



## CIVIL INSIGHTS

IIT BOMBAY 2021



## Message from the Magazine Team

Two years back, the Civil Engineering Department, IIT Bombay, published the first-ever edition of our Department magazine "Civil Insights." And now we are back with the third edition!! The Civil Engineering Department, IITB, is a vital part of the Institute and also holds international identification. In the pages that follow, we try to give a peek into what the department encompasses, and we hope that this magazine comes to be a worthwhile read to all those who wish to get a quick abstract of the department. We would also like to express our heartfelt gratitude to the former HoD, Prof. T.I. Eldho, and present HoD, Prof. Deepankar Choudhury, and the CEA faculty advisors, Prof. Venkata Delhi, Prof. Meera Raghunandan, and Prof. Albert Thomas, have helped us with their invaluable suggestions. Without them, this magazine could not have taken shape.

We hope the magazine will cater to a broad array of readers' interests. The edition features all the key events that happened during the session 2020-21. A heartfelt Thank You to all the faculty, staff, and students who made this magazine so varied in its contents through their articles. While we have tried through all our might to keep the content errorless, the readers may come across mistakes or typographical errors. Kindly accept our profound apologies for the same. We hope that this magazine lives up to the vision held by the last year's team while forging the first edition. We aspire for this magazine to serve as an everlasting reminiscence for the graduating batch, as the department bids them farewell on the Institute's 59th Convocation. We wish the class of 2021 good luck for their journeys ahead.



Rishabh Sharaff Dept. GSec.



KPS Srinivas Design Head



Harshvardhan S. Chief Editor



Harshvardhan T. CEA GSec.



Joshitha T DRC



Vidhya Editoral Team



Prashanth Editoral Team



Srinika Editoral Team



Pavitra Editoral Team



Pranav S. Editoral Team



Sreetam T. Editoral Team



Ravi Editoral Team



Netra Parihar Editoral Team



Shyam Editoral Team



Alakh Agarwal Editoral Team

## DISCLAIMER

Please note that the information in this magazine, including all the articles and statistics, does not make any claims. Any information offered is unequivocally the opinion of the creator/author of that material, and the write-ups should not be relied upon to make any personal decision. Professional advice should be obtained before making any such decision. It is respectfully offered to you to explore, in the hope and with the intent that exploring this material will be educational and helpful to you. By no means are the contents of this magazine intended to hurt the cultural sentiments of any person or group. You may not publish, display, distribute, modify or create derivative works based on the magazine contents or any part thereof, whether by yourself or in any other role, unless authorized in writing by the creator/author of the article or any content contained therein. The images in this magazine have been taken with proper consent from the owners or are declared as free-to-use

#### **Our Contact Details**

Address:The Head, Department of Civil Engineering, Indian Institute of Technology Bombay, Powai,Mumbai - 400076, India. Phone:+91-22-2576 7301 Fax:+91-22-2576 7302 E-Mail:hod@civil.iitb.ac.in

## Contents

| Message from the HoD                | 1     |
|-------------------------------------|-------|
| Department Faculty                  | 3-6   |
| Civil Department Awards             | 7-9   |
| Technical Articles                  | 10-24 |
| Civil Engineering Association (CEA) | 25-27 |
| Aakaar                              | 28-32 |
| EERI                                | 33-35 |
| Views by Freshers                   | 36-42 |
| Conclave with Previous Council      | 43-46 |
| Internship Experiences              | 47-49 |
| Placement Stats                     | 50    |
| Words by Graduating Students        | 51    |
| Art Works                           | 52-53 |
| Batch of 2021                       | 54-57 |
| Gallery                             |       |

## Message from the HoD

Prof. Deepankar Choudhury Head of Civil Department, IIT Bombay



#### Message

Hearty Welcome to the Civil Engineering Department of IIT Bombay!! The Civil Engineering Department is one of the founding Departments of IIT Bombay since 1958, over the years, has grown tremendously, and is now recognized as one of the best and major Engineering Departments in the country and ranked highly in the world for Civil Engineering. With its multifaceted faculty (49 regular Faculty, 1 Emeritus Fellow and additionally 2 Adjunct and 2 Visiting Faculty), it provides high quality teaching and research. We provide very attractive facilities and an environment for those who join the Department as Faculty or Student. Among JEE (Advanced) qualified candidates who opt to join the undergraduate (UG) program (B.Tech. or DD), our department is one of the top most destinations in the country for Civil Engineering. Similarly for GATE qualified candidates, this department is one of the most priority institutes to join for postgraduate (PG) programs. Among the huge number of applications received for the PhD program, only less than 5% get admission in the department. Our department received in 2021 about 200 applications from foreign students for PG (M.Tech. and PhD) programs, showing the high demand of our academic programs in India and among other countries.

The recent QS world ranking 2021 shows our department's world ranking in between 51-100, with all India rank number ONE (1st), in the domain of Civil Engineering. Our expert faculty members are involved in several basic and applied research works, many of which also get translated to solve various challenging issues of the country and society at large. Eight of our department faculty members are also listed in top 2% scientists/researchers of the world in the domain as per the recent Stanford University database. These are possible because of various contributions made by several of our former students of this department.

As the problems the society faces are multi-dimensional, so must be our efforts at combating them. With this view in mind, since the inception of the Department, our goal is to do research in challenging engineering problems and provide efficient engineering solutions in the various sub-disciplines of Civil Engineering.

The department has a strong focus in the research areas of Transportation Systems Engineering, Geotechnical Engineering, Water Resources Engineering, Structural Engineering, Ocean Engineering, Remote Sensing, and Construction Technology and Management. The Department has M.Tech. and Ph.D. programmes in all these areas of research along with its traditional B.Tech. programme in Civil Engineering. Department has 17 high end teaching and research laboratories in these areas. The Department also hosts Postdoctoral Fellowship programmes in various specializations sponsored by Institute (IPDF), SERB, DST, sponsored research and other agencies.

The Department is actively involved in basic and applied research and consultancy and provides high quality technical advisory support through various R & D projects and consultancy to various organizations. Through academic and sponsored research our faculty members and students have published a large number of research publications in peer-reviewed reputed Journals having high impact factors in the domain. In the recent past, the Department has attracted a significant amount of sponsored research funding from government and private organizations and delivered excellent output in terms of implementable solutions for the benefit of the country and society at large.

The Department is well known because of our multi-talented alumni. Several former UG and PG students of this department are in various topmost prestigious positions globally in different sectors like academia, research organization, industry, government bureaucrats etc.

The Department disseminates the knowledge gained from its high quality research through training programs and interacts with world renowned personalities through workshops and conferences. The students and faculty members have won prestigious national and international awards and recognitions, and continue to bring laurels to the Department and the Institute. Quite a good number of our faculty members continue to be Editors or Associate Editors or Members of the Editorial Boards of a number of reputed International/ National Journals.

As per the vision and mission, our aim is to deliver the best to our students, to the society and the nation.

With best wishes,

Prof. Deepankar Choudhury



Prof. Deepankar Choudhury (HoD)
Geotechnical Engineering
dc@civil.iitb.ac.in





**Prof. Pradipta Banerji**Structural Engineering
pbanerji@civil.iitb.ac.in

Prof. Viswanadham B. V. S. Geotechnical Engineering viswam@civil.iitb.ac.in





**Prof. Alok Goyal**Structural Engineering
agoyal@civil.iitb.ac.in

**Prof. Kapil Gupta**Water Resources Engineering
kgupta@civil.iitb.ac.in





**Prof. Ravi Sinha**Structural Engineering
rsinha@civil.iitb.ac.in

Prof. T. I. Eldho
Water Resources Engineering
eldho@civil.iitb.ac.in





**Prof. D. N. Singh**Geotechnical Engineering
dns@civil.iitb.ac.in

Prof. Naresh K. Chandiramani Structural Engineering naresh@civil.iitb.ac.in





**Prof. Yogesh Desai** Structural Engineering *desai@civil.iitb.ac.in* 

Prof. Tom V Mathew Transportation Systems Engineering vmtom@civil.iitb.ac.in





**Prof. K. V. Krishna Rao** Transportation Systems Engineering *kvkrao@civil.iitb.ac.in* 

**Prof. V. Jothiprakash**Water Resources Engineering
vprakash@civil.iitb.ac.in





**Prof. Siddhartha Ghosh** Structural Engineering *sghosh@civil.iitb.ac.in* 





**Prof. Ashish Juneja**Geotechnical Engineering
ajuneja@civil.iitb.ac.in

Prof. Janga Reddy Manne Water Resources Engineering mjreddy@civil.iitb.ac.in





**Prof. Subimal Ghosh**Water Resources Engineering subimal@civil.iitb.ac.in

**Prof. Mandar Inamdar**Structural Engineering
minamdar@civil.iitb.ac.in



Prof. Sauvik Banerjee Structural Engineering sauvik@civil.iitb.ac.in

**Prof. Balaji Ramakrishnan**Ocean Engineering
rabalaji@civil.iitb.ac.in





**Prof. Gopal R. Patil**Transportation Systems Engineering gpatil@civil.iitb.ac.in

**Prof. RAAJ Ramsankaran**Remote Sensing
ramsankaran@civil.iitb.ac.in





**Prof. Dasaka Murthy** Geotechnical Engineering dasaka@civil.iitb.ac.in

**Prof. Nagendra Rao Velaga** Transportation Systems Engineering *n.r.velaga@civil.iitb.ac.in* 





**Prof. Bellie Sivakumar**Water Resources Engineering
Sivakumarakashn@iitb.ac.in

Prof. Avijit Maji
Transportation Systems Engineering
avimaji@civil.iitb.ac.in





**Prof. Manasa Ranjan Behera** Ocean Engineering manasa.rb@civil.iitb.ac.in





**Prof. Swagata Basu** Structural Engineering swagata@civil.iitb.ac.in

**Prof. Jayadipta Ghosh**Structural Engineering
jghosh@civil.iitb.ac.in





**Prof. Prasenjit Basu** Geotechnical Engineering *pbasu@civil.iitb.ac.in* 

**Prof. Riddhi Singh**Water Resources Engineering
riddhi@civil.iitb.ac.in





**Prof. Dharamveer Singh**Transportation Systems Engineering dvsingh@civil.iitb.ac.in

**Prof. Amit Das**Structural Engineering
amitdas@civil.iitb.ac.in





**Prof.Prakash Nanthagopalan**Construction Technology & Management
prakashn@civil.iitb.ac.in

Prof. Venkata S. Delhi Construction Technology& Management venkatad@civil.iitb.ac.in





**Prof. Basudev Biswal**Water Resources Engineering basudev@civil.iitb.ac.in

**Prof. Indu J.**Remote Sensing indusj@civil.iitb.ac.in





**Prof. Arghadeep Laskar** Structural Engineering *laskar@civil.iitb.ac.in* 

**Prof. Meera Raghunandan**Structural Engineering
meerar@civil.iitb.ac.in





**Prof. Arpita Mondal**Water Resources Engineering
marpita@civil.iitb.ac.in





**Prof. Muhammad Salman**Construction Technology&Management
msalman@civil.iitb.ac.in

**Prof. Rao E P**Adjunct Faculty ceepria@iitb.ac.in





**Prof. Manish Kumar** Structural Engineering *mkumar@civil.iitb.ac.in* 

Prof. Tarun Kant INSA Senior Scientist tkant@civil.iitb.ac.in





**Prof. Albert Thomas**Construction Technology&Management *albert@civil.iitb.ac.in* 

**Prof. Milind Wankhede**Adjunct Faculty
milindwankhede@iitb.ac.in





**Prof. Eswar Rajasekaran** Remote Sensing *eswar@civil.iitb.ac.in* 

Prof. S. Lakshmivarahan Current Visiting varahan@ou.edu



(m)

Prof. Srineash V K
Ocean Engineering
srineash@iitb.ac.in



Prof. Pinom Ering Geotechnical Engineering pinomering@civil.iitb.ac.in



# CIVIL DEPARTMENT AWARDS (2020-21)



## SIGNIFICANT AWARDS/ DISTINCTIONS OF FACULTY MEMBERS AND STUDENTS

The students and faculty have won prestigious national and international awards and recognition and continue to bring laurels to the Department and the Institute. Some of them are:

**Prof. Tarun Kant**, received the VASVIK award for 2020 in Mechanical & Structural Science and Technology.

**Prof. V. Jothiprakash,** was appointed as an Associate Editor of 'Journal of Applied Water Engineering and Research, IAHR Journal.

**Prof. Subimal Ghosh,** received American Geophysical Union (AGU) DL Memorial Medal 2020.

**Prof. Arpita Mondal**, joined as an Associate Editor in the International Journal Regional Environmental Change (REEC), Springer.

**Prof. Riddhi Singh,** served as an Associate Editor of the Journal of Earth System Science, published by the Indian Academy of Sciences, for three years from July 2020.

**Prof. Subimal Ghosh**, won the prestigious Shanti Swarup Bhatnagar Award and Swarnajayanti Fellowship of the Government of India for his research in climate and hydrological science.

**Prof. D.N. Singh** won 2018 Canadian Geotechnical Journal Fredlund Award Canadian Science Publishing (publisher of the Canadian Geotechnical Journal), Geo St.John's November, 2019.

**Prof. Siddhartha Ghosh**, appointed as the Professor-in charge of, Continuing Education Programme & Quality Improvement Programme (CEP/QIP) w.e.f. January 01, 2021

**Prof. Avijit Maji,** won Best Paper Award International Conference on Transportation Infrastructure Projects: Conception to Execution, Indian Institute of Technology (IIT) Roorkee January, 2020.

**Prof. Manish Kumar,** won Sustainable Transportation Systems and Infrastructure (STSI) Award, Hokkaido University Japan, Visiting Scholar, Award Beijing University of Technology, Beijing, China.

**Prof. V. Jothiprakash**, got added in the Editorial Board of ASCE Journal of Hydrologic Engineering as an Associate Editor.

**Prof. Jay Ghosh** & his students, got inclusion of two of their papers in Editor's choice in ASCE Journals.

**Prof. Deepankar Choudhury**, selected as Fellow of ASCE (F.ASCE) the USA and joining as Editorial Board member of the journal "Soils and Foundations", Elsevier, Japan.

**Prof. Dharamveer Singh**, joined as Editorial Board Member Journal of Pavement Engineering "Road Materials and Pavement Design".

**Prof. Arpita Mondal**, received UA Scholars' Award, 2020.

**Prof. Sauvik Banerjee**, received the 2019 Reviewer of the Year Award from ASME Journal of Non-destructive Evaluation.

**Prof. Subimal Ghosh** was awarded American Geophysical Union (AGU) DL Medal 2020 and Dr A P J Abdul Kalam High-Performance Computing award 2020.

**Prof. Janga Reddy** was appointed as Associate Editor of the Journal of Water Resources Management.

**Prof. Raaj Ramsankaran** was appointed as a member of the Editorial Board of the Journal Geomatics, Natural Hazards & Risk, published by Taylor and Francis.

**Thiruvengadam P** (Supervisor **Prof. Indu J.**) has received the prestigious Fulbright-Kalam Climate Fellowship for doctoral students.

**Prof. Albert Thomas** and his student **Ms. Tripti Singh Rajput** received the best paper award at ICRDSI 2020.

**Dr. Vinil Kumar Gade** and **Prof. Dasaka Murty** received the best paper award at the Indian Geotechnical Journal - Instrumentation - 2020.

**Dr. Kaustav Chatterjee & Prof. Deepankar Choudhury** received the best paper award on Deep Foundations - IGS Award - IGS-Kochi Chapter YGE Award.

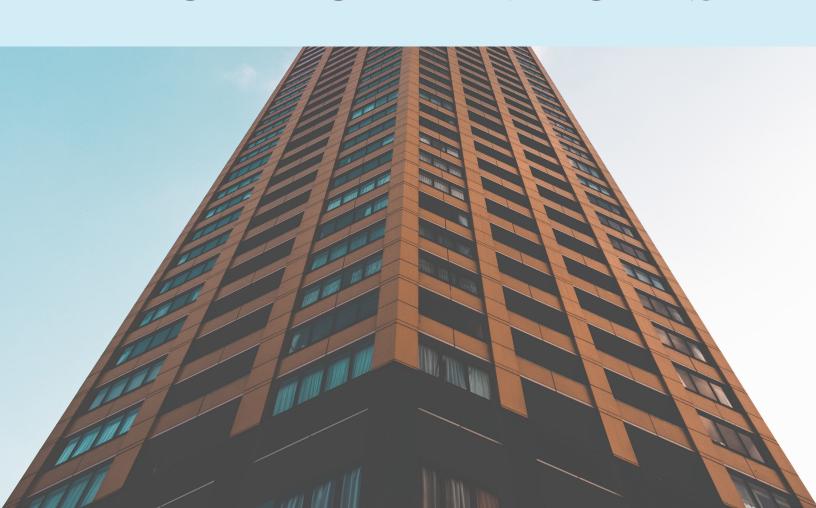
Ms. Sanjivani Nigade Saha & Prof. B.V.S. Viswandham has been awarded the best paper towards Solutions to the Problems of Expansive Soils.

Mr. Pankaj Kumar & Prof. B.V.S. Viswandham received IGS-AFCONS Biennial Award-2020.

Mr. Sarosh Alam Ghausi (Supervisor Prof. Subimal Ghosh) has received the INAE innovative student project award.



## TECHNICAL ARTICLES



## Rainfall deficits and cropping choice drive crop loss in Marathwada, India

Student Mariam Zachariah Supervisor: Prof. Arpita Mondal

Tnderstanding the role of climate variability in driving crop loss is an important research area, particularly for the agrarian economy of India. Among other social, economic and political factors, crop loss also contributes to ensuing crises such as bankruptcy, famine and suicides. The wide variability in agroclimatic features over the country warrant studies that focus on small target areas, for discerning crop sensitivities to the regional climate factors. To this end, we quantified the effects of growing season rainfall and temperature on selected crops grown in Marathwada, in the state of Maharashtra. This region is a microcosm of India's agrarian culture with the community engaged primarily in agriculture and allied activities. Situated in the rain shadow region of the Western Ghats, Marathwada is also highly prone to droughts, and a resultant hotspot of agrarian crisis.

On observing the acreages of the crops grown in the region during the rain-fed Kharif season, from 1997-2014, we found a gradual shift from food crops such as sorghum and pearl-millet, to cash crops such as sugarcane and soybean (Fig.1a). In order to understand whether this observed shift is reconcilable with the native climate conditions, we disaggregated and compared the sensitivities of these crops to the growing season rainfalls and temperature. In the first part of the study, we used Mixed-Effects Linear Regression (MELR) models that express crop yields as a function of rainfall, temperature and other derived variables such as soil moisture and irrigation, while also accounting for unobserved soil characteristics and improvements in cropping practices via. intercepts in space and time. The sensitivities were then, inferred from the regression coefficients (Fig.1b). In the next part, these findings were verified using a process-based model, namely the Decision Support System for Agrotechnology Transfer (DSSAT v4.7), from customized experiments that allow either rainfall or temperature to evolve as observed, while all other meteorological inputs are kept constant at their respective long-term daily means. The sensitivities, in this case, were inferred from the coefficient of variation in yields from these experiments (Fig.1c). Our results showed that the cash crops that are increasingly cultivated in recent years are water intensive, while the declining food crops are not sensitive to rainfall or temperature.

The daily average temperature distributions for the various crop development stages under future warming scenarios of 1.5° and 2° C above pre-industrial levels, were also found to lie within the optimum temperature ranges for these crops, suggesting

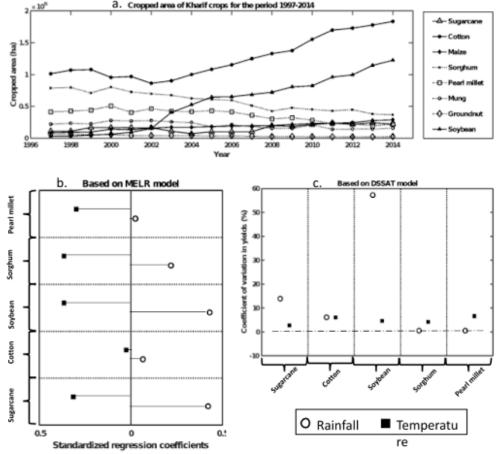


Fig.1 (a) Area under cultivation of the important crops grown in Marathwada during the Kharif season, from 1997-2014. (b) The regression coefficients for rainfall and temperature of selected crops, from standardized MELR models. (c)The coefficient of variation in yields of these crops due to changes in rainfall and temperature from DSSAT model.

temperatures are expected to have minimal effect on crop yields, even under future climate change. This led us to conclude that rainfall deficits, rather than temperature is likely to be the primary driver of crop loss in the region, and seemingly aggravated by the shift from the native drought-resilient food crops to rainfall-intensive cash crops. In this regard, strategies for promoting and sustaining the cultivation of drought resistant food crops seems to be one of the potential ways forward, for the crisis-ridden Marathwada region. Such measures will be useful for addressing both immediate farmer crisis in the region, and threats to food security in the long term. The simplicity of the methodology proposed in this work allows for similar studies focusing on other regions, and including other relevant drivers of crop loss, depending on the region. This study is published in Environmental Research Letters, and is available for download at https://iopscience.iop.org/article/10.1088/1748-9326/ab93fc.

## Degradation relations for the tensile properties of corroded reinforcement bar

PhD Raghava Kumar Vanama Supervisor: Prof. Balaji Ramakrishnan

According to a study, 50% of the reinforced concrete (RC) structures are experiencing premature failures and requires repair even before ten years from their construction. Repairing/strengthening these corrosion damaged RC structures requires the information on the extent of damage and its effect on their load-carrying capacity. Mechanical properties of corroded rebar have great significance in durability evaluation and assessing the load-carrying capacity of a damaged RC structure. Tensile properties of corroded rebar are also necessary for modelling the damaged concrete structures. As retrieving the rebar from any RC structure (for tensile testing) can further damage its condition, empirical relations are often used in modeling the damaged RC structure. The degradation equations to estimate the nominal stresses of corroded rebar (uniform and pitting) proposed in the past have got some drawbacks. For example, properties of the corroded rebar whose mass loss is more than 36% were neither considered nor been validated with past experimental results. They could not be applied when the type of corrosion is unknown, thereby restricting their application.



#### METHODOLOGIES ADOPTED:

A part of the present study evaluates the tensile properties of the corroded rebar that are corroded up to 79.64% mass loss of three different grades subjected to natural carbonation and simulated chloride attack. Tensile tests were conducted on 38 corroded steel round rebars of 12.7mm nominal diameter (MS 250 & MS 350 grades) obtained from a 54-year-old inland concrete corridor structure, exposed to natural carbonation and on 15 ribbed bare rebars of 16mm nominal diameter (Fe 500D grade) subjected to chloride attack through an impressed current method. Mass losses were in the range of 0.81% to 79.64% for naturally corroded rebar and 9.95% to 50.51% for artificially corroded rebar. In the case of artificially corroded rebars, variations in rib loss with the level of corrosion were also captured. Customised end holders were designed to test the highly corroded rebar without slippage during the tensile loading. A set of degradation equations were formulated to estimate the yield and ultimate stresses of corroded rebar knowing the properties of uncorroded rebar. The proposed formulations are best fitted by adding the obtained test results to the previous studies. Finally, proposed equations were validated with the results obtained from the literature study. The comparison revealed that the equations proposed in this study provide improved prediction of yield and ultimate stresses of corroded rebar.

#### **SALIENT CONCLUSIONS:**

- 1. Shank diameter found to be reduced by 26.45% at 50.48% of mass loss. At a given level of corrosion below 50.48%, on an average, transverse ribs and longitudinal ribs reduce by an excess of 4.93% and 4.60%, respectively as compared to the reductions observed for shank diameter.
- 2. Based on the tensile tests performed for rebars that are corroded up to 79.64% mass loss, the average elastic modulus is estimated to be 1.99E+05 MPa and observed that value slightly decreases with increase in corrosion degree.
- 3. The proposed decay laws are checked for their validity by comparing with the test results published in previous studies and are valid till the corrosion levels up to 50% mass loss.

Link to full-length paper (Published in 'Construction and Building Materials' Journal): https://www.sciencedirect.com/science/article/abs/pii/S095006182030711X

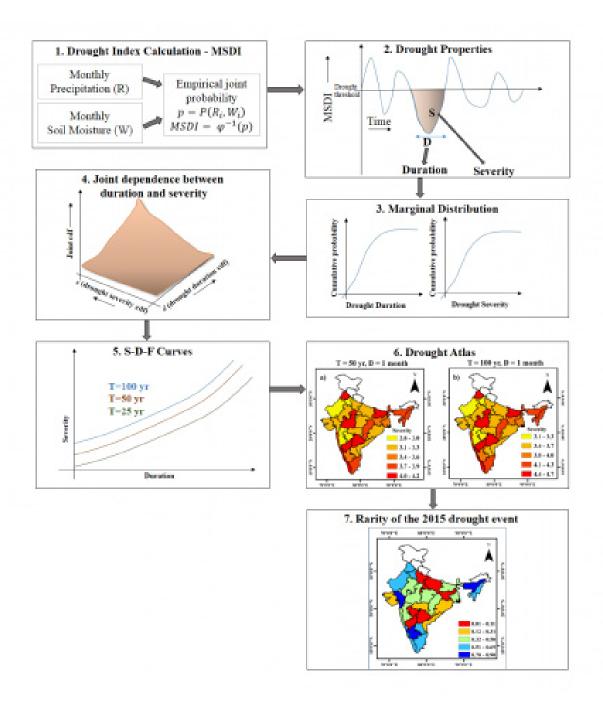
## A country-wide drought atlas for India using an integrated, multivariate approach

#### PhD Sahana V. Supervisor: Prof. Arpita Mondal

In India, many regions frequently experience drought conditions. The primary driving factor for droughts is the deficiency in precipitation. Our country's economy is mainly dependent on agriculture. Therefore efficient agricultural drought monitoring is very important. The deficiency of soil moisture have direct implications on agricultural drought and hence on its productivity. An efficient characterization of agricultural drought condition is possible when both precipitation and soil moisture deficiencies are considered. Therefore we used a multivariate drought indicator called Multivariate Standardized Drought Index (MSDI) to analyse the historical drought conditions caused by simultaneous deficits in precipitation and soil moisture for 30 meteorological subdivisions in India. The MSDI is able to capture the drought initiation and drought termination time more realistically. Further, every drought event can be characterized by its duration and severity. These drought characteristics influence drought resilience and preparedness. These two variables are correlated with each other. For a cogent probabilistic drought risk assessment, it is required to compound these two variables. One such tool to combine them is through copulas.

We developed the copula-based severity-duration-frequency (SDF) curves for each of the sub-divisions in India. In general, SDF curves are multivariate tools that link the severity and duration of droughts to the return period. These curves were obtained for specific return periods of 10, 25, 50, and 100 years considering their relevance in water resources planning and management. These curves can be used to obtain the design drought severity for a particular drought duration and return period. This information can be used to design structural measures such as construction of reservoirs or check dams that can improve drought resilience. We observed the SDF curves to be steep for larger drought durations in most of the sub-divisions.

A country-wide drought atlas can spatially represent drought characteristics for integrated drought monitoring and warning system in India. We present a country-wide multivariate drought atlas for India based on the developed SDF relationships. The atlas basically shows the drought severity in each sub-division for different drought duration and return periods. Regions of North Interior Karnataka, West Madhya Pradesh, Maharashtra, Telangana, Bihar, Jharkhand, Gangetic West Bengal, Kerala, Punjab, Chattisgarh and North-East India are found to be having a higher severity compared to other sub-divisions.



The atlas shows a contrasting behavior of drought severity in the neighboring subdivisions. This is due to the diverse topographical features and variations in rainfall both spatially and temporally. Also, our drought atlas shows larger drought severity for regions of high rainfall such as Kerala or North-East India. This is because our multivariate drought atlas represents variability in rainfall and soil moisture with respect to their long term characteristics and not the magnitude of rainfall and soil moisture.

The 2015 drought event in India had affected multiple sectors including reservoir levels, crop yields and well-being of people. This drought event was deficient in both precipitation and soil moisture. Therefore, we used the developed multivariate drought atlas to find

- a) how rare was the drought event in each of the sub-divisions?
- b) which sub-divisions were affected the most?

According to our drought atlas, the sub-divisions West Uttar Pradesh, EUP, Jharkhand, Marathwada, Telangana and North Interior Karnataka experienced a rare drought event in the year 2015 with return periods between 5–100 years. The condition of the vegetation on ground can be measured using Normalised Difference Vegetation Index (NDVI). A higher magnitude of negative anomalies of NDVI indicates higher agricultural impact. We prepared the NDVI anomalies map for the 2015 drought condition to validate our drought risk estimates. Though not directly comparable, the negative anomalies of NDVI are found to overall coincide with the regions that experienced rare drought according to our drought atlas. This highlights the effectiveness of the developed drought atlas in agricultural impact assessment and mitigation of rare droughts.

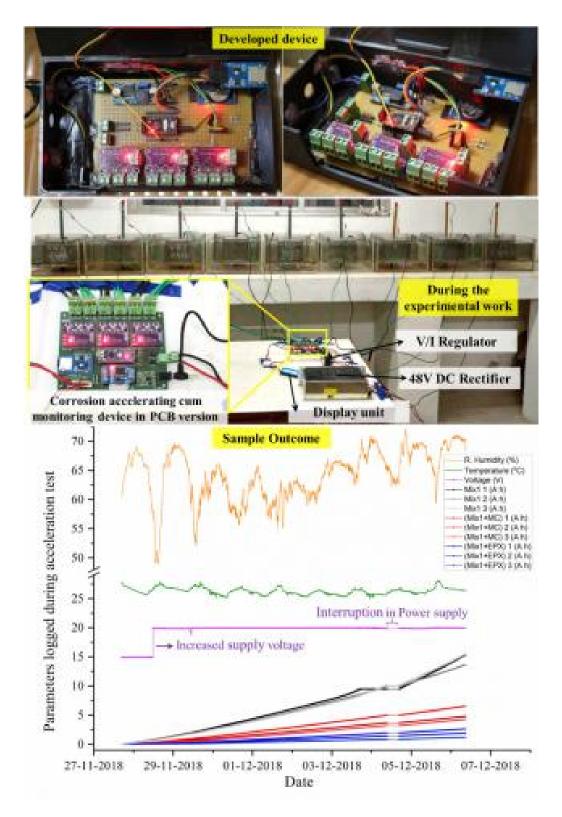
Ref - https://www.alumni.iitb.ac.in/en/newsletter-article/2020-12/country-wide-drought-atlas-india-using-integrated-multivariate-approach

## Economical Multi-utility data logging device for corrosion studies

PhD Raghava Kumar Vanama supervisor: Prof. Balaji Ramakrishnan

The total annual cost of corrosion in India was estimated to be INR 4.27 lakh crore (70.3USD billion) for the year 2011-12 which is nearly 4.21% of country's total Gross Domestic Product (GDP) for that year. Cost of corrosion (CoC) is significant, and strategies for corrosion mitigation and its study is necessary to reduce the cost. In corrosion studies, to evaluate the performance of any mitigation strategy and complete the experimental work in a stipulated time, researchers artificially accelerate the corrosion of embedded reinforcement bar. Also, corrosion monitoring and its prediction are needed in most of the experimental/laboratory research works. There are several commercial systems/devices available in the market for performing such tasks but are expensive. Economical instrumentation in this regard support and encourage more research studies on corrosion and its mitigation in academic/small to medium scale laboratories. Authors have developed a multi-utility device at IIT Bombay that can accelerate, monitor and predict the corrosion of nine specimens simultaneously. Also, this device can be operated in two different configurations and monitor the resistivity offered by the concrete specimen during the Rapid Chloride Migration Test (RCMT). Besides the supply voltage and current drawn by each specimen, the developed device can log the ambient air temperature and relative humidity levels during the experimentation at the required interval. Monitoring these associated corrosion parameters is essential in estimating the apparent chloride diffusion coefficient (Dapp). This coefficient is useful in evaluating the performance of the adopted mitigation strategy in terms of the service life of an RC structure. Thereby, the developed instrument can be used in multiple ways in the corrosion-related studies and is helpful for many researchers in carrying out the experimental laboratory works at very low-cost. The device can be customized according to the need of the study and is very handy.

The developed system has tremendous potential to be commercialised. It can be made available to a broader research community and encourage more corrosion mitigation studies. The device is applied for the Indian patent and been published. More details regarding the developed instrument can be found in the published patent section with the following credentials.



More details at https://ipindiaservices.gov.in/publicsearch

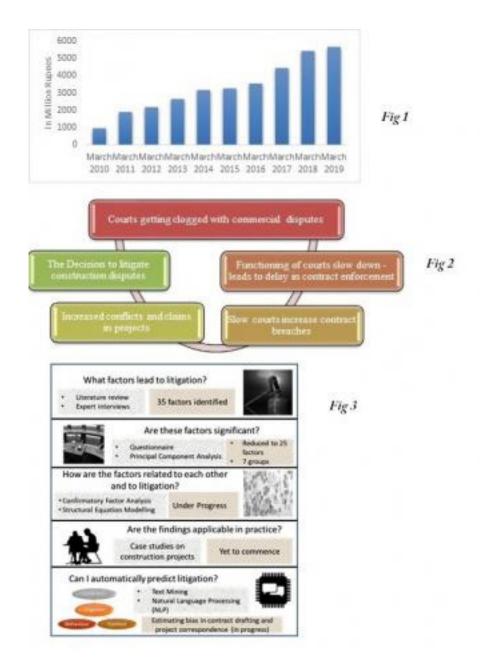
## Conditions leading to the decision to litigate contractual disputes in construction

Murali Jagannathan (NICMAR) Prof. Venkata Santosh Kumar Delhi

onstruction operations, considering their capital and stakeholder intensive, unique, and project-based nature, is an exclusive research domain. Conflicts and disputes, followed by long drawn adversarial dispute resolution processes are an integral part of a majority of construction operations. Dispute resolution is, therefore, a topic of research interest since many decades. Various dispute resolution mechanisms have evolved over years focussing on both time and cost-effective dispute resolution and sustenance of working relationship between parties. However, disputes continue to plague construction projects even to this day (Zhang, Fenn and Fu, 2019), with certain disputes getting escalated as legal battles in the court of law (Sinha and Jha, 2020). While the number of instances that escalate into litigation may be small (Tazelaar and Snijders, 2010), the value (of claim or dispute) associated with those few instances are too large to ignore. Some facts that can help visualizing the litigation climate in India are

- In the six-lane project of Panipat-Jalandhar section of National Highway 1, due to the stay order by the High Court regarding a dispute (which was later reversed by the Supreme Court), there was a cost escalation of INR 1054 Crore (till February 2018) (PMI&KPMG, 2019).
- Recently, an article was published in the newspaper revealed that as on March 2018, out
  of 426 projects of worth INR 1.2 lakh crores that were carried out by road developers,
  740 arbitration claims worth INR 1.7 lakh crores were raised by the developers and
  further INR 37200 crore counterclaims were lodged by the employer NHAI (Dash,
  2019).
- A study on the balance sheets of selected construction infrastructure organizations over the last ten years, indicate growing expenses towards legal charges as shown in figure 1 (financial data sourced from the database of Prowess IQ).

It is a well-documented fact that courts in India are grappling with the problem of huge backlog of pending cases that are leading to delays in dispute resolution. When construction disputes are litigated, such delays set off a vicious cycle breeding further instances of litigation (Chemin, 2010) as shown in figure 2.



Existing research in this direction largely focuses on the conditions leading to the choice a particular dispute resolution method (Chan, Suen and Chan, 2006; Haugen and Singh, 2015). The difference between disputes and litigated disputes are often ignored by researchers leading gaps in understanding the reasons that motivate parties to litigate (Jagannathan and Delhi, 2020). The focus of this research, therefore, will be on finding out the conditions that can escalate a construction dispute to the litigation, notwithstanding efforts to resolve such disputes amicably through alternate dispute resolution methods.

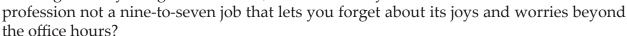
Ref - https://www.alumni.iitb.ac.in/en/newsletter-article/2020-10/conditions-leading-decision-litigate-contractual-disputes-construction

## MISCELLANEOUS ARTICLES (SPECIAL ENTRY)

What does an average day in the life of an IIT professor looks like?

- By: Prof. Arpita Mondal

any a times, I get asked by friends and family, on days that I don't have a class – 'but you don't have to teach! What keeps you busy?' I thought of penning it down once and for all, and hence this article. What does an average day in the life of an IIT professor look like? Is teaching the only thing we do? If not, what else? Why is this



Let's discuss that a bit.

Let me take a typical day with teaching as an example, to give you some idea about what fraction of my job actually constitutes teaching. It is a day in April. I have an 8.30 am lecture. Since I have the support of my family and domestic help to look after my infant, I am at least relieved of the worry of freshening him up, brushing his teeth, feeding him, bathing him, and so on and so forth on the days that I am away for work. Everyone knows the efforts in keeping a baby human alive. (Or do they?)

No matter how much one prepares, the last minute rehearsal before a class is indispensable. At least to me, it is. Also, my classes are scripted. I wish I could retain more in my brain and be more flamboyant in class, but no – most of the pauses, points of interaction, jokes and anecdotes – they are all set-up. I do improvise sometimes, but I cannot rely on my improvisation skills. Also, since I teach mathematically intensive subjects, there is a large possibility of goofing up in class. Therefore, rehearsal is important. The goof-up still happens, but the goal is to minimize it. So here I am, awake at 6.30 am indulging in some last minute mugging. Finally, I reach class just on time, and be done with it at 9.30 am. But hold on, there are always the over-enthusiastic bunch of students who would gherao the instructor with great questions after a class. Fifteen to thirty minutes may go by, just in those discussions – and I love them! Before I realize, it is 10 am already, and I have to enter into a video-conferencing call with my collaborators in Australia – we have a unique joint-PhD program – and it's time for the student to present her weekly updates.

I thought I would excuse myself early in the meeting, but the discussions went on deep into the statistics of extremes and a lot of investigations in interpreting some of the results we got. Such discussions and intellectual exercises do provide a kick. Indeed, these are the very highs that one gets to experience in academia that perhaps no other profession could offer. The meeting finally gets over around 11.30 am. I have exactly an hour to check my emails and catch-up on news, and networking. There are fifteen unread emails from last night - some require action - I somehow 'star'-mark them, and add on the pile of pending things (Gosh! Will I ever be able to have a clean slate there?). And then some updates on my LinkedIn and Twitter profiles and a bit of stalking my peers. And this is not at all for competition, but merely for the motivation to excel, as much as the world does. Oh, there's that recently published work from my peer researcher in the UK - this may be of interest to one of my PhD students! And, oh, there's that workshop for early career researchers that my colleague in the USA is hosting - may be I should ask some of my slightly-advance-into-their-PhDs students to attend!

Around 12.10 pm, my office landline number rings - my dear friend and colleague is on the other side - 'hey Arpita! Do you want to catch a cup of coffee in our lounge?' Who could refuse the lure of having a deep conversation with a colleague with whom your mental frequency and worldview matches so much! And there goes twenty minutes of my enjoyment.

At 12.30 pm, I have to be present for a meeting with the students' council of the hostel where I serve as the Associate Warden. We discuss budget, facilities, activities and all sorts of other issues the inmates may be facing. (Sometimes we get invited to their lovely dinner parties, too!) Done at 2 pm, and turning down their invitation for lunch, I rush back home. I have to check on my baby. 'Everything is fine, Didi!', assures my help. My husband has left for his office on time, too. I gobble on my food and rush back to office. At 3 pm, there's this annual research progress seminar of a PhD student in my Department on whose progress committee I serve.

Finally, at 4 pm, we resolve the meeting and rush for a department all-faculty meeting. Here, we discuss issues of relevance to all faculty members - instructions for courses, grading, changes in policy, admission related statistics, functioning of the department, cleanliness, staff-related issues - you name it! There are also meetings of smaller committees that specialize in their duties, such as policy committee, admissions committee, faculty recruitment committee, undergrad students' matter committee, postgrad students' matter committee, and so on.

The up-side of it is that we get enough food and tea/coffee to tide through these meetings. Interestingly, there are some voices here that are reasonable, while some are not; some argumentative, some polite; some flamboyant, while others conservative. What amuses me about these meetings is that sometimes we get to see unseen aspects of the personality in each of us. It is, perhaps, both good and bad.

Transacting business fast is difficult when the size of the meeting is this large. Finally, we are done by 6 pm. There's a student waiting for me in my office - his manuscript has come back from a good journal the previous evening. He was shattered, and so was I, partly, because we considered that work to be one of our best. However, rejections are a part of research. And the sooner we come to terms with it, the better it is for us as well as for the work. What we consider our best might not make it to the topmost journal, while the one we thought is merely 'a good' study can eventually be published in the best journal. This is the reality!

I had spoken to the student briefly last evening, but he needs more counseling as he is inexperienced, and otherwise may get discouraged. Also, we need to discuss on how to address the reviewers' comments, what additional analysis needs to be done, and where to submit it next. Finally, I reach home at 7.45 pm, with a part of my brain not functioning any more, due to exhaustion. But my day has not ended, because at 8 pm, I have given time to a journalist who wants to know more about our recent work related to droughts and agrarian crisis in an important region in the country. After speaking for about half an hour, I finally am relieved of my duties for the day.

A simple, home-cooked (albeit microwaved!) dinner, thanks to my cook, warm hugs from my baby, company of my partner, and the comfort of home slow me down and let me into peace. As I lay down in bed, pop comes two notifications in my email - there's a new scheme announced by the Government for funding research projects related to my area, proposal submission deadline soon. Also, I had earlier agreed to review a paper for a well-known journal in my field. The editor has reminded that I have missed the deadline that was today, and must submit my review soon. Tomorrow may be a harder day.



## CIVIL ENGINEERING ASSOCIATION (CEA) EVENTS AND UPDATES

## Civil Engineering Association

The Civil Engineering Association (popularly known as CEA) at IIT Bombay, was established with a prime objective to proliferate knowledge & address industrial issues by bringing corporates, professors and students on common platform. CEA, having students as well as faculties as its members, is one of the most active organizations of civil engineers in the country. We aim to promote Civil Engineering by providing the much-needed practical exposure to the community members through its regular activities like technical seminars, research symposium, talks on ongoing research practices throughout the globe and many other related topics from distinguished practitioners of the trade. Collaboration between the school and industry is important for the advancement of engineering teaching and research. With this aim, to give our students some practical insight into Civil Engineering, we organize several visits throughout the year to ongoing construction sites thus giving them a chance to interact with key personnel of the industry. Apart from the technical aspects, it also undertakes the responsibility of proper nurturing of students by organizing some social events as a part of extracurricular. Here is a brief description of the events organized by CEA throughout the year.

### Traditional day:

For the first time, Traditional Day was organised in video conferencing, where all the students, from UG fresher year to PhD students, gather together to have a fun-filled and healthy interaction with each other. Importantly, it is for freshers to get a chance to meet and interact with the seniors. As the name suggests, all the students wear traditional attire on this day. Different students from different cultural backgrounds come dressed in their native outfits, giving a diverse touch to the occasion and the civil department of IIT Bombay. During this get together, the students share their experiences academic as well as non -academic, create memories, participate in some fun activities and take back a handful of memorable experiences.

#### Core talks:

It is a series of online interactive sessions between the alumni and the students. As the name suggests, the talk aimed at giving the students insights on career opportunities in the core industry and the scope of higher studies in their parent department.

### Sports Weekend:

This event was organized at the beginning of the spring semester. The sports weekend includes tournaments in various sports like chess, Counter-Strike: Global Offensive, Valorant, Call Of Duty Mobile, Scribble and Among Us. This weekend is eagerly awaited by sports enthusiasts. Not only this, but the department staff also participates in the tournaments, playing alongside the students. At the end of the sports weekend, the winners are honored with certificates.

### E-Valedictory Function:

For the first time in the history of the civil department, the very first E-valedictory function was organized in the month of August for the batch of 2020. This is a universal truth we all have to face, whether we want to or not, everything eventually ends, on this note it was one of the most overwhelming function of the annual year.

### Seminars, Workshops and Webinars:

CEA has been offering many in-depth, high quality seminars and talks each year covering a wide range of technical, management and career-oriented topics. These seminars include both formal and informal sessions being delivered by alumni, industry professionals, international faculties and research scholars. Along with this CEA also organizes software workshops covering all important aspects of software that are used in civil engineering.

#### Road Construction Technology:

Dr. Dhanesh Kumar, senior research manager at Indian Oil Corporation Limited R&D centre at Faridabad. He illustrated his ideas over the information of bitumen and bituminous products for flexible pavement in road construction. He also shared his views upon compositions, production, relevant specifications and performance evaluation along with Indian Oil's portfolio of binders.





## Aakaar

Aakaar, IIT Bombay is the annual technical festival of Department of Civil Engineering, IIT Bombay. Aakaar has been working as a great platform for the students across the country to showcase and enhance their skills at the highest level since its inception in 2009. Aakaar is now Asia's largest civil engineering festival. There are many competitions held in Aakaar such as Civil Engineering Symposium, Bridgelt, Conquerlt, Civil Engineering national exhibition, Smart Pitch which let the students compete and enhance their practical knowledge. As a part of knowledge sharing endeavour, many software workshops are conducted viz, Etabs, Autodesk Civil 3D, StaadPro, BIM, Revit etc. National level Civil Engineering Quiz is conducted every year named CiviQ. And many more fun events are a part of Aakaar which makes the learning a fun.

#### Envizn:

Architecture is more than just a building; it is capable of serving deeper functions. We are surrounded by Architecture around us, we walk through it, we live in it. The purpose of the Envizn is to generate design ideas for iconic high-rise buildings in cities around the globe. The competition focuses on outstanding ideas that redefine skyscraper design by implementing novel technologies, spatial organizations, materials, and aesthetics, along with studies on globalization, flexibility, adaptability, and the digital revolution. Anyone having BIM software knowledge, artistic skills, and architectural aptitude can participate in the competition. The designs are not required to be analyzed structurally. It is all about the creativity and design expertise, which this competition focuses on. You just need to select an intriguing theme and give shape to your imagination through the Skyscraper.

### Industrial design problem (IDP):

From primitive hutments of early years to sophisticated buildings of the modern era, the growth of the civil engineering industry has been phenomenal. The civil engineering industry deals with many challenges in day to day life that most common people are unaware of. And to bridge this gap and connect the budding civil engineers of the future to outside industrial affairs AAKAAR brings to you the IDP competition. The theme of the problem statement revolves around the sustainability of concrete. The competition will give you the experience of the real-world problems of the Civil engineering industry and make you brainstorm ideas, learn and explore the industry

#### CiviQ:

CiviQ is a series of online quizzes for civil engineering students. Here is an opportunity to learn, explore, and showcase your skills and competence in civil engineering. Be a part of this fantastic quiz series. The competition will be having quizzes consisting of

logical and aptitude questions with the significant domain of civil engineering. Quizzes will be conducted twice a month, and marks of all being cumulatively added to incentivize top scorers with a prize pool of 30k. There are around six quizzes lined up; the more number of quizzes you give, the more your chances to be on top.

#### Symposium:

It is a forum for young and promising students enthusiastic in research to present their work in front of the most experienced professors of the country, civil engineering leaders, industrialists and the best civil engineering students. Aakaar's Symposium is one of the largest of its kind in the entire country in terms of participation and it showcases excellent student research papers and presentations. It involves professionals in civil engineering domain as its audience. Symposium targets to take research and civil engineering to a whole new level.

#### CiviPix:

This year, Aakaar launched the first ever event of CiviPix. In this event, candidates had to click an image relevant to the theme from the nearby vicinity and attach a write up explaining the activities in the image that appreciated the aspects of the civil engineering involved in it. The theme adopted in the year were construction site, architectural monuments. The prize pool was over 30K.

#### Smart-pitch competition:

Society for Innovation and Entrepreneurship (SINE) is a leading Technology Business Incubator (TBI) hosted by IIT Bombay (IITB). SINE has pioneered incubation efforts in academic institutions in India and offers Start-to-End support to innovators and entrepreneurs. Since its inception, SINE has catered to 170+ Startups and 550+ Entrepreneurs. AAKAAR, IIT Bombay in association with Society for Innovation and Entrepreneurship (SINE) brings to you Pitch competition, a platform providing all the startups an opportunity to pitch their idea to an esteemed panel of investors and SINE mentors. Smart Pitch is a competition which provides great opportunity for startups in the field of Civil Engineering. To register for the competition, a team has to send a presentation based on their idea. The idea should be based on the given theme. Shortlisting is done from the presentations the teams have sent. The themes followed were tackling transport, real estate and financial management, construction management and infrastructure, water resource management, soil management and disaster management.

### Workshops:

Workshop is the right platform to connect theoretical knowledge to practical knowledge. Through workshops, leading professional softwares being used in the field of construction are introduced. Gaining knowledge about these softwares from some of the best experts in the field will definitely help in delving deeper into the subject. It also provides a chance to interact with people sharing the same interests and to clarify doubts from the professionals. The workshops conducted this year were Staad Pro, Revit, Fusion 360, Civil 3D and Infraworks.







### Tall Building Design Workshop:

This workshop was being conducted over a span of two days to put an end to the curiosity of the students and let them know the reality about how the tall buildings are actually designed. Here, Aakaar worked in association with the Entrench Electronics over the smooth conduction of its first-ever online workshop on E-Tabs. It included contents as introduction to E-Tabs (like software algorithm, E-Tabs manual, sample models and templates, etc.), modelling process and techniques (like geometry creation process, Modelling through import method 2D import, 3D import other import techniques, etc.), analysis process and techniques (like static and dynamic analysis, second order p-delta analysis, etc.) and design methods and technicality (like design of columns and beams, design methodology, etc.).

## Road to automobile safety with AI and computer vision webinar:

Autonomous vehicles are the future of road safety. To avoid human errors, to prevent accidents, artificial intelligence and computer vision will be the key players in the field. Aakaar hosted Mr. Nisarg Pandya, founder CEO of DrivebuddyAI, a startup, developing an intelligent driver safety system, built to prevent collisions and reduce distracted driving.

### Highlights of Aakaar 2021:

- Road Safety Awareness Month Campaign
- First InfraTech Business Summit
- Envizn 2021
- Industrial Design Problem by JSW
- InfraBharat Lecture Series
- 30+ Events
- 1 Lakh + Reach
- 1200+ Colleges
- Prize Pool worth INR 2.5 Lakh+

#### Eminent Guests:

- 1. Dr. Kumar V Pratap, Senior Economic Advisor to Government of India,. Former (Joint Secretary, UT), Ministry of Home Affairs, Government of India.
- 2. Ashwini Thorat, Head of Design and Planning, Noida International Airport.
- 3. Dr. Pralhad Pawar, CTO, Tata Projects.
- 4. Mr. Subrata Dutta, Project Director (PD), Motera Stadium, L&T Construction.
- 5. Mr. Sandeep Sharma, Head of Planning, Rohtang Tunnel Project.
- 6. Mr. Piyush Tewari, Founder & CEO of SaveLIFE Foundation.
- 7. Sunil MK, Country Manager, AEC Segment, Autodesk India & SAARC.
- 8. Mr. Arun Kumar Radhakrishnan, global education manager of Bentley Education.
- 9. Dr. V Ramchandra, Joint President & Head (Tech), UltraTech Cement.
- 10. Mr. Kishore Desai, Principal, Strategic Initiatives and Policy Advisory, NIIF.

## EERI IIT BOMBAY STUDENT CHAPTER

Student Chapter
established in
March'21. It aims to
promote the study,
practise and research
in earthquake
engineering and related
fields.

EERI (Earthquake
Engineering Research
Institute) is an
international organization
that connects
multidisciplinary
professionals dedicated to
advancing earthquake
resilience.



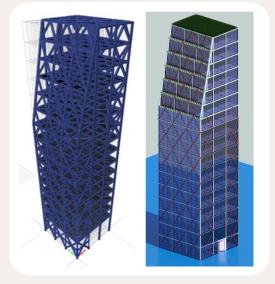
### All about us !!!



This chapter aims to promote promote study, practice and research in earthquake engineering and related fiels. Throughout the year, chapter will organize various talks of professionals as well as prominent researchers in the field of earthquake engineering. Various workshops based on student's intersts will also be organized. Chapter will provide a global platform for students to participate in several EERI competitions such as SDC & activites Chapter will also conduct outreach activites in nearby schools and organizations to enhance awareness about earthquake hazards. Stay tuned and join us for shaking experience!!

#### Seismic Design Competition (SDC)

EERI Student Chapter at IIT Bombay participated in its first ever undergraduate seismic design competition (SDC), which is an international competition that provides students with an opportunity to design and construct an earthquake resistant and cost effective complex tall building structure. Competition involved multiple deliverables in seismology, geotechnical engineering, structural analysis, design and retrofit, architecture and sustainability (LEED certification) aspects of a hospital building that need expansion vertically due to increase in demand of beds in COVID-19 pandemic.With an enthusiastic team of 11 UGs mentored by graduate students participated in this international competition which had a total of 37 teams from 10 countries. Among the 7 awards in the competition, the IIT Bombay team received the "Charles Richter Award for the Spirit of the Competition". This award is given to the team that best exemplifies the spirit of the competition.



Glimpse of SDC





Team effort in unprecedented time

#### **OUR ADVISORS**



Prof. Meera Raghunandan Faculty Advisor



Dr. Vipul Ahuja Industry Person EERI IITB

#### **OFFICE HOLDERS**



Satwik Rayjada President



Radhika Pajgade Vice President



Kaustav Sengupta Secretary



Raj Kabrawala Treasurer



Aditya Sharma . Webmaster



Sudhir Pratap Singh Event Coordinator



**Mohit Tak** Event Coordinator



Ritik Dhalwani SDC Coordinator



Chetan Kumar SDC Coordinator



**Ashutosh Patel** SDC Coordinator



Sahitya Event Coordinator



Mitali Badwe Media Manager



Saurabh Kumar Mahra

#### **SDC TEAM 2021**



Mohamed Fasil



Ritik Dhalwani



B .Priyanka



Kaligandla Chandana Sahitya



Mitali Badwe



Saurabh Kumar Mahra



Yashwant Babu Gaddipati



Bhawna Kumari







**Chetan Kumar** 

#### Contact Us

**EERI IIT Bombay Student Chapter** Indian Institute of Technology Bombay Powai, Mumbai -400076 Maharashtra, India Email: eeri.iitb@gmail.com

Website: https://eeriiitb.wixsite.com/eeri-iitb





# VIEWS BY FRESHERS



#### Alakh Agrawal Title- Mistakes done, lessons learnt

Excited to be into this majestic world of IIT Bombay, I started my college journey with a lot of hope, hope to meet new people, learn new things, and most importantly, be a part of something greater than myself. The first semester was quick to pass by; most of the time passed by getting accustomed to this new regime, learning about the academic structure, clubs, tech teams, a wide variety of events, and infinite opportunities coming with them.

Even though I was among the group who were mostly 'online awkward, I managed to meet many people. As the second semester came into the picture, I was thrilled to be behind the scenes for these riveting events. Applying for club-convener ship and techteams, I moved forward and thankfully got the opportunities. I am glad that I learned many new things in my freshie year but simultaneously sad that I wasted a lot of time not striving for more. Academics were, of course, neglected a lot during this whole process, mostly due to me not working extra hard to focus on dull online lectures and partly because it seemed less important at the time.

Still, as they say, "Life is all about Second Chances."

#### Pavitra Meena

#### Title- Online semester in IITB

The transition from in-person learning to a virtual environment can be difficult to accept but what I am grateful for is being able to stay connected and have access to continue my education through technology. Remembering that not everyone has access to reliable Wi-Fi, or the technological equipment or platforms that online learning requires—has made me realize how important it is to still utilize my time learning, even if it is not in the way I imagined or planned.

According to the academic perspective, life in an online semester was not much different as the academic flow was maintained throughout the year. The professors were always there for doubt solving. Other queries and the TAs were beneficial and supportive; even if we had missed something, they would be there to help us out; the education system here is very well maintained, smooth, easy-going and helpful for students. But yeah, it affected everyone's social life like making friends and hanging out with them, and other fun activities that many students couldn't do due to ongoing pandemic and restraints in their house due to which many of us missed our precious first year sitting in their home doing nothing much.

Also the online events weren't bad, everyone tried their best to make us feel the feels of Insti at our home in a virtual environment like the online mood indigo event was

successfully conducted and was fun attending with friends along with VC at your home even the competitions were successfully arranged amidst the pandemic which indeed was really a hard task and inconceivable one like freshiesta, showstopper, institute chess league, freshie la vista and many more.

#### Pranav Singla Title- Insti culture

The demand for IITs and other good colleges is not only due to the quality of education. Instead, it's skewed towards the opportunities and culture the institution offers. Being a student most of our life, only after stepping into college, we get our first taste of true freedom and opportunity to develop our interests. Here at IIT Bombay, we have the design club for exploring one's creativity, electronics and robotics club for tech-enthusiasts, web and coding club for coding, DevCom for web development, Roots club for learning more about our culture and different languages, Symphony club for learning music and many other cult clubs like the literati and debate club. All of this, to explore whatever we want to, to acquire whatever skills we want to.

However, due to the pandemic, we feared that we might miss out on the most happening and fun year of our college life. Whether it's our first Techfest or the Mood Indigo, or various club activities, everything was uncertain. But it was the resilience of the IITB junta that made it happen so that our first year was also full of excitement and fun. The events that we enjoy with each other, the skills we learn from each other, and the new friendships we make are what college life and its culture are all about. This online year may have taken away the mischiefs we would have done with our wingies, but then again, it has made listening to our seniors' anecdotes all the more thrilling. Albeit there were some missed events and activities, I'm sure we will get to enjoy them when we all meet at the campus. After all, it might be stormy now, but rain doesn't last forever. Also, the online events weren't bad, and everyone tried their best to make us feel the feels of Insti at our home in a virtual environment; the online mood indigo event was successfully conducted and was fun attending with friends along with VC at your home even the competitions were successfully arranged amidst the pandemic which indeed was a challenging task and inconceivable ones like freshiesta, showstopper, institute chess league, freshie la vista and many more.

#### Prashant

#### Title- Comparison between two phases of life

After a challenging study of 2-3 years, we got a chance to enter college life. We all desire to do all such things that we had not done in our preparation days. We all have a feeling of lockup during JEE journey, and in college, we have got a lot of freedom. Most of us are going through a physical change like the transformation from teen to youth life.

We'd thought of many things to do in college and explore various fields like sports, culture, and dramatics. We cannot limit ourselves to academics only, as college life allows you to explore multiple areas. These things led to make good friends and relationships. Doing parties and night-outs are common during college days. Here, you get friends who make your college family. Dealing with roommate conflict can be an essential lesson, and moving out is a hassle. Many of us have favorite subjects as mathematics and physics during our school days, but it changes after some time with engineering physics and advanced maths.

Thus, the new phase completely differs from the one we lived in.

#### Ravi Agarwal

#### Title- IIT Bombay: A journey from JEE

Remember those JEE days, IIT Bombay was a dream for almost all of the students. The day when our results were announced, we were very happy and were feeling proud to be students of IIT Bombay. Entering college with huge confidence and excitement to be an IITian was almost finished on the very first day of my college life. I felt that I was in the crowd of excellence. I saw extremely talented and excellent people in every field. I thought that the actual race starts here. Race means competition in every field of life from dance to any POR, essay writing to filmmaking, academics to drama, there were masters in each field. Being a topper, I was completely disappointed in every arena from extracurricular activities to academics, the feeling I can't describe in words. But being part of a race that was full of competitors was also a very good learning experience for me. I enjoyed being part of this race which is full of talented and enthusiastic people, the qualities I learned from them, enjoyed very much. I felt the legacy and excellence of the topper is also because of talented students.

#### Angoth Sai Vidhya Title- My roller coaster life

There's no denying the fact that life is full of ups and downs. This has been proven to us in the last year. None of us were really prepared for the dramatic shift in how we function as a society. I was a student worried about the online exams that were being postponed constantly. Being cooped up for the better part of 2020 wasn't the best for my mental health. Yet, I somehow knew that this was my chance to concentrate on things within my control. Eventually, my hard work paid off and I got into IIT-Bombay.

Classes commenced and I didn't even mind the fact that classes were online. After all it was the education that was important right? Or so I thought. At first, I did enjoy the classes wholeheartedly. But soon, I realised everything wasn't as black and white as I thought it'd be.

I made loads of friends and actively took part in a lot of college activities. However, this made me realise even more about all the things I was missing out on as a freshman. Again, this was incredibly hard for me to deal with.

A year later and things still haven't changed and I'm now accustomed to the online mode of education. Hopefully, all of us will go to the institute by next semester, till then sayonara.

"Après la pluie, le beau temps"

#### Srinika Reddy Title- Being an IITian

After receiving my JEE results, I was slightly upset because my rank didn't leave me with a lot of options. On one side were my friends who were like," I don't care about which IIT I get, I will go for CSE" and on the other side I had plans of going for some other Institutes like BITS, and that I'd also applied for some foreign universities.

Finally, it so happened that we ended up at IITB. No doubt, we were happy for having a finality to the chaos that had occupied our minds for some time, but also had traces of doubt regarding our choice. After all, every relative and friend (and some friends of friends and friends of friends of... you get it, right?) had had a chance to voice their opinion, and insert bits and pieces of doubt in our minds.

#### What next?

Well nothing, I just completed my first year of college sitting in my bedroom on a random Friday.

Sounds too sad?.. but it wasn't that bad, to be honest.

Apart from the fact that we missed the part of being in college (which is indeed a big thing), I don't find anything else to regret about. Seeing all the positive things, I was able to make many many good friends online. Late-night calls, virtual birthday parties, movie streaming, online gaming nights, and many more did cover up most of it. Various clubs have found out alternatives for various events and have conducted them online in a really good way.

Too optimistic huh?? well... I would have enjoyed dancing on stage for AIDS, spending the whole night for road painting, parties, trips, chance to organize the largest cultural fests, and many more and it's our bad luck that we missed them. But at this point, I just don't want to compare things. Nevertheless, online versions of all events were also quite memorable, and that there was nothing major that I wanted to but couldn't do (except for taking part in the singing club).

Seniors were super supportive throughout and I learned many things. Apart from social/cultural things... something more important (probably), not probably

..it's important... academics.

Study for two years, and once u get into an IIT, no need to study anymore!!

#### Sounds familiar??

Well, that's wrong, you need to study. Definitely, not as much as you studied for JEE, it's way less comparatively. It's all about how you prioritize and manage your time for your academics and other activities.

One more thing that I understood is that, you are never tied to one department. There are a lot of options and choices available when it comes to deciding your courses, and thus you can continuously choose to experiment around and yet, pursue your passion simultaneously.

So yeah, that's all (soo much) I wanted to say. Hoping that the college reopens soon and that we get to experience actual college life.

#### Shyam

#### Title- IIT Bombay: A place to race

"Life is a race, if you don't run fast you'll be like broken egzzzz!"

These words Virus came into my breath as soon as I stepped into this online phase of IITB. I

came with a thought of leaving behind the race phase (the JEE phase) and thereby hoping life to turn into an interesting journey (of knowledge, of exploration, and most importantly of joy) rather than some kind of crazy rat race.

But we never know what life has in store for us, here at this college I found a crazy hustle and competition going on in every bit of walking. I saw a sort of strife in the smallest of things – be it the weekly events or even a WA group chat, everything seemed a sort of competition (maybe it's a game of perspective, but yaa..)

But yes, a competitive environment does bring with it - a finer place for betterment, and one should surely get benefited rather than feeling dumped off in a crowd, keeping in mind that "Some races are not meant for winning, it's more about what you gain in the process", and one thing that I am very sure about is that - IITB provides a hell of a lot of opportunities to the one who strife for it. I explored and enjoyed a bunch of things, particularly in the cult, and of course, I need to iterate that the cult clubs of IITB are very well organized and provide great opportunities in literally any field you admire, a bit of enthu is all you need. And the same goes with the tech clubs and the other student bodies,

which are always highly devoted to imparting plenty of knowledge and services (in terms of student support sessions by UGAC).

Eventually, in this little journey, I realized that – "Yes life is a race, but you need not run too fast, all you need is persistence, self-belief, and a pinch of joy along the racetrack". And yes a lot is yet to be experienced, to be explored (hopefully offline) .....

# Sreetam Tripathy Title- Feeling lost in the crowd

And here I was, at IIT Bombay.
What was the first thing I felt?
Happy that I got a seat here? Sad that I was still at home?
Angry because COVID happened? Excited about my college life ahead?

No. None of that.

The first thing I remember feeling was being confused. I had gone through the motions to clear JEE, because that's what everyone was doing, and because I didn't have anything better to do. But now I was being given the luxury of choice, the freedom to do what I want, and endless things to explore. And that left me confused.

Because simply put, I had never really made decisions for myself. And that's okay. I am nowhere, and I can now learn to do so. So that's where I started, making one decision at a time. One needs to prioritize pretty soon between the endless club events, ATMs, VCs, and of course lectures and assignments.

To find the balance is difficult, but I keep trying... and failing. And that's okay, too.



# CONCLAVE WITH PREVIOUS COUNCIL MEMBERS



## Harshvardhan Tidke

CEA Secretary (2020-21)

CEA General Secretary (2021-22)

Work experience- I've been part of CEA council for 2 consecutive years now and it has been 2 great years. One striking thing about CEA council work is the stark flexibility it provides and this has provided me with a lot of opportunities to grow. While our tenure was entirely online, we at CEA council



managed to do remarkable things. We pulled off CIVI-FEST for the first time, conducted inter department gaming tournaments and a lot of department VCs. As a CEA General Secretary, I've seen remarkable work and potential in the current council as well. It's been just 3 months and we've managed to do lot of good things like Hasta La vista series of events for the graduating batch, inter-department gaming night etc. I'll also like to mention we've developed great bonding over the time and that's something rare.

**Hurdles faced-** There is this cliché sentence I say 'the only hurdle you face while working in the CEA family is your own imagination'. The amount of freedom any responsibility holder has in the council is simply great and anything that can be done. I didn't really face a lot of hurdles maybe that's partly due to the online nature of my tenure(s).

**Expectations vs. reality-** I was really serious about PORs at first but we have extremely friendly environment at CEA. To be very honest it was more than I could've ever hoped for. The seniors not only help out with the work stuff, they also help you with all the other issues you might face as a student. It's great to actually interact with lot of people and to learn a lot in the process.

#### New initiatives-

- 1. Hasta La vista series of events for graduating batch (completed)
- 2. CEA website
- a. Linking of all registration process of events through CEA website
- b. Displaying exam timetables on CEA website
- 3. POR information session( completed in informal way)
- 4. Revival of Instagram page of CEA

One word to describe the responsibilities and dedication required for the post-Interesting!

**Message for juniors applying for this particular post**- Go for it fellas. Lot of things to learn and a lot of bonds to make. Don't miss the opportunity.

#### Vivitsa Jain

Department Alumni Secretary (2020-21)

**Work Experience**- It was quite a unique experience for me due to the online nature of the semester. Though due to online sem, it gave me more exposure and chance to interact with the alumnis of this prestigious institute, not only from Mumbai but also from the various regions of our country.



**Motivation**- First of all, was the experience of working in a student body of IIT Bombay. Also, I wanted to establish a much more interactive and healthy relationship between students and alums. My own personal feelings played an important role in selecting it..

**Hurdles faced**- The online semester turned out to be boon and bane at the same time. I guess the communication decreased slightly a bit, otherwise all other objectives were really good.

**Expectations vs. reality**- My expectations were that the online semester would turn out to be much worse, it would increase screen and work time exponentially. But the reality hit me differently, the online semester went much more smoothly as expected and though the workload was quite manageable.

**New initiatives-** Starting of Alumni Student Mentorship Programme (ASMP), in accordance with SARC.

One word to describe the responsibilities and dedication required for the post- Don't procrastinate!

**Message for juniors applying for this particular post**- If you are enthusiastic about the student body, go for it. The satisfaction of working at this post would be really amazing.

#### Sarika Beniwal

Design Secretary (2020-21)

**Work experience**- I had a nice experience throughout my tenure. I learned a lot while working with such a nice team. I could improve not only my design skills but also soft skills.

**Motivation**- Interest in design and wish to work with the department closely.



**Hurdles faced-** Only hurdle was some short notice work during a busy schedule.

**Expectations vs. reality**- Earlier it seemed very challenging due to online nature but it wasn't that difficult and I learnt a great deal of experience.

One sentence to describe the responsibilities and dedication required for your post-One should be enthusiastic for the work and have good time management.

**Message for juniors applying for this particular post**- It's a nice opportunity to pursue your interest in design and learn more. And also to enhance your soft skills.

#### Samkit Mehta

CEA General Secretary (2020-21)

**Work experience-** I had a great experience working at this post. Because of the online mode, each event seemed new and different and that made the tenure challenging as well as interesting. Having a great team of secretaries and DGSec was icing on the cake for this tenure.



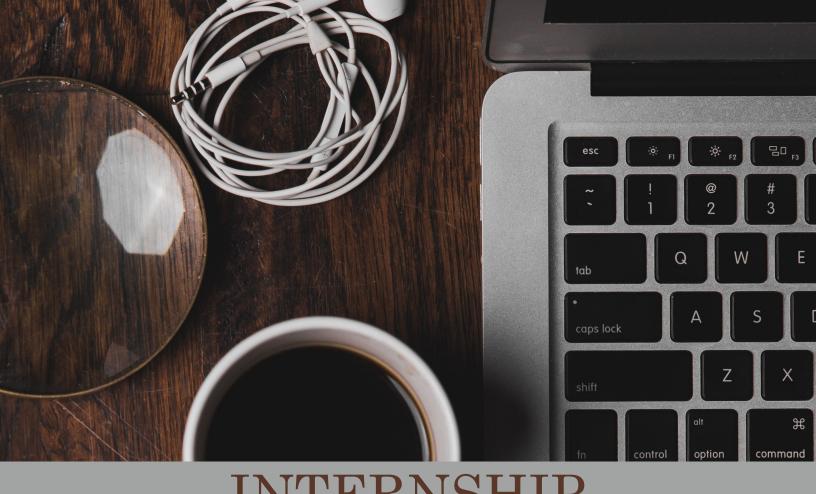
**Motivation**- I was part of CEA Council as I was the CR of S2 2nd year. So, I was able to see the work of the then CEA GSec and it motivated me. This was a post with great responsibility and would give me a chance to work for the department students. Also, the work was very dynamic and hence I found it very interesting.

**Hurdles faced**- The tenure was very challenging as it was the 1st ever online one. The purpose of CEA events is to initiate interaction between all the civil students, which was very difficult to have in online mode. Also most of the usual events like trip or kurta day were not possible due to the prevailing situation.

**Expectations vs. reality-** Well, reality was totally different in my case as the whole tenure went online which I had never ever expected. Also, certainly reality will be different, you will face challenges which you never expected, you are accountable for a lot of things, but all these eventually lead to a good tenure and help in your development.

New initiatives- Well the entire tenure being online was a new initiative. We launched Civi-Fest- consisting of Traditional day Photoshoot Challenge, Crypt Hunts and e-sports. We also had a gaming weekend in collaboration with other departments. Valedictory Function was done in online mode, where we also collaborated with Comedy Cons for Stand Up acts. Junior-senior interaction was promoted through video calls.

**Message for juniors applying for this particular post**- Be enthusiastic and and motivated to work for the department.



# INTERNSHIP EXPERIENCES



Name - Sadaksh

**Type of Internship** - Non- Core

Name of the Institution - Axxela Advisory Services

**Internship Experience** - So, Axxela is a trading firm, and anyone who wants to learn trading and maybe pursue it as a career, this is one of the places to be. The overall experience was nice, the managers and staff were helpful at all times.

Name - Joshitha Tottala

Type of Internship - Core

Name of the Institution - TRANSyT (Transport Research Centre), Polytechnic University of Madrid

**Internship Experience** - My internship was basically a University Intern in Madrid. I did my research on the topic "Impacts of covid on mobility trends in different cities." It was an excellent experience as I got the opportunity to do it in person. The professor I was working with was very helpful and guided me throughout my internship. I got excellent international exposure and met a lot of people from different countries. After doing the internship, I realized how excited and fascinated I am to do research in transportation.

**Message To Juniors** - Always try out different things and see what excites you the most. Never let peer pressure overtake you in making your decisions. Whatever you do, try to give your full shot.

Name - Ritvik Sharma.

**Type of Internship** - Non- Core

Name of the Institution - Aditya Birla Group

**Internship Experience** - I have been working as an Research and Marketing Intern in Aditya Birla Groups(Grasim Industries), so far my experience is so good, it is WFH intern, helping environment and I learnt a lot.

Message to Juniors - Always be confident, be responsible and ready to do more work.

Name - B Priyanka

Type of Internship - Core

Name of the Institution - CDRI (Coalition for Disaster Resilient Infrastructure)

**Internship Experience** - I cannot say that I could ever have a much better experience than this internship. While the internship was decided to be conducted in an online mode, but the organization took up a call to bring the 4 interns for a 2 week experience at the office. I would like to thank the internship coordinators and Prof Ravi Sinha for bringing out this opportunity, and also the team of CDRI. We on boarded the train and the next day I reached the hostel, the arrangements were fantastic. The most important thing I loved was the work culture, my co-interns (now one of my best friends group) and the most important my mentor.

The 2 weeks flew away without any notice and became one of the best experience I could have in this covid scenario. My efficiency shot up while being in the office. I learned more about the organization being there and also have completed a significant amount of work in just 2 weeks. That's all till I am writing this message. Now I am back to home with the energy and continuing the work in an online mode.

**Message to Juniors** - If you have a passion in something be sure about it and take the shot. Don't miss any opportunity related to the stream that you like. Plan ahead and work accordingly. And give the best in your work.

Name - Swaraj Goyal

Type of Internship - Non- Core

Name of the Institution - Fullerton India Credit Co. Ltd.

**Internship Experience** - It was a great experience for me as the role was for financial data analytics and I got to learn new things and practical applications of various softwares and algorithms that we just read. My mentor was really nice and helped me gain a lot of knowledge about the field. So overall I had a great learning experience in Fullerton.

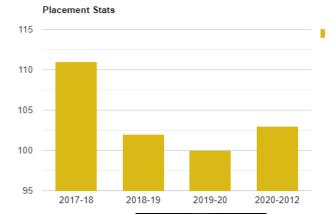
**Message to Juniors** - Focus on practical skills rather than just doing something for the sake of completing it. Starting somewhere is always better than not even trying. Some of you might feel that others are ahead of you, but don't worry about it, just keep doing your part. Just start and find the right option that suits you.

## Placement Stats

#### Number of job offers:

**2017-18:** 111 **2018-19:** 102 **2019-20:** 100 **2020-21:** 103

Firms/ corporations involved:

















walter p moore



## Words by graduating students

#### Shantanu Chhaparia

**Best experience in the institute**: Went go-karting during the institute fest.

Best year experienced: 2nd year, because of hostel life, sports and friends.

**Message to juniors**: Try to withdraw as much tension as possible and live your life to the fullest.

#### Kushagra Mundra

**Best year experienced**: 2nd year because of personal skill development, and it also gave a direction towards the goal of my life.

One change you would have done if you were freshie: Focused more on my academics. Message to juniors: Give yourself a try in extra-curricular activities. Socialize as much as possible with seniors, batchmates and others.

#### Pranav Deo

**Best year experienced**: 2nd year because of exploration of the essential skills for my goals. **One change you would have done if you were freshie**: Would have taken NSO.

**Message to juniors**: Try to keep your cpi up to the mark from the beginning. Keep yourself involved in other activities like clubs, sports, etc.

#### Avi Jain

Best year experienced: 2nd year because I participated in the dance.

One change you would have done if you were freshie: Worked more for academics.

**Message to juniors**: Explore the world of the institute like sports, culture and tech. Try to keep a decent cpi from the starting itself. Socialize and make new friends make memorable moments.

#### **Aashish Tiwari**

Best year experienced: 1st year because of friends. Also explored new stuff.

One change you would have done if you were freshie: Would have gone for NSO instead of NSS and focused more on academics.

Message to juniors: Involve yourself in different activities for personal development.

#### Harshit Jain

**Aspiration**: To become a young entrepreneur.

**Happiest moment and funniest moment**: Happiest moment to enjoy Campus Life of IIT Bombay with enthusiastic students enjoying funny trips with CEA.

Message to juniors: Enjoy campus life and activities. However, Covid has halted your campus life. But don't worry, you will see Normal life on Campus. The only message is to Chase your Dreams, Passion & Interest. Work hard to achieve what you want in your life.

## Artworks





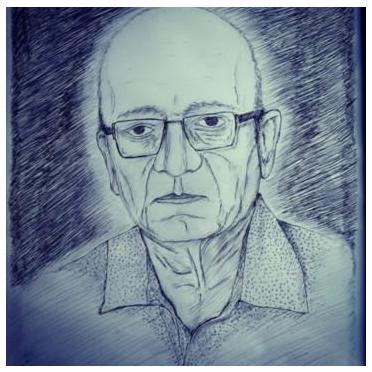


Rishika Rai

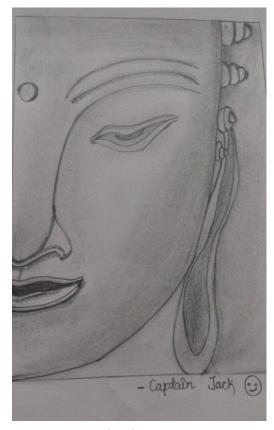








Kaustav Sengupta



Jagdish Dangi



Sai Vidya

## Batch of 2021

## B.Tech

- 1. Ingle Akshay Sarjerao
- 2. Akshita
- 3. Ameya Shankar Kulkarni
- 4. Soni Vivek
- 5. Kanishk Sunil Jadhav
- 6. Jay Nalin Thakkar
- 7. Laher Mahesh Gada
- 8. Yatin Sharma
- 9. Deo Pranav Sunil
- 10. Ravi Balkisan Bhusari
- 11. Akhilesh Nitish Katkar
- 12. Omkar Sharad Nikam
- 13. Mehul Bhupendra Parmar
- 14. (Ms) Neha Ramkrishna Tale
- 15. Akash Krushna Khonde
- 16. Ram Pramod Boob
- 17. Anuj Kirtikumar Jain
- 18. (Ms) Komal Kundlik Gaware
- 19. Kuldeep Singh Nareda
- 20. Avi Jain
- 21. Divyansh Meena
- 22. Rahul Meena
- 23. Divyansh Mittal
- 24. Abhishek Kumar Kholwal
- 25. (Ms) Aastha Bhutani
- 26. Yash Agrawal
- 27. Arpit Malhotra
- 28. Aishit Dharwal
- 29. (Ms) Saumya Birla
- 30. Abhay Kumar
- 31. Rajat Sehara
- 32. Sumit Patel
- 33. Ankit Kumar
- 34. Tanmay Goyal
- 35. Kushagra Mundra
- 36. Nand Lal Chaudhary
- 37. Kavin Agrawal
- 38. Kaushik Padua

- 39. Sajal Choudhary
- 40. Pradeep Seervi
- 41. Adarsh Kumawat
- 42. Manish Kumar
- 43. Sonu
- 44. Shyopal Kumawat
- 45. Sunil Kumar Chawla
- 46. Rakesh Kumar Meena
- 47. Manan Sharma
- 48. Manas Jain
- 49. Prateek Khichi
- 50. Arpan Jain
- 51. Manish Kumar
- 52. Saurav Kumar
- 53. Aakarsh Shrivastava
- 54. Kartik Chowda
- 55. Vibhav Bhargava
- 56. Amey Sharma
- 57. Anshuman Malliwal
- 58. Prateek Yadav
- 59. Aditya Shah
- 60. Siddhant Kurmi
- 61. (Ms) Poornima Dongre
- 62. Yash Mishra
- 63. Ankit Singh
- 64. Saurabh Kumar Tripathi
- 65. Shubham Singh
- 66. Prabhat Singh
- 67. Shivam Jaiswal
- 68. Matcha Sai Sathwik
- 69. Peddinti Priyatham
- 70. Patina Sriharsha
- 71. Shubham Soni
- 72. Rohit Kumar Chaudhary
- 73. (Ms) Mahima Sethi
- 74. Aniket Mondal
- 75. Tamoghno Pramanik
- 76. V A Adithya Upadhyaya

# Batch of 2021 B.Tech

- 77. Shashanka Katta
- 78. Mohamed Fasil C
- 79. Tiwari Aashish Rajkumar
- 80. Pankaj Gupta
- 81. (Ms) Anugya Singh
- 82. Prajanya Agarwal
- 83. Vijay Pratap Singh
- 84. Amlan Mishra
- 85. Akshat Johri

## Batch of 2021

## M.Tech

- 1. Kunal Mallik
- 2. Irfan Taher Goriawala
- 3. Guntu Venkata Sai Teja
- 4. Manem Pruthvij
- 5. Jaikrishna Padhy
- 6. Sagar Verma
- 7. Nischay Yashwant Nagrale
- 8. Engidaw Getahun Negani
- 9. Santosh Gunaji Narvekar
- 10. Harshit Jain
- 11. Ajay Singh Mahadela
- 12. Rituparna Chatterjee
- 13. Mitra Pradeep
- 14. Resmi M
- 15. Gaurav Yadav
- 16. Famy S. Maheen
- 17. Lovinder Singh Mann
- 18. Vikram Singh
- 19. Sruthi S
- 20. Somaiya Priyen Sureshkumar
- 21. Sarath S
- 22. Akhila Padmajan
- 23. Naveen R.
- 24. Goparaj Vamshi Krishna
- 25. Anurag Pal
- 26. Likith M
- 27. Anushriya Jain
- 28. Divya Catherin Sebastian
- 29. Ajay Kumar
- 30. Kashish More
- 31. Manish Kumar Mishra
- 32. Vidit Kumar
- 33. Prasanna Basappa Hannur
- 34. Siddhant Sharma
- 35. Kalikota Vikas
- 36. Thodeti Anil
- 37. Patel Jainish Maheshbhai
- 38. Pujari Vaibhav Vidyadhar

- 39. Rahul Gupta
- 40. Battu Eshwar Sai
- 41. Anil Kumar
- 42. Rabin Shah
- 43. Vishal Wilson
- 44. Arthana Balakrishnan
- 45. Akhil Johnson K.
- 46. Melna Jose
- 47. Shanaraj V K
- 48. Athul P
- 49. Dhore Rutuja Avinash
- 50. Buddhadev Jay Dharmeshbhai
- 51. C Hemanth Kumar
- 52. Sakhare Ashwin Rajendra
- 53. Mohit Tyagi
- 54. Vaishnavi Anand Koli
- 55. Jitendra Singh
- 56. Vinita Mehar
- 57. Moti Chavan
- 58. Reema Roy
- 59. Vora Anav Milind
- 60. Salil Raj Aryal
- 61. Ashish Kumar
- 62. Kshitij Sanjeev Baloothiya
- 63. Devendra Sanwariya
- 64. Lokhandwala Abdulmuttalib Murtuza
- 65. Mohamad Urooj Malik
- 66. Pallab Das
- 67. Gourav Tanwar
- 68. Krishna Pratap Sah

# Batch of 2021 Dual Degree

- 1. Kirtesh Ajay Gadiya
- 2. Talele Kaustubh Ajay
- 3. Barkale Shubham Uttamrao
- 4. Kanthale Onkar Bhagwat
- 5. Wagh Tanay Paresh

## PhD

- 1. Nair Akhilesh Sivaraman
- 2. Bharat Kumar Pathiyada
- 3. Arif Mohammad
- 4. Swati Sirsant
- 5. Bithin Ghorai
- 6. Ashish Kumar
- 7. Ankit Kumar Yadav
- 8. Vanama Raghava Kumar
- 9. Nawghare Sariput Madhavrao
- 10. Patil Richa Tatoba
- 11. Kirti Mahajan
- 12. Panchereddi Bhaskara Rao
- 13. Vivek Francis
- 14. Rohit Mangla
- 15. Aditya Gupta
- 16. Patare Swapnil Abasaheb
- 17. Ganaraj K
- 18. George Tharakan Idiculla
- 19. Shibayan Biswas
- 20. Remya K P
- 21. Amol Mali

## MS by Research

1. Beas Barik

