

**G. H. Raisoni College of Engineering & Management,  
Wagholi, Pune – 412207**

**PG Abstract Book  
2017-18**



**G. H. RAISONI COLLEGE OF ENGINEERING & MANAGEMENT,  
WAGHOLI, PUNE**

(An Autonomous Institute under UGC Act 1956 & Affiliated to Savitribai Phule Pune University)

NAAC ACCREDITED

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## About PG Course

GHRCEM offers 05 full time postgraduate programmes of studies in engineering in different Specializations leading to M.Tech/ME Degree.

Following are the courses offered by GHRCEM,

### Post Graduate Courses (M.Tech):

SN	Course Name	Intake
01	M.Tech (Computer) Computer Engineering	24
02	M.Tech (E&TC) VLSI & Embedded Systems	24
03	M.Tech (Mechanical) Heat Power Engineering	18
04	M.Tech (Mechanical) CADME	24
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# R&D Initiatives for Postgraduate Students

1. It is mandatory to undertake dissertation work pertaining to live industrial problems/cutting edge technologies.
2. They are required to refer minimum 5 journal/transaction papers for finalizing the topic for dissertation.
3. Monthly progress seminars are conducted to assess the work.
4. External experts are being called for the evaluation of the quality of the work during the year & at the time of topic selection.
5. Before submission of the final dissertation, students are required to publish at least two papers in reputed international conference/journal
6. Guest lectures and industrial visits are regularly organized to focus on thrust areas.
7. 100% financial assistance is provided for publishing the papers in conferences in IITs/NITs/COEP/IISC Bangalore.
8. 90% financial assistance for developing the experimental setup for the dissertation work (Pre-Approved).
9. Research methodology workshops and Latex workshops are arranged by R & D cell.

## PG Project Evaluation Procedure

1. Students asked to appropriately select 03 Project topics in which they wish to pursue M.Tech./M.E. Project in III semester. Sufficient literature review to be carried out by students.
2. Seminar based on Literature Review on all 03 topics in front of departmental Project Recognition Committee.
3. One topic approved based on feasibility of topic.
4. Synopsis of topic to be submitted in standard format.
5. RRC Committee constituted by Dean(R and D).
6. Changes, if any, suggested by RRC, to be incorporated in the synopsis.
7. Title and scope of topic finalized in RRC.
8. Research paper based on Literature review to be published by students in M.Tech./M.E. III Semester.
9. Two progress seminars based on Project work in M.Tech./M.E. III Semester.
10. Four progress seminars based on Project work in M.Tech./M.E. IV Semester.
11. Rigorous experimentation and analysis to be done in M.Tech./M.E. IV Semester.
12. Research paper based on Experimental work to be published by students in M.Tech./M.E. IV Semester.
13. Pre- Submission Seminar in front of Panel of eminent experts from NIT.
14. Suggestions, if any, suggested by Panel, to be incorporated in the work.
15. Write up of thesis in standard format prescribed by GHRCEM.
16. Submission of thesis in standard format prescribed by GHRCEM.
17. Panel of Examiners from NIT, IIT constituted by Dean(R and D).
18. Final defense and viva conducted.

# Marks Distribution for Project Work

## ■ III SEM PG

### PG Dissertation Evaluation Scheme 2017-18 (Odd Semester)

SN	Activity	Marks for PG Dissertation			
		COMP	E&TC	MECH	CIVIL
1	Seminar 1: Literature Review	4	10	8	8
2	Seminar 2: Topic Finalization (in presence of Industry/ External Academic Experts)	4	10	8	8
3	Seminar 3: Submission of synopsis (in presence of RRC)	5	10	10	10
4	Progress Seminar 1	5	20	10	10
5	Progress Seminar 2	5	20	10	10
6	Progress Seminar 3 (in presence of PG RRC)	10	30	20	20
7	Evaluation by Guide	10	30	20	20
8	Submission of Dissertation Report (in specified format)	7	20	14	14
9	Compilation and submission of CA Marks	<b>50</b>	<b>150</b>	<b>100</b>	<b>100</b>
10	External Examination*	100	50	100	50
<b>Total Marks</b>		<b>150</b>	<b>200</b>	<b>200</b>	<b>150</b>

\* For M. Tech. (COMP) and M. Tech. (MECH), the marks include both continuous assessment as well as Oral marks. Thus, the CA marks can be given out of 100 and External Examination out of 50 (to be decided by respectively BoS Chairman)

## ■ IV SEM PG

### PG Dissertation Evaluation Scheme 2017-18 (Even Semester)

- Total internal marks for project work during fourth semester for each department are mentioned below in table.
- Three Project Progress Seminars

S.N.	Activity	Marks for PG Dissertation			
		COMP	E&TC	MECH	CIVIL
1	First Project Progress Seminar	10	30	20	20
2	Second Project Progress Seminar	10	30	20	20
3	Third Project Progress Seminar	10	30	20	20
4	Project work assessed by project guide	20	30	50	50
5	Project work assessed by Expert	--	--	50	50
6	Paper publication (International journal/conferences)	30	30	20	20
7	Submission of Dissertation report	20	--	20	20
<b>Total Continuous Assessment Marks</b>		<b>100</b>	<b>150</b>	<b>200</b>	<b>200</b>
<b>Project work assessed by External Examiner</b>		<b>100</b>	<b>50</b>	<b>100</b>	<b>100</b>
<b>Total Marks</b>		<b>200</b>	<b>200</b>	<b>300</b>	<b>300</b>

# **Abstracts of PG Projects**

**Department of Computer Engineering  
M.Tech in Computer Engineering**

# **M.Tech in Computer Engineering**

**Title: SMARTCRAWLER: PERSONALIZED WEB SEARCH FOR RELEVANT WEB PAGES**

**Student name: Ms. Arati Anilrao Wardekar**

**Academic Supervisor: Prof. Poonam Gupta**

## **Abstract:**

On web we see web pages are not indexed by crawler that increase at a very fast , there has been developed many crawler efficiently locate deep-web interfaces, Due to large number of web resources and the dynamic nature of deep web, For that to achieve better result is a challenging issue. To solve this problem we propose a two-stage framework, mainly SmartCrawler, for effectively finding deep web. Smart-crawler get seed from seed database. First stage, Smart Crawler performs Reverse searching that match user query with URL. In the second stage Incremental-site prioritizing performed here match the query content within form. Then according to match frequency classify relevant and irrelevant pages and rank this page. High rank pages are displayed on result page. Our proposed crawler efficiently retrieves deep-web interfaces from large sites and achieves greater result than other crawlers. We develop searching thorough personalized searching to improve performance considering time we maintain log file. Pre-query result display after entering query on search box we get all pre-query result

**Keywords** - Two-stage crawler, Crawler, Deep web, Feature selection URL, IP, Site frequency, Ranking



**Title: SMARTCRAWLER: PERSONALIZED WEB SEARCH FOR RELEVANT WEB PAGES**

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For that to achieve better result is a challenging issue. To solve this problem we propose a two-stage framework, mainly Smart Crawler, for effectively finding deep web. Smart-crawler get seed from seed database. First stage, Smart Crawler performs Reverse searching that match user query with URL. In the second stage Incremental-site prioritizing performed here match the query content within form. Then according to match frequency classify relevant and irrelevant pages and rank this page. High rank pages are displayed on result page.

Our proposed crawler efficiently retrieves deep-web interfaces from large sites and achieves greater result than other crawlers. We develop searching thorough personalized searching to improve performance considering time we maintain log file. Pre-query result display after entering query on search box we get all pre-query result.

**Result:**

Here we can perform personalized search engine with retrieving deep web page which cannot be retrieve by normal searching. And we are maintaining log files and can maintain the pre-query result display and reduce time for searching.

**Publication Details:**

**Journal:** International Conference for Convergence in Technology.

**Title:** SMARTCRAWLER: A PERSONALIZED WEB SEARCH FOR RELEVANT WEB PAGES- A SURVEY

**Journal:** International Conference on Computing Communication Control & Automation (ICCUBEA)

**Title:** Smart crawler: A Personalized Web Search For Relevant Web Pages.

**Title: Malicious Tweet Detection using Sentiment Analysis and Event Reporting**

**Student name:** Dhanashri Rangrao Deosarkar

**Academic Supervisor:** Ass. Prof. Sandeep Gore

**Abstract:**

Introduction: There are so many social networking sites are available but TWITTER having some limitations that's why tweeter is mostly used. Tweeter is used by billions of people to connect socially to their closed one. Maximum tweets limit is 140 character., if tweeter ask any question then answer must be less than or equal to 140 character. Because of that reason spammers are using the URL shortner to short their maliciout tweets [1], they are using this to improve the quality and using tensor factor it checks that if event is occurred in any area. If the event occurred in any area then alert people in that area related to that event via mail or message.

Motivation:- The challenges came from the different social networking websites which contains the more malicious URLs that are connected to the different illegal websites. In online tweet analysis there contain the survey for various different topics like politics, voting related to any debate, sentiment of any gadget or product.

Proposed system Identifies the malicious tweets from the given account and If any event is occurred in any area then this system will alert about that event to people in that area.

**Results:** Our System is useful for tweeter user this system identifies the malicious tweets and also if any event is occurred in any area it identify the event and alert people in that area about that event.

**Publication Details: Conference:** International Conference on Advanced Recent trends in Computing and Information Technology (ICARCIT-18).

## **Title: “Efficient Algorithms for Mining Erasable Closed Patterns From Product Datasets ”**

**Student name: Nikhil Sunil Gumaste**

**Academic Supervisor:** Prof. Sunita Nandgave

### **Abstract:**

By Discovering information from expansive informational collections to use in intelligent systems turns out to be increasingly essential in the Internet period. Pattern mining, classification, text mining, and opinion mining are the topical issues. Among them, pattern mining is an important issue. The issue of mining erasable patterns (EPs) has been proposed as a variation of frequent pattern mining for optimizing the generation plan of production factories. A few algorithms have been proposed for effectively mining EPs. Be that as it may, for extensive limit esteems, many EPs are acquired, prompting substantial memory use. it is important to mine a consolidated portrayal of EPs. This paper first define erasable closed patterns (ECPs), which can represent to the set of EPs without data loss. At that point, a theorem for quick deciding ECPs in view of dPidset structure is proposed and demonstrated. Next, two efficient algorithms [erasable closed patterns mining (ECPat) and dNC Set based algorithm for erasable closed patterns mining (dNC-ECPM)] for mining ECPs in view of this theorem are proposed. Keywords - Data mining, pattern mining, erasable pattern, erasable closed pattern.

The dNC-ECPM algorithm based on dNC Set structure will be proposed. dNC-ECPM uses the theorem and strategy of ECPat with dNC Set structure instead of dPidset structure. Experimental results show that ECPat is better than dNC-ECPM and Na-MEI for sparse datasets. This uses the divideand-conquer strategy and the difference pidset (dPidset) concept for mining EIs fully.

By concentrate on displaying the efficient algorithms for data mining, and plan to develop the efficient algorithms for data mining on the information and in addition to anticipate general conclusions datasets. The novel plan behind the proposed two efficient algorithms [erasable closed pattern mining (ECPat) and dNC Set based algorithm for erasable closed pattern mining (dNC-ECPM)] for mining ECPs based on this theorem are proposed. Experimental results show that ECPat is the best method for sparse data sets, while dNCECPM algorithm outperforms ECPat algorithm and a modified mining erasable itemsets algorithm in terms of the mining time and memory usage for all remaining data sets.

In this project, investigation defined ECPs, inferred a theorem for quick deciding ECPs. At that point, we proposed ECPat and dNC-ECPM algorithms for mining ECPs. A few analyses were led to think about the mining time, and memory use between ECPat, dNC-ECPM and an innocent approach (all EPs are mined by MEI and afterward ECPs are found from the got EPs).

**Results:** The outcomes demonstrate that ECPat is the best technique for digging ECPs for sparse datasets. The other way around, dNC-ECPM algorithm beats the ECPat and guileless approach as far as mining time and memory use for all the rest of the datasets. In future work, we will ponder a few issues identified with EPs, for example, mining EPs from tremendous datasets, mining top-rank-k ECPs, and mining maximal EPs. In addition, by will examine the issue of mining erasable patterns in various leveled datasets.

### **Publication Details:**

**Conference Name:** *“International Conference on Advanced Recent trends in Computing & Information Technology (ICARCIT -2018)”*

**Organized by:** *Department of Computer Engineering G H Rasoni College of Engineering & Management Wagholi, Pune, Maharastra &Institute For Engineering Research and Publication (IFERP)*

**Title: Enhanced Indexing and Scraping for Educational Search Engine using Web Usage Mining**

**Student name: Ramkrishna Gaikwad**

**Academic Supervisor: Prof. Mansi Bhonsle**

**Abstract:**

Nowadays the growth of World Wide Web has better a lot with more assumption. Large amount of text, multimedia files, images website documents were present in the web and it is still increasing in its forms. Education Search engine has become an important daily network application tool to search information.

Data mining is the form of extracting data present in the internet. We propose an Education Search Engine in two-stage technique, namely Smart Indexing, for efficient gathering deep web interfaces. To achieve more accurate results for a focused crawl, Smart Indexing ranks websites links to prioritize highly relevant result in websites link rankings.

In the second stage, Web Usages mining in web scraping is a method for extracting textual characters from screens so that they could be analyzed. Web scraping is the process of collecting information from the World Wide Web. The results showed that the smart indexing and scarper can realize the high-efficient and flexible data collection function, and laid the foundation for Web data mining. This efficiently retrieves web data mining interface from large-scale sites and achieves higher.

**Results:** Project 100% implementing with results.

**Publication Details:**

- 1) International Conference on Advanced Recent trends in Computing & Information Technology(ICARCIT-2018)
- 2) International Journal of Analytical, Experimental and Finite Element Analysis(IJAEFEA)
- 3) International Journal for Research in Engineering Application & Management(IJREAM)

**Title:** Multi-Attribute Tag Based Image Search By Social Re-Ranking

**Student name:** Ms.Shinde Sarika Maruti Exam Seat No:FS05

**Academic Supervisor:** Prof. Manjushri Mahajan

**Abstract:**

Social media sharing websites like Flickr allow users to annotate images with free tags, which significantly contribute to the development of the web image retrieval and organization. Tag-based image search is an important method to find images contributed by social users in such social websites.

However, how to make the top ranked result relevant and with diversity is challenging. In this paper, we propose a social re-ranking system for tag-based image retrieval with the consideration of images relevance and diversity.

We aim at re-ranking images according to their visual information, semantic information and views. The initial results include images contributed by different social users. Usually each user contributes several images. First we sort these images by inter-user re-ranking. Users that have higher contribution to the given query rank higher. Then we sequentially implement intra-user re-ranking on the ranked users image set, and only the most relevant image from each user's image set is selected. These selected images compose the final retrieved results. We build an inverted index structure for the social image dataset to accelerate the searching process.

**Results:**

Tag-based image search is an important method to find images contributed by social users in such social websites. This project propose a social re-ranking system for tag based image retrieval with the consideration of image's relevance and diversity. We aim at re-ranking images according to their visual information, semantic information and social clues. The initial results include images contributed by different social users. Usually each user contributes several images.

**Publication Details:**“MULTI-ATTRIBUTE TAG BASED IMAGE SEARCH BY SOCIAL RE-RANKING” Open Access international journal of Science & Engineering, || Volume 3 || Special Issue 1 || March 2018 || ISO 3297:2007 Certified ISSN (Online) 2456-3293

**Title:** Facebook Protector : Detecting Malicious Facebook Applications And Fake Accounts

**Student name:** Mr. Kulkarni Sumit Milind **Exam Seat No:**SY03

**Academic Supervisor:** Prof. Vidya dhamdhare

### **Abstract:**

Facebook is the biggest social media network on the internet. Every user uses the social networking sites for making profiles and sharing their personal information. More than 20 millions apps installs per day on facebook Third party applications are main reason for reputation and prevalence of facebook. Unluckily, hackers have realized the potential of using apps for spreading the unwanted things.As we are aware that not all applications but some applications are malicious.We focused only on detecting malicious applications they are not providing the facility of message filtering and fake facebook account detection.So we are going to building up an apparatus called Facebook Protector, a precise classifier for identifying pernicious Facebook applications. Most strikingly, we featured the rise of application nets huge gatherings of firmly associated applications that advance each other. Keep on digging further into this biological system of malevolent applications on Facebook, and we trust that Facebook will profit by our suggestions for decreasing the danger of programmers on their platforms.

### **Results:**

We have given a framework using which we can detect fake profiles in any online social network with a very high efficiency as high as around 95COMPA uses statistical models to characterize the behavior of social network users, and leverages anomaly detection techniques to identify sudden changes in their behavior. The results show that our approach can reliably detect compromises affecting high- profile social network accounts, and can detect compromises of regular accounts, whose behavior is typically more variable, by aggregating together similar malicious messages. Fake profile detection can be improved by applying NLP techniques to process the postsand the profile.

**Publication Details:**“Automatic detection of fake profiles in online social network” Open Access international journal of Science & Engineering, || Volume 3 || Special Issue 1 || March 2018 || ISO 3297:2007 Certified ISSN (Online) 2456-3293

**Title: Automatic botnet detection based on bipartite graph and one mode projection**

**Student name: Miss Tejas Bajirao Tambe**

**Academic Supervisor: Prof.B.Padmavathi**

**Abstract:**

**INTRODUCTION:**

In the internet network source and destination hosts increasingly, therefore it becomes important to understand traffic patterns of communicating network nodes and internet applications for efficient network configuration and security monitoring. Our research studies have focused on traffic behavior analysis of individual nodes and applications. However, an increasingly large number of end-hosts, a wide variety of applications, and heavy network traffic data poses significant importance for such fine-granularity analysis for backbone networks or enterprise networks.

**MOTIVATION:**

In this system we design a new way of analyzing traffic behavior by identifying and clusters of hosts or applications that depict similar communication patterns. With each cluster abstracting behavior patterns of a plurality of hosts or applications, the cost of botnet detection is significantly reduced. We first implement bipartite graphs to model network traffic of Internet platform links or Internet based links of border routers in wireless networks. As in the one mode projections can effectively extract hidden relationships between nodes within the same vertex sets of bipartite graphs. We inherently construct one-mode projections of bipartite graphs to connect source hosts that communicate with the same destination IP address and to connect destination hosts that communicate with the same source host(s).

**OUTCOME:**

The derived one-mode projection graphs enable us to further build similarity matrices of Internet end-hosts, with resemblance is featured by the shared number of destinations or sources between two hosts. Based on the similarity matrices of end-hosts in the same network prefixes, we propose a novel effective clustering algorithm to find the hidden *end-host behavior clusters*. Each cluster consists of a group of hosts that communicate with similar sets of servers, clients, or peers. The network behavior clusters does not only mitigate the number of behavior profiles for analysis compared to traffic profiling on individual hosts, but also reveal detailed behavior patterns for a group of end-hosts in the same network prefixes.



**Abstracts of PG Projects**  
**Department of Electronics &**  
**Telecommunication Engineering**  
M.Tech in VLSI & Embedded System

# *M.Tech in VLSI & Embedded System*

**Title:** Design and Implementation of Reversible Logic Based Digital CMOS Applications.

**Student name:** Ms. Shivani G. Horke

**Academic Supervisor:** Ms. Manisha Waje

**Abstract:** The reversible logic design attracting more interest due to its low power consumption. Here, reversible logic based digital circuits like full adder, ALU, and novel reversible logic block are proposed. These proposed circuits will be implemented with the help of CMOS BSIM4 model. Proposed designs will be efficient in terms of constant inputs, garbage outputs, quantum cost, and gate count. These reversible logic based designs will be implemented and simulated using tanner EDA tool. Performance analysis of these designs will be done considering various parameters. Applications of reversible logic circuits lies in the area of Low power CMOS, Quantum computer, Nanotechnology, Optical computing.

**Results:** Design and implementation of novel reversible logic block. Design of reversible logic based full adders, ALU. Optimization of proposed circuits and comparative analysis with the circuits in literature.

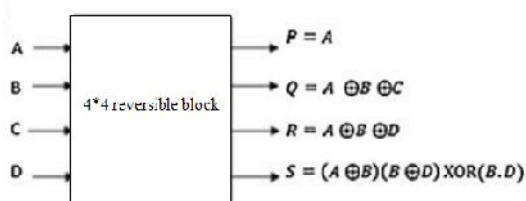


Fig. Block schematic of 4\*4 Reversible logic block

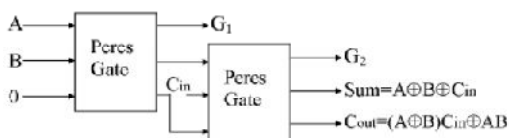


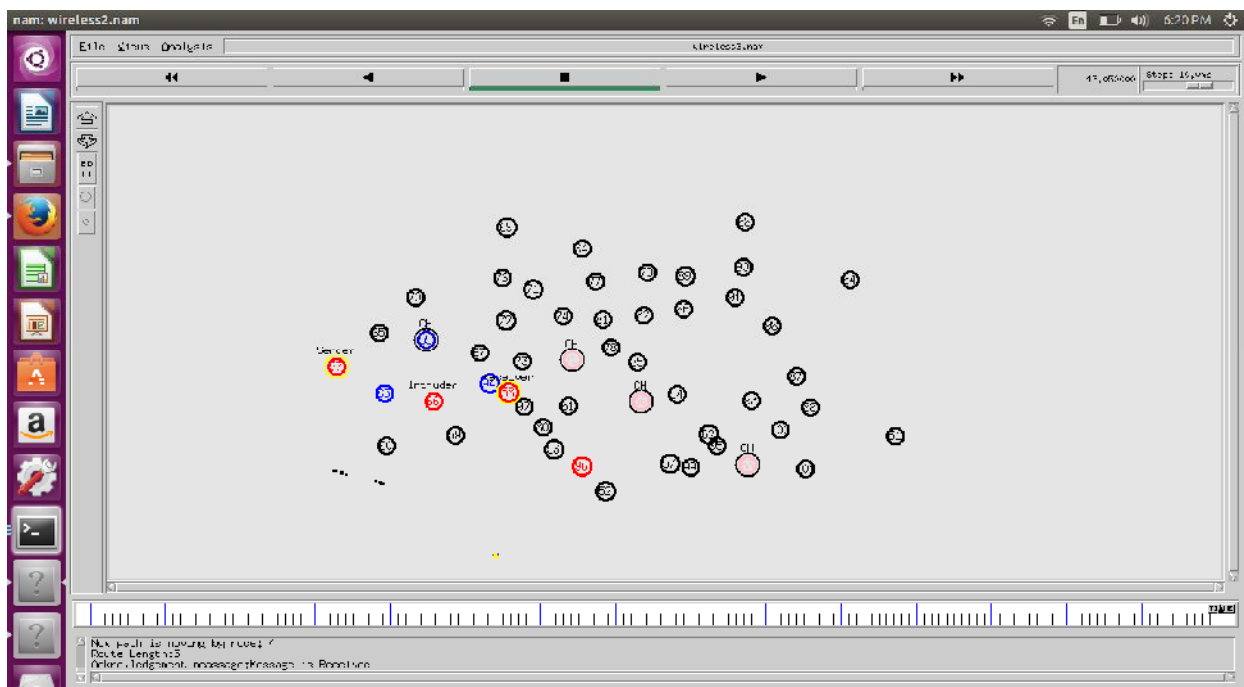
Fig. Block schematic of reversible full adder

## **Publication Details:**

1. Shivani Horke, Manisha Waje, "Irreversible logic based 2:4 decoder", Proceedings of the International Conference on Inventive Computing and Informatics (ICICI 2017) IEEE Xplore Compliant - Part Number: CFP17L34
2. Shivani Horke, Manisha Waje, "Performance Analysis of Reversible Logic Based Full Adder using BSIM4 Model", International Conference on Computing, Communication and Signal Processing (ICICSP-2018), Dr. Babasaheb Ambedkar Technological University, Raigad. January 2018, AISC Series of Springer (yet to published).

**Title:** Active Trust Routing in Wireless Sensor Network**Student Name:** Rutuja Krishna Kadam**Academic Supervisor:** Ms. Bharati Patil

**Abstract:** Wireless sensor networks (WSNs) are more and more being deployed in security-critical applications. Many anonymity enhancing techniques have been proposed in WSN. Because of their basically resource-constrained characteristics, they are prone to various security attacks, and a packet drop attack or black hole attack is a type of attack that seriously affects data gathering. To overcome that an active detection-based security and trust routing scheme such that Active Trust is proposed for WSNs. The important of Active Trust is that it detects the problem of black holes through the active creation of a number of detection routes to rapid detect and obtain novel trust and thus improve the data route security. In active trust the generation and divide of detection routes are given, which can fully use the energy in non-hotspots to create as several detection routes as needed to gain the desired security and energy efficiency. Active Trust makes better the data route success probability and ability against black hole attacks and can optimize network lifetime. And also we provide security to the packets and also node activation during packet transmission.

**Results:****Publication details:**

1. Paper published in IEEE ICISC 2018

Paper title: A Novel Approach to Secure Routing Protocols in WSN

Paper ID: ICISC-2416

2. In process for Springer conference ICSTEESD-18.

**Title:** - A Low Cost Design and Implementation of Quadcopter for Surveillance Application.

**Student Name:** - Disha Amrutlal Gandhi

**Academic Supervisor:** - Prof. Munmun Ghosal

**Abstract:** -

This paper provides a lower cost and flight capable Unmanned Aerial Vehicle (UAV) quadcopter for the application of surveillance. Drones square measure a unit capable of extraordinarily advanced investigating, and drones already in use by social control can carry various sorts of instrumentation also as live-feed video cameras, infrared cameras, heat sensors, and radar. Few military kind devices will keep in the air for hours or days at a time, and their hi-tech cameras which will scan entire city from a height of nearby 60,000 feet.

**Results:-**

As compared to manned aircraft, the quadcopters or Unmanned Aerial Vehicle (UAV) is better choice because human will not get hurt if any failure occurs during flight time. Also it will cover a large area for surveillance which will reduce the time and also it will reduce the human efforts. As discussed above it has various applications which are beneficial for human life.

**Publication details:-**

- [1] Disha Amrutlal Gandhi, Prof. Munmun Ghosal “Survey on: A Low Cost Design and Implementation of Drones to improve its Motion and Surveillance Application” *National conference on pervasive computing 2018. (CiiT Journal)*
- [2] Disha Amrutlal Gandhi, Prof. Munmun Ghosal “Intelligent healthcare using IoT: A Extensive Survey” *2nd International Conference on Inventive Communication and Computational Technologies (ICICCT 2018). (IEEE Conference)*

# Title: Self-Reconfiguration on FPGA through Configuration Access Port

Student Name: Asha H. Jadhav

Academic Supervisor: Mr. Pravin N. Matte

## Abstract:

Our project presents an alternative approach for self reconfiguration for FPGA which enables the device to reconfigure at run time by itself through the configuration access port. The configuration access port core with decompression module is able to reconfigure FPGA itself at run time. This approach can be implementable for various FPGA architectures such as Spartan series, Virtex-II, Virtex-4, Zynq SoC's.. It reduces reconfiguration time and bitstream size. This is self-reconfiguration approach can developed for low cost and power optimized application.

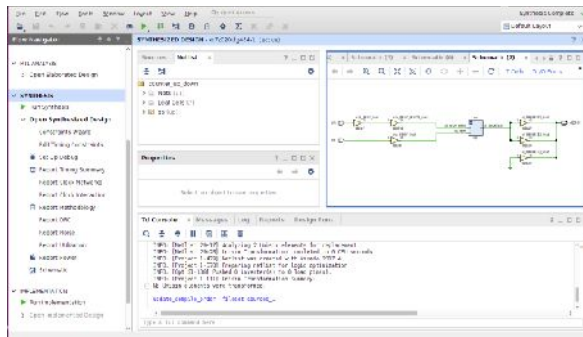
## Results:

The outputs for reconfiguration on FPGA divided in various stages.

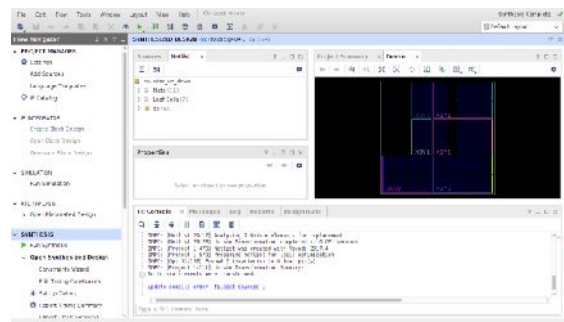
Here we attached results of reconfigurations modules floorplan, routing view in vivado software.

This is results of first module.

### 1. Schematic :



### 2. Synthesized design



The other hardware results and bitstreams can generate after successfully dumping the program in hardware.sss

## Publication Details:

1. Presented review paper on “Reconfiguration on FPGA through Internal configuration access port” in 2<sup>nd</sup> international (IEEE) conference on computing methodologies and communication (ICCMC-2018), organized by Surya Engineering College during 15<sup>th</sup>-16<sup>th</sup> February 2018, Erode, Tamil-Nadu, India.

**Title:** Machine Learning Based Leaf Disease Detection & Crop Optimization

**Student name:** Anish Polke

**Academic Supervisor:** Prof. Kavita Joshi

**Abstract:**

An efficient approach to detect soil contents using neural network is presented. The algorithm can minimize the distracting influence from the soil and localize the contents with better precision. This approach used pattern recognition for extracting texture features and contour algorithm for boundary extraction. The quality of the results can be significantly improved by employing this approach. This can be very useful for higher level vision processing. Agricultural productivity is something on which economy highly depends. This is the one of the reasons that disease detection in plants plays an important role in agriculture field, as having disease in plants are quite natural. If proper care is not taken in this area then it causes serious effects on plants and due to which respective product quality, quantity or productivity is affected. Detection of plant disease through some automatic technique is beneficial as it reduces a large work of monitoring in big farms of crops, and at very early stage itself it detects the symptoms of diseases i.e. when they appear on plant leaves. This project presents an algorithm for image segmentation technique which is used for automatic detection and classification of plant leaf diseases. Image segmentation, which is an important aspect for disease detection in plant leaf disease, is done by using genetic algorithm.

**Results:**

To maintain productivity growth in a sustainable manner, there is a need to move from input intensive to technology intensive and skill intensive agriculture. This helps to reduce the crop loss by properly educating the farmers with the crops details and their requirements. The Matlab ANN Toolbox is the software domain in which the prediction system is built and then imported to Android platform. Most important advantage of using this method is that the plant diseases can be identified at early stage or the initial stage.

**Publication Details:**

1. "A SURVEY ON LEAF DISEASE DETECTION USING MACHINE LEARNING", International Conference on Electrical, Electronics, Computer, Mechanical and Computing (EECCMC), EFP18037-PR: 978-1-5386-4303-7 IEEE- 2018.
2. "LEAF DISEASE DETECTION BASED ON MACHINE LEARNING", International Conference on ISMAC in Computational Vision and Bio-Engineering (ISMAC -CVB 2018)- Springer - Lecture Notes in Computational Vision and Biomechanics.

**Title:** Temperature & Humidity Control by Using Neural Network For Oyster Mushroom Cultivation.

**Student Name:** Ms. Dnyaneshwari S. Gajbhiye

**Academic Supervisor:** Prof. Kavita Joshi

**Abstract:** In oyster mushroom cultivation process, the temperature and the humidity are very important parameter for the growth of mushroom. Controlling temperature and humidity are very delicate task because cultivation space remains stable at temperatures range between 22 -28 ° C and humidity 60-90 %. For accurate measurement of temperature and humidity we are proposing a project in which the values of the humidity and temperature are given to the Arduino through serial communication and the ANN is used for decision making of DC FAN and Mist Maker which are basically used to control temperature and Humidity respectively. The aim of this system is to control the temperature and humidity automatically in mushroom cultivation plant.

**Results:** The training process is started by using MATLAB software to get the best model based on the training data. Different values of temperature and humidity has been set with different condition using MATLAB programming. On the basis of these values we can control the temperature and humidity of oyster mushroom house using exhaust fan and mist maker connected to arduino through relay. At epoch 1000, we observed training state as Gradient with 1.2411, Mu with 100 and there weren't any validations failures occurred. The regression infers the best fit output for the system with respect to Target data.

**Publication Details:** Second International Conference on Computing Methodologies and Communication (ICCMC 2018), IEEE Xplore ISBN: 978-1-5386-3452-3

**Title:** Digitized City with IoT

**Student Name:** Preeti Verma

**Academic supervisor:**Ms. Munmun Ghosal

**Abstract:** Internet of things generally termed as IoT is a collection of heterogeneous network. It can also be explained as it is a pool of various technologies used so far. IoT is a communication network. It includes networks, cloud, machine learning, big data and interoperability. This paper proposes an idea digitalization of a city and real vision of smart city. This paper also explains the basic structure of smart city and the need of MANET-WSN integration, the applications and challenges related to smart city.

**Results:** In this paper we studied the concept behind the smart city and its implementation. IOT is becoming very popular among various vendors as well as common peoples. It has enhanced the area of WSN applications by handshaking with internet. There are so many protocols are available which are used according to the requirement but the problem is again the standardization. Now the work to implement this design is in progress but the limitation of IOT and its issues are obstacles to optimize the final results. The technologies and protocols which are described in this paper are already in active production of devices and its application.

**Publication Details:** ICCMC - 2018



**Title:** CHALLENGES AND OPPORTUNITIES OF WASTE MANAGEMENT IN IOT ENABLED SMART CITIES

**Student name:** Nirmala Pujari

**Academic Supervisor:** Prof. Meeta Bakuli

**Abstract:**

As the population is increasing day by day, the environment should be clean and hygienic. In most of the cities the overflows garbage bins are creating an unhygienic environment. This will further lead to arise of different types of unnamed diseases. This will degrade the standard of living. To overcome these situations an efficient smart garbage management method has to be developed. A major part of the world today has a throwaway culture, producing huge amounts of solid wastes. Advancements in environmental measurement techniques clearly indicate that demand on the earth's resources is not sustainable and should be addressed immediately. Due to rapid population growth, disorganization of city governments, a lack of public awareness and limited funding for programs, garbage management is becoming a global problem. Due to the lack of care and attention by the authorities the garbage bins are mostly seem to be overflowing. This project involves garbage management ideas contains three IR sensors connected to the garbage tank at three positions. If IR1 detect the garbage at 1st level then the motor1 will push the garbage into forward direction in the tank. If IR2 detect the garbage at 2nd level then the motor2 will push the garbage into downward direction in the tank. If IR3 sensor detects 3rd level then we get the text message as garbage tank is full on main control unit.

**Results:**

A garbage management system is a step forward to make the manual collection and detection of wastes automated in nature. The currently employing method in which concerned municipal employee has to look for the filled waste bins manually across different spots in an area/street for checking regularly whether the waste bin is filled or not, which is complex and time consuming process. This automation of waste also reduces the human effort and consequently the cost of the whole process. .Using IOT one can track garbage/bin location, load, missing/stolen bins, the level of the waste in garbage bins and to suggest the shortest route for rapid collection of solid waste without or minimum human intervention.

**Publication Details:**

1. "CHALLENGES AND OPPORTUNITIES OF WASTE MANAGEMENT IN IOT ENABLED SMART CITIES", International Conference on Electrical, Electronics, Computer, Mechanical and Computing (EECCMC), IEEE- 2018.

**Title:** Brain Tumor Detection and Extraction using Genetic Algorithm and its Non-Invasive Classification

**Student name:** Snehal Kharche

**Academic Supervisor:** Mr. Pranav Chippalkatti

**Abstract:** Tumor in any form is the most deadly illness in the world. Scientists are investigating into this disease and developing methods and treatments to fight it. Brain Tumor is an abnormal cell population in the brain tissue and may not always be visible in imaging techniques. In recent years magnetic resonance imaging (MRI) technique is being used to show the detailed image of the affected brain region. The image processing plays an important role in identification of the disease. In this project the brain MRI images are chosen to be studied and a better method is searched for more clear view of the region affected by tumor. The method used to obtain a segmented tumor region clear enough to be observed by the medical people and give them more detail about the tumor in their diagnoses. The method introduced is using Genetic Algorithm with morphological operations, feature extraction, noise removal, intensity adjustment based segmentation, k-mean clustering and SVM classifier techniques. This method is based on obtaining clear images of the skull, brain and the tumor. Through several pixel subtraction operations on these images a clear background is constructed which made the tumor separation easy. The noise is removed from the image using median filtering. Using the filtered image, the classification of the grades of the pixels on the image identifies the stage of the tumor. Lastly, the segmented image of the tumor is added on the original image for a distinct identification. Detection of Brain Tumor through some automatic technique is beneficial as it reduces a large work of monitoring large number of MRI images, and at very early stage itself it detects the symptoms of diseases. This project presents an algorithm for image segmentation technique which is used for automatic detection and classification of Brain Tumor. Image segmentation, is done by using genetic algorithm.

### **Results:**

The system developed is an aid to the medical people to diagnose the brain tumor using MRI images. The system uses morphological operations, feature extraction, mean filtering, intensity adjustment based segmentation and pixel addition to identify the images with and without tumor. 70 images with tumor and 30 images without tumor are tested. The method is introduced has 100% recognition rate on the images without a tumor and 94.29% recognition rate on ones with the tumor. The overall success rate is 96% which is better a performance our the methods compared with. PSNR and MSE is calculated.SVM classifier is used to classify the stage of tumor and location of tumor that is in right or left lobe. Second is that the proposed method is an automatic procedure.

### **Publication Details:**

1. "A SURVEY ON BRAIN TUMOR SEGMENTATION AND DETECTION USING GENETIC ALGORITHM", international journal for science and advance research in technology, IJSARTV4I322165 , ISSN [ONLINE] : 2395-1052, Volume 4,Issue 3 in March 2018.

**Title:** Design and Implementation of the Adaptive Headlight Control System Using Can/Lin Protocols

**Student name:** Vrushali Deoram Ichake

**Academic Supervisor:** Mr.Pranav Chippalkatti

**Abstract:** This project presents a blueprint of flexible car headlights system in light of CAN-LIN arrange in order to avoid the car crashes that more often than not occurs in dim night or on account of sudden change in lighting. LIN-CAN is serial network protocols used for communication between parts in vehicles. Local Interconnect Network transport was particularly expected for minimal low-cost communication between savvy sensors in car applications and Controller Area Networks are used keeping in mind the end goal to enhance overall performance and for security reasons. This research adopts CAN-LIN buses for communication, catching car's controlling wheel angle, body's tilt angle and outer ambient light luminance and exchanging signal and from there on sending this to the comparing control hubs to control headlights. This design upgrades the security and comfort of the general people inside vehicle and quality of the vehicle being driven.

### Results:

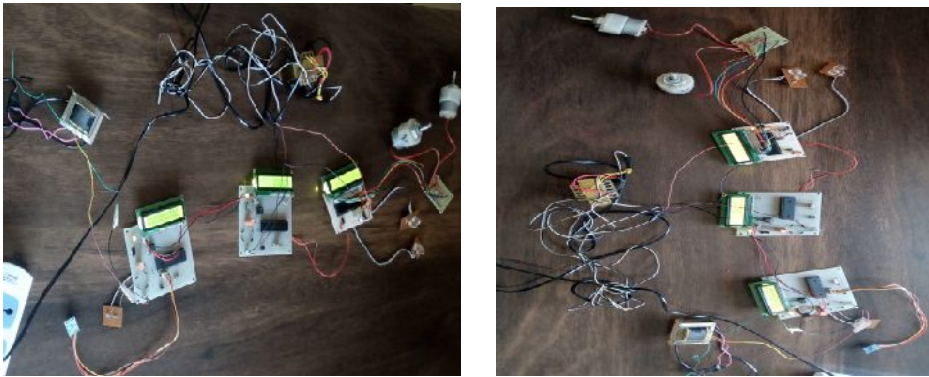


Figure shows the actual hardware model of the adaptive headlight control system using can/lin protocols. The hardware consist of 3 PIC microcontroller one in the middle is master and left one capture the input while the third is controlling unit. Sensor as input are connected to first controller whereas the output like motor, LED are connected to the third controller.

### Publication Details:

1. Paper published in International Conference on Advances in Communication and Computing Technology (ICACCT)-2018, technically sponsored by IEEE Bombay Section.
2. Acceptance letter received from Springer International conference on Computer Networks and Inventive Communication Technologies (ICCNCT - 2018)
  - Conference to be held on 26<sup>th</sup> & 27<sup>th</sup> April.

# Title: “IOT BASED EARTH TREMORS DETECTION and FLOOD PRIOR WARNING AND NOTIFICATION SYSTEM”

**Student Name:** Navaldeep Prakash Harne

**Academic Supervisor:** Prof. Vaibhav Hendre

## Abstract:

Natural disaster is a usual phenomenon by which the living as well as nonliving entities belong to the environment is suffering regularly. Human being does not have the power to totally uproot the natural calamity but the only thing Human can do is, it can predict or prior sense natural calamity and take major steps to minimize it. There are many technologies available to predict and prevent the natural calamity. In this project we are employing Internet of Things technology for predicting flooding condition. ESP8266 node is preferred due to its cost effectiveness, easy configuration of required parameter for flood prediction, earthquake detection alert. This project explores natural disaster such as earthquake and flood warning and alerting system based on Internet of Things. The project is equipped with GPS, GSM and Wireless LAN technology for acquiring, alerting and communication purpose.

## Results obtained till now:

The Earthquake is sensed using acceleration and vibration sensor. The flood situation is sensed using SONAR/Ultrasonic sensor. The realtime GPS data, along with earth vibrations and flood level is accessed using MySQL database. The UI design part is in progress. Fig1. is the GPS latitude, longitude data from which the sensor detecting the earthquake is obtained.

```
Lat/Long(10^-5 deg): 18568580, 73794749
lon/long(float): 18.56858, 73.79474

SMS Sent/Received Data

Lat/Long(10^-5 deg): 18568580, 73794749
lon/long(float): 18.56858, 73.79474
-----
SMS Sent/Received Data:

Lat/Long(10^-5 deg): 18568580, 73794749
lon/long(float): 18.56858, 73.79474
```

Fig1:GPS Data

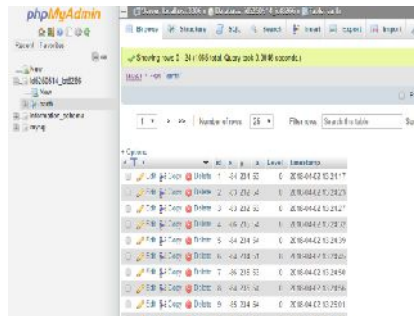


Fig2: Sensor Database

```
Access-Control-Allow-Origin: *
Server: Apache/2.4.18 (Ubuntu)
X-Content-Type-Options: nosniff
X-Debug-Header: On
Requesting URL: /api/index.php?id=45-255

{"success":1,"message":"Search successfully created."}
closing connection
Acc in X-axis : 2
Acc in Y-axis : 255
Acc in Z-axis : 7
Tvalue: 0
Level in Jangam Level: Con: 100
connecting to localhost:3306:localhostapp.com
Requesting URL: /api/index.php?id=45-255
```

Fig3:Sensor values uploading to the web server

## Publications:

Paper 1: “Internet of Things based Earth Tremors Warning and Notification System using ESP8266 nodeMCU” published in International Journal of Engineering Research in Computer Science and Engineering (IJERCSE) in the Vol- 5 Issue- 2, Feb, 2018.

**Abstracts of PG Projects**  
**Department of Mechanical Engineering**  
**M.Tech in Heat Power**

## **M.Tech in Heat Power**

**Title:** Experimental investigation of heat transfer through staggered fin array in natural convection

**Student name:** Patil Akhilesh Anandrao

**Academic Supervisor:** Saurabh H. Gupta, Asst. Professor (Mechanical)

**Abstract:** The special surface geometry of fins or special fin pattern may enhance heat transfer coefficients. Staggered arrangement of fins is the special fin pattern which gives enhanced heat transfer rates due to effective flow distribution. The area selected for investigation is experimental analysis of staggered fin arrays. They are compared with continuous fin array. The fin arrays under study have constant length, width, fin thickness and fin spacing. The design of fin arrays includes variable percentage lengthwise staggering of vertical fin arrays and variable fin height.

### **Results:**

Experimental study of staggered fin arrays is performed using two different heights of fin flats. The percentage lengthwise staggering and heat input are varied.

Arrays with staggered fins have higher values of average Nusselt number for all heater inputs, and staggered arrangement enhances the heat transfer rate from 8%-25% in various arrangements.

### **Publication Details:**

**Technical Paper published in proceedings of National Conference at GHRCEM, Pune (Feb, 2018).**

**Title: “Performance Analysis of Wind Turbine using Wind-lens Technology”**

**Student name: Tushar Gajanan Kunjir**

**Academic Supervisor: Mr. C. Limbari, Dr. R.R.Arakerimath**

**Abstract:**

Wind power generation is proportional to the third power of the wind speed as per available thesis and mathematics. If we can increase the wind speed, specifically by capturing and concentrating the wind energy locally, the output power of a wind turbine can be increased effectively. To embody the scenario, a simple shroud structure which intentionally creates vortices behind it to draw more mass flow of air into the wind turbine was devised. The structure was named “Wind Lens”. The wind lens has a compact diffuser shroud with a broad-ring rim at the exit periphery. This system increases the output power generation of the wind turbine effectively.

**Results:**

The power output of the wind turbine increases by 15%.

**Publication Details:**

Paper topic- “Performance Analysis of Wind Turbine using Wind-lens Techonolgy” under the journal “Journal of Energy Environment and Carbon Credits” by STM Journals.

**Title:** “Study and Performance Characteristics of C.I. Engine By Using Mixed Nanoparticles in Diesel”

**Student name:** Mr. Rushikesh Digamber fegade

**Academic supervisor:** Dr.Rachayya Arakerimath

**Abstract:**

In this research an attempt is made to use nanoparticles as fuel additive in a C.I. Engine. Dispersion of nanoparticles in diesel and The physiochemical properties are characterized. The fuel samples are then tested in C.I. Engine test rig. Results reveal that use nanoparticles as fuel additives lead to enhanced performance and emission characteristics in comparison to plain fuel or not. Ultrasonicator will be used to blend and different test is perform to know particulate carbon monoxide (CO), carbon dioxide(CO<sub>2</sub>) and unburned hydrocarbons (HC), Engine Torque, force on crankshaft (power), brake thermal efficiency ,Specific gravity @ 15°C ,Kinematic viscosity @ 40°C in cSt ,Flash point (°C) ,Fire point (°C) Cloud point (°C) ,Pour point (°C) ,Gross calorific value kcal/kg and more.

**Results:**

5% increase in engine efficiency. NO<sub>x</sub> and HC emissions decrease 30% and 45% respectively. Using Cerum Oxide. Emissions of CO reduces by 25% and emissions of unburnt HC reduces by 18%. Bsfcc decreases by 22%. Using Titanium dioxide (TiO<sub>2</sub>)

**Publication details:**

**Title:** “Study and Performance Characteristics of C.I. Engine By Using Mixed Nanoparticles in Diesel”

Published under NCRDMECE-2018



## **Title: Performance Evaluation of Solar PV Pump with Conventional Pump**

**Student name: Sumeet Deelip Sanyashiv**

**Academic Supervisor:** Premendra Bansod sir

**Abstract:** The performance of a solar water pumping system is discussed in this project report; the system consists of a photovoltaic (PV) array, and a solar pump with pump controller. The efficiency of the system is improved with a maximum power point tracker (MPPT) and a sun-tracker. Simulation and field test results are presented. A properly designed solar pumping system will be efficient, simple and reliable. Solar powered pumping systems are used principally for three applications town and city water supply, livestock watering and irrigation. It is best prevention method for Global warming which is a biggest challenge for humanity in the 21st century. This paper includes Utilization of solar energy for driving a solar water pump. This paper consists of frame of solar water pump, with comparison to conventional water pump. Specifying the required suitable 10 HP solar pump to replace the conventional pump of 10 HP.

**Results:** The results of the research work carried out by various authors on different aspects of solar pumping technology are summarized in the respective sections. However, some of the important results are discussed in this section as follows:

\_ PV water pumping systems have shown significant advancements in the last decade. The limitations in the design of solar pumps introduced in the early 1970s have now been removed. The use of electronic systems have further increased the output power, performance, reliability and overall efficiency of the system for drinking, irrigation and community water supply applications. The first-generation PV pumping systems used

centrifugal pumps driven by DC/AC motors with hydraulic efficiencies varying from 25% to 35% whereas second generation PV pumping systems use positive displacement pumps, progressing cavity pumps or diaphragm pumps with high hydraulic efficiencies of even 70%. Controllers are used for monitoring storage tank levels and pump speed. Maximum power point tracking (MPPT) technology is used to optimize water pumping.

\_ Direct coupled DC solar pumps without battery storage are still low cost, simple and reliable for small irrigation, sprinkler or drinking water supplies but cannot operate at maximum power point of PV generator. However, adding a maximum power point tracker (MPPT) and controls/protections can further improve the performance of such PV pumps.

\_ A number of simulation programs have been developed by researchers for the performance prediction of the PV water pumping system based on solar radiation data of a location which are found to be sufficiently accurate in evaluating the actual performance of solar pumps. These combined with optimization sizing techniques developed have resulted in the selection of various components and refinement of PV pumping technology by the manufacturers.

\_ The fluctuations in the solar irradiance, accumulation of dust on PV generator and high module temperatures also affect the performance of PV pumps like any other PV system. Spraying water on the PV modules results in cleaning the dust as well as cooling of modules improves the module efficiency and hence the water flow rate. These aspects need to be adhered to so as to improve the performance.

\_ The degradation analysis of PV modules of a solar pump is important to be carried out as it identifies the degradation mechanism. Field studies on PV systems carried out during last 40 years show that average power degradation in PV modules is 0.8% per year [83]. The power generated is reduced due to degradation of PV modules of the generator because of prolonged field exposure thus requiring selection of appropriate PV technology. Understanding degradation mechanism and

estimating module lifetime are important research areas for PV water pumping also as at present not much attention is given to this aspect.

\_ PV generator is the main component of the solar water pump. Thus selection of suitable PV technology is essential for the performance and reliability of solar pumps. The use of solar cells with materials of high efficiencies will reduce the number of modules, installation cost and land required for installation thus bringing the cost of solar power down as compared to the cost of electricity from fossil fuels. Thus, even the expensive PV cell technologies with higher efficiency can be less expensive at the module or PV system level than based on lower efficiency cells.

\_ Efficiency of PV water pumping systems can be improved by optimum sizing, adding MPPT and controllers. Optimum PV array tilt angle is another important parameter for enhancing the performance of fixed PV generator which can be determined at monthly, seasonal and annual values for each location. The maximum solar radiation falling on panels using optimum tilt angle increases the output power from PV panels used in the system.

\_ Most of the PV pumping systems use two axis manual tracking which can increase the system efficiency up to 20%. The use of automatic sun tracking improves the pump efficiency but adds to the system cost considerably.

\_ The investment payback for PV water pumping systems is found to be 4-6 years, with some systems reporting paybacks in half that time. PV modules are now readily available in a wide range of sizes from several well established PV companies. The reliability of PV is such that 20 to 25-year power warranty is given by the manufacturers with life expectancies beyond 30 years. With decline in PV module costs, warranty period of 25 years and with incentives available for installing PV pumping systems in some countries like India the payback period is going to be reduced further.

\_ PV pumping is economically viable for water needs of remote communities. However, the mismatch between water demand and supply patterns has a major effect on economic viability of the PV pumping. Therefore the water pumping projects for community water supplies need to be carefully designed. The main factors inhibiting widespread implementation of PV pumping technology are high initial capital cost and lack of awareness among users. The results of GIZ study in Indian context show that the life cycle cost of a 746W diesel pumping system for a ten year period is 35.79% more than that of a PV powered system of same capacity. The levelized cost of energy (LCOE) of a fuel free PV pumping system is found to be Rs. 8.60 (US \$ 0.141) as compared to Rs. 13.90 (US\$0.228) of diesel pumping system. The life period of diesel pump is about 10 years whereas the standard warranty period for PV modules is 25 years. As a result, PV can serve as a highly reliable and low maintenance system especially for water pumping applications. PV panels ranging from 60Wp to 500Wp are found to be suitable for meeting domestic water pumping requirements in residential buildings.

**Publication Details: 1) 3<sup>rd</sup> National Conference On Research and Developments in Mechanical, Electronics and Civil Engineering -2018 (NCRDMECE-2018)**

**Title:** Heat recovery analysis of boiler shell using refractory material

**Student name:** Anagha Ravindra Jadhav

**Academic supervisor:** Dr R. R. Arakerimath and Prof. Subhash Kumar

**Abstract:**

The boilers used in many industries are facing problem of refractory failures inside the furnace after some years of applications. Some industries are working on this to find out what are the causes of failure of refractory as well as what can be the ideas to recover the heat loss which is due to failure. The objective is to study the reasons of refractory failure in order to recover the heat in boiler shell. This report is related to thermal analysis of refractory which is 305 mm thick and temperature distribution at certain intervals by using ANSYS software. Model is drawn in solid works and then imported to ANSYS for next analysis. This project is sponsored by Thermax where they want to get proper thermal analysis of refractories they used inside the boiler.

**Results:**

The temp distribution values obtained from software are:

Inner temp= T1=1700°C	T2=1338°C
T3=1155.4°C	T4=972.76°C
T5=790.15°C	T6=607.55°C
T7=424.94°C	T8=242.34°C

Outer temp=T9=60°C

**Publication details:**

Title: Heat recovery analysis of boiler shell using refractory material

Published under the NCRDMECE-2018

**Title:** Experimental analysis of automotive exhaust heat exchanger for thermal uniformity and pressure drop.

**Student Name:** Jadhav Vishal Sudam (FA07)

**Abstract:** The automobiles are using the 30 to 40% percent of heat energy for the mechanical work. Rest energy being waste through exhaust and through the cooling system. This energy is recovered by using heat exchangers. In heat exchangers, there are usually no external heat and work interactions. Typical applications involve heating or cooling of a fluid stream of concern and evaporation or condensation of single or multi component fluid streams. There are many techniques like Rankine cycle, refrigeration; TEG, etc are used to recover the waste heat of automobiles. In that TEG is used widely in automobiles waste heat recovery. In TEG there is one problem occurs i.e. uneven temperature of the surface of hot side of TEG device i.e. heat exchanger hot plate surface. So minimize this problem we have try to make heat exchanger which gives the thermal uniformity on the surface of heat exchanger which is helps in thermoelectric generation. The thermal uniformity is the objective of the project without affecting the back pressure of the engine. With the help of thermal uniformity thermoelectric module will work proper and efficiently. By that we can give a more efficient base for thermoelectric generation.

**Result:** The heat exchanger is device which is significant while doing the heat absorption from the exhaust gases. So selection of heat exchanger position and its internal structure must be proper for getting the uniform temperature on the surface of heat exchanger. Choose the best design amongst 1inlet-1outlet, 2inlet-1outlet, 1inlet-2outlet which gives the better thermal uniformity and less pressure drop.

**Publication details:** In process in STM Journals.

**Title: Experimental Investigation to Improve Heat Transfer By Using Dimple Surface**

**Student Name: Pathan Nadeem Bashir**

**Academic Supervisor: Prof. Sanjay Mitkari**

**Abstract:** Heat transfer enhancement over surface results from the depression forming recesses rather than projections. Such features are known as dimples, and may be formed in an infinite variation of geometries which results in various heat transfer and friction characteristics. Heat Transfer enhancement using dimples are based on the principle of scrubbing action of cooling fluid taking place inside the dimple and phenomenon of intensifying the delay of flow separation over the surface. Spherical indentations or dimples have shown good heat transfer characteristics when used as surface roughness. The technology using dimples recently attracted interest due to the substantial heat transfer augmentations it induces, with pressure drop penalties smaller than with other types of heat augmentation. From all the research work studied the researchers have used various dimple shaped geometries such as triangular, ellipsoidal, circular, square out of which ellipsoidal shape gives better results due to prior vortex formation than other shapes. Also dimples give more heat transfer than flat plate. Therefore we are trying in this project to enhance heat transfer rate by using hemispherical dimples.

**Abstracts of PG Projects**  
**Department of Mechanical Engineering**  
**M.Tech in CAD ME**

## **M.Tech in CAD ME**

**Title:** Parametric Analysis of Reciprocating Friction and Wear Behaviour of PTFE Composite

**Student Name:** Mr. Pawan I. Patel

**Academic Supervisor:** Prof. Hemant Bhore (Project Guide)

Dr. R.R. Arakerimath (HOD ME)

### **Abstract:**

When filler materials like carbon, graphite, glass fibres are added in the PTFE, a composite is formed which improves mechanical & thermal properties of that composite. It increases hardness and wear resistance, while the coefficient of friction is slightly affected and remains low. In this survey, we study various papers in which various methods & experiments were carried out for calculating friction & wear resistance of various compositions of polymers. So it is easy to understand properties & behaviour of polymers under various test conditions.

### **Results:**

1. Addition of filler materials such as bronze and carbon to PTFE causes an increase in wear resistance, while the coefficient of friction is slightly affected.
2. The friction coefficient of pure PTFE and its composites decreases by increasing applied load, which can be improved by reinforcement PTFE with glass fibres.
3. For the specific range of load and speed, the load has stronger effect on the wear behaviour of PTFE and its composites than the reciprocating velocity.
4. Addition of filler materials such as carbon, graphite, glass fibers and PPDT to PTFE causes an increase in hardness and wear resistance, while the coefficient of friction is slightly affected and remains low. Filler materials in general are effective in impeding large-scale fragmentation of PTFE, thereby reducing the wear rate.

### **Publication Details:**

1. Paper presented in NCRDMECE 2018

**Title:** Finite Element Analysis & Optimization of CNG Cylinder Mounting Cradle for Four Wheeler Cargo vehicle

**Student Name:** Mr. Avishkar Sorate

**Academic Supervisor:** Prof. P. J. Ambhore (Project Guide)

Dr. R.R. Arakerimath (HOD ME)

**Abstract:**

The finite element analysis of CNG cylinder mounting cradle is done for checking the strength of mounting arrangement. The iterations were carried out to make the existing proposal safe for all the loading conditions. The results obtained from the analysis of the existing proposal are used for creating the new CNG cylinder mounting proposal. The new proposal is based on optimization process. The finite element analysis for new proposal is also carried out for checking the strength for the loading conditions. By comparative study of analyses the best proposal is suggested for the CNG cylinder mounting cradle.

**Results:**

1. Initial study of the existing CNG cylinder mounting cradle is done to understand the mounting cradle design. Linear static analysis is performed on the existing CNG cylinder mounting cradle to obtain the maximum stress plot and maximum value of displacement for comparative analysis to be done later.

2. The L.H. C bracket of existing model is changed in iteration 1 and 2. The stress values are not safe in iteration 1. Hence the iteration 1 is neglected. The thickness of L.H. C bracket is increased by 0.5 mm in iteration 2 and the values of the stresses and the displacement are within the safe limits.

3. For the proposal 1 design of existing model is changed in some parts. The cradle C pipe is cut at the corner from left side for fixing the new L bracket on it. This L bracket is then attached to the chassis. The finite element analysis of this optimized model is done by using Hyperworks. The stress and displacement values of proposal 1 are in safe limits. The weight of proposal 1 is reduced by 2.58 kg.

Comparative studies of the proposals are done. The existing proposal with iteration 2 has the better values of stresses and displacement in all the loading conditions.

Hence it is concluded that,

- 1) The analysis for the different mounting proposals for strength analysis is done successfully.
- 2) The best design for strength and manufacturability is proposed iteration 2.
- 3) The optimized proposal based on stress result is modeled to get optimized solution.
- 4) The analysis of modeled proposal is done to check the strength.

**Publication Details:**

2. Paper presented in NCRDMECE 2018



**Title:** Design and Finite Element Analysis of Refractory Boiler Shell For Optimum Weight

**Student Name:** Miss Sejal Chandu Patne

**Academic Supervisor:** Dr. R.R. Arakerimath (Project Guide)

**Abstract:**

Refractory boiler shell by using finite element method, a stress analysis has been carried out under the application of pressure at the inner surface of boiler shell. Von-Mises stresses and maximum shear stresses are found. To find out the temperature distribution to get thermal analysis . Modeling has been done by CATIA V5 and analysis of boiler shell has been done by ANSYS (Workbench) with a version 14.5.

**Results:**

- In the present project a boiler shell has been designed and optimized for structural and thermal analysis.
- The temperature at every 10mm thickness can be calculated by using ANSYS software.
- Study on reduction thickness.

**Publication Details:**

3. Paper presented in NCRDMECE 2018

**Abstracts of PG Projects**  
**Department of Civil Engineering**  
**M.Tech in Structural Engineering**

# **M.Tech in Structural Engineering**

**Title:** Analysis Design and Casting of I Girders used in Mumbai Metro Construction Work.

**Student name:** Yojana Balaram Patil

**Academic Supervisor:** Prof. Girish V. Joshi

## **Abstract:**

Part Design and Construction of Elevated Viaduct and 5 elevated stations of Mumbai Metro Line 7 Project. These stations are Aarey, Pathanwadi, Pushpapark, Bandongari and Mahindra and Mahindra from Chainage 5801.400 to 11664.6. The static analysis of Pretension I girder of the viaduct portion is carried out considering the Dead load and super imposed load and live load. For girder, composite section properties at various locations are assigning by considering volume of deck and density of the concrete. The structure is analysis for train loads single track loaded and both span loaded .The design of the Pretensioned I Girder is carried out as per standards mentioned in IRS CBC -1997 and IRC –SP 71. The Casting of these I girders is carried out at Casting Yard by maintaining all Quality related activities.

**Results:** Analysis Design and Casting of I Girders used in Mumbai Metro Line 7 Project. The Use of I girders helps in Fast track construction ,Utilizing as little space as possible on the road, Minimal inconvenience to traffic and people., Aesthetics of the structure to be given the highest consideration., Construction to be carried out in an environmental friendly manner.

## **Publication Details:**

1. Yojana B. Patil<sup>1</sup>, Prof. G. V. Joshi<sup>2</sup>, [2018], “Comparative Evaluation between Elevated and Underground Metro”, IJREST Journal.
2. Yojana B. Patil<sup>1</sup>, Prof. G. V. Joshi<sup>2</sup>, [2018], “RTSF & ROS in Krishna Bhima River Basins in Maharashtra”, IJREST Journal.
3. Yojana B. Patil<sup>1</sup>, Prof. G. V. Joshi<sup>2</sup>, [2018], “Commercial Exploitation for Transport Infrastructure Project Case Study of Metro Transport Infrastructure”, STM Journal.
4. Yojana B. Patil<sup>1</sup>, Prof. G. V. Joshi<sup>2</sup>, [2018], “Technical paper on commercial exploration of transport Infra project”, ISBN: 978-93-87433-17-5.

**Title:** “Impact Of the Masonry Infill Walls on the Seismic Response Of The G+7 RC Building”

**Student name:** Shubham Makarand Adkar

**Academic Supervisor:** Prof. Dr. S. B. Allampallewar

**Abstract:**

The most of human profession is accommodated by suburban and commercial buildings for our living and working purposes. Due to existing space limitations, there is new trend of high rise building construction in the earthquake prone area. Reinforce concrete frame structures with masonry infill walls as a partition is most frequently used in construction industry. The construction of the High rise building in the earthquake prone area required respectable design processes which counting correct modeling on structure causes reduction in the damage to the time of earthquake. The incorrect modeling of the structure during the analysis and design, definitely influence the structural response which may result in damage to the structures as well as collapse when subjected to the earthquake.

The correct modeling of the structure reflects on many structural aspects like strength and stiffness of the structure to resist the lateral earthquake load initiated by earthquake. The present study investigates the influence of the infill walls on the seismic performance of the high rise RC buildings endangered to lateral seismic load. The parametric study is carried out with different infill materials like AAC block masonry, Burnt brick masonry, and Fly ash brick masonry etc. and different structural arrangements like bare frame, infill strut frame, wall panel frame also for different earthquake zones. During the earthquake infill acts as a compression strut which converts the load carrying mechanism from frame action to truss action. In the present study Infill effect introduce to the help of an equivalent diagonal method according to IS1893:2016.

In the present work, we are prepared RC high rise building model for the analysis. The analysis will be performed with response spectrum method as per IS1893:2016 using E-tabs software. Comparative and parametric study is carried out with the help of storey shear, storey drift, storey displacement, and time period.

**Results (Zone III):**

**1. BASE SHEAR:**

Following are the percentage differences of base shear:

- a) **AAC block masonry:** There is an increase in base shear by 96.13% and 88.49% for infill frame and 89.85% and 82.60% for wall panel frame in x and y-direction respectively than base shears for a bare frame.
- b) **Red brick masonry:** There is an increase in base shear by 105.06% and 95.7% for infill frame and 93.26% and 85.90% for wall panel frame in x and y-direction respectively than base shears for a bare frame.
- c) **Fly ash brick masonry:** There is an increase in base shear by 101.93% and 94.09% for infill frame, 99.76% and 92.14% for wall panel frame in x and y-direction respectively than base shears for a bare frame.

## 2. STOREY DRIFT:

- a) **AAC block masonry:** There is a decrease in storey drift by 48.41% and 36.02% for infill frame, 42.86% and 31.03% for wall panel frame in x and y-direction respectively than storey drifts in the bare frame.
- b) **Red brick masonry:** There is a decrease in storey drift by 64.86% and 55.45% for infill frame, 65.18% and 56.07% for wall panel frame in x and y-direction respectively than storey drifts in the bare frame.
- c) **Fly ash brick masonry:** There is a decrease in storey drift by 68.81% and 60.26% for infill frame, 71.19% and 63.25% for wall panel frame in x and y-direction respectively than storey drifts in the bare frame.

## 3. STOREY DISPLACEMENT

Following are the percentage differences of storey displacements for roof level:

- 1. **AAC block masonry:** There is a decrease in storey displacements by 33.68% and 25% for infill frame, 30.05% and 22.17% for wall panel frame in x and y-direction respectively than storey displacements in the bare frame.
- 2. **Red brick masonry:** There is a decrease in storey displacements by 53.20% and 45.99% for infill frame, 55.60% and 48.91% for wall panel frame in x and y-direction respectively than storey displacements in the bare frame.
- 3. **Fly ash brick masonry:** There is a decrease in storey displacements by 59.05% and 53.33% for infill frame, 62.50% and 56.47% for wall panel frame in x and y-direction respectively than storey displacements in the bare frame.

## 4. TIME PERIOD

Following are the percentage differences of time periods:

- a) **By I.S code-** There is a decrease in the time period by 45.92% and 43.78% for all infill frame and wall panel frame for all three masonries in x and y-direction respectively than the time period for a bare frame.
- b) **By analysis-** There is a decrease in the time period by 37.79% and 30.84% for aac, 46.54% and 36.3% for red brick, 49.67% and 38.61% for fly ash in x and y-direction respectively for infill frame as well as wall panel frame than the time period for a bare frame.

**Publication Details:**

1. Shubham Makarand Adkar<sup>1</sup>, Prof.Dr.S.B.Allampallewar<sup>2</sup>, [2018], “Impact of The Masonry Infill Walls On The Seismic Response Of The G+7 Rc Building”, STM Journal.
2. Shubham Makarand Adkar<sup>1</sup>, Prof.Dr.S.B.Allampallewar<sup>2</sup>, [2018], “Impact of The Masonry Infill Walls On The Seismic Response Of The G+7 RC Building”, IJETS, Vol. 5, Issue 3, March 2018 (PAPER ID- ISSN 2394-3386).

**Title:** “Damage Detection and Its Repair and Rehabilitation Techniques By Using NDT On RCC Structures”

**Student name:** Hrushikesh Shivajirao Jadhav Patil

**Academic Supervisor:** Prof. N. C. Dubey

**Abstract:**

Buildings and other structures have a certain useful life, which depends on the specifications adopted. The large numbers of monuments, which are cherished heritage structures have stood well over a period of time. But some of these have shown signs of distress due to age, aggressive natural environment/industrial pollution etc. Further, distress gets aggravated due to overloading and misuse of buildings. A few Buildings have also failed due to faulty design or construction. The various causes of structural failure and the principles of rehabilitation of structures are discussed. In the structures, the cracks are generated due to different causes e.g. in some cases cracks are caused after the structure has been completed for a few years which results in shortening of life and strength of structure. The main criteria is how to repair a reinforced concrete elements of structures and for this the skills, knowledge, and experience required to repair damaged or deteriorated structures are decidedly different from those required to build new structures. Structures are assemblies of load carrying members capable of safely transferring the superimposed loads to the foundations. Their main and most looked after property is the strength of the material that they are made of. Concrete, as we all know, is an integral material used for construction purposes. Thus, strength of concrete used, is required to be ‘known’ before starting with any kind of analysis. In the recent past, various methods and techniques, called as Non-Destructive Evaluation (NDE) techniques, are being used for Structural Health Monitoring (SHM). The concept of nondestructive testing (NDT) is to obtain material properties of in place specimens without the destruction of the specimen nor the structure from which it is taken. However, one problem that has been prevalent within the concrete industry for years is that the true properties of an in-place specimen have never been tested without leaving a certain degree of damage on the structure. However, the term “nondestructive” is given to any test that does not damage or affect the structural behavior of the elements and also leaves the structure in an acceptable condition for the client. The use of the ultrasonic pulse velocity tester is introduced as a tool to monitor basic initial cracking of concrete structures and hence to introduce a threshold limit for possible failure of the structures. Apart from requiring regular maintenance, many structures require extensive Repair, Rehabilitation &Retrofitting. Over a period of time, as these

structures become older, we find in them certain degradation or deterioration with resultant distress manifested in the form of cracking, splitting, delaminating, corrosion etc.

**Results:**

- Overall condition of the building is satisfactory
- Major cracks Are developed in Column no.2 And Column no.3
- Repair of column no.2 And Column no.3 is Required
- Paints and plaster of rooms is in medium condition
- Ceilings has minor cracks

**Conclusion:**

From the consideration of all the above points we conclude that the defects of structural members are due to combined effects of carbonation, corrosion & effect of continuous drying and wetting. The result of visual survey prompt us to conclude the distress is wide spread and is an ongoing process and so needs to be stopped at this stage so as to avoid complete collapse of the structure. The results obtained in the form of graphical representation confirms that the capacitance based sensor effectively detect the micro cracks in the structure. This sensing device is new era technology, which is relatively cheaper but accurate. By employing this technique we can effectively forecast the development of the cracks in the structure and will be in the state to provide remedies well before collapse of the structure. Such technology plays vital role in the rehabilitation of the structures and makes structural health monitoring easier.

**Publication Details:**

1. Mr. Hrushikesh S. Jadhav Patil<sup>1</sup>, Prof. N. C. Dubey<sup>2</sup>, [2018], "*Damage Detection And Its Repair And Rehabilitation Techniques By Using NDT on RCC Structures*", STM Journal.
2. Mr. Hrushikesh S. Jadhav Patil<sup>1</sup>, Prof. N. C. Dubey<sup>2</sup>, [2018], "*Damage Detection And Its Repair And Rehabilitation Techniques In RCC Structures Using NDT For Corrosion Mapping*", Conference World (India), (PAPER ID-IC/PGMCOE/552).



**Title:** “Analysis and Comparative Study of Trapezoidal Shaped Folded Plate as Retaining Wall with Varying Geometric Parameters”

**Student name:** Sujit Hanmant Sonwalkar

**Academic Supervisor:** Mrs. Smita D. kuralkar

**Abstract:**

This project work deals with the study of retaining wall using trapezoidal plates with various geometric properties such as angle of inclination and widths of plates. While doing this other remaining geometric properties and material properties are kept constant. Here in this study the trapezoidal shaped folded plate is formed with the angle of inclination of plates is varying from 10 degree to 90 degree (i.e. 10 degree, 20 degree, 30 degree, etc.) with 10 degree constant interval, similarly the width of the plates is varying from 0.5 m to 2.5 m (i.e. 0.5m, 1m, 1.5m, etc.) with 0.5 m constant interval and horizontal plates of 0.5m in between two inclined plates. The other constant geometric parameters are height of retaining wall 5.5m and thickness of plate is 0.2m throughout the project, also the material properties are always remain same for entire work. Concrete is the material for analysis. Several models were created in the software using the above parameters to analyze the effects of the width and inclination angle by observing the results such as Deflections. These results of deflections of plates are plotted against the inclination of plate for every different width of plates. From these plotted graphs we can determine the critical angle for each specified plate width. In these work the only static loads are considered for analysis purpose dynamic loads are not considered.

**Results:**

From the project work the final result in short are as per follows. Following table shows the critical dimensions of the retaining wall structure.

Height of stem	Critical angle	For 1m width plate	For 1.5m width plate	For 2m width plate	For 2.5m width plate	For 3m width plate
0m	50	<b>Ok</b>	<b>Ok</b>	<b>Ok</b>	<b>Ok</b>	<b>Ok</b>
	60	-	-	-	<b>Ok</b>	-
	70	-	-	-	-	-
0.5m	50	<b>Ok</b>	<b>Ok</b>	<b>Ok</b>	<b>Ok</b>	<b>Ok</b>
	60	-	-	<b>Ok</b>	<b>Ok</b>	-
	70	-	-	-	-	-
1m	50	<b>Ok</b>	<b>Ok</b>	<b>Ok</b>	<b>Ok</b>	<b>Ok</b>
	60	-	<b>Ok</b>	<b>Ok</b>	<b>Ok</b>	-
	70	-	-	-	-	-
1.5m	50	<b>Ok</b>	<b>Ok</b>	<b>Ok</b>	<b>Ok</b>	<b>Ok</b>
	60	-	<b>Ok</b>	<b>Ok</b>	<b>Ok</b>	-

	70	-	-	-	-	-
2m	50	Ok	Ok	Ok	-	Ok
	60	-	Ok	Ok	Ok	Ok
	70	-	-	-	-	-
2.5m	50	Ok	Ok	Ok	-	Ok
	60	Ok	Ok	Ok	Ok	Ok
	70	-	-	-	-	Ok
3m	50	Ok	Ok	Ok	-	Ok
	60	Ok	Ok	Ok	Ok	Ok
	70	-	-	-	-	Ok
3.5m	50	Ok	-	Ok	Ok	Ok
	60	Ok	Ok	Ok	Ok	Ok
	70	-	-	-	-	Ok
4m	50	Ok	-	Ok	Ok	Ok
	60	Ok	Ok	Ok	Ok	Ok
	70	-	-	-	-	Ok
4.5m	50	Ok		Ok	Ok	Ok
	60	Ok	Ok	Ok	Ok	Ok
	70	-	-	-	-	Ok
5m	50	Ok	-	Ok	Ok	Ok
	60	Ok	Ok	Ok	Ok	Ok
	70	-	-	-	-	Ok
5.5m	50	Ok	-	Ok	Ok	Ok
	60	Ok	Ok	Ok	Ok	Ok
	70	-	-	-	-	Ok

#### Publication Details:

1. Sujit Hanmant Sonwalkar<sup>1</sup>, Mrs. Smita Kuralkar<sup>2</sup>, [2018], “*Study of Trapezoidal Shaped Retaining Wall with Varying Geometric Parameters*”, STM Journal.
2. Sujit Hanmant Sonwalkar<sup>1</sup>, Mrs. Smita Kuralkar<sup>2</sup>, [2018], “*Analysis and Comparative Study of Trapezoidal Shaped Retaining Wall with Varying Geometric Parameters*”, Conference World (India), (PAPER ID-IC/PGMCOE/550).

**Title:** “Parametric Study of Composite Castellated Beam With Varying Size Of Opening”

**Student name:** Chavan Shivam Maruti

**Academic Supervisor:** Prof. G.V. Joshi

**Abstract:**

The term composite can be used of any structural medium in which two or more materials interact to provide the required strength and stiffness. In steelwork construction the term refers to cross-section which combines steel section with concrete in such a way that two act together is one unit. The performance of composite beams is similar to that of reinforced concrete beam, but there are two main differences. Firstly, the steel section has significant depth and its second moment of area may not be ignored, unlike that of the steel bar reinforcement. Secondly, the concrete to reinforcement bond, which is essential for reinforced concrete action, is absent in composite beam generally and must be provided by shear connection. Design methods for composite beams therefore follow those methods for reinforced concrete with modification as indicated. Due to the presence of concrete slab, the steel member is not usually relevant in simply support members except during erection.

The many attempts have been made by structural Engineers to obtain new ways to decrease the cost of steel structures. Due to the limitations on maximum allowable deflections, the high strength properties of structural steel cannot always be utilized to best advantage. As a result several new methods have been aimed at increasing the stiffness or load carrying capacity of steel members without any increase in weight of the steel required. Castellated beams with web openings were one of these solutions. Castellated beams are fabricated from wide flange I-beams. The Castellated beams are manufactured by cutting and re-welding of hot rolled sections which are made of regularly spaced opening. A number of common and practical web openings are circular, square, rectangular, hexagonal. As height of castellated beam will get increase it gives high bending and shear strength as section modulus of castellated beam will get increase. As a result load carrying capacity will get increase and such type of beams also allows to structural work.

**Results:**

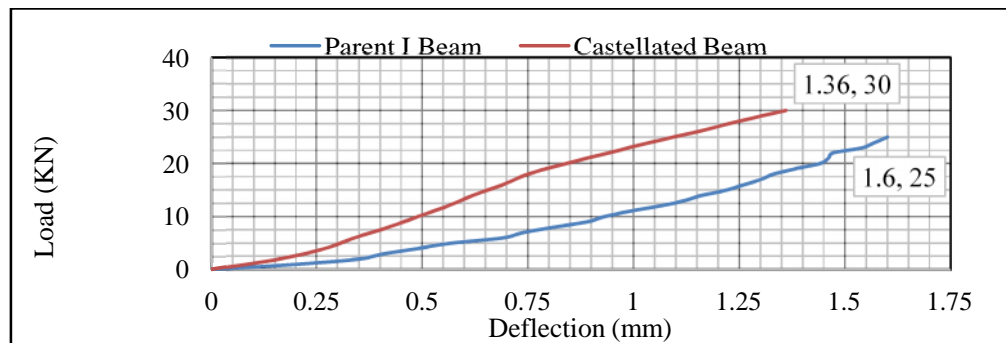
From the project work the final result in short are as per follows. Following table shows the load & Deflection of the parent HRS I beam & castellated beam.

The comparison of behavior of both parent and castellated beam is given below, it is clear that castellated beam behaves satisfactory in respect of deflection requirement as compares to its

parent I beam, also due to increased depth of castellated beam deflection is reduced and failure load i.e. load causing yielding of material is increased. This will result in greater moment carrying capacity of the castellated beam.

Sr. No.	Load (kN)	Deflection (mm)
1	0	0
2	2	0.16
3	4	0.27
4	6	0.34
5	8	0.42
6	10	0.49
7	12	0.56
8	14	0.62
9	16	0.69
10	18	0.75
11	20	0.84
12	22	0.94
13	24	1.04
14	26	1.15
15	28	1.25
16	30	1.36

Load and deflection of castellated I beam



**Publication Details:**

1. Shivam Chavan<sup>1</sup>, Prof. G.V. Joshi<sup>2</sup>, [2018], “*Parametric Study of Composite Castellated Beam*”, STM Journal.

2. Shivam Chavan<sup>1</sup>, Prof. G.V. Joshi<sup>2</sup>, [2018], “*Comparative Study of Parent and Castellated Beam with Varying Size of Opening*”, Conference World (India), (PAPER ID- IC/PGMCOE/ ).

**Title:** “Seismic Analysis and Comparative Study Of Vertically Irregular R.C. Building Frames”

**Student name:** Shridhar Chandrakant Dubule

**Academic Supervisor:** Prof. Darshana Ainchwar

**Abstract:**

Earthquake occurred in multi-storeyed building shows that if the structures are not well designed and constructed with an adequate strength it leads to the complete collapse of the structures. To ensure safety against seismic forces of multi-storied building, there is need to study of seismic analysis to design earthquake resistance structures.

Response spectrum analysis method used in structural seismic analysis. We considered the residential building of G+ 13 storied structure for the seismic analysis and it is located in zone III. The total structure is analysed by computer by using STAAD.Pro V8i software.

The study is concerned with the effects of various vertical irregularities on the seismic response of a structure. The objective of the project is to carry out Response spectrum analysis (RSA) of vertically irregular RC building frames and to carry out the ductility based design using IS 13920 corresponding to Response spectrum analysis (RSA). Comparison of the results of analysis of irregular structures with regular structure is done. Three types of irregularities namely mass irregularity, stiffness irregularity and stiffness & mass irregularity were considered. According to our observation, the storey shear force was found to be maximum for the first storey and it decreases to minimum in the top storey in all cases. The mass irregular structures were observed to experience larger base shear than similar regular structures. The stiffness irregular structure experienced lesser base shear and has larger inter-storey drifts.

**Results:**

Storey	Regular	Stiffness irregular	Mass irregular	Mass +stiffness structure
14	399.46	348.68	424.08	371.08
13	1269.71	1118.44	1312.79	1159.49

12	1743.06	1552.60	1780.88	1590.41
11	2122.60	1921.57	2154.90	1955.64
10	2407.83	2221.59	2435.29	2251.99
9	2615.14	2458.46	2639.09	2485.74
8	2775.01	2646.73	2797.09	2671.79
7	2923.81	2806.87	2945.44	2830.69
6	3090.66	2959.95	3112.60	2983.39
5	3285.13	3121.2	3307.44	3144.77
4	3493.73	3294.84	3516.03	3318.7
3	3686.97	3472.97	3708.87	3497.00
2	3953.98	3784.52	3974.82	3808.37
1	4026.55	3925.19	4047.03	3948.83

**Publication Details:**

1. Shridhar chandrakant Dubule, Prof. Darshana Ainchwar, [2018], “A survey report on seismic analysis and design of vertically irregular R.C. building frame”, IJRSET Journal.
2. Shridhar chandrakant Dubule, Prof. Darshana Ainchwar, [2018], “A survey report on seismic analysis and design of vertically irregular R.C. building frame”, IJAREEIE.

**Title:** “Analysis and Comparative Study of Folded Plate Type Foundation for Retaining Wall”

**Student name:** Akshay S. Kathe

**Academic Supervisor:** Mrs. Smita D. Kuralkar

**Abstract:**

*Footing is an important part of structure. The footing is an architectural element attached to ground and also transfers loads of structure to ground. The purpose of footing is to support structure and also prevent instability of structure.* A structure’s foundation is connector between part of structure and footing. Footing secures foundation by gaining actual strength of structure. This paper gives information about Analysis and Comparative study of folded plate foundation for retaining wall with varying geometric parameters. This paper also helps to find out economical structure with prevention of sliding and also gaining high strength to whole structure

Folded plates are assemblies of flat plates rigidly connected together so as to make structural system capable of carrying loads. They provide an economical and aesthetically pleasing design. This Paper aims at studying the material used for folded plate structure, analysis of folded plate structure by finite element strip or computer programs. Folded structures are three-dimensional structures - spatial structures and they belong to the structural systems. The term folded structure defines a folded form of construction, including structures derived from elements which form a folded structure by their mutual relationship in space. For very long time this type of construction has been realized in practice only in of reinforced concrete and made on site, which conditioned the use of a very complicated shell. Development of prefabricated building led to improvements of this type of construction so that the folded structures could be derived by assembly of prefabricated elements and their relationship – monolithization on site. Development of the research of folded structures, starting from their earliest days to today, followed the innovations and latest developments in terms of applied materials and methods of connection. The tendency for the cost effective and quicker construction pushed the folded structures made in reinforced concrete, and led to the construction realized in wood, steel and other modern materials that eventually experienced expansion

**Results:**

The aim of this paper is to achieve an ideal V shaped plate foundation for retaining wall which covers up to 27m length. Using the principle of FEM with several models to analyze the geometric parameter i.e. length and internal angle. Folded plate provided in foundation for retaining wall. Elastic mat is provided as foundation for retaining wall. The STAAD Pro models

have been made for the internal angle of 45, 60, 75, 90, 105, 120 degrees with change in length as 1, 1.5, 2 m.

<b>SR. NO.</b>	<b>INTERNAL ANGLE</b>	<b>LENGTH OF EACH PLATE</b>	<b>MAXIMUM DEFLECTION</b>
	(DEGREE)	(METER)	(MM)
<b>1</b>	45	1	118.596
		1.5	88.576
		2	74.388
<b>2</b>	60	1	120.665
		1.5	107.144
		2	92.855
<b>3</b>	75	1	124.586
		1.5	122.083
		2	120.665
<b>4</b>	90	1	143.353
		1.5	138.244
		2	129.792
<b>5</b>	105	1	161.763
		1.5	158.690
		2	155.945
<b>6</b>	120	1	186.916
		1.5	179.885
		2	168.235

**Publication Details:**

1. Akshay S. Kathe<sup>1</sup>, Mrs. Smita D. Kuralkar<sup>2</sup>, [2018], “Analysis and Comparative Study of Folded Plate Type Foundation for Retaining Wall”, NCRDMECE-2018 STM Journal.
2. Akshay S. Kathe<sup>1</sup>, Mrs. Smita D. Kuralkar<sup>2</sup>, [2018], “Analysis and Comparative Study of Folded Plate Type Foundation for Retaining Wall”, NETSRM-18 Journal.



**Title:** Analysis and Comparative Study of V Shaped Folded Plate Retaining Wall With Varying Geometric Parameters.

**Student name:** Monika Arun Verma

**Academic Supervisor:** Mrs. Smita D. Kuralkar

**Abstract:**

Retaining wall is a structure whose primary purpose is to retain some material on one side or both sides of it. Architects and civil engineers are continuously looking for new and efficient methods to cover large spaces using the least materials. Therefore, the need of new techniques in the designing of retaining wall structure is targeted in order to be conservative. Folded plate is a concept in which every Structural Engineer is interested due to its efficiency, architectural look, cost effectiveness etc. In this research work the shape of conventional retaining wall is changed to V shaped folded plate. The analysis work for V shaped cantilever Retaining wall is carried out in a similar manner as that of the Conventional type retaining wall. Also, when V shaped is taken into consideration, the length and the internal angle is primarily the important parameter. This research work is carried out using STAAD.Pro for the analysis purpose.

**Results:**

The aim is to achieve an ideal V shaped plate retaining wall structure which could cover the larger surface. Several models with varying internal angle viz.  $45^\circ$ ,  $60^\circ$ ,  $75^\circ$ ,  $90^\circ$ ,  $105^\circ$ ,  $120^\circ$  along with varying plate length from 1m, 1.5m, 2m, 2.5m and 3m are made with the STAAD.Pro using the principles of FEM to analyze the effects of the length and internal angle parameter. In the present study, folded plate is to be analyzed as a retaining wall, it is considered as fixed to the ground at the base and the other as the free end. Plate mat is provided as the footing. In this research work the conceptual study of V Shaped Folded plates can be used as a retaining structure instead of simple straight plate to conventional retaining wall due to the cost effectiveness. It can be seen from these STAAD.Pro results that for every angle as the plate length is increasing the deflection of the plate is decreasing.

**Publication Details:**

1. Monika Verma<sup>1</sup>, [2018], “*Conceptual Study on V-Shaped Folded Plate- Retaining Wall*”, STM Journal.
2. Monika Verma<sup>1</sup>, Mrs. Smita Kuralkar<sup>2</sup>, [2018], “*Analysis of V Shaped Folded Retaining Wall*”, ISSN NO. 2394-3386.

**Title:** Comparative Study of Multi Storey Building under Action of Shear Wall Using Etabs Software

**Student name:** Shubham Rajesh Kasat

**Academic Supervisor:** Prof. Vinesh S. Thorat

**Abstract:**

From the past records of earthquake, there is increase in the demand of earthquake resisting building which can be fulfilled by providing the shear wall incorporated in building to resist lateral forces produce in plane of wall due to wind, earthquake & other forces. In R.C.C building without shear wall, the beam and column size are quite heavy and there is lot of congestion of reinforcement at the joint and it is difficult to place and vibrate concrete at these places and displacement is quite heavy which induces heavy forces in member. The analysis is by carried out of R.C.C building with different posting of shear wall on floor plan of by using E-TABS software. It gives the idea of analysis of R.C.C building with different configuration. The main objective of earthquake engineers is to design and build a structure in such a way that damage to the structure during the earthquake is minimize. For verification a Multi-storey building example is taken. The results of which are compared with the results of E-TABS. An earthquake analysis is applied to a building which is located in Zone III as per code provision IS-1893 & as per that resulting lateral displacement, storey drift, storey shear is calculated. The analysis of building with core shear wall and edge shear wall is done.

**Results:**

1. The analysis of building with Core shear wall and edge shear wall shows that Shear wall at core shows stiffer behaviour.
2. When shear walls are provided on edge maximum storey displacement of buildings is increased comparing to when shear walls are provided on center portion.
3. When dynamic analysis is done storey drift decreases.
4. When shear wall is placed on edge time period of building increases.
5. When shear walls are provided on edge storey drift of buildings is increased comparing to when shear walls are provided on center portion.
6. For good seismic performance a building should have adequate lateral stiffness. Low lateral stiffness leads to large deformation and strains, damage to non-structural component, discomfort to occupant.
7. Stiff structures though attracts the more seismic force but have performed better during past earthquake

8. So from above results Building with shear wall at core proves to be a better alternative for building in earthquake prone area.
9. Dynamic analysis reduces storey shear, storey displacement, storey drift etc; this shows that dynamic analysis gives improved estimate of forces and therefore analysis of building become more accurate as well as economical.

**Publication Details:**

1. Shubham Rajesh Kasat<sup>1</sup>, Prof. Vinesh S. Thorat<sup>2</sup>, [MARCH 2018], “*Comparative Study of Multi Storey Building under Action of Shear Wall Using Etab Software*”, IJETSR, ISSN 2394 – 3386, VOLUME 5, ISSUE 3.
2. Shubham Rajesh Kasat<sup>1</sup>, Prof. Vinesh S. Thorat<sup>2</sup>, [MARCH 2018], “*Comparative Study of Multi Storey Building under Action of Shear Wall Using Etab Software*”, IJIRSET, ISSN 2394 – 3386, VOL. 7, ISSUE 3.

**Title:** “Structural Health Monitoring and Audit, Repair and Rehabilitation of Building in Construction Industry”

**Student name:** Sachin Rambhau Shelke

**Academic Supervisor:** Prof. Darshana Ainchwar

**Abstract:**

Structures are assemblies of load carrying members capable of safely transferring the superimposed loads to the foundations. Their main and most looked after property is the strength of the material that they are made of. Concrete, as we all know, is an integral material used for construction purposes. Thus, strength of concrete used, is required to be ‘known’ before starting with any kind of analysis. In the recent past, various methods and techniques, called as Non-Destructive Evaluation (NDE) techniques, are being used for Structural Health Monitoring (SHM). The concept of nondestructive testing (NDT) is to obtain material properties of in place specimens without the destruction of the specimen nor the structure from which it is taken. However, one problem that has been prevalent within the concrete industry for years is that the true properties of an in-place specimen have never been tested without leaving a certain degree of damage on the structure. For most cast-in-place concrete structures, construction specifications require that test cylinders be cast for 28-day strength determination. Usually, representative test specimens are cast from the same concrete mix as the larger structural elements. Unfortunately, test specimens are not an exact representation of in-situ concrete, and may be affected by variations in specimen type, size, and curing procedures. The rebound hammer test is classified as a hardness test and is based on the principle that the rebound of an elastic mass depends on the hardness of the surface against which the mass impinges. The energy absorbed by the concrete is related to its strength. There is no unique relation between hardness and strength of concrete but experimental data relationships can be obtained from a given concrete. However, the term “nondestructive” is given to any test that does not damage or affect the structural behavior of the elements and also leaves the structure in an acceptable condition for the client. The use of the ultrasonic pulse velocity tester is introduced as a tool to monitor basic initial cracking of concrete structures and hence to introduce a threshold limit for possible failure of the structures. Apart from requiring regular maintenance, many structures require extensive Repair, Rehabilitation & Retrofitting.

**Results:**

From the consideration of all the above points we conclude that the defects of structural members are due to combined effects of carbonation, corrosion & effect of continuous drying and wetting. The result of visual survey prompt us to conclude the distress is wide spread and is an ongoing process and so needs to be stopped at this stage so as to avoid complete collapse of the structure.

The Rebound hammer showed erratic result when the compressive strength was below 15 N/mm<sup>2</sup>. Above 15 N/mm<sup>2</sup> the predicted compressive strength varied almost linearly with the actual compressive strength.

**Publication Details:**

1. Sachin Rambhau Shelke<sup>1</sup>, Prof. Darshana Ainchwar<sup>2</sup>, [2018], “*Structural Health Monitoring, Audit, Repair and Rehabilitation of Building in Construction Industry*”, ICETSET-2018 Journal.
2. Sachin Rambhau Shelke<sup>1</sup>, Prof. Darshana Ainchwar<sup>2</sup>, [2018], “*Structural Health Monitoring, Audit, Repair and Rehabilitation of Building in Construction Industry*”, IJRSET,( DOI:10.15680/IJRSET.2018.0703063)

**Title:** “A Survey on Vibration Based Damage Detection of Bridges under Varying Temperature Effects using Time Series Analysis”

**Student name:** Varpe Shivpriti Vilas

**Academic Supervisor:** Prof. Darshana Ainchwar

**Abstract:**

The complex and progressing problem of deterioration of aging civil infrastructure, Structural Health Monitoring (SHM) has become a very important area in civil engineering for assessing the performance of civil infrastructure systems. SHM is considered to be one of the most critical components of civil infrastructure management for providing an objective, versatile, and innovative decision-making support tool for infrastructure owners and decision-makers to increase the safety and reliability of our infrastructure system. Bridges are among the most critical infrastructures and most of them are reaching or have already reached their life span. In Canada one-third of 75,000 highway bridges are with structural or functional deficiencies (NRCC 2013). Similarly, the most recent Report Card for America’s Infrastructure (2013) graded the US infrastructure with a D+, and C+ for bridges (one in nine of the nation’s bridges are rated as structurally deficient).

Although the SHM is a relatively new concept in bridge engineering community, testing of bridge structures dates before 1900s (ISIS Canada 2001). SHM methodology can be very effective in complementing the visual inspection techniques for determination of condition of structures. Condition of the bridge network can be improved by continuous evaluation of bridges using SHM systems. Continuous monitoring of bridges improves safety, reduces response time and it has economic impact on the bridge maintenance practices. Besides the regular continuous monitoring of the structures, SHM can be utilized after the incidental events, such as earthquakes. SHM can then provide relevant information on the new condition of the structure, and determine its operational safety.

**Results:**

Five damage cases are applied to the model, along with variable temperature effects with a range of -25°C and 55°C. These temperature effects cause change of elastic modulus for steel and concrete material, as well as additional axial forces in the structure. These two factors then alter the dynamic response of the structure. In the time series analysis part of the method, vibration data of the structure is used to define ARX models with sensor clustering

**Publication Details:**

1. Shivprit Vilas Varpe<sup>1</sup>, Prof. Darshana Ainchwar<sup>2</sup>, [2018], “*A Survey On Vibration Based Damage Detection Of Bridges Under Varying Temperature Effects Using Time Series Analysis*”, STM Journal.
2. Shivprit Vilas Varpe<sup>1</sup>, Prof. Darshana Ainchwar<sup>2</sup>, [2018], “*A Survey On Vibration Based Damage Detection Of Bridges Under Varying Temperature Effects Using Time Series Analysis*”, IJIRSET Journal.

**Title:** “Study of Resilient Bridge Rocking Column with Polyurethane Damage Resistant End Segments and Replaceable Energy Dissipating Links”

**Student name:** Chandulal Ramlal Prajapat

**Academic Supervisor:** Prof. Girish Joshi

**Abstract:**

This paper introduces a novel low-damage bridge column design for accelerated bridge construction (ABC) in seismic areas. The proposed design integrates polyurethane (PU) damage-resistant segments at the column ends to accommodate large rotations without damage, external replaceable energy-dissipating (ED) links to provide supplemental hysteretic damping and flexural stiffness and strength, and internal unbounded post tensioning to provide self-centering. Polyurethanes are polymeric materials that exhibit large deformability, low stiffness, and large strength, in addition to rate-dependent elastic and inelastic mechanical properties. As a result, PUs can accommodate large deformations with negligible damage. The ED links are external buckling restrained yielding steel elements, which offer additional stiffness/ strength and hysteretic energy dissipation to control seismic-displacement demands. Following strong earthquakes, residual deformations are small and can be fully eliminated upon replacement of the (external) ED links, which are the only elements to experience major damage. Because all ED links are external, replacement can be rapidly performed without operation disruptions. The mechanical properties of a selected PU were first investigated through uniaxial compression tests for various strain rates. The proposed column design was then investigated for various PU-segment geometries and various ED-link properties through three dimensional finite-element analysis of a bridge column subjected to monotonic and cyclic pushover loading at various loading rates and amplitudes. The proposed column design was found to provide major self-centering and energy-dissipation capabilities with negligible damage. The response was found to be dependent on the geometric properties of the PU segments. Residual deformations significantly decreased with the loading rate. However, the peak column strength only slightly increased with the loading rate.

**Results:**

**1** The selected PU demonstrated mild viscoelastic properties (i.e., small dependence of the elastic response on the strain rate) and strong viscoplastic properties (i.e., large dependence of the inelastic response on the strain rate). As shown in Table (1), the elastic modulus increased by only 20% as the strain rate increased from 0.001 to 0.05 s<sup>-1</sup>, whereas the peak compressive strength (over the entire applied strain history) increased by 44%.



	Strain rate (s-1)		
Property	.001	.01	.05
E (Mpa)	367	383	440
Fc (Mpa)	10.1	11.6	14.5

**Table no 1**

2. The end of the half-cycle, the strain recovery of the (unloaded) specimen was measured. For all tests, the rate of the strain recovery was initially large, but it decreased over time. The residual strains (at all-time instants) decreased with the rate of loading, implying that plastic traveling was smaller at higher strain rates, which is consistent with the fundamentals of viscoplasticity. According to Table 2, the residual strain was 50% of the total peak strain of 0.1 applied at a strain rate of 0.001 s<sup>-1</sup> whereas it decreased to 32% of the total peak strain of 0.1 applied at a strain rate of 0.05 s<sup>-1</sup>. Moreover, the rate of recovery was higher for the tests conducted at larger strain rates, with 72 and 94% of the total recovery being achieved in the first 10min for the tests conducted at strain rates of 0.001 and 0.05 s<sup>-1</sup>, respectively.

	Strain rate (s-1)		
Parameter	0.001	0.01	0.05
Residual strain after test	0.070	0.066	0.066
Residual strain 4 h after test	0.050	0.045	0.032
Total recovery (%)	29	32	52
90% recovery duration(min)	60	41	3
Residual strain after 10min	0.055	0.048	0.034
Total recovery after 10 min (%)	72	86	94

**Table no. 2**

**Publication Details:**

1. Chandulal Prajapat<sup>1</sup>, Prof. Girish Joshi<sup>2</sup>, [2018], “*Study of Resilient Bridge Rocking Column with Polyurethane Damage Resistant End Segments and Replaceable Energy Dissipating Links*”, IJETSRS, Volume 5 ISSN 23943386.
2. Chandulal Prajapat<sup>1</sup>, Prof. Girish Joshi<sup>2</sup>, [2018], “*Study of Resilient Bridge Rocking Column with Polyurethane Damage Resistant End Segments and Replaceable Energy Dissipating Links*”, IJRSET, Volume 7 ISSN 23198.

**Title:** Analysis and Comparative Study of Barrel Shell Type Retaining Wall.

**Student name:** Mr. Surajkumar Patil

**Academic Supervisor:** Mrs. Smita D. Kuralkar

**Abstract:** Retaining wall is a structure whose primary purpose is to retain some material on one side or both sides of it. Architects and civil engineers are continuously looking for new and efficient methods to cover large spaces using the least materials. Therefore, the need of new techniques in the designing of retaining wall structure is targeted in order to be conservative. Barrel shell is a concept in which every Structural Engineer is interested due to its efficiency, architectural look, cost effectiveness etc. Hence in this paper the conceptual and basics study of barrel type Shaped is done as Retaining wall is done to obtain the stability of structure.

**Results:** The objective of the research is to provide a systematic performance evaluation of the Barrel shell Shaped plate system and to do the gestate study of barrel shaped retaining wall. Also to use the concept of simple cantilever retaining wall in the barrel shaped retaining wall. In this research work the conceptual study of Barrel Shaped can be used as a retaining structure instead of simple straight plate to conventional retaining wall due to the cost effectiveness. The research work is done using staad.pro. It can be seen from these STAAD.Pro results that as the diameter of the shell increases the structure becomes more stable with decrease in deflection.

**Publication Details:**

1. Surajkumar patil<sup>1</sup>, Mrs. Smita Kuralkar<sup>2</sup>, [2018], “*Analysis Study on Barrel Shaped Folded Plate Retaining Wall*”, ISSN NO. 2394-3386.
2. Surajkumar Patil<sup>2</sup>, [2018], “*Conceptual Study on V-Shaped Folded Plate- Retaining Wall*”, STM Journal.

**Title:** “Retrofitting and Repairing Of Heavily Cracked Unbonded Post Tensioned Structural System”

**Student name:** Anand Rambhau Mitkal

**Academic Supervisor:** Prof. N. C. Dubey

**Abstract:**

Composite materials and high strength adhesives are becoming popular for various structural repair jobs. These materials provide good solutions for repairing, and retrofitting concrete structures. In this system repair work can be done within a short time, without using much labor, and the repair materials generally do not alter the geometric shapes of the original structural member.

The proposed retrofitting method achieves a high level of structural safety through dampers installed in an existing seismically vulnerable building more efficiently than conventional retrofitting methods. There are many ways of installing dampers in an existing building, including (1) installing steel-framed braces that incorporate dampers into an existing open frame and (2) installing damper-embedded studs into existing frame so that existing openings are maintained. The latter method can be used in cases where the building is to be strengthened internally. Dampers used in this retrofitting method are elasto-plastic steel dampers that have honeycomb openings.

**Results:**

From the project work the final result in short are as per follows. Following table shows the Comparison between experimental strength and calculated strength.

Specimen		No. 1	No. 2	No. 3	No. 4
Story drift angle at flexural yielding (rad)		1/114	1/112	1/100	1/100
Experimental (kN)	Total Shear	453 (1.00)	967 (1.00)	925 (1.00)	787 (1.00)
	Damper	-	258	211	218
	Steel frame	-	55.8	98.0	-
Calculated (kN)	Simplified formulas	421 (0.93)	987 (1.02)	963 (1.04)	733 (0.93)
	Analysis using model	426 (0.94)	989 (1.02)	968 (1.05)	724 (0.92)

**Publication Details:**

1. Anand Rambhau Mitkal<sup>1</sup>, Prof. N. C. Dubey<sup>2</sup>, [2018], “*A Survey report on Retrofitting and Repairing Of Heavily Cracked Unbonded Post Tensioned Structural System*”, STM Journal.
2. Anand Rambhau Mitkal<sup>1</sup>, Prof. N. C. Dubey<sup>2</sup>, [2018], “*A Survey report on Retrofitting and Repairing Of Heavily Cracked Unbonded Post Tensioned Structural System*”, IJRSET Journal.

**Title:** “Seismic Behaviour of Base Isolated Structures with various distributions of Isolators”.

**Student name:** Nimse Annasaheb Laxman

**Academic Supervisor:** Prof. Dr. Satish B. Allampalliwar

**Abstract:**

This study concerns with the seismic response comparison of a fixed base building with a base isolated building and parametric study of a base isolated building. The structural system considered for analysis is a three storey reinforced concrete building, which is idealized as a shear type building with one lateral degree of freedom at each floor level. The isolation systems considered for this study are Laminated Rubber bearing (LRB), Lead Rubber Bearing (N-Z bearing) and Friction Pendulum System (FPS). The response of fixed base building and of base isolated building is compared in terms of maximum top floor acceleration, inter-storey drift, maximum floor displacements and base shear. For parametric study important isolation system parameters considered are: (i) isolation time period, isolator damping for LRB; (ii) isolator yield strength, isolation time period, isolator damping for N-Z bearing and (iii) isolation time period, friction coefficient for FPS. It is found that base isolation technique is very effective in reducing seismic response of structure and isolation system parameters significantly influence the earthquake response of a base isolated structure

**Results:**

The nonlinear response of FB and BI asymmetric variants with various positions of the center of isolators CI is obtained for ten ground motion records scaled to building design acceleration. The torsional coupling was introduced by the variation of the mass eccentricity and torsional-to-lateral frequency ratio  $s$  of the superstructure. From the results obtained from the present study, the following conclusions may be drawn which are only applicable to frame type building structures within the selected range of structural and base isolation eccentricities. The conclusions are based on the analyses made for buildings in which eccentricity was created only in one direction. In the case of a large two directional eccentricities the observed amplifications might be even bigger. The FB structure was designed according to Eurocodes and therefore the obtained conclusions might be extended to similar code designed FB and BI buildings. The top displacements and rotations of all asymmetric BI buildings are substantially smaller (up to 8 times) than those of FB buildings in absolute measure. However, the torsional amplifications of the superstructure with respect to the symmetric structure of BI buildings are not necessarily smaller than for FB buildings. Depending on the position of the center of the isolators CI, the torsional amplification

ratio of the BI structure can be increased (maximal up to 1.3/ 2 at the stiff/flexible side) or decreased even below the response of the symmetric structure.

**Publication Details:**

1. Nimse Annasaheb laxman<sup>1</sup>, Prof. Dr. Satish B. Allamalliwar<sup>2</sup>, [2018], “*Seismic Behaviour Of Base isolated Structure with Various distributions of Isolators*”, STM Journal.

**Title:** Predicting Fracture in Steel structures.

**Student name:** Anjum Dilawar Attar

**Academic Supervisor:** Prof. N.C Dubey

**Abstract:**

Fracture is an extreme limit state in steel structures, often precipitating structural failure or serious loss of function. Methods to predict fracture in civil structures include traditional approaches developed in other disciplines (mechanical or aerospace engineering) subsequently adopted in structural engineering, as well as approaches to characterize earthquake-induced fractures originating within civil engineering. Developed over nearly six decades, the state of the art is composed of theories and models that address fracture over multiple scales and are targeted toward disparate application scenarios. The report examines these approaches from a structural engineering standpoint, considering trade-offs in accuracy and expense, while identifying areas for improvement. Traditional approaches (including linear elastic and elastic plastic fracture mechanics) are presented, followed by newer local approaches that are better suited for scenarios where traditional approaches are inapplicable. By simulating micro mechanisms such as micro void growth as well as granular cleavage, local approaches address fracture under large-scale yielding, ultralow-cycle fatigue (which occurs during earthquakes), and low stress triaxiality, all of which are important in civil structures. The physical basis for these approaches is outlined, with a summary of best practices for calibration and application. However, these local approaches have limitations as well, and often require substantial resources for successful implementation. With this background, optimal fracture assessment strategies are outlined for common structural scenarios, considering accuracy and cost. Limitations of the entire fracture modeling framework are summarized because they pertain to mainstream adoption within structural engineering research and practice. As the profession moves toward accurate performance characterization, it is anticipated that research will accelerate to overcome these limitations.

**Results:**

It has been observed that the Stress Intensity Factor, SIF value increases with increase in crack length and the crack propagates when the SIF is greater than critical value i.e. fracture toughness of the material. When the stress intensity is less than the fracture toughness of the material the crack is stable and the life of the crack is infinite.

**Publication Details:**

1. Anjum Dilawar Attar<sup>1</sup>, Prof. N.C Dubey<sup>2</sup>, [2018], “*Review on Predicting Fracture in Steel Structures*”, IJRSET 2018 (PAPER ID-ISSN ONLINE: 2319-8753, ISSN PRINT: 2347-6710).
2. Anjum Dilawar Attar<sup>1</sup>, Prof. N.C Dubey<sup>2</sup>, [2018], “*Predicting Fracture in Steel Structure*”, IJRSET 2018 (PAPER ID-ISSN ONLINE: 2319-8753, ISSN PRINT: 2347-6710).
3. Anjum Dilawar Attar<sup>1</sup>, Prof. N.C Dubey<sup>2</sup>, [2018], “*Predicting Fracture in Steel Structure*”, IJRCCE 2018



**Title:** “Cyclic Response of Unbonded Posttensioned Precast Columns (Pier) With Ductile Fiber Reinforced Concrete”

**Student name:** Vaibhav dadarao shinde

**Academic Supervisor:** Prof. V.S. Thorat

**Abstract:**

A precast segmental concrete bridge pier system is being investigated for use in seismic regions. The proposed system uses unbonded posttensioning (UBPT) to join the precast segments and has the option of using a ductile fiber-reinforced cement-based composite (DFRCC) in the precast segments at potential plastic hinging regions. The UBPT is expected to cause minimal residual displacements and a low amount of hysteretic energy dissipation. The DFRCC material is expected to add hysteretic energy dissipation and damage tolerance to the system. Small-scale experiments on cantilever columns using the proposed system were conducted. The two main variables were the material used in the plastic hinging region segment and the depth at which that segment was embedded in the column foundation. It was found that using DFRCC allowed the system to dissipate more hysteretic energy than traditional concrete up to drift levels of 3–6%. Furthermore, DFRCC maintained its integrity better than reinforced concrete under high cyclic tensile compressive loads. The embedment depth of the bottom segment affected the extent of microcracking and hysteretic energy dissipation in the DFRCC. This research suggests that the proposed system may be promising for damage-tolerant structures in seismic regions.

**Results:**

From the project work the final result in short are as per follows. Maximum moment carried by test specimen.

Specimen	Maximum Applied Lateral Load (kN)	Percent Drift At Maximum Load	Maximum Applied Moment $M_u$ (kN-m)	Design Moment $M_n$ (kN-m)	$M_u/M_n$	Measured Tendon Force <sup>a</sup> (kN)	Measured Internal Resisting Moment $M_{u,i}$ (kN-m)	$M_u/M_{u,i}$
SCon38	84.7	8	32.3	29.9	1.08	187	29.4	1.07
SFrc38	87.0	13	33.2	29.8	1.11	192	30.5	1.07
SFrc76	91.0	6	34.7	29.3	1.18	183	28.5	1.19
TCon38	46.5	6	31.9	29.6	1.08	181	28.2	1.09

TFrc38	47.0	15	32.3	29.5	1.09	191	30.6	1.04
TFrc76	54.9	6	37.6	29.6	1.27	176	27.4	1.04

**Publication Details:**

1. Vaibhav Dadarao Shinde<sup>1</sup>, Prof. V.S. Thorat<sup>2</sup>, [2018], “*Cyclic Response Of Unbonded Posttensioned Precast Columns (Pier) With Ductile fiber Reinforced Concrete*”, STM Journal.
2. Vaibhav Dadarao Shinde<sup>1</sup>, Prof. V.S. Thorat<sup>2</sup>, [2018], “*Cyclic Response Of Unbonded Posttensioned Precast Columns (Pier) With Ductile fiber Reinforced Concrete*”, IJRSET Journal.

**Title:** Experimental Investigation Of Flexural Behavior Of Carbon Nanotubes Reinforced Concrete Beams And Analysis.

**Student name:** Archana S. Mali

**Academic Supervisor:** Prof. G.V. Joshi

**Abstract:**

Concrete is versatile material and it is important part in construction activity as it has high compressive strength Carbon nanotubes has strong as tension material. CNT's has outstanding properties it can be used as composite applications like nanotechnology, electronics, optics and other fields of material science. It is light in weight so also can be used in space. They exhibit extraordinary strength and unique electrical properties and are efficient conductors of heat. Nanotubes have been constructed with length-to diameter ratio of up to 132,000,000:1, significantly larger than for any other material. By using CNT we can increase the tensile strength of concrete. Industrial by product can increase the flexural strength of concrete. As we know carbon affects human health.

**Results:**

Based on present experimental result, we can say that CNT 2 (i.e. 0.030%) will be the optimum percentage of CNT to achieve the objectives of our Project. CNT gives more flexural as well as compression strength at 0.030%. In this project CNT is collected by industry. The industrial byproduct can gives more strength to concrete. CNTs in construction activity gives ultimate strength where we required more tensile strength e.g. in construction of bridges as steel or in concrete. CNTs are very costly but finding a solution will give great result in construction line.

**Publication Details:**

1. Archana S. Mali<sup>1</sup>, Prof. G.V. Joshi <sup>2</sup>, [March 2018], "*Experimental investigation of Flexural strength of concrete beam by using Carbon Nanotubes*", IJETSR, ISSN 2394 – 3386 Volume 5, Issue 3.
2. Archana S. Mali<sup>1</sup>, Prof. G.V. Joshi <sup>2</sup>, [March 2018], "*A Review on Synthesizing carbon nanotubes from Industry*", NCTR-2018 Journal.

**Title:** “Study of Structural Response for Regular Buildings on Dynamic Input on Sloped Ground with Different Soil Structures”

**Student name:** Rushikesh Sanjay Tilekar

**Academic Supervisor:** Prof. Vinesh Thorat

**Abstract:**

Earthquake creates considerable damage to structure, its behavior is not predictable and it is very dangerous. If the structure is subjected to seismic forces and if the structure is on sloped ground, then the response of structure creates more damage to structure as well as human life. Due to sloped ground some columns may be short and some columns may be long, hence there is always uneven force distribution within structure. At some locations shear forces, bending moments, torsion having more magnitude than structure on flat ground. In northern India about 130 million years ago due to tectonic actions Himalayan mountainous range formed. In this region soil diversity can be observed.

In the present study, G+5 regular building with different slopes are analyzed with the help of numerical analysis. Different soil structures in Central western Himalayan forest will be considered. Forest type having clayey soil or loam is considered and final consolidation settlement is used for finding out subgrade modulus. Structural response will be obtained by performing linear time history analysis in STAAD Pro. Comparison will be made for buildings on slopes with spring stiffness and same buildings without spring stiffness.

**Results:**

In this chapter results of analysis of structure for different conditions are mentioned. Analysis results for structure on sloped ground varying from 0 degree to 45 degree, are mentioned as below.

**4.1 Buildings on 0° slope:**

	Natural Time (T) Sec.	Mass Participation Factor (At mode 30)	Max. Story Displacement (mm)	Max Base Shear (kN)	Maximum Bending Moment (kNm)
Fixed Support	0.53	98.292	12.3	314	30.6
Case 1	0.669	99.362	13.6	264	50

Case 2	0.669	99.362	13.6	264	78.7
Case 3	0.654	99.07	14.4	237	50.5

#### 4.2 Buildings on 5° slope:

	Natural Time (T) Sec.	Mass Participation Factor (At mode 30)	Max. Story Displacement (mm)	Max Base Shear (kN)	Maximum Bending Moment (kNm)
Fixed Support	0.51	95.692	11.5	314	37.325
Case 1	0.633	95.764	13	281.8	52.3
Case 2	0.618	98.652	13.6	270.3	76.5
Case 3	0.616	96.632	14.4	272.2	78.8

#### 4.3 Buildings on 10° slope:

	Natural Time (T) Sec.	Mass Participation Factor (At mode 30)	Max. Story Displacement (mm)	Max Base Shear (kN)	Maximum Bending Moment (kNm)
Fixed Support	0.494	92.68	7.79	300	42.88
Case 1	0.6	94.55	12.3	282.5	116
Case 2	0.57	94.7	13.1	275.3	99.9
Case 3	0.584	94.154	12.8	278.2	146.374

#### Publication Details:

1. Rushikesh Tilekar<sup>1</sup>, Prof. Vinesh Thorat<sup>2</sup>, [2018], “Study Of Structural Response For Regular Buildings On Dynamic Input On sloped Ground With Different Soil Structures ”, IJETSR, VOL 5, Issue-3, March-2018, ISSN 2394-3386

**Title:** “*Strengthening of Steel Bridge Girder Using CFRP Plates*”

**Student name:** Sachin Bhaurav Devadkar

**Academic Supervisor:** Prof. N. C. Dubey

**Abstract:**

While traditional retrofitting methods for steel bridge girders could be time consuming and uneconomical, an alternative repair method is suggested using Carbon Fiber Reinforced Polymers (CFRP) laminate strips, providing engineers with a competitive solution that will increase the life-cycle of repaired bridges. This study investigated its feasibility as an option to strengthen and rehabilitate steel bridges. The main advantages of using CFRP laminates are their light weight and durability, which results in ease of handling and maintenance. The research conducted experimental and analytical work to evaluate the effectiveness of strengthening steel beams by the use of novel CFRP laminate strips configurations. The research involved the testing of five experimental composite beams, in addition to the development of approximately 100 finite element models. The results showed a significant gain in the beam’s elastic and ultimate capacities. The conclusion is that there are specific sensitive parameters controlling the effectiveness of the CFRP laminate rehabilitation technique. An adequate AASHTO design of the rehabilitation method, which takes into consideration the effective parameters, would result in an effective bridge structure.

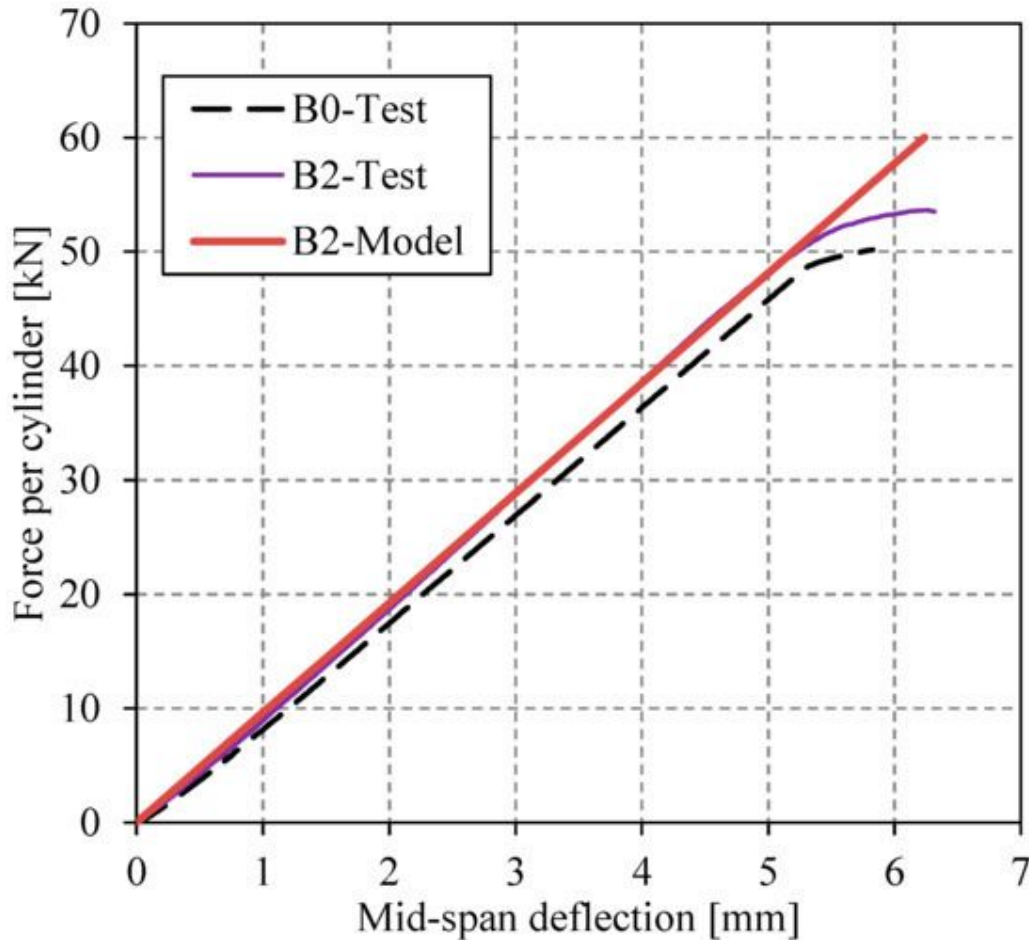
**Results:**

*Static Test Results*

Laboratory static results (in linear elastic domain) for bonded and un-bonded retrofit systems are quite beneficial for interpreting the fatigue behavior of the member after strengthening. The results of the static tests are in the linear elastic domain. Such results are very helpful for fatigue analysis as the service loads on bridges are often relatively low and the bridge elements are in the linear elastic domain. Therefore, the results of laboratory static tests can provide a better understanding of the behavior of the metallic member after strengthening subjected to service loads. In particular, such static tests can provide useful information about the stress distribution along the CFRP laminates and critical metallic detail. The results can be used for fatigue analysis to determine the lifetime of the metallic member after strengthening. Furthermore, the present paper gives an estimation of the time that is required for strengthening of the bonded and the un-bonded retrofit systems. This information will help engineers to consider different aspects of a

retrofitting plan, particularly costs (e.g., required strengthening time) versus performance (e.g., post strengthening behavior).

[Figure 10](#) shows the load-deflection behaviors of reference specimens B0 and B2, which were retrofitted by the un-bonded NM CFRP plate. The behavior of the unstrengthened reference beam B0 is indicated by the black dashed line. The test results are compared with those obtained from the analytical model presented in [\[38\]](#), which shows a good agreement (in the linear elastic domain). Details about the analytical model can be found in [\[38\]](#).



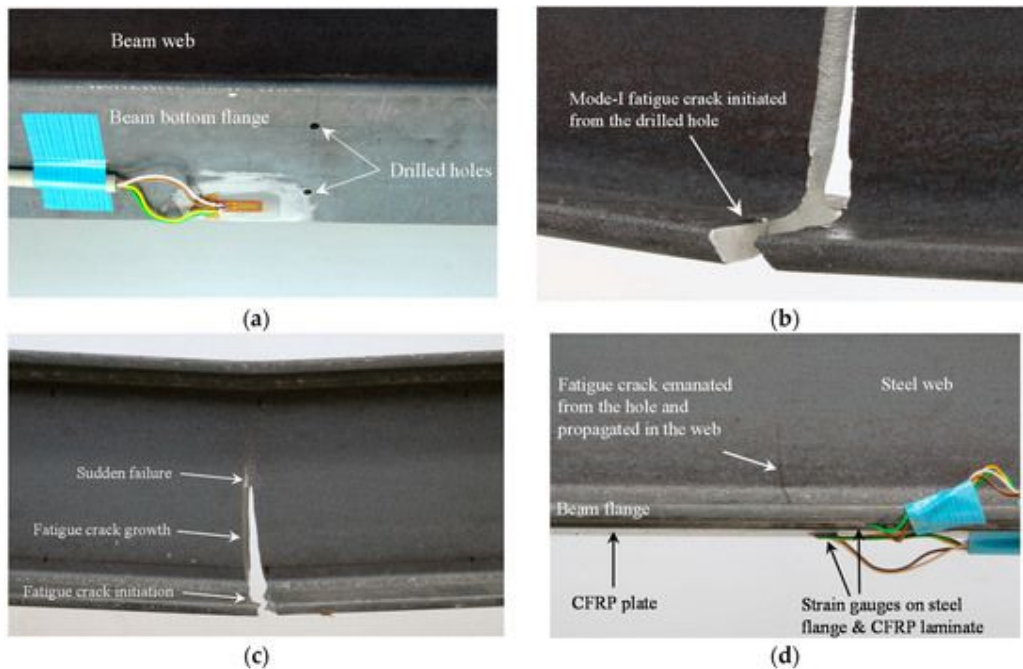
**Figure 10.** The load-deflection behavior of reference specimen B0 and specimen B2 (retrofitted with the un-bonded NM CFRP plate).

### 6.3. Fatigue Test Results

In this paper, two retrofit techniques for steel members subjected to cyclic loads were discussed. The first method takes advantage of the compressive force achieved from the pre-stressed CFRP plate, and the second method is based on the reduction of stress amplitudes when the steel element is stiffened (e.g., with the UHM CFRP plates). Extensive tests were previously performed [\[32\]](#) demonstrating the accuracy of the first method. In this paper, the results of a series of fatigue tests

will be presented to examine the effectiveness of the second retrofit technique (i.e., stiffening effect) using un-bonded CFRP plates. Therefore, in this paper, the reference un-strengthened specimen (i.e., B0) and only specimens retrofitted by the un-bonded CFRP plates are subjected to fatigue tests (i.e., specimens B2, B4 and B6). All specimens were subjected to fatigue loading between 1.7 and 18 kN.

The unstrengthened reference specimen, B0, was first subjected to fatigue loading. The Eddy Current NDT system was used to inspect the area close to the hole in the beam bottom flange (see [Figure 13a](#)). A fatigue crack was detected from one hole at the beam bottom flange after 450,000 cycles. After a fatigue crack was detected, the cyclic loading was continued to further study the behavior of crack propagation. The crack then continued to propagate into the beam's bottom flange and later into the web, as shown in [Figure 13b](#). Once the crack size reached a critical length, the overall stress intensity factor at the crack tip exceeded the fracture toughness of the steel material and the beam failed, as shown in [Figure 13c](#).



**Figure 13.** (a) Holes drilled in the beam bottom flange; (b) crack emanating from stress concentration location; (c) different stages of fracture failures: crack initiation, crack propagation and a sudden fracture failure; (d) fatigue crack initiated from the hole of the retrofitted specimen and propagated into the steel web.

#### Publication Details:

1. Sachin Bhaurav Devadkar<sup>1</sup>, Prof. N. C. Dubey, [2018], “Strengthening Steel Bridge Girders Using CFRP- NATIONAL PAPER”, STM Journal.



2. Sachin Bhaurav Devadkar<sup>1</sup>, Prof. N. C. Dubey<sup>2</sup>, [2018], "A Survey on Strengthening Steel Bridge Girders Using CFRP"- IJIRSET

**Title:** “Fibre section model with an exact shear strain profile for two dimensional RC frame structure”

**Student name:** Mr. Rahul J Chavan

**Academic Supervisor:** Prof. Vinesh Thorat

**Abstract:**

A fiber-section model for nonlinear analysis of shear-critical reinforced concrete frames is developed. The model incorporates a new procedure for the computation of an exact shear strain profile and corresponding shear stress distribution over the cross section. Therefore evaluating seismic performance of a building and proposing suitable retrofit measure is an important area of study in this context.

Longitudinal axial strains are evaluated based on the plane section assumption, whereas transverse strains are determined from equilibrium in the vertical direction, following classical beam assumptions. Axial-shear interaction at the fiber level is based on a smeared-crack orthotropic constitutive model, which uses equivalent uniaxial material models for concrete and steel in the crack and reinforcement directions, respectively. Shear strain components at the crack, arising from deviations between principal and crack directions, are related to shear stresses by means of a shear stiffness term that fully satisfies compatibility and equilibrium conditions. The procedure was implemented into a force based element and applied to monotonic and cyclic analysis of lightly reinforced beams, shear-critical frames, and columns

**Results:**

The results obtained for the dcr values and the status of the members in the building are discussed below. The results are for beams of level 2 and random columns were selected (specifically the foundation ones) and their dcr values were calculated.

**Beams status in flexure**

Beam no.	beam type	dcr	status
21101	1b3	2.08	fail
21102	1b3	1.99	fail
21103	1b3	1.66	fail
21104	1b3	1.60	fail
21105	1b3	1.59	fail

21106	1b3	1.57	fail
21107	1b3	1.74	fail
21108	1b3	1.87	fail
21111	1b6	0.01	safe
21112	1b6	0.01	safe
21121	1b4	-0.15	safe
21122	1b4	1.82	fail
21123	1b4	1.84	fail
21209	1b8	-0.70	safe
21210	1b8	0.01	safe
21211	1b6	0.01	safe
21221	1b5	0.01	safe
21222	1b5	1.87	fail
21223	1b5	2.43	fail
21224	1b5	1.67	fail
21225	1b5	2.46	fail
21226	1b5	1.87	fail
21227	1b5	0.01	safe

**Beam status in shear**

Beam no.	beam type	dcr	status
21101	1b3	0.88	safe
21102	1b3	0.97	safe
21103	1b3	0.97	safe
21104	1b3	0.88	safe
21105	1b3	0.88	safe
21106	1b3	0.96	safe
21107	1b3	0.97	safe

21108	1b3	0.87	safe
21111	1b6	0.50	safe
21112	1b6	0.53	safe
21121	1b4	0.68	safe
21122	1b4	1.81	fail
21123	1b4	1.83	fail
21124	1b4	0.68	safe
21201	1b8	0.00	safe
21202	1b8	0.94	safe
21203	1b8	1.53	fail
21204	1b8	1.89	fail
21205	1b8	0.00	safe
21206	1b8	1.43	fail
21207	1b8	1.89	fail
21208	1b8	1.53	fail

**Publication Details:**

1. Rahul Chavan<sup>1</sup>, Prof. V. S. Thorat<sup>2</sup>, [2018], “Review *Fiber section model with an exact shear strain profile for two dimensional RC frame structure*”, IJIRSET -2018 Journal.
2. Rahul Chavan<sup>1</sup>, Prof. V. S. Thorat<sup>2</sup>, [2018], “Study on *Fiber section model with an exact shear strain profile for two dimensional RC frame structure*”, ICETSET -2018 Journal.

# **INDUSTRY BASED PROJECTS**

S. N	Year	Name of student	Title of Project	Name Of Guide	Department/ PG Course	Name of Industry
<b>M.Tech in Computer Engineering</b>						
1	2017-18	Gumaste Nikhil Sunil	Efficient And Accurate Algorithms For Mining Erasable Closed Pattern From Large Datasets	Mrs. Sunita Nandgave	SY M. Tech Computer engg.	SSP Technology ,Pune
2	2017-18	Apeksha Amol Unhale	Identity Based Integrity Checking And Attributes Based Data Sharing With Time Constraints Mechanism In Cloud Computing	Mrs. Nivedita Rawte & Dr. Vikram	SY M. Tech Computer engg.	Xtrovix Technologies Pvt. Ltd.,Pune
3	2017-18	Kulkarni Sumit Milind	Automatic Detection of compromised accounts in online social Networks	Mrs. Vidya Dhamdhare	SY M. Tech Computer engg.	IDA Hadpsar, Pune
4	2017-18	Deosarkar Dhanashri	An Integrated Approach For Malicious Tweets Detection	Mr.Sandeep Gore	SY M. Tech Computer engg.	Xtrovix Technologies Pvt. Ltd.,Pune
5	2017-18	Shinde Sarika Maruti	Satellite data information system	Ms.Manjushri Mahajan & Ms. Geeta Atkar	SY M. Tech Computer engg.	Mahalanobis national crop forecasting center, new Delhi
6	2017-18	Tambe Tejas Bajirao	Botnet Identification Algorithm For Randomized Traffic	Mrs. B Padmavathi	SY M. Tech Computer engg.	Xtrovix Technologies Pvt. Ltd.Pune
7	2017-18	Wardekar Arati Anilrao	Smarts Crawler: A Two stage crawler for efficiently harvesting Deep web interfaces	Mrs.Poonam Gupta	SY M. Tech Computer engg.	SSP Technology ,Pune
8	2017-18	Gaikwad Ramkrishna Ramesh	A Smart Crawler And Scraping For Web Data Mining	Mrs. Mansi Bhonsale	SY M. Tech Computer engg.	Wetotus Technology,Pune
<b>M.Tech in VLSI &amp; Embedded System [E&amp;TC Engineering]</b>						
S. N	Year	Name of student	Title of Project	Name Of Guide	Department/ PG Course	Name of Industry
9	2017-18	GAJBHIYE DNYANESHW ARI SURESH	Automation of temperature & humidity control by using neural network for oyster mushroom cultivation	Ms.Kavita Joshi	E&TC Engineering [VLSI & Embedded System]	WEBHUB TECHNOLOGY PUNE
10	2017-18	PREETI VERMA	INTERNET OF DRONES	Ms.Munmun Ghosal	E&TC Engineering [VLSI & Embedded	A Square Electro Engineering Pvt Ltd, Pune

					System]	
11	201 7-18	ANISH PRAVIN POLKE	Machine Learning Based Leaf Disease Detection & Crop Optimization	Ms.Kavita Joshi	E&TC Engineering [VLSI & Embedded System]	WEBHUB TECHNOLOGY PUNE
12	201 7-18	JADHAV ASHA HANUMANT	Self Reconfiguration of FPGA using configuration Access Port and Decompression Hardware	Mr.Pravin Matte	E&TC Engineering [VLSI & Embedded System]	Analog Embedded System
13	201 7-18	KADAM RUTUJA KRISHNA	Active Trust Routing in Wireless Sensor Network	Ms.Bharti Patil	E&TC Engineering [VLSI & Embedded System]	Analog Embedded System
14	201 7-18	HORKE SHIVANI GANGADHAR	Design & Implementation of Reversible Logic based digital CMOS Applications	Ms.Manisha Waje	E&TC Engineering [VLSI & Embedded System]	Trdenttech Labs, Pune
15	201 7-18	PUJARI NIRMALA TUKARAM	Challenged and Opportunities of Waste Management in IOT enabled Smart Cities	Ms. Meeta Bakuli	E&TC Engineering [VLSI & Embedded System]	SSP Technology
16	201 7-18	GANDHI DISHA AMRUTLAL	DESIGN AND IMPLEMENTATION OF DRONES TO IMPROVE STABILITY	Ms.Munmun Ghosal	E&TC Engineering [VLSI & Embedded System]	A Square Electro Engineering Pvt Ltd, Pune
17	201 7-18	HARNE NAVALDEEP PRAKASH	IoT Based Flood and Earth Tremors Prior Notification System with Realtime Data Logging	Dr.Vaibhav Hendre	E&TC Engineering [VLSI & Embedded System]	RSB Infotech,Pune
18	201 7-18	ICHAKE VRUSHALI DEORAM	Design and Implementation of the Adaptive Control System for Automatic Headlights based on CAN/LIN Network	Mr.Pranav Chippalkatti	E&TC Engineering [VLSI & Embedded System]	SSP Technology

### **M.Tech in Heat power Engineering/CADME [Mechanical Engineering]**

S. N	Year	Name of student	Title of Project	Name Of Guide	Department/ PG Course	Name of Industry
19	201 7-18	Sorate Avishkar Shivaji	FEA and optimization of CNG mounting carddle	Mr. P. J. Ambhore	Mechanical Engineering/ MTech (CADME)	Piaggio vehicles Pvt Ltd. Baramati
20	201 7-18	Patne Sejal Chandu	Design and FEA of boiler refractory shell from optimum weight	Dr. R R Arakerimath	Mechanical Engineering/ MTech	Thermax limited, "Energy house" D-II block, plot

					(CADME)	no.38&39,MIDC, chinchwad Pune 411019,India.
21	201 7-18	Sapkal Vishal Kantilal	Chemical analysis of chemical casting Parametric analysis of reciprocating friction and wear behavior of PTFE composite	Mr. Kamal Ukey	Mechanical Engineering/ MTech (CADME)	Bhagwati Casters Pvt. Ltd. Survey no. 12/3 near holiday cottage Vilholi, nashik 422010
22	201 7-18	Sanyashiv Sumeet Deelip	Heat recovery analysis of boiler shell using various refractory materials	Mr. P J Bansod	Mechanical Engineering/ MTech (HPE)	Sninfra Energies Pvt Ltd Gat No 90, LonwadeShivar, Tal. Malegaon, Dist. Nashik- 423203
23	201 7-18	Jadhav Anagha Ravindra	Heat recovery analysis of boiler shell using various refractory materials	Dr. R R Arakerimath	Mechanical Engineering/ MTech (HPE)	Thermax limited, "Energy house" D-II block, plot no.38&39,MIDC hinchwad Pune 411019,India.

### M.Tech in Structural Engineering [Civil Engineering]

S. N	Year	Name of student	Title of Project	Name Of Guide	Department/ PG Course	Name of Industry
24	201 7-18	Yojana Patil	Project Title Anyalsis And Design And Casting Of Pretensioned I - Girder Beam For Mumbai Metro Line 7	Prof.G.V.Joshi	Civil Engineering (Structural Engineering)	J Kumar Infra Project Ltd
25	201 7-18	Jadhav Patil Hrushikesh Shivajirao	Damage Detection And Its Repair And Rehabilitation Techniques By Using Ndt On Rcc Buildings	Prof. N.C.Dubey	Civil Engineering (Structural Engineering)	N.K.Patil Constructions
26	201 7-18	Sonwalkar Sujit Hanmant	Analysis And Comparative Study Of Trapezoidal Shaped Folded Plate As Retaining Wall With Varying Geometric Parameters	Prof Smita Kuralkar	Civil Engineering (Structural Engineering)	Lakade Builders & Developers And Sachin K. Ranaware Govt. Contractor.
27	201 7-18	Chavan Shivam Maruti	Parametric Study Of Composite Castellated Beam	Prof.G.V.Joshi	Civil Engineering (Structural Engineering)	V.J.Joshi And Associate
28	201 7-18	Monika Arun Verma	Analysis And Comparative Study Of V Shaped Retaining Wall With Varying Geometric Parameters.	Prof Smita Kuralkar	Civil Engineering (Structural Engineering)	Laxmi Construction Company
29	201 7-18	Shubham Rajeshkumar Kasat	Comparative Study Of Multistoried R.C. Building With And Without Shear Wall	Prof.V.Thorat	Civil Engineering (Structural Engineering)	Pylon Enginners,Pune



30	201 7-18	Shelke Sachin Rambhau	Structural Health Monitoring, Audit, Repair And Rehabilitation Of Building In Construction Industry	Prof.V.Thorat	Civil Engineering (Structural Engineering)	Magic Dream Homes
31	201 7-18	Shivprit Vilas Varpe	A Survey On Vibration Based Damage Detection Of Bridges Under Varying Temperature Effects Using Time Series Analysis	Prof. D.V.Ainchwar	Civil Engineering (Structural Engineering)	Webhub Technology Pune
32	201 7-18	Surajkumar B. Patil	Analysis, And Comparative Study Of Barrel Shell Type Retaining Wall	Prof Smita Kuralkar	Civil Engineering (Structural Engineering)	Laxmi Construction Company
33	201 7-18	Mitkal Anand Rambhau	Retrofitting And Repairing Of Heavily Cracked Unbonded Post Tensioned Structural System	Prof. N.C.Dubey	Civil Engineering (Structural Engineering)	Ssp Technology Pune
34	201 7-18	Nimse Annasaheb Laxman	Seismic Behaviour Of Base Isolated Structures With Various Distributions Of Isolators.	Dr. S.B.Allampalli war	Civil Engineering (Structural Engineering)	Vastech Consultants & Engineers Pvt.
35	201 7-18	Archna Mali	Experimental Investigation Of Flexural Behavior Of Carbon Nanotubes Reinforced Concrete Beams And Analysis Using Staad Pro.	Prof.G.V.Joshi	Civil Engineering (Structural Engineering)	Palm Alloy Steel Private Limited
36	201 7-18	Chavan Rahul Jaywant	Fiber Section Model With An Exact Shear Strain Profile For 2 Dimensional Rc Frame Structure.	Prof.V.Thorat	Civil Engineering (Structural Engineering)	Viraj Enterprises & Developers