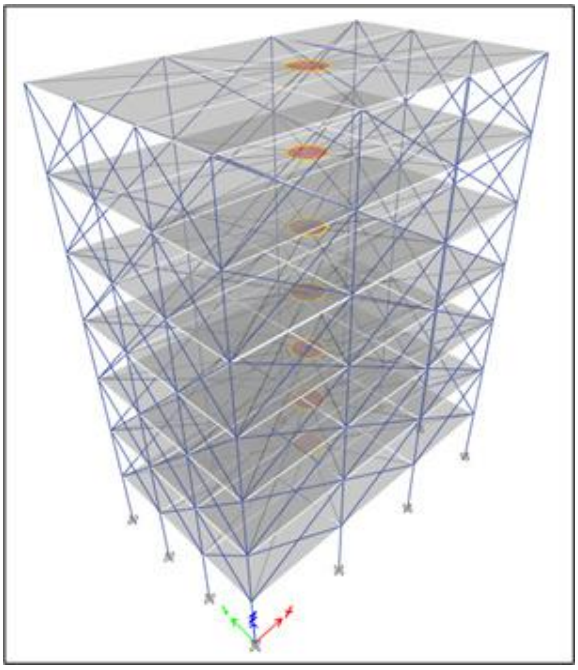
Figures 4: Shows Building With Bare Frame. (Model-1)



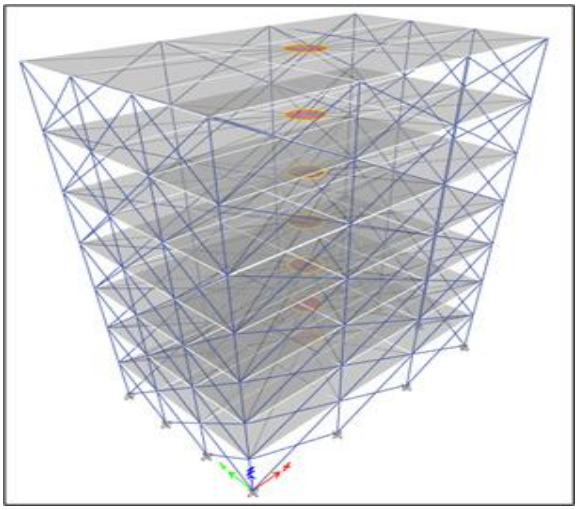
Figures 5: Shows In-Filled Frame Single Strut Approach from 1st Story (Model-2).



Figures 6: Shows In-Filled Frame Single Strut Approach from Soft Story Effect. (Model-3).



Figures 7: Shows In-Filled Frame Double Strut Approach from 1st Story. (Model-4).

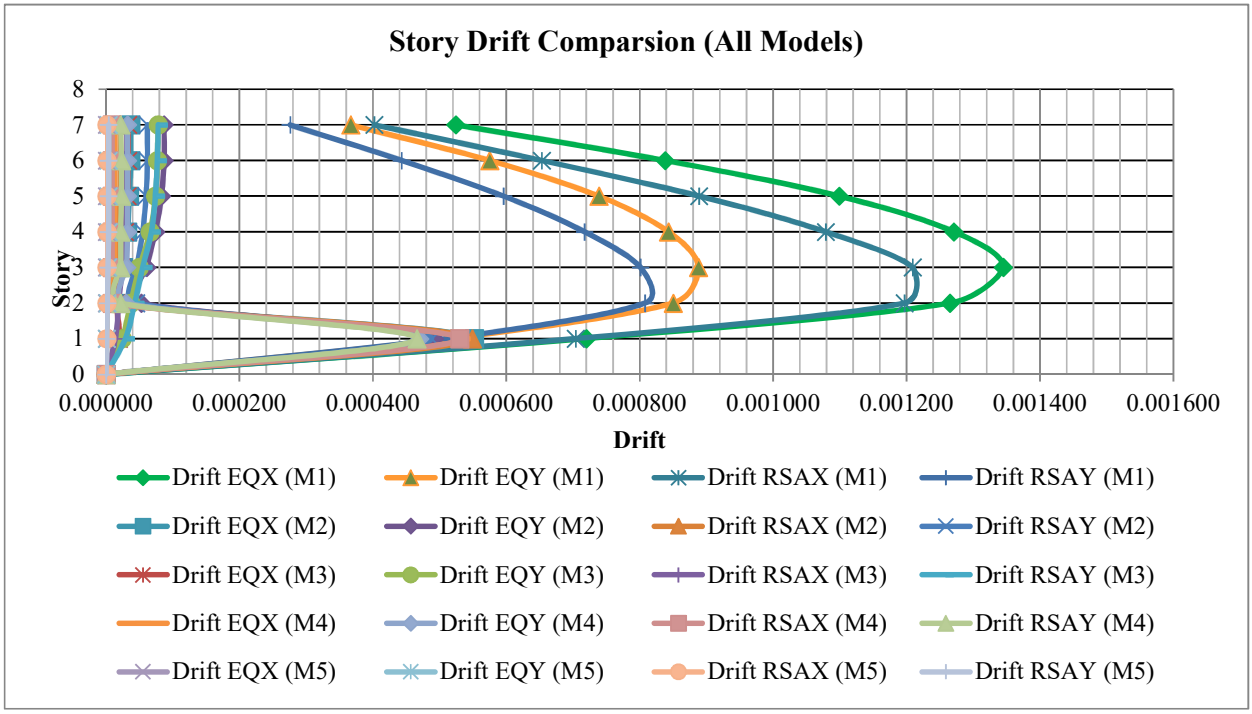


Figures 8: Shows In-Filled Frame Double Strut Approach from Soft Story Effect (Model-5)

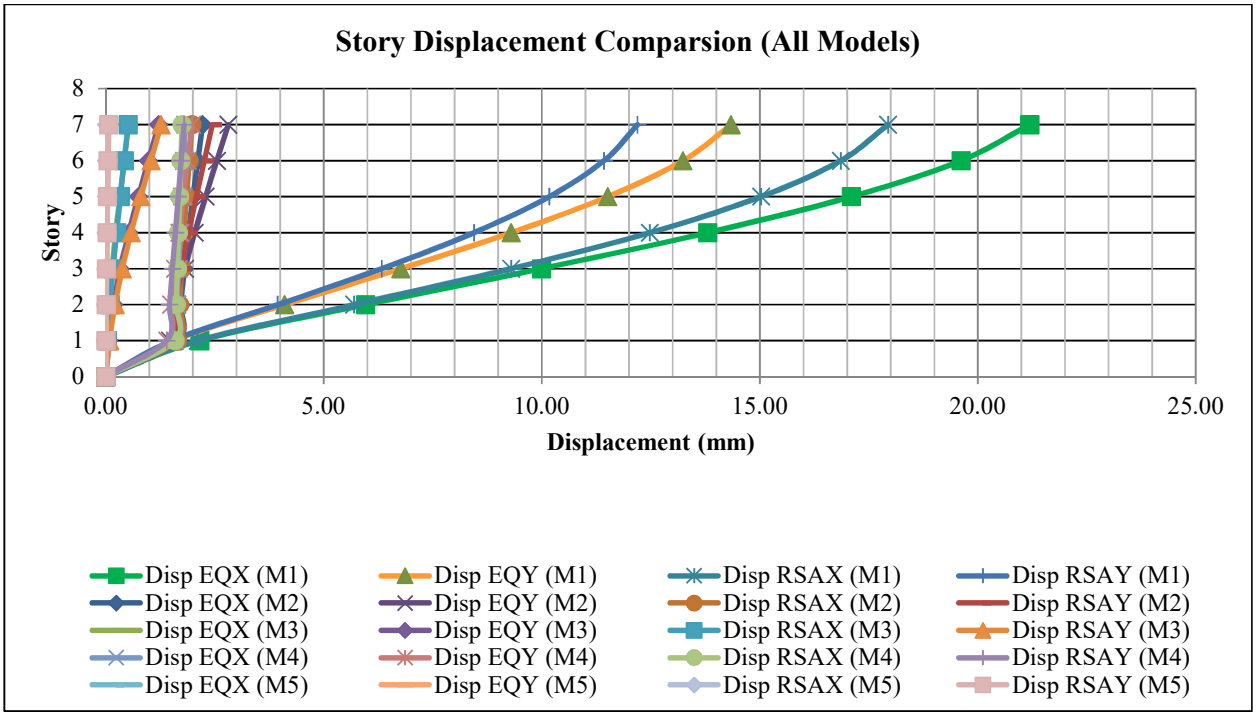
IV. RESULTS AND DISCUSSION

An attempt is made to find the vulnerability location of soft storey by considering the soft storey at the ground levels with and without using struts

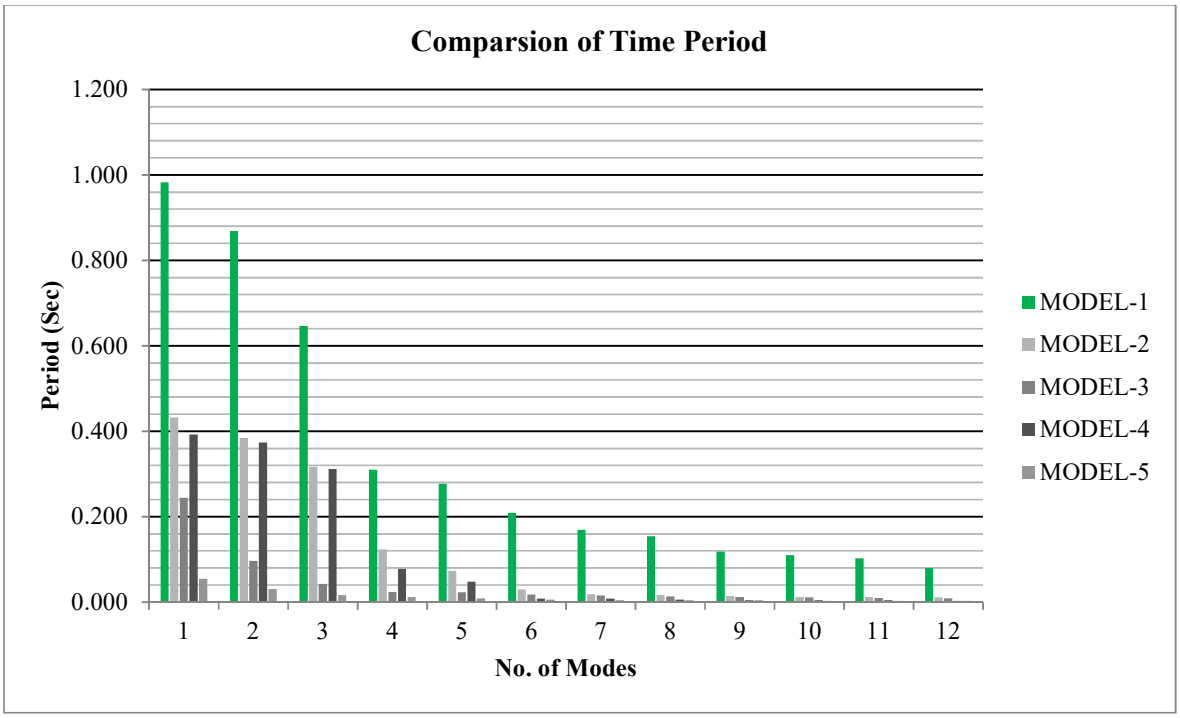
A. Results of Storey Drift



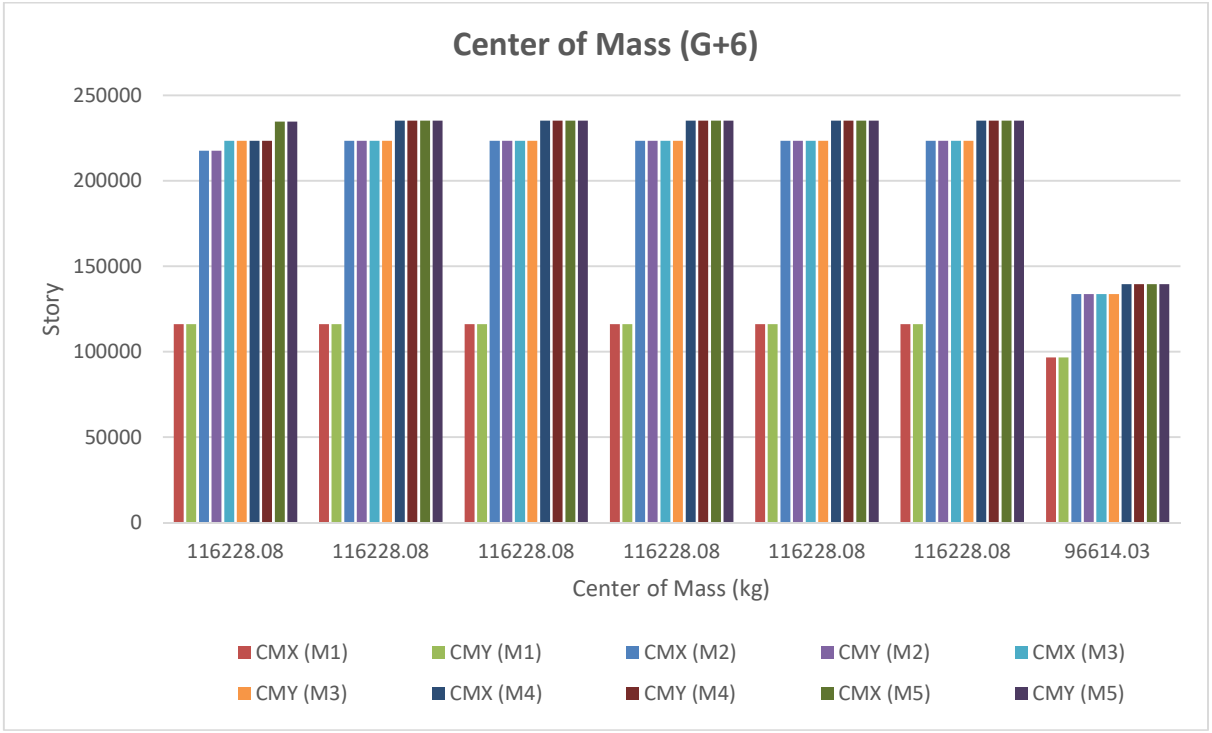
B. Results of Storey Displacement



C. Results for Time Period



D. Results for Center of Mass



V. CONCLUSION

In the present work attempt has been made to compare the seismic analyses of different buildings and following are the conclusions drawn.

- In case of an open first storey frame structure, the storey drift & displacement is very large than the increasing upper storeys, which may cause the collapse of structure during strong earthquake shaking. The necessary measures should take to improve capacities of the columns in the soft first storey.
- Drift and displacement of the structure are more in the case of bare frame. And these can be lowered by making the provision of strut at the level of soft storey.
- From the analysis it is seen that, deflection is more in case of bare frame as compare to that of infill frame, because presence of infill contributes to the stiffness of building. This effect is clear from comparison of all models with Model 1.
- Time duration of the structure is more in bare frame, whereas it reduces in case of strut frame. Fundamental time period decreases when the provisions of different types of strut are considered.
- Stiffness of the soft storey in case of bare frame is less than the upper storey. And it is seen that stiffness of the storey increases by providing the bracings at soft story level.
- Behaviour of square column is better than rectangular column, in terms of storey drift & story displacement. It is also observed that due to double strut used in building column force are reduced drastically.
- Moments & Shear forces in bare frame are always maximum as compare to infill wall & strut in all Models.
- It also concludes from the observation cross (X-type) strut is very effective in case of infill wall building as compare to other type used. It should be considered in soft story at some location in outer periphery to strengthen the column.

VI. FUTURE SCOPE

- To observe the effect of soft storey in a building at different level with different shapes of shear wall throughout the height of the building and also the shear wall at the center of the building.
- Study the effect of soft storey at different level for structure having irregularity in plan.
- Study the effect of soft story and the floating column due to soft story.
- The structure can be analyzed in different soil type and seismic zone and also study in hilley terrain area.

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Reed Bed Technology for Waste Water Treatment – A Review

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Abstract: In this article, reed bed technology is described in brief.Reed bed technology is a waste water treatment which is natural purifying decentralized process. There are different types of macrophytes present in waste water. Thus various types of reed bed i.e Horizontal flow and Vertical flow type reed bed is use. Also many types of aquatic plant species is used in this technology for treatment of waste water. This technology gives an efficient and satisfying solution to the problem of domestic waste water.

Keywords: Horizontal flow, vaertical flow, Rophytes, Rhizosphere, NitrificationDenitrification, Root-Zone.

I. INTRODUCTION

Day by day increasing scarcity of water required the reuse of water in different rural areas or in those places facing the same problem. Treatment of wastewater so that we can reuse it for a different purpose is required. The reeds bed system is one of the most widely accepted wastewater treatment methods. Rural areas can easily afford this method as it is cost-effective than any other conventional wastewater treatment method. A reed bed wastewater treatment system works according to the law of nature, to effectively purify domestic effluent. It is a biological treatment that works on the combined action of plants and bacteria. Reeds bed system consists of a layer of sand, gravel and planted with the macrophytes i. e Phragmites Australis. Wastewater passes through the basin and undergoes treatment. The filtering action of soil bed, biological and physical interaction between wastewater, plant, micro-organisms, oxygen, and gravel takes place. This mechanism is known as root zone technology or Bio-filter or Constructed Wetland (CWs). Reed Bed System is highly effective, eco-friendly, cost-effective, maintenance-free, and responsible for the reduction of carbon footprint.

II. LITERATURE REVIEW

A huge number of industries produce toxic wastes and discharged into rivers and streams with insufficient treatment or without treatment; an action which increases threats to public and aquatic lives. In this paper, reed bed treatment system for removal of toxic metals from industrial waste water was investigated. Phragmites Karka, a reed palnt was used for the Wetland system while granite and washed sand were used as substrates. Hydraulic retention period for the treatment performed is of 3, 7, 11, 15 and 19 days. The results describes that the retention periods increases with gradually reduction of the biochemical parameters. The removal rate with reed bed lies between 36.8% to 61.5%. These results further confirm the efficiency of the reed plant, phragmites karka, in the treatment of industrial wastewater.
Our objective is to study the performance efficiency of the reed bed system in the removal of harm full chemicals contained in the contaminated water.

III. REED BED SYSTEM

Reeds bed system works on the principle of Root Zone Technology (RZT). Reeds bed systems are known as Constructed Wetlands (CWs), when common reeds, phragmites australis have been planted as the main macrophytes. It is one of the most cost-effective methods of wastewater treatment & affects the environment minimally. On other hand, we can say it is an eco-friendly method of sewage treatment. It works on the principle that reeds can transfer the oxygen from leaves

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to their rhizomatous root, promote the growth of bacteria in the bed and help break down the organic matter in the root zone.

A. TYPES OF REED BED

There are different types of reeds bed exist based on their hydraulic flow, such as Horizontal flow reeds bed, Vertical flow reeds bed, Surface flow reeds bed, Hybrid flow reeds bed. Horizontal flow reeds beds are the most common type for tertiary treatment of sewage at small work. Meanwhile, vertical flow reeds bed are widely used as it deals with strong effluents. Due to the extra availability of oxygen, Vertical flow reeds bed provide good nitrification, ammonia removal, as well as the removal of (Biochemical Oxygen Demand) BOD pollutants. While Horizontal flow reeds beds are efficient to reduced BOD (Biochemical Oxygen Demand) and Suspended Solids.

B. MACROPHYTES AND ITS ROLE

Microphytes are phytoplankton and are also known as microalgae generally found in fresh and marine water. An interesting step for wastewater treatment offered by microalgae culture. As they provide tertiary biotreatment along with the production of potentially valuable biomass, which can be used for several purposes. Microalgae use inorganic material (such as nitrogen and phosphorus) for their growth. Hence, microculture can be treated as tertiary and quandary treatment for wastewater. Also, they have the ability to remove heavy metals and some toxic organic compounds. Thus, it does not lead to secondary pollution. Microphytes are very important for life on the earth. Approximately half of the atmospheric oxygen has been produced by them. They are responsible for the reduction of greenhouse gas carbon dioxide.

C. AQUATIC SPECIES PLANT

There are various species of aquatic plants but should prefer one of the native species grows locally in that area. The species should have a relatively rapid growth rate, be able to withstand wetland conditions, and be tolerant of rich feeds. In India, the *Phragmites Australis* also known as common reeds and locally known as 'Nanal' in Tamil Nadu, has been proven to be most effective for wastewater treatment. Their heights range up to 3m -4m at full of their growth. These species of aquatic plants have the ability to transfer the oxygen from the leaves of the plants to their roots via stem from the atmosphere, where a part diffuses into the liquid substrate. They have deep root and the main stem that's run underground horizontally called 'rhizome' which provide the growth of microorganism to form their colonies. Microorganism used oxygen from the plants and helps to stabilize the organic matter. Thus plants promote the growth of microorganisms, Promote nitrification, denitrification along with the stabilization of organic matter.

D. REED BED SYSTEM PROCESS

The 'Root Zone Technology' works on the principle of nature to effectively purify the domestic effluents. It consists of the live interaction of various species of bacteria, soil, roots of plants, air, sun, and of course water. Reeds plants have the characteristics ability to absorbed oxygen from the atmosphere and promote the growth of microbial organisms. Most of the microorganisms oxidized and help to purify the wastewater also use nitrogen and phosphorus to multiply their colonies. It is one of the most eco-friendly methods of purifying, a self-regulating process found by nature itself. Some important component is essential in this system are

1] Aquatic plant use *(Phragmites Australis)*
2] Set up of reeds bed
3] Microbial organism or Microphytes.

The raw effluents pass through the bed of soil horizontally or vertical having an impervious bottom. The roots of reeds plants spread very thickly under the ground where the effluents percolate. Nearly about 2,500 types of bacteria and 10,000 types of fungi, received oxygen from the weak membrane of the root and aerobically oxidized the organic matter of effluent. These plants absorbed oxygen from the atmosphere with the help of their leaves transfer it to the roots through the stem while the roots of these plants are deep and having pores in them which makes oxygen dispersed under the ground. Thus, it can be utilized as a bio-pump. Far from the roots, anaerobic digestion also takes place. Self-filtering action of soil bed, the action of microbial organism help to treat the wastewater and finally obtaining clean and clear water that's all it compasses. This system has the ability to regenerate from the death of old plants and creates some useful humus. Hence, it is one of the most efficient, maintenance-free, cost-effective and run-for several-year methods.

E. GUIDELINES FOR REED BED TECHNOLOGY

1. Site selection

a. The site selected should not impairs the drinking Water sources.

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b. The site should not be a flood prone area.
c. The flat ground surface should be selected which is at lower level that nearby water bodies.
d. f design and location is proper, CW does not generate any order or nuisance in the vicinity.
e. Now-a-days it is possible to treat a waste water at the already selected site by the standars parameters od concerned authority.
f. Selected sites should be easily assicible for maintaince.

2.Shape:-
a. This allows an increase in the flow path that helps in increases contact period.. This ultimately increases the flow path and efficiency of treatment is also increases.
b. Space constraint case gives an alternative shape to the filter bed such as Zigzag or vertical flow are generated.

3. Selection for suitable filter media:-
a. Gravel should be of rounded in shape.
b. Filter sixe should be in between . Effective grain size should be> .2 mm.
• Different size of filter media in a cm. - proportion of 1:3 is used that provides effective pore space of 30 percent .

4. Depth and Dimension:-
Two factored are considered for the dimensioning of the planted filter bed,
1. Waste water Volume
2. Load of organic materials

IV. CONCLUSION

Sanitary water is harmful to dispose directly on ground surface. It is necessary to dispose such waste into the pit hole. If it is not possible due to concreting surfaces and increase in transportation cost, Reed Bed system is a good and effective alternative. Now a days, it is a need of every college hostels. In BDCE the sanitary water from hostels are disposed into pits, due to availability on mass land. But it is more effective to clean before going to dispose. In this way, ground water pollution reduces up to great extent. In that case, Reed Bed system is more effective and economical.
The water after treating with Australis phragmities (Aquatic Plant) gives clean and palatable water. The results are taken from above mention research paper. The BOD removal efficiency is approx. 76.81%. This indicates that use of such water is allow for agricultural practices. The value of COD for treated water is 25.5 mg/l, which is much lesser than 250 mg/l. pH of treated water is 7.8, which is most suitable for cleaning purposes with no colour. In such a way, HARDNESS, TDS, TSS, SS, TURBIDITY, CHLORIDES are under usable value. This indicates that Reed Bed system is effective way for treatment of water.

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