

# Pothole Detection and Road Condition Assessment

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## ABSTRACT

Traffic Congestion, Road Accidents, Pothole detection are the major problems in urban as well as rural areas. In short, maintenance of roads is a major problem in developing countries. A well-maintained road contributes a major portion of the country's economy. Identification of pavement distress such as pothole not only helps drivers to avoid accident or vehicle damage but also helps authorities to maintain roads. A cost-effective solution is needed that collects information about the security of pothole and also helps drivers to drive safely. To overcome such problems proposed this system "Pothole detection and Road Condition Assessment". In this system, we use the Ultrasonic sensor, GPS and Webcam. So in order to provide a solution for pothole problem, we developed an android application which detects pothole automatically, as well as sends a notification to nearby users. User can see the location of detecting pothole on the map.

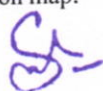
## 1. INTRODUCTION

Driving the vehicle on the road having a bad condition is very dangerous to the driver. Due to rains, oil spills quality of the road decreases such hurdles may cause road accidents. To overcome such problem, proposed this system 'Pothole Detection and Road Condition Assessment'. In this system, a sensor is used to sense the pothole, road quality. GPS system finds the position of pothole and rough road, and stores the Latitude and longitude in the database. Based on Latitude and Longitude User can see the location of the detected pothole and rough road area on a map, and also suggest an alternate path for this. All the data is saved in the database. This collected information on bad condition roads is helpful for recovery of the road. Android phones are widely used due to its features like GPS, computational ability and internet connectivity. There are many android applications which help the user in order to provide solutions to many problems related to their day to day life. Traffic congestion, Road accidents, Pothole detection are the major problems in urban areas as well as a rural area. So in order to provide a solution for pothole problem, we developed an Android application which detects pot hole automatically as well as sends a notification to the user. User can see the location of a detected pothole on map.

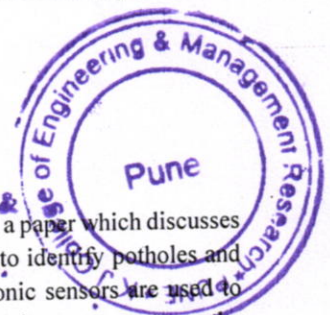
## 2. LITERATURE SURVEY

Rajeshwari Madli, Santosh Hebbar, Praveenraj Pattar, Varaprasad Golla et al [1], has proposed a paper which discusses previous pothole detection methods that have been developed and proposes a cost-effective solution to identify potholes and humps on roads and provide timely alerts to drivers to avoid accidents or vehicle damages. Ultrasonic sensors are used to identify potholes and humps and also to measure their depth and height respectively. The proposed system captures the geographical location coordinates of potholes and humps using GPS receiver. The sensed-data includes pothole depth, the height of hump and geographic location, which is stored in the database (cloud). This serves as a valuable source of information to the Government authorities and to vehicle drivers. An android application is used to alert drivers so that precautionary measures can be taken to evade accidents. Alerts are given in the form of flash messages with an audio beep.

Nilam Kumbhar, Dipali Mhetre, Amarina Mujawar, S.T.Khot et al[2], has proposed a system which describes driving the vehicle on the road having the bad condition is very dangerous to the driver. Due to rains, oil spills quality of the road decreases. Such hurdles may cause road accidents. To overcome such problem we proposed this system Intelligent Pothole Detection and Notification System. In this system, the ultrasonic sensor is used to sense the pothole. Image of such location is captured using the webcam. The GPS system finds the position of the pothole. All the data is saved in the database. This collected information of bad condition roads is helpful for recovery of the road.

  
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# Study of Optimization of Traffic Congestion at Intersection using BRT Lane

(Case Study of Katraj-Swargate BRT Corridor, Pune)

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## ABSTRACT

Bus Rapid Transit was introduced as a flexible, low-cost alternative to Metro and Light-Rail systems which also aimed at encouraging people to opt for public transport instead of private vehicles. But due to the restriction of right-of-way in the existing road, implementation of BRT system has affected the other lanes. The Motorized vehicle lanes get congested and the total throughput in every direction is affected. Thus, the BRT system needs to be integrated with other modes of transport for optimization of the traffic situation as a whole. This paper presents a study in which the motorized vehicles are given passage into the BRT Lane at a 'appropriate distance' before the intersection taking into account the traffic signal cycle and also the traffic signal used at 'entry spot' of the BRT Lane. VISSIM, a microscopic simulation model is used to investigate the results of the above model and its effects on the traffic situation. It has been observed that if motorized vehicles are allowed on Bus lane at a distance from the intersection, there is an increase in number of vehicle-throughput, average speed, and reduction in average delay time and with minimal impact on the BRT system.

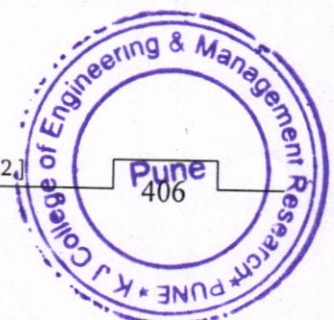
**Keywords :** Bus Rapid Transit(BRT), Appropriate Distance, Motorized Vehicle, Traffic Congestion, Intersection, Heterogeneous Traffic.

## I. INTRODUCTION

In current day to day life man has become more officious due to Technology and Research. Road Transport has become a basic factor for man to travel from one place to other. On the other hand, road transport has also become a huge problem due to increase in use of private vehicles. Bus Rapid Transit was implemented for a faster, cost-effective mode of transport which also aimed at encouraging people to opt for public transport instead of private vehicles.

Bus Rapid Transit (BRT) is a high-quality bus transit system that offers fast, comfortable, and economical services at metro-level capacities. It does this through the provision of dedicated lanes, with busways and terminals typically aligned to the centre of the road, off-board fare collection, and fast and frequent operations.

Bus Rapid Transit (BRT) has become a solution to the transport problem, especially in developing countries such as India, where cost is the main criterion for choosing a bus system. It costs significantly less than a metro system and a light rail transit (LRT) system. A



# COMPARATIVE STUDY ON SEISMIC ANALYSIS OF MULTISTOREY BUILDINGS WITH BRACING AND SHEAR WALL

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**Abstract** – The most important use of the shear wall in RCC buildings is to decrease seismic effects causing major damage to the building. Any structure should have lateral stability to resistance to loads like as buckling, lateral forces, to control lateral drift and displacement of the building. Most affected by the earthquake is nothing but multistoried buildings. In steel structures, steel bracing is used. Shear wall and bracing system have huge effect on the structural performance. The shear wall and bracing system shows different variations and behavior for the seismic load. For the analysis, a G+9 storey building with bracings and shear wall is considered. Storey drift, Storey displacement, Base shear are the major parameters considered to check seismic performance of the building. Bracings and shear walls are provided at various locations by using ETABS software.

**Key Words:** Base shear, storey displacement, storey drift, bracings, seismic analysis, shear wall.

## 1. INTRODUCTION

### 1.1 Bracings

One of the retrofitting techniques which give superb approach for strengthening and stiffening is nothing but bracing system. This system is very useful for resisting lateral loads like as wind loads and earthquake loads. To resist tension and compression bracing members are arranged in various ways. Bracing system decreases shear forces and bending moment present in the columns. It increases the rigidity of the building with a negligible added weight and reduces the shear forces and bending moment in the columns.

### 1.2 Shear wall

Both level load and different loads should be resisted by the structure. A shear wall is a nothing but vertical element designed to resist in-plane lateral forces particularly seismic and wind loads. Due to the forces in horizontal direction applied to the top of the wall, uplift forces, exist. Two types of forces opposed by shear walls: Uplift forces, Shear forces. Accelerations from ground movement and external forces like wind generate shear forces.

## 2. OBJECTIVES

- 1) To model building with G+9 storey with bracings and shear wall.
- 2) To study storey drift, storey displacement, storey shears of both shear wall and bracings.
- 3) To model building in seismic zone V and medium type soil.
- 4) To study bracings and shear wall at different locations in RCC Building.
- 5) To check the results of bracings and shear wall.

## 3. METHODOLOGY

Methodology adopted as follows:

1. Modeling of the structure with G+ 9 storeys.
2. Providing bracings and shear wall at center, corner and core of the structure.
3. Analysis of parameters like storey drift, storey displacement, storey shear.
4. Compare the results for building with shear wall and bracing.

## 4. PARAMETERS CONSIDERED

No. of storey	G+9 storey @X-4m,@Z-3.5m, @Y-3m
Slab thickness	0.150 m
Size of beam	0.3 m x 0.3 m
Size of column	0.6 m x 0.6 m
Thickness of wall	0.23 m
Bracing	ISA 110 mm X 110 mm X 10 mm
Concrete grade	M 25
Live Load	3 kN/m <sup>2</sup>
Floor Finish Load	1 kN/m <sup>2</sup>
Zone	V (Medium soil type)



# Seismic and Wind Analysis of Regular and Irregular RC Structures with Tuned Mass Damper

Deepak P. Kadam, Atul B. Pujari, Vipul N. Khosla

**Abstract** - Latest trend in the development high rise structure demanding taller and lighter structures, which are progressively adaptable with very low damping ratio. As the structures developing vertically, they are ending up all the more affecting by powerful excitation forces, for example, wind and seismic forces. For the more safety of structure and inhabitant's solace, the vibrations of the tall structures become a major issue for both structural designers. So as to control the vibration, various methodologies are proposed out of the few systems accessible for vibration control. Out of numerous methods, TMD has been observed to be increasingly powerful in controlling the dynamic forces caused due to seismic and wind excitations. In this paper, the adequacy of TMD in controlling the dynamic reaction of structures and the impact of different ground movement parameters on the seismic viability of TMD is researched.

Essentially, a TMD is a vibratory subsystem appended to a bigger scale host structure so as to lessen the dynamic reactions. The frequency of damper will be tuned to essential structure's frequency, so when frequency is high, the damper will result to resonate out of phase along with structural movement. The objective of this work is to study the impact of TMD on the dynamic forces brought about by seismic tremor and wind excitations in standard just as unpredictable in tall RC building structures. For that three 22 story RC building structures are considered with a similar arrangement out of which one ordinary regular structure and the other two are irregular RC structures are demonstrated in Etabs. In irregular RC structures, Stiffness irregularity and torsional irregularity are considered.

For assessing seismic and wind reactions of structures, time history analysis, and static analysis used, with and without the tuned mass damper in ETABS. The outcomes acquired from the investigation of three 22 story RC structures with and without tuned mass damper are compared.

**Keywords:** Tuned Mass Damper, Dynamic Responses, Time history Analysis, Etabs

## I. INTRODUCTION

With the fast economic and infrastructural development, common structures, for example, elevated structures, towers, and long-span bridges are planned with an extra adaptability, which lead to susceptibility to dynamic excitation. In this way, these adaptable structures are vulnerable to endure abnormal amounts of vibration under the activities of wind or tremor. The behavior of a structure during tremors depends fundamentally on its general shape, size and geometry, alongside the how quake powers are shaking the ground. Structures comprising of asymmetric dispersion of strength, stiffness and mass endure serious harm during quakes.

In the modern era of tall building structures, a large portion of the structures are engaged with architectural importance and it is profoundly difficult to design with ordinary shapes. These irregularities are in charge of collapse of buildings under the activity of dynamic responses. Thus, enough research is required to accomplish extreme execution even with a poor setup. In the modern era of tall building structures, a large portion of the structures are engaged with architectural importance and it is profoundly difficult to design with ordinary shapes. These irregularities are causes structural collapse under the activity of dynamic responses. Thus, enough research is required to accomplish extreme execution even with a poor setup. More often than not these structures are having low natural damping. So to increment in damping limit of structural systems, or by considering the other mechanical devices to expand the damping limit of the structures is normal in the new trend of tall structures. In any case, it ought to be made with a legitimate routine practice to plan the damping limit into a structural system while designing the basic systems.

There are numerous strategies which have been utilized to control structural vibration and many other techniques proposed which are offering the possibility of improvement in the effectiveness of structures. The selection of a specific sort of vibration control system is governed by various components which incorporate efficiency, compactness and weight, capital cost, operating cost, maintenance requirements and safety. The tuned mass dampers (TMD) have been broadly utilizing the vibration control in basic designing. As of late, TMD system is getting to be prominent to decrease in vibrations of tall structures and other civil structures. The frequency of damper is tuned to essential structure's frequency so that at whatever point that frequency got energized, the damper will resonate out of phase with the structural deflection.

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# Design and Development of Wheel Balancing Machine Experimental Setup

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**Abstract:-** This project must be completed for the practical purpose for requirement stages in laboratory. This machine is consisting of Electric AC motor, Frame, V-belt driven shaft on two 6006 series spherical bearings, the wheel is mounted on the shaft attaching by an anchoring system and affix instrumentation is use to find (a) find amount of acceleration force due to vibration caused by non uniformly distributed mass, (b) to find counterweight mass on the wheel for the balancing (c) find position on the rim where mass is exactly added. The accelerometer is used for the linear acceleration caused due to unbalanced force which is acting on the wheel and ultrasonic sensor is also used to measure the distance from the wheel rim to the ultrasonic sensor by using Arduino circuits, analysis and display. We dealt with some technical issues, mechanical and instrumentation at one time. This is fairly good in comparison to the existing complicated wheel balancing machine for the final year project turned out to be an applied research project.

**Keywords:** - Design, Balancing, Vibrations, Analysis, Counterweight

## I. INTRODUCTION

Wheel balancing is also known as tyre balancing. It is the process of equalizing the weight of the combine tyre and wheel assembly so that it rotates smoothly at high speed. Balancing involves the putting the wheel assembly on a wheel balancing machine and rotate it to determine where the weight should be added on wheel rim. In essence, wheel and tyre are never exactly the same weight all around.

When man invented the wheel, he very quickly learned that if wasn't completely round and if didn't rotate evenly about its central axis, then he had a problem due to vibrating wheel, it causes damage to itself and in severe cases, be unusable. As that of replacing and remanufacturing of wheel is very difficult so it takes huge time consuming, considering all the reasons it's necessary to found all solutions on this problems. This results shows that the wheel and shaft vibrations are minimized which is found in balance state. i.e., mass is evenly distributed either side of the wheel rim for the balancing purpose so result takes the minimizing the vibration of wheel it means resultant vibrations was at minimum. This had to be achieved during manufacturing for the maximum service life could be achieved from the system.

The purpose of the project is to describe the Experimental setup and Testing of Wheel Balancing Machine and convey the experiences we had during the design and practical setup of "Wheel Balancing Machine."

## MECHANICAL SYSTEM OF WHEEL BALANCING MACHINE

Dynamic balancing of a wheel requires that the wheel be in rotational motion. Rotational motion is accomplished by a 1440 rpm, 0.25 hp electric motor. Motor speed is reduced to 400-rpm shaft speed by a v-belt and pulley system attached to one end of the shaft. The wheel is attached to another side of the shaft by using a back cone system consisting of a faceplate, a cone of metal, a pressure cup and a nut. The metal cone helps to center the wheel, while the face plate and the cup make sure that the wheel is perpendicular to the shaft as the nut is tightened. The faceplate was welded to the shaft on the original system. In design of shaft faceplate shall be fitted and tightened to shaft to prevent welding distortions in that shaft. A square frame length is 36 inch and breadth is 18 inch and c section plate angle is 1.2 inch, height of the frame is 30 inch placed and supports the spherical bearings and the electric motor. The shaft is supported by the bearing housing which consisting two spherical bearings (6006).

Accelerometer sensor is mounted on the bearing housing it sensed acceleration force of wheel/tyre and ultrasonic sensor are placed on the shaft frame which is perpendicular to the wheel rim. Both sensors are connected to each arduino circuits and its displays. Shaft is connected to driven pulley (7inch) and driven pulley is rotated with the help of diving pulley (2 inch). Electric motor is supported by vibration isolation. And this isolation mounted at the bottom of the frame. Some mechanical system arrangements are given in Fig. 9 and Photo of whole system is given in Fig. 10.

## NOMENCLATURE

A = total amplification of accelerometer signal  
K = calibration constant for a balanced wheel of rim size R.  
R = rim radius at which mass "m" is placed  
S = sensitivity of accelerometer (usually in mV/g)  
W = Total weight of the system  
a = measured acceleration  
g = standard gravitational acceleration  
m = counterbalance mass  
 $\omega$  = angular velocity of wheel

## WHEEL BALANCING MACHINE INSTRUMENTATION

### (a). Measurement of the Unbalance Force

An accelerometer attached to the frame of the machine is used to indirectly measure acceleration due to unbalance in the tire as tire rotates at about 400 rpm. Accelerometer output signal

# SEISMIC ANALYSIS OF LOW RISE, MID RISE AND HIGH RISE RCC STRUCTURE ON SLOPING GROUND

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**Abstract** - Due to scarcity of plain ground rapid construction is taking place in hilly areas i.e., on sloping ground. Earthquake is such an unpredictable calamity that it is very necessary for survival to ensure the strength of the structure against seismic forces. Therefore there is continuous research work is going on around the globe, revolving around development of new and better techniques that can be incorporated in structures for better seismic performance. Obviously, buildings designed with special techniques to resist damages during seismic activity have much higher cost of construction than normal buildings, but for safety against failures under seismic forces it is a prerequisite.

RCC structures are considered in seismic areas that may be main targets of seismic activities. Due to such conditions now a days there is a heavy demand of earthquake resisting RCC structural design. Not only seismic activities but also due to accidental failures, structure can fail. To analyse RCC structure for earthquake zone, we have to make model using ETABS software which can resist all types of loading such as dead load, live load, seismic load using IS 1893.

In this study Low rise (G+5), Mid rise (G+10) and High rise (G+15) storey structures will be analysed by using Equivalent static method, Response spectrum method and Time history methods of analysis in ETABS. This structure placed on Plain ground as well as on sloping ground. These structures placed on different angles of sloping ground. After analysing models in ETABS the results for Storey displacement, Base shear, Storey drift, Time period and Modal participating factors are then obtained. After observing this result some conclusions are made.

**Key Words:** Sloping ground, Response spectrum method, Time history method, Base shear, Storey drift.

## 1. INTRODUCTION

Earthquake has always been a threat to human civilization from the day of its existence, devastating human lives, property and man-made structures. The very recent earthquake that we faced in our neighbouring country Nepal has again shown nature's fury, causing such a massive destruction to the country and its people.

Earthquake causes random ground motions, in all possible directions emanating from the epicentre. Vertical ground motions are rare, but an earthquake is always accompanied with horizontal ground shaking. The ground vibration causes the structures resting on the ground to vibrate, developing inertial forces in the structure. As the earthquake changes directions, it can cause reversal of stresses in the structural components, that is, tension may change to compression and compression may change to tension. Earthquake can cause generation of high stresses, which can lead to yielding of structures and large deformations, rendering the structure non-functional and unserviceable. There can be large storey drift in the building, making the building unsafe for the occupants to continue living there.

### 1.1 Seismic Performance of Structure

Seismic performance defines a structure's ability to sustain its due functions, like its safety and usefulness, at and once a specific earthquake exposure. A structure is, commonly thought of safe if it doesn't endanger the lives and well-being of these in or around it by partly or fully collapsing. A structure may be considered serviceable if is able to fulfil its operational function for which it was designed.

### 1.2 Seismic Behaviour of RCC Structure

In recent times, ferroconcrete buildings became common in Republic of India, particularly in towns and cities. Reinforced concrete (or merely RC) consists of 2 primary materials, particularly concrete with reinforcing steel bars. Concrete is formed of sand, crushed stone (called aggregates) and cement, all mixed with pre-determined amount of water. Concrete can be moulded into any desired shape, and steel bars can be bent into many shapes. Thus, structures of complicated shapes area unit doable with RC.

# PROGRESSIVE COLLAPSE ANALYSIS OF RCC STRUCTURE FOR VARIABLE HEIGHTS ON SLOPING GROUND

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**Abstract** - In recent years, the deficit of the plain ground to build commercial or residential structure in faster developing cities. Subsequently, construction of structure on hilly regions is increased day by day. Due to sloping profile, the various levels of such structures step back towards the hill slope and may also have setback at the same time. One of setback known as Progressive Collapse. Progressive collapse occurs when a structure undergoes a primary structural element fails, resulting in the failure of adjoining structural elements which in turns causes overall structural failure. A structure experiences progressive collapse when a primary structural member (generally column) fails due to explosion, vehicle impact, fire, manmade or natural causes. The failure of a member in the primary load resisting system, leads to redistribution of forces to the adjoining members and if redistributed load exceeds member capacity it fails. This process continues in the structure and eventually the building collapses. For present study the construction of structure on hilly region for analysis of progressive collapse potential of G+5, G+10 and G+15 concrete framed building assessed on sloping ground. When analyzing the structure on sloping ground the angles taken  $0^\circ$ ,  $20^\circ$ ,  $30^\circ$  for G+5, G+10 and G+15 building. Progressive collapse RCC structure G+5, G+10 and G+15 building is analyzes using the General Service Administration (GSA-2016) guidelines. To use Linear statics analysis method as per GSA (2016) guidelines for the axial force, bending moment, shear force, joint displacement of member and also to check on the basis of ETABS G+5, G+10 and G+15 building software and then also checked performance for Demand Capacity Ratio as per GSA (2016) guidelines.

**Key Words:** Progressive Collapse, RCC frame structure, sloping ground, Linear Static Analysis, GSA 2016, ETABS

## 1. INTRODUCTION

### Progressive collapse

Progressive collapse is a term now a days used worldwide. Progressive collapse phenomenon is initiated by the failure of one or more load carrying members. At the time of failure, to transfer excessive load, structural elements structure will seek alternate load paths. Sometimes structure may not be designed to resist additional loadings. Failure of overloaded structural elements will cause further redistribution of loading; this process will continue till the equilibrium is reached. When elements may reach equilibrium already a

large part of structure has already collapsed. The resulting overall damage may be disproportionate to the damage in the local region near the lost member. The hilly areas have marked effect on the buildings in terms of style, material and method of construction leading to popularity of multi-storied structures in hilly regions. Capacity assessment of the structural progressive collapse and progressive collapse design are based on structural progressive collapse analysis, analysis methods include linear static, nonlinear static, linear dynamic and nonlinear dynamic. The American Society of Civil Engineering (ASCE, 2005) is the only mainstream standard which addresses the issue of progressive collapse in some detail. The guidelines for progressive collapse resistant design are noticeable in US Government documents, General Service Administration (GSA, 2003) and Unified Facility Criteria (UFC, 2009). The GSA guidelines have provided a methodology to diminish the progressive collapse potential in structures based on Alternate Path Method (APM). It defines scenarios in which one of the building's columns is removed and the damaged structure is analyzed to study the system responses. With the current scenario of increasing reasons for disaster like situation at industrial or residential workplace. The main objective of this study is to implement GSA guidelines for RCC structure in three dimensional, which are designed according to Indian standard codes to assess the vulnerability behavior. The procedure has been carried out is Linear Static according to the guidelines, and analyzed by using by finite element software Etabs. All the structures should be analyzed before the construction since there are many possibilities of failure. But what if the structure supposed to be constructed on hill like in northern and north eastern states of India. Since the slope varies there are many possibilities that during an earthquake, structure would collapse down from a hill. To make the structure which maintain its own stability under steep slope under earthquake.

## 2. LITERATURE REVIEW

Vinod Kumar, H.S.Vidyadhar [1] The buildings resting on hill areas have to be configured differently from flat ground. Hill buildings are different from those in plains; they are very irregular and unsymmetrical in horizontal and vertical planes, and torsionally coupled & hence susceptible to sever damage when affected by earthquake. The floors of such buildings have step back towards the hill slope and at the same time set-back also In this study 3D analytical model of

# SEISMIC ANALYSIS OF ECCENTRICALLY AND CONCENTRICALLY STEEL BRACED STEEL STRUCTURES

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**ABSTRACT** - Steel is an important construction material and plays a very significant role in the developing societies. Construction is an industry where steel is used to a greater extent, exceeding use of 50% of world's steel. Steel also offers good architectural view and it gives more freedom of design for structural engineers. Earthquake can be defined as the shaking of the surface of the Earth, resulting from the sudden release of energy in the Earth's lithosphere that creates seismic waves.

When the structure is experiencing seismic forces it has been observed that the bracing system resist the forces effectively. The analysis in the paper shows that the bracing system when applied in the steel structures helps in dissipating the seismic energies more effectively than the unbraced structures. The design of steel structures which falls under seismic active zones shall be deigned in such a way that they effectively soak the horizontal forces acting on the structures caused due seismic activities. The performance of the steel structures can be increased by the application of the bracing systems as it increases the lateral stiffness and capacity of the structures. In this study various eccentrically and concentrically steel braced steel structures will be analyzed for seismic analysis to find the stability of the structures while seismic vibrations.

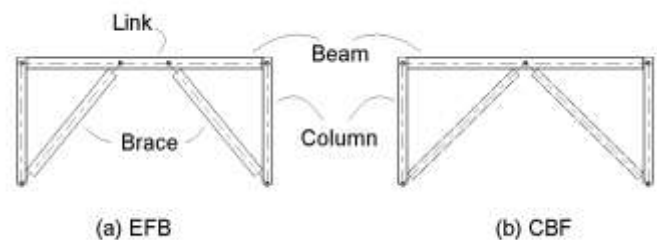
**Keywords:** Steel, Structures, Earthquake, Bracing System, Seismic Excitation, Horizontal Loads.

## 1. INTRODUCTION

Earthquake is an oscillation which is generated by forces beneath the lithosphere, moving through the asthenosphere. It can be stated as the vibration which takes place because of energy released in asthenosphere. The release of the energy is result of the immediate disruption or the demonstrative outburst of portion of the crust, or even due to the human interventions caused by explosions. This problem has been a significant subject of consideration for investigators. Eventually many researchers and scholars suggested the use of bracing system for the effective resistance of the seismic loads.

During the seismic activities the seismic energy generated is found to be effectively soaked up by the bracing system. The steel structures which are in the earthquake prone areas should be designed such that they can effectively resist the horizontal loads. The designs of structures require a good

amount of balance between strength, ability, and energy dissipation. To satisfy these requirements of the steel structures different types of structural systems like the OMRF (Ordinary Moment Resisting Frames), ordinary Concentric Braced Frames and Eccentric Braced Frames are opted in these areas.



**Figure (a) Showing Eccentrically Braced Frame and Figure (b) Concentrically Braced Frame**

## 1.1 Objectives

- 1) To find effective bracing systems to resist the seismic loads.
- 2) To study the behaviour of unbraced structures, eccentrically braced structures and concentrically braced structures along with there comparison.
- 3) To evaluate the inter-story drift and base shear various frames by performing Equivalent Static Analysis in STAAD.Pro V8i 2016.

## 2. LITERATURE REVIEW:

**Federico M. Mazzolani, et al.,2009, Journal of Civil Engineering and Management**, in their paper they mentioned that among the possible systems to retrofit an existing structure, bracing systems appear to be simple and effective, especially when storey drifts need to be limited.

**Madhusudan G. Kalibhat, et al., 2012, IOSR-JMCE**, in their paper they concluded that for the retrofitting of the existing structures the steel bracings are effective. There is increment in the Base shear capacity of the structure while roof displacement in the structure decreases when bracing system is applied to the structures. There is a significant reduction in



# Static & Dynamic Analysis on Automated Car Parking Towers & Study Behaviour of the Building

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**Abstract** - Over the decades our country has been developed drastically, now we are in this state that we have a lot of well contacted roads, commercial building and increasing number of automobiles. As we are advancing with time, the manual car parking system in commercial spaces is creating hurdle which is causing wastage of time and some economic losses as well. Therefore we need a solution which can overcome these problems. Hence, the Automated Parking Systems are the solution of these problems. This system not only saves time and money, it can also earn money by charging for parking spaces.

In this project a parametric study of Automated car parking tower is prepared, subjected to static load (self-weight of structure, weight of car, weight of pallet etc.) & Dynamic load (wind load, seismic load) for different zones of earthquake and wind in INDIA. The effects of load & behavior of building will be evaluated on the basis of following parameters –Storey deflection, quantity of structural steel. In this work, analysis of work is carried out using STAAD.Pro software.

**Key Words:** Staad.Pro, Static load, Dynamic load, storey deflection

## 1. INTRODUCTION

Automated car parking system is typically consists of a vehicle elevator with a parking space either side of the elevator shaft. To have an overlook of parking tower, this configuration is repeated over a number of levels. The vehicle elevator rises to one of the parking levels of the tower and deposits the vehicles sideways into a parking spot. A vehicle is taken back in a same way. System redundancy is an issue with tower system as there is single mechanism to park and retrieve cars.

An automated parking system (APS) is a mechanical system designed to minimize the area and/or volume required for parking cars. Like a multi-level parking garage, an APS provides parking for cars on multiple levels stacked vertically to maximize the number of parking spaces while minimizing land usage. The APS, however, uses a mechanical system to transport cars to and from parking spaces (rather than the driver) in order to eliminate much of the space wasted in a multi-story parking garage. While a multi-story parking garage is similar to multiple parking lots stacked vertically, an APS is more similar to an automated storage and retrieval system for cars.

### 1.1 literature review:

A Automatic Car Parking System-Prototype: A Review by Prathmesh. K. Bhadane<sup>1</sup>, Prashant Gosavi<sup>2</sup>, Ravikumar Dongarraje<sup>3</sup>, SohamGeet<sup>4</sup> Mrs. Shalaka.H. Joshi<sup>5</sup> [Journal of Automotive Engineering & Technology] [1] Paper states about the Unique Characteristics the space for parking 3 motorcar can hold more than 9 motorcar. Flexible managing system, no caretaker is required, key pressing function, High safeness, whole investigate device Stable and safe it is simple to manage with the driver parking and leaving the vehicle in the system at the ground level.

It is completely successful when installed in engaged areas which are well established and are suffering with shortage of area for parking. Although the building of this system seems to be comfortable, it will be with from knowing without the knowledge of materials, chains, sprockets, bearings, and machining operations, kinematic and dynamic mechanisms imagine the period that automatic smart parking systems would preserve us.

Analysis and Strengthening of Soft Storey Building with Equivalent Diagonal Strut at Center under Earthquake and Wind Load by Abdul Juned Siddiqui<sup>1</sup>, Prabhat Soni<sup>1</sup>, Aslam Hussain<sup>2</sup> [International Journal of Engineering Research] [2] From this paper it is observed that value of moments of earthquake moments is higher than the value of wind load moments. It is also seen that soft storey at 4th storey is critical in both direction for all cases of buildings. So it can be concluded that soft storey at fourth floor shall be avoided. From above observation it can be concluded that considering all the parameters, 4th storey is critical in all load cases. CASE-1 (bare frame without equivalent diagonal struts) is most critical frame between them and CASE-2 (equivalent diagonal struts at centre) is efficient one. Means while providing equivalent diagonal struts at corner will reduces moment, shear force, displacement and storey displacement. Equivalent diagonal struts provide better stiffness to the soft storey.

# An experimental study of water quality and balsam growth in minimum dissolved oxygen conditions with aquaponic system

Bharat Mulay, K. Rajasekhara Reddy

**Abstract:** The aquaponic systems are the combination of fish and plant culture. These are recirculating systems with two components: hydroponics and aquaculture. In these systems, the food given to fish is metabolized. This metabolized food fulfills the nutrient requirement of plants. This is achieved by the recirculation of water from the aquaculture component to the hydroponic component and back to the aquaculture component. This experiment is conducted to test the effect of recycling of water in a longer period on the growth of iridescent shark and balsam plant in the aquaponic system. The system developed is 1.08 m<sup>3</sup> area of water in aquaponic component and 1 m<sup>2</sup> for plant growth. In the hydroponic component course aggregate of 0.1m diameter was selected to support the plants. Coconut husk and sand particle layers of 0.03m and 0.06m are used for the growth and development of nitrifying bacteria. An average quantity of 1 kg of balsam plant leaves was produced in 60 days of plant growth. It has been found that balsam plant and iridescent shark species in this system has a faster and better growth compared to the conventional growth. The water used in the system is completely replaced once in three months after 45 days. Also, it was recirculated once in 3 days during experimentation. The DO level of fish tank water was dropped below 2 ppm during the span of two successive recirculations. No direct sunlight was available for the plants and no other artificial light source was used in cloudy and humid atmospheric conditions. The experiment also tested the success of the aquaponic system in adverse conditions like unavailability of fresh water for replacement, poor sunlight and minimum DO condition. The combination of balsam and iridescent shark proved to be suitable for the aquaponic system under such adverse conditions.

**Index Terms:** Aquaponic, biofilter, TAN, DO, Nitrates.

## I. INTRODUCTION

Aquaponic, from the last few decades, has become the fastest growing mechanism for integrated plant and fish production system [14]. There were 54.8 million people working in the fish production sector in the year of 2010. Aquaculture and fisheries developed income source and food for them. In the world, Asia has more than 87 percent of the fish farmers and China has nearly 14 million people (26 percent of the world total) as fishers and fish farmers. The percentage in Africa is more than 7 percent, with Latin America and the Caribbean contribute 3.6 percent [14]. In the year 1950-51, India produced 0.75 million tonnes of aquaculture and fisheries production. In the year 2013-14, it increased to 9.6 million

tonnes. With respect to the aquaculture production, India is in the second place after China [14]. Aquaponics is a form of aquaculture that follows soil less production of plants and development of fish species. Thus aquaponics is an integrated and combined form of aquaculture [1]. It is a dynamic interaction between the fish, plant, nitrifying bacteria and corresponding aquatic environmental factors [2]. This combined interaction of aquaculture and hydroponics has the benefit of low demand of nutrients. And low quantity waste output when compared to the systems which run as separate systems [6]. Plants need micronutrients like N, P, K, Ca, S, Mg and micronutrients like Fe, Cl, Mn, Zn, Cu, B and Mo, which are essential for their growth [6]. One of the most important macronutrients required for plant growth is nitrogen. It is supplied through fish waste in the form of ammonia (NH<sub>3</sub>). Though NH<sub>3</sub> is toxic to fish in high concentrations, after oxidizing into nitrite (NO<sub>2</sub><sup>-</sup>) by nitrifying bacteria (Nitrosomonas) and re-oxidized by the second type of nitrifying bacteria known as Nitrobacter, it is converted into nitrate (NO<sub>3</sub><sup>-</sup>) and is easily absorbed by plants [10]. To decide the right balance and optimum combinations for a sustainable aquaponic system is the biggest challenge for researchers. To achieve such optimization, it needs the basic knowledge and experiences regarding the factors like types of fish, feeding rates, type of fish food and its composition, protein quantity converted to Total Ammonia Nitrogen (TAN) along with feeding frequency, the design and type of the aquaponic system, the types of cultivated plants, density of plant sowing, and chemical quality of the water during the mineralization rate of fish waste [6]. In recirculating aquaponic systems, the fish, plants and microorganisms stay in a single recirculating cycle. Therefore, for smooth functioning of the system, it is important to set the parameter levels of temperature, pH and mineral concentrations in water at optimum values. With an objective to create a stable system for maximum crop and fish production, and to optimize it, various studies are done [1]. Several methods are implemented for the optimization of the various factors such as pH, temperature, nutrients, dissolved oxygen (DO), total suspended solids and total nitrogen [9]. Since the introduction of the aquaponic system in the late 1980s, their production was increased in volume. Production is also increased in species variety. Now a day more than 10 species are produced in RAS namely turbot, sea bass, salmon and sole as marine species and African catfish, eel, trout as fresh water species [2].

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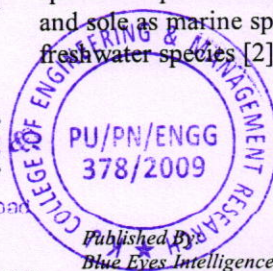
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# Experimental Investigation of Plant Bio-Filter on Water Quality and Growth of Iridescent Shark in a Pilot Scale Aquaponic System

Bharat N. Mulay, K. Rajasekhara Reddy

**Abstract:** An aquaponic system is a recirculating aquaculture system (RAS) that incorporate the production of plants without soil. These systems raise large quantities of fish in relatively small volumes of water by treating the water to remove waste products. System reuses the water many times for the production of plants. The system has two components: hydroponics and aquaculture in which it converts the food as excreta of the fish. The excreta dissolved in water fulfill the nutrient requirement of plants. The experiment is conducted to test the survival and growth of the iridescent shark and balsam plants in an aquaponic system. A pilot aquaponic system is developed to examine such possibility and sustainability with 1.08 m<sup>3</sup> area of water in aquaponic component and 1 m<sup>2</sup> for plant growth. The hydroponic component is used as a plant bio-filter. In the hydroponic component, the coarse aggregate of 0.01m is selected to support the plants. Coconut husk and sand particle layers of 0.03m and 0.06m are used for the growth and development of nitrifying bacteria. The aim of the experiment is to test the success of the aquaponic system in adverse conditions like the unavailability of fresh water for replacement, poor sunlight, drastic temperature variations, and minimum D.O. condition. The system is examined with only 25% of water replacement after 45 days and without maintenance of the biofilter. The recirculation period of water is varied for every 20 days of the span. The impact on environmental factors like D.O., Ammonia, Nitrogen, Nitrates, TDS, and pH are studied in experimental investigations. The growth of fish is steady, and no death is observed during the experimentation. The experimental investigation proves that water can successfully be recirculated and reused for the growth of iridescent shark and balsam plants with a minimum replacement of water for once in 70 days.

**Index Terms:** Aquaponics, ANOVA, recirculation, TAN.

## I. INTRODUCTION

India has a coastline of 7,517 km and offers a huge potential for aquaculture development. The country has an extensive river and canal system which consists of 14 major, 44 medium and numerous small rivers along with the streams. Pond and tank resources are estimated at 2.36 million ha [1]. The 73% of the Indian Sunderbans population is directly or indirectly depends on aquaculture [2]. The river Ganga flows through the Bay of Bengal and formed the Indian Sunderban Mangrove ecosystem. It is the UNESCO World Heritage site and spans an area of 9630 sq. km comprising 56 islands [2]. It is mentioned by World bank that 16% of animal protein is consumed globally and this hunger will go up with per capita income in rise [3].

India ranks second with 4.2 million out of 66 million tonnes of global fish production [4]. It is evident that the need of sustainable food production is constantly expanding in India and hence a cost effective food production technology like aquaponics need to be adopted. An aquaponic system combines aquaculture and hydroponics is a recirculating production technique and a promising solution to the emerging problems of limiting water source and the consequent effects [5],[6]. It's an integrated system of aquaculture and plant production [7]. A systematic and dynamic interaction of fish, nitrifying bacteria and plant takes place in aquaponic systems [8]. It minimizes the need of micronutrients and macronutrients needed for the growth of plants [8]. The basic principle behind a successful aquaponic system is the nutrient rich water with enough dissolved oxygen for fish health and the cost effective water quality maintenance [10], [6]. Several experimental methods were carried out to optimize the AP systems for sustainable fish and crop production [7]. Three most common methods are nutrient film method (NFT), media based method and deep water culture (DWC) method [13].

### A. Effect of ammonia in aquaponic system.

The mechanism of aquaponic system is to recycle the nutrient rich effluent generated from an aquaculture unit in the hydroponic unit where, the essential nutrients are taken up by the plants for the growth. By absorbing the nutrients, plants prevent their accumulation by acting as a natural biofilter and extending the use of water returning to aquaculture unit [1]. Nitrogen is one of the major nutrient required for plant growth and living organisms because it is a component of deoxyribonucleic acid (DNA), ribonucleic acid (RNA), amino acids and proteins. The fish feed in aquaponic system is the major source of nitrogen which is excreted by fish in the form of ammonia nitrogen [12]. Ammonia (NH<sub>3</sub>) is produced by fish in the liver and excreted into the water by gills, which consists of two components NH<sub>3</sub> and NH<sub>4</sub><sup>+</sup> [13]. They are called as total ammonia nitrogen (TAN) in aquaculture. Being very soluble in water and can diffuse easily in cell membranes, it is converted to NH<sub>4</sub><sup>+</sup> in cell membranes at lower pH [14]. NH<sub>3</sub> is toxic to fish when high in concentrations, but it is oxidized by nitrifying bacteria (Nitrosomonas) into nitrite (NO<sub>2</sub><sup>-</sup>) and again into nitrate (NO<sub>3</sub><sup>-</sup>) by a second type of bacteria (Nitrobacter) which can be easily absorbed by

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# A SEMANTIC MACHINE LEARNING APPROACH TO AUTOMATIC PPT GENERATION

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## ABSTRACT

In today's world as the size and complexities of the documents are increasing it becomes very difficult to extract the important points from the multiple documents in a given stipulated time. Natural language Processing ( NLP ) is playing a vital role in this, where it extracts the important feature from each of the sentences and they are framed together to yield best semantic data. This research article mainly concentrates on yielding the semantic presentation slides for the given input of multiple documents of type pdf, text and MSword. Some methodologies are existed to concentrate on yielding automatic PowerPoint presentation files based on the given input of documents. Most of the research technique do suffer from the matter of precision of the obtained slides. So this research article throws some light on automatic power point presentation generation technique by extracting some NLP features and then by using Random forest technique model provides accurate desired slides.

**KEYWORDS:** NLP, Feature Extraction , Random Forest, PPT generation.

## I. INTRODUCTION

PowerPoint was developed by a start-up in 1983 for the Macintosh Platform as an addition to the Graphical user interface. It was an immense success, such that it has the majority of the worlds market share for a presentation software.

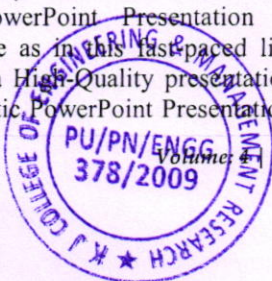
The reason of PowerPoint popularity is attributed to the fact that it is very easy to present as a very powerful visual aid that can have a captivating impact. This can leave a lasting impression on the viewer and conveys the information very efficiently. Due to this fact, the Automatic Generation of a

PowerPoint Presentation Generation is a valuable resource as in this fast-paced lifestyle, it is not possible to create a High-Quality presentation in a less time. Therefore, automatic PowerPoint Presentation Generation is very helpful

for businesses and academicians to help get their point across efficiently and with maximum impact.

Feature extraction refers to the practice of isolating certain data elements from a collection with similar features. It is quite an essential aspect of Machine Learning that is to segregate useful data and useless data. this allows the Data Scientists to work a lot more efficiently with only relevant data that is being isolated. The features here refer to the important aspects related to the data that is being segregated. These points are the features that are essential for the particular problem at hand.

Feature extraction is the most basic and the core part of a machine learning interface that deals with a lot of data and has to understand the relevance of the data elements to solve the particular problem at hand. The algorithm is basically trained



# Vision Based Drowsiness Detector for Real Driving Conditions

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**Abstract**— The objective of this project is to design an Accident Prevention System which supports in preventing or avoiding accidents. The driver is more disposed to accidents due to drowsiness and the disturbing intruders. Driver fatigue is one of the supreme common reasons for deadly road accidents around the world. This shows that in the transportation industry especially, where a driver of a heavy vehicle is often exposed to hours of monotonous driving which causes fatigue without frequent rest period. Driver inattention is one of the main causes of traffic accidents. Under this project we will develop a system using Python and Machine Learning that can monitor the alertness of drivers in order to prevent people from falling asleep at the wheel System creatively reduces accidents due to drivers' fatigue by focusing on treating the driver later than fatigue has been detect to achieve decline in accident.

**Keywords:** Image processing, machine learning, drowsiness, Pre-Processing

## I. INTRODUCTION

Driver drowsiness detection is a car safety technology which prevents accidents when the driver is getting drowsy. Various studies have suggested that around 20% of all road accidents are fatigue-related, up to 50% on certain roads. Driver fatigue is a significant factor in a large number of vehicle accidents. Recent statistics estimate that annually 1,200 deaths and 76,000 injuries can be attributed to fatigue related crashes. The development of technologies for detecting or preventing drowsiness at the wheel is a major challenge in the field of accident avoidance systems. Because of the hazard that developed for counteracting its affects. Driver inattention might be the result of a lack of alertness when driving due to driver drowsiness and distraction. Driver distraction occurs when an object or event draws a person's attention away from the driving task. Unlike driver distraction, driver drowsiness involves no triggering event but, instead, is characterized by a progressive withdrawal of attention from the road and traffic demands. Both driver drowsiness and distraction, however, might have the same effects, i.e., decreased driving performance, longer reaction time, and an increased risk of crash involvement. Based on Acquisition of video from the camera that is in front of driver perform real-time processing of an incoming video stream in order to infer the driver's level of fatigue if the drowsiness is Estimated then the output I send to the alarm system and alarm is activated.

## II. LITERATURE SURVEY

This section of the literature survey eventually reveals some facts based on thoughtful analysis of many authors work as follows

The objective of paper [1] is to design an Accident Prevention System which supports in preventing or avoiding accidents. The driver is more disposed to accidents due to drowsiness and the disturbing intruders. Driver fatigue is one of the supreme common reasons for deadly road accidents

around the world. This shows that in the transportation industry especially, where a driver of a heavy vehicle is often exposed to hours of monotonous driving which causes fatigue without frequent rest period. Driver inattention is one of the main causes of traffic accidents. There are lots of approaches and among them computer vision has the potential of monitoring the person behind the wheel without interfering with his driving. The computer vision system for driving monitoring uses face location and tracking as the first processing stage. In the next stage the different facial features are extracted and tracked for monitoring the driver's vigilance. Under this project we will develop a system that can monitor the alertness of drivers in order to prevent people from falling asleep at the wheel System creatively reduces accidents due to drivers' fatigue by focusing on treating the driver later than fatigue has been detect to achieve decline in accident.

Drowsiness Detection System has been developed, using a machine vision based concepts. The system [2] uses a small camera that points directly towards the driver's face and monitors the driver's eyes in order to detect fatigue or drowsiness. In a case if fatigue is detected, a warning signal or alarm signal is issued to alert the driver to wake up and come out of the drowsy state First of all, the system detects the face and then the eyes, and then determines whether the eyes are open or closed. The system deals with using information obtained for the binary version of the image to find the edges of the face, which narrows the area of where the eyes may exist. Once the eyes are located, measuring the distances between the intensity changes in the eye area determine whether the eyes are open or closed. If the eyes are found closed for 5 or more consecutive frames, then the system finds the inactiveness of the driver and concludes that the driver is falling asleep and issues a warning signal or generate and alarm signal to wake him up.

Studies show that around one quarter of all serious motorway accidents is attributable to sleepy drivers in need of a rest, meaning that drowsiness causes more road accidents than drink-driving. Driver fatigue is a significant factor in a large number of vehicle accidents. The development of technologies for detecting drowsiness at the wheel is a major challenge in the field of accident avoidance systems. Because of the hazard that drowsiness presents on the road, methods need to be developed for counteracting its affects. The aim of this is to develop a drowsiness detection system by monitoring the eyes and mouth; it is believed that the symptoms of driver fatigue can be detected early enough to avoid a car accident. Detection of fatigue involves the observation of eye movements, blink patterns and mouth opening for yawning. The analysis of face images is a popular research area with applications such as face recognition, and human identification security systems. Paper [3] is focused on the localization of the eyes, which involves looking at the entire image of the eye, and determining the position of the

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# Shear Strengthening of Existing Bridge Structure using Carbon Textile-Reinforced Mortar

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**Abstract**—The carbon textile-reinforced mortar is more effective and innovative technique to improve the shear strength of reinforced concrete component has been investigated. The study comprises with the comparative statement of properties of CRT reinforced concrete with conventional concrete based on experiments performed in the laboratory. This research includes of large-scale beam testing on shear response of reinforced concrete beams strengthened with textile-reinforced mortar and to be compared with the same sized conventional beams. This research also proposed study on the strength of the M50 grade reinforced concrete cubes strengthened with carbonized textile fiber sheets. The cubes and beams have been subjected to 7, 14 and 28 days of curing and the results for compression tests are noted. It was found that the cubes subjected to 28 days of curing period showed effective increase in strength gain than the conventional cubes. Results of the beam testing demonstrated that the shear strength gain caused by strengthening was in the range of 51% to 100% depending on the amount of internal stirrups and number of textile-reinforced mortar layers.

**Keywords:** Carbon Textile Fibers, M50 Concrete, Shear strength analysis, curing

## 1. INTRODUCTION:

The carbon textile sheet are used to increase the shear resistance of reinforced concrete members is investigated in this study. TRM may be considered as an alternative to fiber reinforced polymers (FRP), providing solutions to many of the problems associated with application of the latter without compromising much the performance of strengthened members. Based on the experiment, we can say that textile-mortar jacketing makes it better in shear resistance; the shear strength increases with the number of increasing layer. The layers applied are sufficient to transform shear failure to flexural failure. The CTRM layer is a combination of an anticorrosion carbon fiber reinforced polymer fabric and an efficient mortar.

In this paper, the strengthening method and the experimental results obtained by applying a thin layer of textile-reinforced mortar technique to improve the shear response of reinforced concrete beams has been investigated.

Related studies on textile reinforced concrete used for the strengthening and repair of RC beams, notably in relation to shear strengthening, are even less. The use of carbon textile fiber as externally bonded (EB) reinforcement in shear strengthening of RC members has become very popular since last two decades. Yet the TRM strengthening technique has a few disadvantages mainly due to the use of epoxy resins, high

cost, also shows poor performance at high temperatures, can't be applied on wet surfaces.

In an attempt to overcome the problems arising from the use of epoxies, researchers have introduced a novel composite material, namely textile-reinforced mortar (TRM), which combines advanced fibers in form of textiles (with open-mesh configuration) matrices, such as cement-based mortars. Over the last decade it has been reported in the literature that TRM is a very promising alternative to the FRP retrofitting solution. TRM has been used for the strengthening of RC members and, as well as for the seismic retrofitting of masonry-infilled RC frames common. It is clear that the existing literature does not cover adequately the subject of experimental application of the strengthening system CTRC when used in shear strengthening of concrete members. This paper presents the systematic study on the effectiveness of CTRC sheets in shear strengthening of RC beams. The investigations address additional parameters including the number of layers and the strengthening configuration.

Details are provided in the following sections.

## 2. AIM AND OBJECTIVES OF THE STUDY:

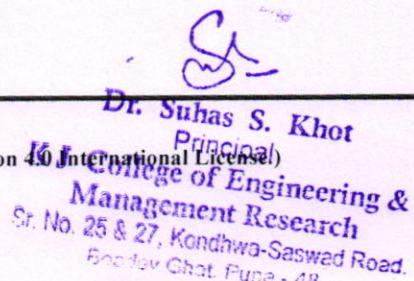
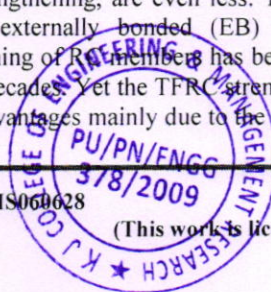
The project aims to investigate shear response of RC beams strengthened in shear with TRM and through the conclusions of provide recommendations for future studies in the field.

The overall objective of the current study is to investigate the shear response of RC beams strengthened in shear with TRM. The detailed objectives are listed herein:

- To study the physical properties of TRMs by conducting durability tests on M50 Grade TRM concrete cubes
- Examine the viability of using TRM strengthening system to improve the shear response of RC beams
- Demonstrate the application of TRM for the strengthening of existing bridge structures.

## 3. LITERATURE REVIEW:

Various authors presented studies on bond characteristics between TRM and concrete. Previous studies on shear strengthening of RC beams with TRM are then summarized. Based on the literature review, test variables affecting shear strength of RC beams strengthened with TRM are identified and discussed.





## An Empirical Study on Frequent Item Set Mining

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**Abstract:** In e-commerce or retail business, it is very important to predict the requirements of the customers to improve the business. The easiest and quickest solution for this is to analyze the current market trend to fulfill the customer's requirements. Most of the time these trends are keep changing due to product quality, entry of the new products, endorsements, promotional events, freebies, advertisements and many more reasons. This literally makes impossible to predict the requirements, so one strong and effective method for this is frequent item mining. Apriori is one of the most popular among these frequent item mining algorithms. Because of its horizontal pattern mining it creates more space complexities. So this paper analyses some of the past works on frequent item mining and try to evaluate lesser time and space complexity solution.

**Keywords:** Frequent Itemset Mining, Apriori Algorithm, Eclat Algorithm.

### I. INTRODUCTION

Ever since the advent of humans on this planet, they have been in search of knowledge. At first it was recognizing the dangers that would be fatal for an individual. Such as, predatory animals and birds. They had to recognize the edible fruits and animals that could be eaten for the survival of the species. Human's memory served as the greatest asset in times like these, which would be changed soon enough.

As there was an increase in the amount of information being processed, the humans developed speech and taught their progeny. Therefore, the knowledge was now proliferated with the help of word of mouth. This practice was essential for the survival of our species as knowledge has always been supreme. This was the case until humans were hunter gatherers and required extensive knowledge about what was edible and stay away from poisonous items.

This was extremely difficult to maintain as the agricultural age was ushered and humans settled in pucca houses rather than natural caves and had tools to assist them in farming. This had to be detailed in the form of books. And books were the primary source of knowledge and are still in widespread use due to their flexibility and versatility. This was very instrumental in bringing about the proliferation of knowledge and helped advance the human species forward.

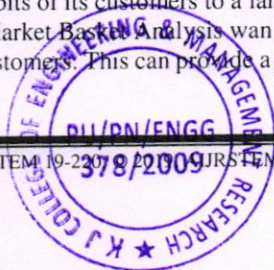
As the technological advancements have occurred significantly with the introduction of silicon as the center of all the technological expansion. Silicon can act as a barrier and allow only for certain values of voltage or current to be able to act like switches which gave rise to the transistor and revolutionized computing forever. The rise of electronics also increased our consumption of data.

Nowadays, we have such an increasing number of smartphones and computers that generate petabytes of data. This data is massive in size and it is very difficult to handle that efficiently. Therefore, there have been some methods that have been designed to manage and extract relevant information from these large sets of data. These large collections of data are called as Big Data very appropriately.

Frequent itemset mining refers to the mining of data elements in a dataset that are frequent of occur with a recurring pattern. This is very critical for the workings of a data mining algorithm. as the frequent itemset mining does not do anything substantial but it is designed in a way to perform certain tasks related to identifying the patterns that exist within a particular dataset.

Frequent itemset mining is also known as association mining because it has the ability to associated patterns with each other and effectively return the set of items occurring with a certain frequency. It is one of the most important parts of the market basket analysis. The market basket analysis utilizes the frequent item set mining to understand the habits of its customers to a larger degree.

The Market Basket Analysis can be really helpful in decoding the various items that are seemingly picked up by the customers. This can provide a greater understanding of the buying habits of people and the kind of items being



# A Real Time Virtual Dressing Room Application using Opencv

Rshami S. Shinkar, Nagaraju Bogiri

**Abstract:** The real time clothes trying having long waiting queues for trial rooms is a problem faced at many places and store. In this system, by using real time system cloth processing is done by data drive approach which is worn by human. To give exact look to skeleton, by using height, skin color, it starts creation of clone person which is prior to real-time simulation. We use hardware sensors like motion, light, camera sensors which are controlled by using GUI (Graphical User Interface) software. Hardware uses latest depth camera of Kinect Sensing element along Unity SDK. We use operating system which can communicate with the user friendly software which should manage the controllers. This proposed approach can offer good GUI which is user friendly to end user and also to retailer. Because of this user friendly system, it should increase the level of marketing more than current system. Proposed system should provide not only good solution for dressing but also can solve the issues which are related to retailer and end user.

**Keywords:** Depth Image, Kinect Sensor, Augmented Reality, Unity SDK, Skeleton

## I. INTRODUCTION

In stores usually it takes more time to change the clothes or trying clothes. In online shopping, we cannot try clothes. In proposed system we will try to upgrade use of cloth in less time [8]. For this approach we are going to create an environment which should be the effective room and which should be virtual [1]. For this system main issue should occurs regarding to adjustment according to model of cloth with their ideal situation, plate, turning, spinning and ordering [2]. The most important thing of this problem is removing user and their body parts [4]. In literature, for detection of parts of user body, skeletal tracking and pose approximation there were many ways proposed. For online shopping users, by using web camera it is going to be simple.

To make platform independent approach and portable approach we should implement this by using OpenCV [5]. Our approach is as follows:

- By using depth and user label data, by video stream user should be extracted.
- According to the skeletal tracker, Positioning of the 2D cloth models.
- From the sensor distance should be scaled between body joints and user.
- To prevent blockage of body parts which is unnecessary skin color detection is used.
- On user stratified of the model.

For checking the practical performance according to user interface a simple application should be designed. The interface permits the user to settle on a dress by suggests that of hand movements. An extreme way of interacting with machines is action recognition using the Kinect technology. For human body, by using Kinect by Microsoft, analyzation of depth mapping and skeletal joint information is done and also we should recover three dimensional information scenes [9]. According to that we can detect position of human body such as stand, walk, seat, wave etc. Kinect has large no of application areas related with computer, medical, electronics, robotics and many other. By using own body movements, people can play games. In medical purposes, by using Kinect remote location doctor can operate patient. To interact with human's, Kinect is used applications related to the software and medicines. Using Kinect is great thing in computer vision. The computer vision is based on Human Computer Interaction i.e. HCI. The Kinect sensor senses the environment and produces depth map for it. By using the mean shift algorithm, the human body is tracked using skeletal tracking. In skeletal tracking, 24 joints of human body should be identified by using Kinect sensor. Kinect find out the action by the human body and gestures according to 3D joint information, [3] after that according to the input given to machine, machine should replies.

### A. KINECT SENSOR:

Kinect Sensor is manufactured by Microsoft. In Kinect Sensor, depth sensor, four-microphone array and a color camera were present. The depth sensor includes IR (Infrared) sensor. IR Camera is a monochrome sensor which is present in IR sensor. IR camera is usually related with idea regarding to structured lights. IR laser moved from broadcast grating and turned into IR dots set is known as IR projector. Projector, Camera and Dot pattern regarding with IR have a known respective geometry. Dot in the image and dot in the projector pattern become same at that time it should be represented in three dimensions.

Depth map for IR should be created by using the Kinect sensor. The darker pixel is near camera point because depth values should be encoded with gray values. If there are no depth values present, at that time it should consider than point is too near or too long to be calculated and no representation can be made.

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# Identity Based Reliable Data Sharing with Revoked System in Cloud

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## Abstract

In the storage services of the cloud, users can be store data on the cloud and perform exchange of data with others. Cloud uploaded files contains sensitive information. At the time of file sharing, may realizing the sensitive information of files hide, but this shared file cannot be used by others. The problem is to how to perform data sharing with the sensitive information. For solving such problem, propose a Revocation algorithm to avoid the use of a sensitive file from unauthorized users. First, in the system, by using sanitizer the data blocks are sanitizes and the binded the data blocks and at the end of sanitized data blocks after that sends this sanitized file by sanitizer and its corresponding signature to the cloud. The integrity of sanitized files is verified by using these signatures during the integrity audit phase. TPA then verifies the integrity of the sanitized file. This way, our proposed system provides security to sharing data.

**Keywords:** Cloud Storage, sensitive information hiding, Revocation Algorithm and Data integrity auditing

## 1. Introduction

In explosives growth of the data, it is a huge burden on users to store all data on the cloud. However, if data is storing on the cloud, it will be damaged or lost as a result of software, hardware failure, and human error in the cloud. We will continue to propose many remote data integrity audit scheme, for the cloud correctly can save data, to verify whether or not. Generate fist to the needs of the owner of the data on the private cloud of the file before uploading. These signatures audit the health of the phase of the data block with a sense of the cloud of the density. Then, the owner of the data is a signature work within the data block. The accumulated data in cloud will include large number of users, but this does not apply to cloud storage applications. The cloud storage has a very important feature called data sharing. The data stored on cloud may contain some sensitive information [1].

Cloud computing helps companies improve the creation and delivery of IT solutions. Clouds can be divided into three categories Public, private and hybrid cloud depends on accessibility restrictions and deployment models. Many cloud storage audit protocols have been proposed to develop technologies. To reducing the computational load on the client, TPA (Third-Party Auditor) [1] [2] [3] [4], has been introduced, it helps to client to periodically checks the integrity of data on the cloud. All the existing protocols is focused on the cloud failure or fraud, procedure for dealing with client private key disclosure for security weakness and security cloud storage audit is a very important issue for clients. This process includes downloading the entire data from cloud storage, creating a new authentication system, and re-uploading all the data on cloud [3].

Another important issue in cloud storage auditing is the recent review of key is-sues. The problem itself is not self-evident in nature. When a client's private key for the storage auditing is exposed to the cloud, the cloud can easily hide data loss incidents to maintain its reputation [4]. For solving this problem, here propose a Revocation algorithm to avoid the use of a sensitive file from unauthorized users. First, in the system [1], sanitizer sanitizes data blocks and blinded blocks of data blocks, and at the end of sanitized data blocks after that it sends sanitized files by sanitizer and it is correspond to signature on the cloud. The integrity of sanitized files is verified by using these signatures during the integrity audit phase. TPA then verifies integrity of sanitized file. This way, our proposed system provides security to sharing data.

**Our contribution:** We propose a Revocation algorithm to avoid the use of sensitive files from unauthorized users. This allows the owner at any time to directly revoke any user from cloud servers and to distinguish unauthorized users, because the security model of the cloud service allows you to share data and protect the data of trusted users. User cancellation is the most difficult, clouds in which a single user revocation affects other users who share a common attribute space.

As a result, we are reducing the cost of data sharing services provided by cloud computing. Mobile cloud computing is a mobile smart terminal used from anywhere, when the cloud of convenience, data accessible to the user. The user stores personal data on the cloud server, and it is easy to share only with authorized customers who have access to the data. A lot of traditional systems provide access control for users of the service, a service based on user attributes. Today, the business is usually outsourcing to the cloud with shared encrypted data for users and, moreover, cloud services are new cloud service partners to respond to in its traditional access control system distributed in different geographical areas. In addition, the cloud server was completely reliable, largescale users from different domains did not leak the contents of the data collusion correspondence with these data leaks is difficult, and the user can cancel the scheme for multiple users to access the cloud service. For solving this problem, here design Revocation algorithm for multiple user accessing in cloud service.

## 2. Literature review



...ing integrity of remote data that enables you to share data with confidential information

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## Replacement of Steel with Bamboo as Reinforcement

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**Abstract** – This paper is the study of the comparison of cost, double shear, flexural strength & tensile strength of bamboo reinforcement with regularly used steel reinforcement. Recently Global warming is the major issue on which we want to focus. Generally in construction steel reinforcement is used but we know that the production of steel is very harmful for nature. The cost of steel is very high so that the middle class peoples are unable to use steel reinforcement. The construction industry is mainly depending on cost of project. The cost of project is mainly depends upon factors such as labour cost and material cost. So for reducing the cost of project we can replace the material such as we can use bamboo as reinforcement. Bamboo is effective material for construction due to its low cost, high strength, earthquake resistant, light weight, etc. By replacing this we can achieve our main objective that cost effective construction and we can also encourage the use of natural products by which we reduce the pollution impact on nature.

By conducting the various tests and analyzing the result we say that we can use the Bamboo as reinforcement in various structural elements where load intensity is less such as Roof slab for security cabin, toilets, car parking etc. and achieve our objective.

**Key Words:** Cost effective, Bamboo reinforcement, Double shear, Flexural strength, Tensile strength, light weight, earthquake resistance.

### 1. INTRODUCTION

In human civilization the construction industry is an integral part. We know that the cost of any construction project is mainly depending on financial factors such as cost of labours and material [1, 6]. We know that concrete is mostly used construction material which having different advantages like its availability, low cost, fire resistance etc. But it has low tensile strength. For getting tensile strength we provide steel reinforcement [2]. For load bearing structures the steel reinforced concrete is used [10]. Recently Global warming is the major issue so the main disadvantage of steel is its production [3]. The cost of steel reinforcement will be increasing in future and the production will be shortening [4]. We know that there are many projects which are working on concept 'low cost building' because any person from middle class family can construct the building [1]. For that we want to find some alternatives. To tackle this environmental issue we have to use sustainable material. For

that we can use the eco friendly Bamboo as a reinforcement [1]. The treated bamboo species shows very good potential for production of different component parts and it will successfully used for various structural and non-structural applications in the construction [7]. According to study Bamboo is renewable resource which having same characteristics by high strength to the weight ratio. The growth of Bamboo is faster [8]. Bamboo is the perennial grass which having various shapes and size according to contractors requirement [3]. In world the various forest of bamboo species has been found in tropic and sub-tropic zones which having latitude of 40degree south. The bamboo forest cultivation is better in the temperature range is from 20 to 30 degree Celsius [8]. Within one day the different species of bamboo are grow 35inches tall. This bamboo shows some similar properties like steel reinforcement which is used in construction [9]. The high yielding property is a main advantage shown by bamboo reinforcement [7]. The different physical and mechanical properties of bamboo are varies from different species from different soils [5]. For better development bamboo is being processed as reinforcement by typical bar sizes which will be used instead of steel reinforcement [10]. Bamboo is very good in tension having the tensile strength from 50% to 75% of that steel reinforcement [5]. As per study it was found that the modulus of elasticity is approximately one third of mild steel [6]. The main factor in deciding the life of bamboo is the moisture content which is depending on height of bamboo, its location and the seasoning period [5].

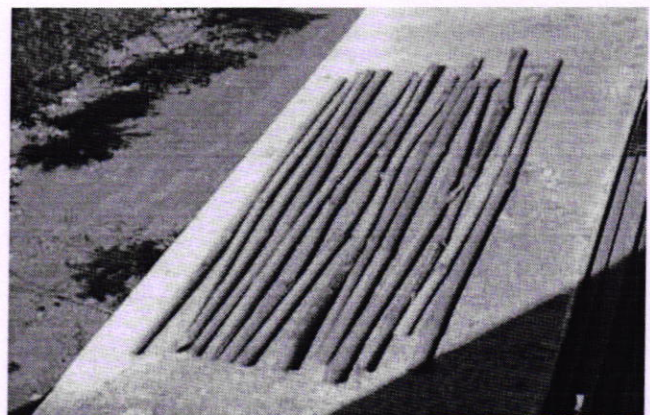


Fig -1: Bamboo Sample used as reinforcement

# Use of Bamboo & Copper Slag for Replacement of Steel & Fine Aggregate

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**Abstract**—Recently considering the issue of global warming, lack of resources & other eco-friendly issues the use of natural materials has become active in the construction industry. Now a days Bamboo has been in wide usage as a vital material for construction due to its low cost, high strength, flexibility, light weight, etc. As well as concrete is widely used construction material and has ability to consume industrial wastes in high volume. As demand for concrete is increasing one of the effective ways to reduce the undesirable environmental impact of concrete is by use of waste and by-product material as replacement for aggregate in concrete.

The main objective of this study is to encourage the use of waste product i.e. copper slag and also serves as a major of rescue for the massive pollution produced by the steel production. The utilization of bamboo reinforcement & copper slag as replacement of steel reinforcement & river sand is gaining immense importance today mainly an account of improvement in economical aspect combined with ecological benefits. In this study bamboo strips are used as reinforcement in a concrete that is made with supplementary cementitious material & partial replacement of copper slag with fine aggregates. The bamboo reinforced concrete beams are casted with different stirrup material along with copper slag as a replacement to 50% of fine aggregate for M25 Grade of concrete.

In this study there are various tests such as Tensile test, Double shear and Flexural tests are conducted on bamboo reinforced beams along with the compression test on concrete blocks of 150mm x 150mm x 150mm with the various proportions of replacement of copper slag as a fine aggregate. By test results and analysis it is found that Bamboo can be used as an alternative for reinforcement as well as Copper slag can be used as an alternative fine aggregate

**Keywords**— Bamboo, Copper slag, Tensile test, Double shear test, Flexural test

## I. INTRODUCTION

The construction industry is an integral part of the human civilization. The glory of construction is mainly determined by the financial factors. The cost of project is mainly depend on two factors called as labour cost and material cost[2].In future the cost of steel reinforcement will be increasing and also its production will be shorten[5].Now a days there are many projects are working based on 'low cost building'. The main motive behind the low cost building project is any one from middle class people can construct the building[2].By efficient supervision the workforce can be manipulated but alternatives should be introduced in order to tackle the market price of the conventional materials. By various researches,

alternatives have been found to be used in concrete for that the waste material which is generated in high amount from treatment plant, production industries, mining etc. can be used can be used[4].But there is no any proper alternative for the steel reinforcement. We know that concrete is weak in tension and strong in compression. For strengthen the concrete reinforcement is provided [2]. But recently considering the issue of global warming the main disadvantage in steel is that its production is one of the most polluting and hazardous and also steel is not economical [8]. To tackle this use of sustainable material must be provided. For that we suggest the eco-friendly Bamboo for replacement of steel reinforcement [2]. Bamboo is renewable resource which has similar characteristics by high strength to weight ratio and its growth is faster [6].Bamboo is perennial grass which is easily available in various shapes according to required dimensions [8].The various forest of bamboo has been found across tropic and sub-tropic zones between latitude of 40degree south where temperature range is from 20 to 30 degree Celsius [6].Different species of bamboo are grow as tall as 35inches within one day. Bamboo shows some similar properties like steel which is used in construction[7].Bamboo has also an several advantage of high yielding[9].As per research the tensile strength specific weight ratio of bamboo is 20times more than that of steel[10].

Similarly now a days there is lack of River sand and also lots of restrictions on river sand mining and its transportation. For that it is necessary to find the alternative for river sand. It is beneficial to find the by-product so that its cost is less and also it can be usable. For that the best option is Copper Slag [3].Copper slag is an industrial product obtained during matte smelting and refining of copper [1,4]. By using copper slag in concrete we can the environmental pollution as well as we reduce the cost of concrete [3]. Copper slag can possesses the physical, chemical and mechanical properties that can be used in concrete as a partial replacement for fine aggregate [1].