

Message from the Editorial Team

Introducing the fifth edition of "Civil Insights", from the Civil Engineering Association (CEA), Department of Civil Engineering, IIT Bombay. The department holds significant importance as one of the founding departments of the Institute and has international recognition. Within the following pages, we offer a glimpse into the department, aiming to provide a concise overview for all readers interested in knowing more about it. The magazine showcases major events and activities that occurred during the academic year 2022-2023. Our heartfelt gratitude goes out to all the faculty, staff, and students who generously contributed their time and efforts to this magazine. Special thanks to the Head of the Department Prof. Deepankar Choudhury and the CEA faculty advisors, Prof. Swathy Manohar, Prof. Srineash V K and Prof. Eswar Rajasekaran for their invaluable suggestions. We hope this magazine caters to a wide range of readers. While we have done our best to ensure error-free content, we apologize in advance for any inadvertent errors that readers may come across. Our goal of publishing this magazine is to serve as a cherished memory for the graduating class, bidding them farewell during the Institute's 61st Convocation. To the class of 2023, we extend our best wishes for success in all their future endeavors.



τ
7

1. Message from the HoD	01
2. Department Faculty	03
3.Civil Department Awards	07
4. Alumni Contributions	09
5.Research Articles	11
6.Civil Engineering Association (CEA)	20
7. Aakaar	27
8.EERI IITB Students Chapter	35
9. Team Shunya	40
10. Internship Experiences	42
11. Words by Graduating Students	50
12. Placement Stats	53
13.Batch of 2023	54
14. Artworks	55
15.Gallery	57

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.

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

Message from the HoD



Prof. Deepankar Choudhury Head of Civil Engineering Department, IIT Bombay Geotechnical Engineering

Hearty Welcome to the Department of Civil Engineering of IIT Bombay!! The Department of civil engineering has been one of the founding Departments of IIT Bombay since 1958. Over the years, it has grown tremendously and is now recognized as one of the country's best and major Engineering departments and ranked highly in the world for Civil Engineering. With its multifaceted faculty (52 regular Faculty, 1 Emeritus Fellow and additionally 3 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 Students.

Among JEE (Advanced) qualified candidates who opt to join the undergraduate (UG) program (B.Tech. or DD), our department is one of the top 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 to the department. Our department received in 2023-24 over 160 applications from foreign students for PG (M.Tech. and PhD) programs, showing the high demand for our academic programs in India and other countries. Additionally, as per the recently signed MoU between IIT Bombay and SVNIT Surat, under the Early Induction Program, 5 final year UG Civil Engg. student of SVNIT joined UG Civil Engg. program at IIT Bombay.

The recent QS world ranking 2023 shows our department's world ranking between 51- 100, with all of India ranking 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 the world's top 2% of scientists/researchers in the domain, as per the recent Stanford University database. These are possible because of various contributions made by several of our former students. As the problems 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 on challenging engineering problems and provide efficient engineering solutions in the various sub-disciplines of Civil Engineering. The department has a strong focus on the research areas of Transportation Systems Engineering, Remote Sensing, and Construction Technology and Management.

The department has M.Tech. and PhD 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), DST, 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. Department generated the all-time highest revenue of more than 20% for the entire institute's revenue in this head in the F.Y. 2022-23 through the industry projects. This is one of the major contributions of the department to make an academic institute self-sustained financially.

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. Many of our Civil Engineering alumni have given back to the department by instituting merit awards, Chair Professor positions and various other contributions to their alma mater. Recently, Mr. Jayant Kanitkar (B.Tech./Civil Engg./1977) has generously donated for instituting the "Kanitkar Merit Awards" for toppers of 3rd-year and 4th-year B.Tech. Civil Engg. with an award amount of INR 2,50,000/- each. Another alumnus Mr. Pankaj Jagtap (B.Tech./Civil Engg./1995), has started the "Anantrao Jagtap Chair" position for an outstanding faculty member who is working in the domain of Construction Management. Late Prof. R. S. Ayyar's family (elder daughter of Prof. Ayyar, Ms. Ranjini is an alumnus, B.Tech. Civil Engg.) donated two flats in Mumbai to the institute, from which one Chair Professor position in the department will be created and naming of the 1st-floor conference room in memory of late Prof. Ayyar will be initiated soon. Very recently, in memory of one of our beloved former UG students Mr. Manu Akula (B.Tech./Civil Engg./2008), whom we lost in recent times, a memorial award in the name of Manu has been instituted by his family and well-wishers for the toppers of Construction Technology/Management courses in UG. Towards social welfare, the department generously contributed a few desktop computers to the institute's common facility, IIT Hospital, for the upgradation of services provided by this essential unit IIT Hospital for students, staff and faculty members.

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 society and the nation.

Best wishes Prof. Deepankar Choudhury Head, Department of Civil Engineering, IIT Bombay



Prof. Deepankar Choudhury Geotechnical Engineering *hod@civil.iitb.ac.in*



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

Prof. Jangid R. S. Structural Engineering *rsjangid@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. Viswanadham B. V. S.

Geotechnical Engineering

viswam@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@iitb.ac.in





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



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

Prof. Subimal Ghosh Water Resources Engineering *subimal@civil.iitb.ac.in* Prof. Vedagiri Perumal Transportation Systems Engineering vedagiri@civil.iitb.ac.in

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





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



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

Prof. Bellie Sivakumar Water Resources Engineering b.sivakumar@civil.iitb.ac.in Prof. Nagendra Rao Velaga Transportation Systems Engineering

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

n.r.velaga@iitb.ac.in

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







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

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

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

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

Prof. Prakash Nanthagopalan Construction Technology And Management



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

prakashn@iitb.ac.in



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

Prof. Santiram Chatterjee Geotechnical Engineering schatterjee@iitb.ac.in



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



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



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



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



indusj@civil.iitb.ac.in



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





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



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

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

Prof. M. C. Deo Ocean Engineering *mcdeo@civil.iitb.ac.in*





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

Prof. Swathy Manohar Construction Technology And Management swathym@civil.iitb.ac.in





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

Prof. Solomon Debbarma Transportation Systems Engineering sdebbarma@civil.iitb.ac.in



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

Prof. Najeeb Shariff Mohammad Structural Engineering shariff@iitb.ac.in





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



Department Awards

The faculty members of department of civil engineering 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. Subimal Ghosh** has been named as one of the top 75 Scientists under age 50 year in India who are shaping today's India, as published by DST, Govt. of India.
- **Prof. Arpita Mondal** has been named as one of the top 75 women Scientists in STEM in India, as jointly published by British Council and PSA, Govt. of India.
- **Prof. D. N. Singh** received IACMAG Outstanding Contributions Medal 2022 from International Association for Computer Methods and Advances in Geomechanics (IACMAG), USA.
- **Prof. K. V. Krishna Rao** delivered 'Prof. N. R. Kamath Memorial Webinar' on 28/Sept/2022, organized by IITB.
- Prof. Arpita Mondal has been appointed as an "Associate Editor" of the journal Earth's Future of the American Geophysical Union (AGU).
- Prof. Raaj Ramasankaran has been invited to join the Editorial Board of the Journal Earth Science Informatics (ESIN), published by Springer Minutes of Special DFM (ARM-2022) on 01/10/2022, CE, IITB Page 3 of 7
- Professor S.P. Sukhatme Excellence in Teaching Award 2022 to Prof. Ravi Sinha.
- Departmental Awards for Excellence in Teaching 2022 to Prof. Prasenjit Basu and Prof. Dharamveer Singh.
- Prof. Prakash Nanthagopalan and PhD scholar Mr. Nabodyuti Das are selected for "NSG Counter-IED Innovation Awards-2022 for their outstanding contribution in joint innovation of "Blast, Ballistic & Electromagnetic-Pulse Resistant Concrete (BBERC)".
- Best Paper Award to **Prof. Avijit Maji** in TIPCE 2022, held recently at IIT Roorkee, for the research work carried out by former PhD scholar Dr. Tushar Choudhari under the supervision of Prof. Maji.
- Dr. Ashutosh Kumar, M.Tech.+PhD/Civil/2018 (supervisor Prof. Deepankar Choudhury), who an Assistant Professor at IIT Mandi, received "John Carter Award 2022 of IACMAG, USA" (Best PhD Thesis Award) given at 16th IACMAG at Italy.
- Dr. Giridhar Rajesh Bande, PhD/Civil/2019 (supervisor Prof. Deepankar Choudhury), who is currently an Assistant Professor at IIT Dharwad, received "IACMAG, USA Excellent Paper Award 2022" for their IJOG, ASCE journal paper.
- Dr. Shubhrajit Maitra, PhD/Civil/2020 (supervisors: Prof. Deepankar Choudhury and Prof. Santiram Chatterjee), joined University of Melbourne, Australia as a Lecturer in the Civil Engg. Department in Sept. 2022.

Department Awards

- Prof. Prakash Nanthagopalan and PhD scholar Mr. Nabodyuti Das were selected for "NSG Counter-IED Innovation Awards-2022" for their outstanding contribution in joint innovation of "Blast, Ballistic & Electromagnetic-Pulse Resistant Concrete (BBERC)". This award is given by the National Security Guard (NSG), Govt. of India.
- **Prof. Manish Kumar** received letter of appreciation for contribution made in the work under the Earthquake Engineering Selection Committee, CED 39 and in particular to the development of the new standard IS 1893 (Part 6): 2022 from the Bureau of Indian Standards (BIS), GoI, New Delhi.
- **Prof. Riddhi Singh** has been named to be featured in the 3rd Edition of "She Is", which will feature 21 women working in the water sector from India and Canada. The book will be released on Water Day, 22nd March 2023.
- **Prof. Riddhi Singh** has been appointed as new Co-editor to Hydrological Sciences Journal (HSJ), the official Journal of the IAHS.
- **Prof. Sauvik Banerjee** has been invited to join as a subject Editor in the editorial board of the Journal of Nondestructive Testing and Evaluation, Taylor and Francis, for a period of two years.
- **Prof. Dharamveer Singh** is appointed as Associate Editor of International Journal of Pavement Research and Technology (IJPRT), Springer
- **Prof. Jangid** has been re-appointed as a Technical Committee Member of High-Rise Committee for BMC w.e.f. 12.01.2023.
- **Prof. Deepankar Choudhury** has been appointed as a Technical Committee Member of High-Rise Committee for BMC w.e.f. 12.01.2023.
- Prof. Deepankar Choudhury has been appointed as the new Editor-in-Chief of Indian Geotechnical Journal (IGTJ), published by Springer, in association with Indian Geotechnical Society (IGS), New Delhi w.e.f. 12.02.2023.
- Research article of **Prof. R. Balaji**, **Akash Sahu** and **Satheeshkumar Jeyaraj** is published in IEI journal has been selected for "Marine Engineering Division Prize", this year. This is third such prize from Institution of Engineers (India, IEI) under the "Marine engineering" category.
- IGS-AIMIL Biennial Award 2022 was given to the paper titled "A New Subtraction-Type Miniature Cone Penetrometer" by Prof. Ashish Juneja and his student Mr. Rajendra Singh Bisht. This paper was published in Indian Geotechnical Journal, Vol. 50, Issue 4, August 2020 (pp. 550 559). It was adjudged as the best paper on "Instrumentation" published through Indian Geotechnical Society.
- Prof. Deepankar Choudhury and his PhD student Mr. Chaidul Haque Chaudhuri were given IGS– YGE Best Paper Biennial Award 2022 for their paper titled "Buried Pipeline Subjected to Seismic Landslide: A Simplified Analytical Solution" by and published in Journal of Soil Dynamics and Earthquake Engineering 134 (2020) 106155, April 2020 under the category of "Slope Stability and Landslides" by Indian Geotechnical Society, New Delhi.

Alumni Contributions

Kanitkar Merit Award

Aim of the Award: The department of civil engineering announces the Kanitkar Merit Award at the end of each academic year to motivate and promote healthy academic competition among UG students to carry out academic excellence in Civil Engineering.

About Mr. Jayant Kanitkar: Mr Jayant Kanitkar is the Financial and Tax Advisor at JayKan Company. He initiated the Kanitkar Merit Awards at IIT Bombay in 2021. He completed his B. Tech in Civil Engineering from IIT Bombay in the year 1977. He attained an MS from Vanderbilt University in Structural Engineering and further attained his MBA from the Northwestern University - Kellogg School of Management. He also worked as a Visiting Faculty at the Shailesh J. Mehta School of Management, IIT Bombay, during the Autumn Semester of 2008.

Recipient of Award in 2022: Institute student Bhuvan Aggarwal (Roll No. 190040026), has been awarded "Kanitkar Merit Awards - 2022" as the topper with CPI greater than 9.0 at the end of 3rd year of B.Tech. in the Department of Civil Engineering. The Awardee received award money of INR 250,000.00 and an additional INR 22,000.00 from the office of the Dean (Alumni and Corporate Relations), totalling INR 2.72 lakhs each, for their scholastic academic performance.

*If the topper does not meet the CPI threshold (above 9.0 out of 10), then the award will not be given in that year.

Dr. Manu Akula Memorial Award for Academic Excellence in CTaM

In memory of the Late **Dr. Manu Akula**, former Civil Engg. B.Tech. student at IIT Bombay of the class of 2008, his family, friends and wellwishers came forward with the "**Dr. Manu Akula Memorial Award for Academic Excellence in CTaM**" starting in the year 2023.

An award amount of **INR 50000/-** (Rupees fifty thousand) will be given to each of the two toppers of B.Tech. Civil Engg. program "**Construction Management**" who will be successfully credited and complete the elective course at the end of 4th year in the department.



In this connection, an MoU has been signed between IIT Bombay, IIT Bombay Heritage Foundation and Mr. Anirudh Akula, Dr. Ihab Ismail on 24th April 2023.

Prof. R. Subrahmonia Ayyar

IIT Bombay, together with the late Prof. R. Subrahmonia Ayyar's wife, Mrs. Parvathy Subrahmonia Ayyar, and, their daughters Mrs. Ranjani Saigal and Dr. Jayashree Subrahmonia, honored the legacy of Prof. Ayyar, former Head of the Department of Civil Engineering and former Dean (AP) of IITB, and a cherished member of IIT Bombay's extended family, by launching two special initiatives for Civil Engineering department:



- 1. Instituting a Chair Professorship in the Department of Civil Engineering.
- 2. To name the 1st floor Conference Room of Civil Eng. Dept. as Prof. R. S. Ayyar Conference Room

These are established through generous funding received from Prof. Ayyar's family, in his memory. The wife and daughters of late professor R. S. Ayyar, have donated 2 flats for betterment and development of the premier institute.

Civil Engineering department of IIT Bombay is extremely thankful to the family members of late Prof. R. S. Ayyar for their generous contributions for the department.

Anantrao Jagtap Chair for Construction Management

Aim of the Award

Mr. Pankaj Jagtap sponsored a chair professorship in memory of his late father Shri. Anantrao Jagtap, who was also a Civil Engineer and passionate about the field of Construction Management. The Chair Professorship will be called 'Anantrao Jagtap Chair for Construction Management'. The primary objective of the Chair Professorship is to attract young and talented faculty members from all over the world and provide them with a platform and financial support to build a world-class program in Construction Management with the eventual goal of making the Construction Management program at IIT Bombay preeminent in the country and internationally.

The Awardee

Should have strong recognition in providing extensive support for promoting Construction Management. Should have initiated academic programmes, streamlined already-existing programmes, and worked to perform academic activities that would be pertinent and in IIT Bombay's best interest. Should exercise technical and intellectual leadership in the area of construction management and seek to establish the department of civil engineering at IIT Bombay as the world's leading institution in the field.

Recipient of this Award

Prof. Venkata Santosh Kumar from Delhi has become the inaugural holder of the "Anantrao Jagtap Assistant Chair Professor" role, commencing on March 5, 2022, for a three-year term. He stands out as the sole Assistant Professor currently occupying a named Chair position within the institute. This appointment will facilitate the institute's junior researchers in pursuing exceptional research and advancements in the field of Construction Management, situated in the civil engineering department of IIT Bombay..



A SONG ABOUT RESEARCH

Listen to our story, listen, o, mate! A story about water and climate. Global warming caused by CO2, Reflecting outgoing radiation back to you. The temperatures are rising in the land and sea, The earth is a very hot place to be!

With mean temperatures soaring high, Heat waves are intensifying, my, oh, my! We look at models and observations To quantify such intensifications. We use many statistical concepts With a dash of physics on the same plate.

Heat waves are not the only science we do, We look at floods, and droughts, too. We define and characterise these extremities, Their IDF (intensity, duration, frequency) and seasonality. We try to find causes of changes in them,

D&A (detection and attribution) identifies what caused mayhem.

We analyse the data and report the facts, About these extremes and their impacts, We report the risks, and the uncertainties, Mixing hazard with exposure & vulnerability. Impossible is not the word in our dictionary, Under climate change, the world is 'non-stationary'.

We code in Python and in R. We make large datasets look less blurred. We make nice global and regional maps. Try to fill in knowledge in the gaps. Scientific publications are important, you see, We also get featured in BBC!





-Prof. Arpita Mondal

<u>A musical version of this song is available online at</u> <u>https://youtu.be/p3LmeSxZEkw</u>

Research Articles

<u>Preserving Heritage - Advancing Stone Conservation and</u> <u>Reviving Lime Mortar for Heritage Structure Restoration</u>

By Prof Swathy Manohar

Heritage structures embody the history and culture of a nation, standing as tangible witnesses to the passage of time. Among the various challenges these monuments face, the degradation of stone materials is a pressing concern. Our research endeavours to contribute to the vital field of conserving stones in heritage structures. The study primarily focuses on material characterization, diverse testing methodologies, and the application of effective conservation measures to ensure the lasting protection of these invaluable treasures. The first step in preserving historic stones is understanding their composition. The research involves in-depth material characterization to identify the type of stones used in heritage structures. Advanced analytical techniques such as X-ray diffraction, petrographic analysis, and scanning electron microscopy assist in determining the mineralogical and microstructural properties. Accurate material identification lays the foundation for targeted conservation efforts. Such knowledge is crucial for devising targeted conservation approaches and selecting appropriate treatments that harmonize with the original materials.

To gauge the extent of stone decay and to assess their mechanical properties, a range of testing procedures has to be employed. Non-destructive testing methods like ultrasonic pulse velocity provide insights into the internal condition of stones without causing harm. Meanwhile, destructive tests, such as compression tests has also to be conducted to evaluate the strength and durability of stones. These evaluations enable a comprehensive understanding of the material's state and aid in planning appropriate conservation strategies. With a thorough understanding of the stone's composition and condition, conservation measures can be implemented. The research mainly delves into the art and science of consolidating stones in heritage structures, employing innovative techniques to reinforce these invaluable links to our cultural heritage. Stone consolidation is a specialized process designed to enhance the structural stability and durability of weathered stones in historical edifices. The technique involves the application of compatible consolidants that penetrate the stone's matrix, binding loose particles and reinforcing the material. The choice of consolidants and application methods are crucial factors, as they must integrate seamlessly with the original stone and preserve its appearance and historical authenticity.

By harnessing innovative approaches and selecting compatible consolidants, our research aims to reinforce these architectural marvels for future generations.

The use of modern materials for the repair of heritage structures is observed to be damaging due to the incompatibility between the materials. Therefore, the introduction of ancient materials is necessary for the repair of heritage structures. Our research group also works on this area to address the issue. One of the major plaster and mortar material used in ancient structures are lime and the study tries to revive lime-based binders for repair. The slow setting and strength gain of lime mortar is responsible for the decline of its use in the modern era.

The research brings in additional materials (industrial residues/organics) to enhance the setting and carbonation properties of lime without altering the porosity of lime mortars. Additionally, lime is also observed to be a potential binder for CO2 mineralization which has not been explored. Modern construction materials such as cement are observed to release considerable amount of CO2 during manufacture and it is high time for the introduction of low carbon-based cements. The research attempts to explore the potential of lime with additives as a CO2 mineralizing material as well as a repair material for heritage structures. The optimization will be based on the mechanical properties and CO2 absorbing potential of binders. The developed binders with adequate strength will be chosen for manufacturing of blocks which can be carbon cured. The research aims to investigate the dual potential of lime, when combined with additives, both as a material for mineralizing CO2 and as a suitable substance for repairing heritage structures.



UNESCO World Heritage Sites fig (a) - Ellora Caves and fig(b) - Ajanta Caves



<u>Machine Learning-Based Reinforced Concrete Beam-Column Model Parameter</u> <u>Estimation and Uncertainty Quantification</u>

By Satwik Pankajkumar Rayjada, Prof. Meera Raghunandan, Prof. Jayadipta Ghosh

Developing appropriate numerical models for structural systems that can capture varied elastic and inelastic behavior under seismic loading is a shared goal for researchers, practicing engineers, policymakers and other stakeholders. The lumped plasticity beam-column model has been widely adopted for modeling the nonlinear response of reinforced concrete (RC) frame elements under earthquake shaking, owing to its simplicity and computational efficiency. In this approach, the nonlinear behavior is captured through inelastic flexural springs provided at the end of the elastic element, as shown in the figure. These springs have nonlinear backbone curves and hysteretic properties that can capture complex structural behavior.



Full Text: https://doi.org/10.1016/j.engstruct.2022.115111

At present, a prevalent approach for estimating backbone curve parameters for the spring includes linear regression-based semi-empirical equations developed following the calibration of experimental column test results with varying design details. Since the choice of modeling parameters affects the prediction of complex seismic behavior, an underlying assumption of static linear relationships may not be valid. Furthermore, experimental column test data is limited and typically sourced from multiple independent studies, reflecting significant heterogeneity prevailing in column properties. Consequently, the homoscedastic assumption of the prediction uncertainty in linear regression may be questionable. This study addresses the above drawbacks through a Gaussian process regression (GPR) approach that can analyze nonlinear patterns in data sets, despite small sample sizes. The kernel-based framework of GPR also efficiently estimates the pointwise prediction uncertainty as opposed to the homoscedastic assumption of linear regression. The prediction uncertainty is propagated in the collapse fragility framework using a case study example of an archetypical reinforced concrete moment resisting frame building. It is observed that overall fragility uncertainty can substantially change through the consideration of pointwise prediction uncertainty and better-fitting models. Based on the results, this study emphasizes the implementation of machine learning algorithms in the field of earthquake engineering that improve prediction accuracy and also provides a reasonable quantification of uncertainty. The GPR-based models proposed in this study can be accessed at: https://github.com/Satwikpr/Backbone_GPR.



<u>Effectiveness of BRB as Retrofit for Seismic Performance Enhancement of</u> <u>Masonry-Infilled RC Frames</u>

Rifan Chelapramkandy, Prof. Jayadipta Ghosh, Fabio Freddi

Among different construction practices available, reinforced concrete (RC) frames with masonry infills is a common construction practice adopted worldwide, including locations with moderate to high seismicity. The structures that are constructed during pre-modern seismic standards are more vulnerable to earthquakes. To strengthen such structures and enhance their capability to withstand future earthquakes, proper seismic retrofitting has to be employed. Among different retrofitting techniques, use of buckling restrained braces (BRBs) is considered as an efficient retrofitting strategy to enhance the seismic performance of the structure. Due to the brittle nature of masonry infill, they are often neglected during the analysis and design process of the building. But from the post-earthquake site investigation, it is observed that although masonry infills are considered as non-structural components, their presence in the frame can influence the seismic performance of the building. This research investigates the potential interaction between the masonry infill and the BRB retrofit.



Full text: www.taylorfrancis.com/books/0a-edit/10.1201/9781003323020/life-cycle-structuresinfrastructure-systems-fabio-biondini-dan-frangopol

A three-story three bay, low ductile RC frame with masonry infill is considered as the case study structure as shown in the above figure (that also shows the placement of BRBs). The structure is retrofitted with BRB to withstand the potential seismic load. The seismic performance of the unretrofitted infilled frame and retrofitted infilled frame are compared based on the seismic fragility curves. A seismic fragility curve describes the likelihood of exceeding the damage level under given seismic loading. To generate the fragility curves, it is necessary to develop probabilistic seismic demand model and building capacity estimates. A nonlinear time history analysis is performed using a set of ground motions to derive probabilistic seismic fragility is derived for various damage levels for the building frame and infill panels, as shown in the figure below. The results from this study reveal the effectiveness of the BRB to protect both the structural and non-structural components of the building, like masonry infill.



<u>Managing large multi-purpose reservoirs: conflicts,</u> <u>uncertainties, and feedbacks</u>

By Prof. Riddhi Singh

Civilizations are built around water. Since time immemorial, people have relied on water resource infrastructure to sustain their socioeconomic activities. The Harappans constructed an elaborate system of reservoirs and canals to support their agricultural activities. The Mauryan empire, often termed as the first 'hydraulic civilization', constructed numerous hydraulic structures such as dams with spillways, reservoir, and water carrying channels. They developed water pricing systems, methods for rainfall measurement, and managing water based on their understanding of rainfall variability in space and time.

The modern era is no exception. The ability to manage naturally variable water resources remains a critical skill that determines a region's growth. This has resulted in proliferation of multi-purpose reservoirs around the world. Reservoirs service a variety of sectors ranging from water supply, irrigation, hydroelectricity, navigation, fisheries, etc. Concurrently, construction of dams affects the riverine ecosystems due to obstruction in the stream's continuity. To overcome the negative consequences of this impoundment, it is recommended to release minimum environmental flows downstream of the dam. Thus, operating a dam requires a careful balancing of socioeconomic and environmental objectives, several of which may come into conflict. Another challenge in planning and managing such large-scale infrastructure is that these structures last for several decades. Therefore, data and assumptions used at the time of their planning is likely to change considerably during their lifetime. For example, the presence of the infrastructure alters the socioeconomic conditions in the region, leading to changes in demand patterns. This leads to a complicated decision context where multiple stakeholders are involved with potentially conflicting preferences, and there are uncertainties associated with an ever-evolving human system serviced by the reservoir.

My research group focuses on developing systems models and decision analytic techniques to advance our ability to manage such infrastructure. Here, I will discuss a few efforts in this direction. The first is the issue of conflict. Typically, conflicts are quantified in decision analysis using the technique of multiobjective optimization. Optimization identifies optimal operational strategies using a dynamic systems model. The strategies simultaneously optimize several performance indicators such as minimization of water deficits, maximization of hydroelectricity production, and maximizing reliability of releasing minimum environmental flows. When two or more objectives are in conflict, it implies that one cannot be improved without compromising performance in another. This results in a set of solutions, instead of a single optimal solution. These Pareto-optimal solutions are mathematically equivalent in the sense that each represents a possible compromise or trade-off between the various objectives. Heuristic algorithms are generally used to identify these solutions as analytical procedures do not exist for such complex problems. As an example, the trade-off between minimizing water shortages (represented as demand deficits) and maximizing hydroelectricity for the Nagarjuna Sagar reservoir in Southern India is shown in Figure 1. Each maker in the figure is a possible way to operate the reservoir, resulting in different values of the two objectives.

As is evident, every solution presents a unique compromise between hydropower generation and water shortage minimization. Such visuals can be used to assist discussions between stakeholders to decide upon the most suitable alternative.





Figure 1. (left) Location of the Nagarjuna Sagar reservoir on the Krishna river in India and its command area indicating the land use pattern in 2010 (NRSC, 2014). (right) The trade-offs between hydropower production (x-axis) and minimization of water shortages (y-axis) for the reservoir. Each grey marker represents a strategy to operate the reservoir. The size of the points represents another objective: maintenance of minimum environmental flows downstream of the dam, quantified by the percentage of time the environmental flow target is met by that strategy. The star represents the ideal point where both objectives are simultaneously optimized but is never reached due to inherent constraints in the system. The green and violet bordered markers represent the strategies attaining the highest hydropower and lowest water deficit, respectively.

The second issue is that of uncertainty. There are two main sources of uncertainty in water resources systems model used for evaluating reservoir operation strategies. First, the climate of a region, say its rainfall and temperature patterns, that governs the river flow at the site is likely to change over the course of several decades. This is mainly due to on-going changes in large scale climate patterns, attributed to global warming. Second, the socioeconomic conditions at the time of planning for the reservoir may evolve through time. For example, farmer's cropping patterns may change considerably once the reservoir starts providing reliable water supply. To address this issue, the concept of 'robust planning' has emerged over the last decade. The idea is to design a range of future scenarios, comprising of different climate and socioeconomic conditions, and then to iteratively test alternative operating strategies across these futures. Strategies that maintain a minimum performance across a large number of scenarios and do not drastically deteriorate in their performance may then be considered as robust and preferred for implementation. In a recent analysis, we performed a robustness analysis to understand whether a proposed inter-basin water transfer from Godavari to Krishna river will be able to satisfy multi-sectoral demands of participating river basins under a range of possible changes in climate and demands. Our study highlighted the need for understanding risk attitudes of stakeholders and careful inclusion of all relevant stakeholders while defining operational definitions of robustness.



<u>Safety assessment of high-speed rural highways</u> By Ashutosh Pandey, K. Rahul Chandra, Aneena Mohan, and Prof. Avijit Maji

Every year globally about 1.35 million road crash-related fatalities occur. More than 10% of those fatalities are from the Indian road network. Though the Indian road network contributes more than 3.6% to the country's GDP, the losses from the road crashes can erode as much as one-fifth of the contribution. More than 85% of passengers and 65% of freights use the Indian road network. The high-speed rural highway network provides connectivity between far-off places and ease transportation of freights and services. However, disproportionately high number of crashes occur on these high-speed rural highways. While driving, negotiating the horizontal curves and overtaking slower vehicles generally demand higher level of attention as the drivers need to continuously fiddle with the vehicle controls for safe maneuvering. It intensifies their workload, resulting into an increased probability of making mistakes that can lead to crashes. Therefore, the potential factors associated with road crashes are driver, vehicle, and infrastructure. Delving into these factors can provide key insights on crashes along high-speed rural highways and help to improve road safety. The driver related factors are generally studied based on performance measures such as vehicle kinematics and lateral positioning of vehicles. The primary concern in horizontal curves is vehicle stability related to rollover and skidding. Recent studies by Choudhari & Maji (2019b, 2021) attempted to understand the performance of drivers in and around the horizontal curves. Lateral acceleration-based performance indicators were specifically developed to identify the risky behavior of drivers based on their socio-demographic characteristics. It was found that around horizontal curves younger drivers (age 25 years or less) get involved in a higher percentage of high-risk events which initially increases with their driving experience, but, subsides thereafter. The study data revealed that the driving experience help drivers aged 25 years and older in reducing high-risk events. Also, various prediction models for speed, acceleration, and deceleration with respect to the road geometry have been developed in these studies (Choudhari & Maji, 2019a; Maji et al., 2018; Sil et al., 2020). The overtaking maneuvers of drivers on two-lane undivided rural highways were also studied in detail (Maji et al., 2023). A hazard-based duration model was developed to predict the overtaking maneuver durations by passenger cars for different overtaken vehicles categories. The study results indicate that the likelihood of overtaking was maximum at 9.2, 10.2, 9.6, and 11.8 sec for motorized three-wheeler, light commercial vehicle, other passenger cars and heavy vehicles, respectively.

This information can help to evaluate the overtaking opportunities based on traffic composition and used in developing reliable advanced driver-assistance systems (ADAS) for mixed traffic streams. It can be used to mark the passing and no-passing zones in the field. These research works offer valuable insights for assessing horizontal curves and evaluating overtaking possibilities for high-speed rural highway safety. The ongoing research is currently investigating the effect of longitudinal elements of high-speed rural highways on driving performance and vehicle dynamics.



Bibliography:

Choudhari, T., & Maji, A. (2019a). Effect of Horizontal Curve Geometry on the Maximum Speed Reduction: A Driving Simulator-Based Study. Transportation in Developing Economies, 5(2). https://doi.org/10.1007/s40890-019-0082-8

Choudhari, T., & **Maji, A**. (2019b). Socio-demographic and experience factors affecting drivers' runoff risk along horizontal curves of two-lane rural highway. Journal of Safety Research, 71, 1–11. https://doi.org/10.1016/j.jsr.2019.09.013

Choudhari, T., & Maji, A. (2021). Risk Assessment of Horizontal Curves Based on Lateral Acceleration Index: A Driving Simulator-Based Study. Transportation in Developing Economies, 7(1), 1–11. https://doi.org/10.1007/s40890-020-00111-2

Maji, A., Mohan, A., Choudhari, T. P., & Shailendra, S. K. (2023). Hazard-based overtaking duration model for mixed traffic. Transportation Letters, 1–10. https://doi.org/10.1080/19427867.2023.2236409

Maji, A., Sil, G., & Tyagi, A. (2018). 85th and 98th Percentile Speed Prediction Models of Car, Light, and Heavy Commercial Vehicles for Four-Lane Divided Rural Highways. Journal of Transportation Engineering, Part A: Systems, 144(5), 1–8. <u>https://doi.org/10.1061/jtepbs.0000136</u>

Sil, G., Nama, S., Maji, A., & Maurya, A. K. (2020). Modeling 85th Percentile Speed Using Spatially Evaluated Free-Flow Vehicles for Consistency-Based Geometric Design. Journal of Transportation Engineering, Part A: Systems, 146(2). https://doi.org/10.1061/jtepbs.0000286





CEA Council 2022-23





Prof. Deepankar Choudhury Head of Department



Prof. Swathy Manohar Faculty In-Charge



Prof. Albert Thomas Faculty In-Charge



Prof. Srineash V K Faculty In-Charge



Aditi Gupta Dept. General Secretary



Divyansh Agarwal Joint Secretary Events



Varun Raipat Joint Secretary Academics



Himanshu Suvata Chief Editor



Harendra Baghel Design Secretary



Sachin Modi M.Tech Representative



Deep Shah Associate Secretary



Udank Jain Web Secretary



Pranaya Patel PG Sport Representative



Rahul Agarwal Associate Secretary



Saloni Garg Alumni Secretary



Akash Nigam PG Cultural Representative



Mihir Borse Design Secretary



Samarth Bhatia Ph.D. Representative



Chiranjiv Pandey PG Associate Secretary

21

CEA Events

The Civil Engineering Association (CEA) was established with a core mission to foster knowledge dissemination and address industry-related challenges by creating a common platform for corporates, professors, and students. Being one of the most active organizations of civil engineers in the country, CEA includes both students and faculty as its members. The association is dedicated to promoting Civil Engineering by providing valuable practical exposure through various initiatives such as technical seminars, research symposiums, and talks by distinguished professionals from the field. Recognizing the significance of collaboration between academia and industry, CEA organizes regular visits to construction sites, facilitating interactions with key industry personnel and offering students practical insights into Civil Engineering. Besides its technical pursuits, the association actively engages in nurturing students by organizing social events as part of its extracurricular activities. Throughout the year, CEA orchestrates a diverse array of events, showcasing its commitment to advancing engineering, teaching, and research in the field of Civil Engineering.



SUMMER OF CORE

During the summer break, we organized an enriching program called "Summer of Core" to offer valuable learning opportunities. The course comprised various workshops where industry specialists shared their expertise and insights. It incorporated hands-on experience with essential software such as AutoCAD, ETABS, Epanet, and OGIS, empowering students with practical skills. PG students served as mentors, guiding and supporting their enthusiastic UG counterparts throughout the two-month-long course. As incentives, the mentees were given the chance to work on exciting research projects. Additionally, successful participants had the opportunity to become members of EERI. "Summer of Core" proved to be a rewarding journey, providing a valuable platform for skill development and mentorship, paving the way for future success in the field of civil engineering.

DEPARTMENT E-SPORTS

recently conducted the We "Department E-sports" in collaboration with other departments. This unique and initiative brought together nine departments, inclusive including Civil Engineering, Mechanical Engineering, Energy Science Department, Chemical Engineering, and more, fostering a sense of unity among students. The event featured four thrilling games: Chess, COD, Valorant, and smash karts. Participants battled it out in intense gaming sessions, and at the end of the event, prizes were distributed to the victorious players. "Department E-sports" undoubtedly proved to be an unforgettable experience, promoting collaboration, and competition.



60th CONVOCATION CEREMONY

The 60th convocation ceremony was a momentous occasion filled with pride and celebration. We were honored to have Shailesh Gandhi, the former Central Information Commissioner of the Government of India and a distinguished alumnus of IIT Bombay, as our esteemed chief guest. The event took place at the LHC and witnessed the release of the latest edition of Civil Insights. It was heartening to see the inclusive nature of the ceremony as we extended our gratitude to the batch of 2022, encompassing not only the UG students but also PG students. Awards were announced to recognize the outstanding achievements of our brilliant students. Snacks were provided to the parents and families who joined us to share this significant milestone in the academic journey of their loved ones. The convocation ceremony symbolized the culmination of years of hard work and dedication, and we look forward to witnessing the future success of our talented graduates as they embark on new adventures beyond our campus.



BOWLING ARCADE FEST

The long-awaited Bowling Arcade Fest finally came to life, creating a buzz of excitement and thrill among all participants. After many years, we revived this fun-filled event, which took place at the Rcity Mall. The fest offered a plethora of engaging activities, including the classic game of bowling. Participants enjoyed a variety of virtual reality (VR) games, including "Smash" and virtual cricket, immersing themselves in the world of technology. To keep the spirits high, delicious refreshments were served, making the experience even more enjoyable. The Bowling Arcade Fest brought together friends and colleagues for a memorable day of bonding, entertainment, and sporting fun.

TEACHERS' DAY CELEBRATION

The Teachers' Day celebration was a heartwarming occasion filled with gratitude and appreciation. Gifts were distributed to all the teachers in the form of pens with their names as tokens of respect. Students took this opportunity to express their heartfelt sentiments by writing personal notes for their professors, leaving them touched by the affectionate gestures. The event also featured the distribution of awards to faculties, acknowledging their exceptional contributions to our academic journey. A delightful evening ensued, marked by informal interactions between professors and students. The celebration included a cake-cutting ceremony, and excellent snacks which were served, making the occasion truly memorable and heartfelt.



TRADITIONAL DAY



We organized a vibrant Traditional Day celebration, inviting students from all batches to come together and revel in the rich cultural heritage of our institute. The Open Air Theatre (OAT) was abuzz with enthusiasm as over 300 students joined the festivities, dressed in colorful traditional attire. The event coincided with the auspicious festival of Makar Sankranti, adding an extra dose of joy and fervor. To make the occasion even more special, we hosted a delightful kite-flying event, filling the sky with colorful kites and laughter. As a token of pride and unity, we also released our department jackets. It was an unforgettable day that brought the entire campus together in the spirit of celebration.

CIVIESTA

We organized an exhilarating event called "Civiesta," a Civil Engineering Sports Week. This action-packed week featured six thrilling games, including football, cricket, basketball, chess, volleyball, and badminton. The Gymkhana Grounds served as the venue for the event, attracting enthusiastic participation from both UG and PG students. At the end of the event, participants were awarded certificates, and the champions proudly took home the coveted trophy, making Civiesta a memorable and successful celebration of sports and engineering spirit.





BACKBENCHER CHATS

We hosted the "Backbencher Chat with Professors" event featuring Professor Swathy Manohar at the civil engineering department's seminar hall. With captivating anecdotes from her life and college days, Professor Swathy shared her journey as a civil engineer, discussing various aspects of the field with passion. The event offered students valuable insights and an enjoyable experience

1st PH.D CONNECT CONCLAVE

We hosted our inaugural "1st PhD Connect Conclave," an event that brought together stakeholders in the civil engineering field. The conclave, featured a series of engaging activities, including poster presentations, elevator pitches, panel discussions, and interactive sessions with esteemed alumni. The themes of the conclave revolved around topics such as smart technologies, physical and numerical studies, field investigations, and gualitative research.



During the event, meals and breaks were offered, fostering networking. The conclave aimed to let PhD students present research and gain input from stakeholders. Participants came from industries, institutes, academia, and government, enabling a special exchange. The "1st PhD Connect Conclave" successfully sparked enriching interactions, promoting collaboration in civil engineering.

VALEDICTORY FUNCTION

We celebrated a memorable valedictory function to bid farewell to the batch of 2023. The event was filled with joyous moments, starting with a delightful photoshoot at the picturesque Jal Vihar. Later, the excitement continued as the prize distribution ceremony took place in



the P.C. Saxena Auditorium. The event was graced by all the distinguished faculty members and guests. Exceptional achievements were recognized, and deserving students received awards for their outstanding contributions. The evening concluded on a heartwarming note, with a warm dinner hosted at the Civil Terrace.

Gallery



26

A Contraction of the second se

AAKAAR Core Team



Chitra Yadav **OVERALL** COORDINTOR



Tanu Singh EVENTS MANAGER



Shreyanshi Agarwal EVENTS MANAGER





Dhananjay Kumar Dhruvi Amaliya COMPETITION MANAGER COMPETITION MANAGER DESIGN MANAGER



Nitin Singh

Manasi Bandichode Vaishnavi Shinde SYMPOSIUM MANAGER SYMPOSIUM MANAGER







Ashish Sharma



Aditya Malhotra



Aditya Ola OPERATIONS MANAGER OPERATIONS MANAGER



Avinash Kumar



Shubham Jadhav WEB MANAGER



Himanshi Yadav WEB MANAGER







Dinesh Kumar FNB AND HOSPITALITY MEDIA AND PUBLICITY MANAGER



Akshat Jain MEDIA AND PUBLICITY MANAGER









AAKAAR'23

Emerging from its inception as Asia's premier departmental college festival, Aakaar at IIT Bombay has blossomed into an extraordinary platform, beckoning aspiring civil engineers to delve into the vast expanse of their field. Within its embrace, students showcase not only their ingenious ideas and engineering prowess, but also glean insights from seasoned professionals. This grand event serves as a catalyst for nurturing inventiveness, fostering entrepreneurship, and igniting the flames of creativity among students. With anticipation and excitement, we eagerly await the opportunity to forge connections and embark on this exhilarating journey with all of you.

Spanning two captivating days in the heart of March, Aakaar stands as a pinnacle of technical festivals, hosting an array of competitions that resonate throughout the nation year-round. The horizon beckons, and we are perpetually eager to unite and traverse this remarkable odyssey together.

Lecture Series

Aakaar hosts a lecture series including various industry experts to gain knowledge about many areas of civil engineering. Many well-known and well-respected civil professionals attend the event and provide their priceless knowledge. The lecture series' subjects for Aakaar 2022 included:

- **Dr Niranjan Hiranandani**, a Real estate Professional: 'Insights and knowledge on the real estate Industry.
- **Mr S. K. Gupta**, Director of projects at Mumbai Metro Rail Corporations Limited: 'delivered lecture on the Inside underground Metro Line of Mumbai'.
- **Mr Akhilesh Srivastava**, Road Safety Ambassador of International Road Federation, ex-Chief Manager of NHAI: 'Infrastructure development and digital technologies.
- **Mr. Rahul Lakhmani**, Founder & CEO Skiify, Motivational Speaker: 'Interaction session on Emotional Intelligence and AI'.
- **Ms. Monika Shrivastava**, Head of JSW Cement: 'Low carbon Transition in the cement industry'.



Panel Discussion

A panel of fabled dignitaries is set to discuss and debate on a particular topic and they share with us all the details from their perspective. Words from these renowned and experienced personalities gives the audience a good view of the topic selected. The topic for the panel discussion this year was "Building sustainable cities that are resilient to disaster and climate change" and five distinguished speakers mentioned below had a discussion on the topic:

- Kumar V Pratap, Senior Economic Adviser Govt. of India.
- Dr L R Manjunatha, Zone Head Direct Sales for JSW Cement.
- Arun Jacob Mathew, National Project Manager, Flagship Report on DCRI, UNDP.
- Kishore Desai, Former Principal, National Investment and Infrastructure Fund (NIIF).
- Chetan Solanki, Professor, IIT Bombay, Solar Man of India.

CENEx (Civil Engineering National Exhibition)

Provides a once-in-a-lifetime opportunity for all Civil engineering students in India to present research projects incorporating new technology through models, prototypes and simulations in front of eminent professors and professionals.

Workshops

Workshop is the right platform to connect theoretical knowledge to practical knowledge. Through workshops, leading professional software being used in the field of construction are introduced. Gaining knowledge about these software 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 professionals.



- **BENTLEY EDUCATION STAAD PRO :** Helps learn industrial in-demand software from the very best, and is an opportunity to earn internationally accepted Bentley education certificates.
- **AUTODESK FUSION 360 :** In association with Autodesk, Fusion 360 gives an opportunity to learn in demand software from professionals, and learn to use Autodesk's most popular CAD software for collaborative product development.



• **ANVIRA EDUSTATION PRIMAVERA :** Primavera is recognized as the most comprehensive software for project planning, scheduling, cost and resource management in the Construction Industry. Hence, gives one of the best opportunity to working professionals and core enthusiasts who want to go deep into project management.

ACADEMIC WRITING WORKSHOP

Helps sharpening one's Academic writing skills. Learn the art of crafting compelling research papers that capture attention and convey ideas effectively. This year the workshop was conducted by:

- Sheba Sanjay Editorial and Training Services Consultant, IITB Monash Research academy.
- Neha Agarwal Founder, Wiseup Communication.

Competitions

BRIDGE-IT : BRIDGE-IT is a popsicle Bridge Making Competition in which participants have to design and construct the most efficient bridge with certain specifications using popsicle sticks, cotton threads and adhesive.

SEISMIC : In SEISMIC, Participants have to design an efficient and sustainable earthquake resistant structure using simple popsicle sticks. It aims to promote the study of earthquake engineering among students.

CONQUER-IT : CONQUER-IT is the competition to design and cast the pervious concrete with high modulus of rupture and high permeability. You have to ensure the quality and the strength of the concrete prepared with required specifications.





LOGIQ: LOGIQ is an online quiz series for all civil enthusiasts pan-India, national-level competition, testing your basic to advanced concepts from the various disciplines of Civil Engineering. Aakaar conducted LOGIQ Phase-I and Phase-II.

MSE WALL: Conducted in association with Strata Jio System, this was a unique first come first serves spot competition on Mechnically Stabilized Earth (MSE) retaining walls.



Aakaar Symposium 2023

In terms of participation, Aakaar's Symposium is one of the biggest of its kind in the nation and features different kind of research presentations from students. a stage where researchers can showcase their work in front of seasoned professors, civil engineering industry experts, and industrialists while competing against the top civil engineering students. Symposium targets to take research and civil engineering to a whole new level.

ICES (International Civil Engineering Symposium)

After launching, Aakaar, IIT Bombay, has continued its grandiose adventure. Over the previous six years, a significant international edition of the Civil Engineering Symposium (ICES)participation. The top research from all over the world was once again presented at ICES in its seventh edition by Aakaar. It provides a forum for aspiring researchers to show their work in front of the most talented professors in related fields in the country, the finest academics and businesspeople in the field of civil engineering.

Paper Presentation

ICES Paper Presentation provides students interested in research with a stage on which to present their work in front of some of the nation's most accomplished professors, industrialists, and leaders in the field of civil engineering.

Poster Presentation

Aakaar introduced Poster Presentation, a method for presenting your study and your comprehension of the subject in a succinct manner. Analysing, assessing, and synthesising the concept is necessary, as is creatively presenting the results of your research.

3 Minute Thesis Talk



For the very first time the event was introduced this year, The Three Minute thesis talk (3MTT) competition cultivates PhD researchers from different IITs & NITs, they take part in presentation, research communication and celebrates exciting research taking place in India. Participants Curate thesis in such a way that they are able to express it in 3 minutes and deliver it to a jury that doesn't belong to Civil Engineering specilization .

City planning

Aakaar provided an opportunity to young students and potential planners to showcase their talent and get recognition for their work. City Planning for designers and planners to reimagine our urban landscapes as cleaner, safer, healthier and more inclusive places to live. The competition's foundation was gaining knowledge of the city and planning for its development a three- to five-year action plan.



Smart – Pitch Competition

In collaboration with the Society for Innovation and Entrepreneurship (SINE), AAKAAR at IIT Bombay introduces the Smart Pitch competition, a platform that gives all startups the chance to present their ideas to a distinguished group of investors and SINE mentors. Start-ups in the field of civil engineering can benefit greatly from the Smart Pitch competition. A team must submit a presentation based on their idea in order to sign up for the competition. The concept must be connected to the specified theme. The subsequent themes addressed transportation, real estate and financial management, infrastructure building and management, water resource management, soil resource management, and disaster management. The teams' presentations are pre-evaluated in order to narrow the field of candidates. Ten to fifteen days prior to the festival, a mentor is appointed to each team to help them construct their Startup plan. The group must pitch its concepts to the judges. They can raise money for their model through the judges or investors. Along with a financial award, the winner team also receives a certificate.



GLIMPSE OF AAKAAR'23



















34



EERI IITB Office Holders 2022-23



Prof. Meera Raghunandan *Faculty Advisor*



Mr. Vipul Ahuja Industry person



Radhika Pajgade President



Divyansh Agarwal Treasurer



Ritik Dhalwani Vice-President



Shiv Prakash Media Manager



Shashank Nyol Secretary



Mukul Raj Media Manager



Piyush Raj Treasurer



Ketan Bajad SDC Coordinator



Anmol Kailash Bhatwalkar SDC Coordinator



Aditya Kumar Events Manager



Soubhagya Kamarkar Newsletter editor



Zaid Yaqoob Mir Rangrez Newsletter editor

EERI IIT Bombay Student Chapter

MISSIONS AND GOALS:

The EERI IIT Bombay Student Chapter, established in March 2021, seeks to advance earthquake engineering and related disciplines through study, practice, and research. The primary objective is to encourage students to pursue careers in these fields by facilitating connections with recognized professionals. The chapter has the

following goals:

- Arrange talks by industry experts and distinguished researchers in earthquake engineering.
- Conduct workshops based on the interests of students.
- Create a global platform for students to engage in various EERI competitions and activities.
- Organize outreach initiatives in nearby schools and organizations to raise awareness about earthquake hazards.

CHAPTER ACTIVITIES

- EERI orientation for new postgraduates and undergraduates of the civil engineering department
- SDC(Seismic Design Competition) orientation
- Guest Lecture by Mr. Umesh Rajeshirke, Managing Director, Spectrum Consultants Pvt. Ltd on the topic "Design and Construction of Cable-stayed and extradosed bridges" on March 2, 2023.

QUAKEZONE

Quake zone is the periodic Newsletter of the EERI IIT Bombay Student Chapter. Issue 5 and 6 was published in December 2022 and May 2023 respectively. Quakezone gives inside access to emerging research, designs, buildings and ideas in the field of earthquake engineering along with relevant information regarding upcoming events and conferences. It is shared with all the students, guests and professors of the department of civil engineering.





EARTHQUAKE ENIGMA

The Earthquake Enigma event was created to combine learning with enjoyment! It is an online contest where students participate as "Googlers" and are presented with questions and problems that they must solve using Google searches. These questions are skillfully crafted to stimulate critical thinking and allow participants to delve into the realm of earthquake engineering. Earthquake Enigma 2023 saw 225+ participants from 30 colleges

SEISMIC DESIGN COMPETITION (SDC) 2023

Through this chapter, the students get an international platform to participate in the EERI's flagship event- Seismic Design Competition (SDC). In this competition organized by EERI, participants construct a cost-effective building model to resist seismic loading. Every year, SDC attracts many reputed universities and organizations worldwide. IIT Bombay is the only Indian team participating in this competition since last three years.

In the first year of its inception, we had a very great kickstart, bagging the "Charles Richter Award for the Spirit of the Competition" in the SDC 2021 organized virtually. It was the first time an Indian team had bagged an EERI SDC award. Last year, 22 undergraduate students from the Department of civil engineering participated for the first time in offline SDC, in 2022, in Salt Lake City, Utah, USA. The building withstood two devastating earthquakes without even a single member failure. Team IIT Bombay stood at 16th rank overall out of 32 participating teams.

IIT Bombay participated for the third time in the annual SDC 2023. SDC 2023 was held in San Francisco, California, USA. 17 students from the Civil engineering department, IIT Bombay participated in SDC 2023. Two students from the team got the chance to represent team IIT Bombay in San Francisco, USA. The competition spanned four days, progressing with different evaluation stages at each day. The team performed exceptionally well and secured an overall 8th position among 34 participating universities! The improvement of IIT Bombay in SDC every year is highly commendable!

Way Forward

As a recently formed chapter within the institute, we are in the process of broadening our activities. Our upcoming initiatives are aimed at benefiting not only the students within the institute but also the larger society, as we seek to raise awareness about seismic hazards and their mitigation. These initiatives will include regular lecture series by experts from various fields, software training, and outreach programs both within the institute and nearby schools.

EERI IIT BOMBAY WELCOMES ALL

Given that earthquake engineering encompasses various disciplines, our chapter comprises both postgraduate and undergraduate students of our institute from diverse domains. This inclusivity offers a distinctive chance to exchange knowledge and experiences from research and fieldwork, while also honing managerial skills and fostering teamwork. Join us now and play your part in "Reinforcing Resilience."

Glimpse of SDC 2023















39

TEAM SHUNYA Building a sustainable future

Team Shunya is a team of young passionate students from IIT Bombay who have joined hands together for a sustainable future with the help of innovation in the field of Housing. We also have our hands spread in the international arena as well. Team Shunya is a dynamic and innovative student group focused on eco-friendly solutions for real-world challenges. As the SEV team, they aim to revolutionize the auto industry with advanced solar technology, promoting clean energy in transportation and inspiring a greener future. text



TEAM SHUNYA

PROJECT VIVAAN

Project Vivaan, led by Team SHUNYA (Sustainable Habitats for Urbanizing Nation by its Young Aspirants) is a remarkable endeavor focused on sustainable housing and climate action. Guided by esteemed professors and IIT alumni, their vision for net positive energy, net zero water, and net zero carbon emissions offers hope for α more responsible future in habitation. The name "Vivaan" beautifully symbolizes their aspiration for positive change, like a ray of morning sun.





Led by Team SHUNYA, Project Vivaan aims for sustainable housing and climate action. With guidance from esteemed professors and IIT alumni, they envision net positive energy, zero water waste, and carbon neutrality, symbolizing hope for a responsible habitation future. The culmination of their hard work saw their sustainable dwelling become a participant in the U.S. Solar Decathlon Build Challenge 2023, engaging in a global competition alongside 32 other teams.

Team SHUNYA undertook an ambitious project called SUSTAIN 3.0 with objectives like creating energy-positive, water-efficient, and carbonneutral houses using innovative technologies and recycled materials. They organized workshops and talks on sustainability, and their remarkable performance in the U.S. Solar Decathlon Build Challenge 2023, where they were the Runner-up among 32 international teams, showcased their dedication to sustainable architecture on a global scale. Team SHUNYA stood as India's sole representative, proudly showcasing their dedication to sustainable innovation on a global stage.







Somya Sharma Software Intern Deutsche Bank

Introduction:

I am Somya Sharma, pursuing my major in Civil Engineering and **minor** in Computer Science and Engineering. I began my professional journey as a web convener at Insight, where I had the opportunity to delve into **Web Development**. This experience led me to secure a winter internship during my second year as a Developer at Incluzon. I did machine learning projects in these courses, which sparked my interest in Data Science. Consequently, I decided to pursue a summer internship in **Data Science** during my second year.

Beginning of my internship period

Then began my third year, and my preparation for the internship season was a comprehensive and strategic endeavour. I invested considerable time and effort in crafting an impressive resume, sought guidance from experienced seniors, and dedicated myself to improving my **DSA skills** through rigorous practice. Additionally, I actively participated in **competitive programming** platforms, allowing me to enhance my problem-solving abilities.

Throughout the internship, we were organized into small teams, and each team was assigned specific projects. In my case, our project entailed revamping of **Deutsche Bank's** legacy application using new tech stacks through the development of new microservices. Over the course of eight weeks, including one week dedicated to HR sessions and a final week for presentations, my team successfully created a fully functional microservice with end-to-end flow. In the concluding week, we had the opportunity to present our work and showcase the application to the tech heads of our team, as well as VPs and directors at both the national and global levels.

Learnings from my internship experience

This internship experience at Deutsche Bank not only enhanced my technical skills but also provided me with valuable insights into the banking industry and its technology landscape. Collaborating with my team members, I gained hands-on experience in working within a professional team environment, effectively communicating ideas, and managing project timelines. Overall, my summer internship at Deutsche Bank as a Software Analyst was an enriching experience that empowered me to grow both professionally and personally. The knowledge and skills I gained during this internship will undoubtedly serve as a solid foundation for my future career in the technology industry.





Aakash Jha Analytics Intern Axis Bank

Hi, I'm Aakash Jha, a soon-to-be fourth-year student in the Civil Engineering Department. I am from Mumbai, and I completed my summer internship as an analyst at Axis Bank.

After my third semester, I participated in the **WIDS program** by the Analytics Club, where I completed a bootcamp and a project. This experience sparked my interest in machine learning, leading me to take a minor course in **Introduction to Machine Learning**. Additionally, I pursued various online courses and completed projects in this field. Later, I interned at **Deloitte** as an Analyst.

These experiences solidified my desire to work in a role involving machine learning. However, I also had an inclination towards quantitative finance due to my completion of a course on algo trading. So, basically, the profiles that I was targeting were data science, quant finance and software(as I had done some **DSA** and competitive programming in the past). As I prepared for interviews in these domains, I learned from seniors that companies often ask puzzle and probability questions alongside technical ones. To prepare, I studied two books: "Fifty Challenging Questions in Probability" and "Heard on the Street."

Initially, my chances were impacted by not having a high CPI during the internship season. Many companies in my target domains had either internal CPI cutoffs or limited openings for non-circuital branches. I really liked Axis Bank IAF as its JD had all the elements that I was looking for. The initial round had two straightforward coding questions based on maps and sets. Three of us were ultimately selected, and I was one of them. I was assigned to the Retail Deposits Team of **Axis BIU**, where my responsibilities included creating a star schema data model and an automated dashboard using SAS VIYA.

Message to juniors

For those targeting the data science domain, my advice is to not only focus on resume preparation and puzzle-solving but also invest some time in strengthening your data structures and algorithms skills. Companies in the data science field often include coding questions in their test rounds, and you wouldn't want to miss out on opportunities due to this aspect. You can practise coding questions using the provided link. Moreover, remember that the internship season can be unpredictable, so don't get demotivated if you don't secure an internship right away. If you have worked hard, you will eventually find a good opportunity.





Kartik Saxena Trading Intern Axxela Advisory

Hello everyone! I'm Kartik Saxena, a fourth year UG Student at IIT Bombay, specializing in Depatmentt of Civil Engineering . Along with my third year I've also successfully completed a two months internship at **Axxela Advisory Services.**

At Axxela Advisory, I had the opportunity to immerse myself in the dynamic world of Trading as a **Derivative Trader**. Axxela has a strong presence in **Financials and Commodities Derivatives** related operations in the International Financial Markets, such as US, UK, Canada, Australia, Brazil, Europe & South East Asia. In my third year of college, I served as **Placement Cell's internship Co-ordinator** so I had a brief idea about which company to target. I got the opportunity to get to know the internship procedure well, which then helped me seize the internship opportunity. Along with that, I was also a member of the Mars Rover and Hyperloop Teams in my second year, a damp mentor in my third, and now am an **ISMP mentor** in my fourth.

I had no prior experience in finance and trading, the company does not anticipate you to possess all the trading skills; therefore, during my internship, I was trained in all the skills necessary for trading. And trading is a profile in which you never get to the point of stagnation because markets are very dynamic, making it an exhilarating and intellectually stimulating profession for those who thrive on challenges. The selection procedure involved two tests, which was then followed by a group discussion and a interview with HR. In order to better prepare for my internship, I tried **Speed mathematics** and other like sites.

During my internship at a prominent trading and finance company, I had the privilege of diving into the fast-paced world of financial markets. I was exposed to various aspects of the industry, from conducting indepth market research to assisting with trade executions and risk management. Overall, my experience at Axxela Advisory taught me a lot, and interning there was a truly memorable experience.

Message to Juniors :

Don't pass up on any opportunities related to the stream you enjoy. Make preparations and work accordingly. Give your all in your job, and keep in mind that the internship season may occasionally be challenging. So, keep patience and be calm.



Ishit Garg in my 2 Software Intern voluntee Jaguar Land Rover mentor.

Introduction: I am Ishit Garg, a fourth-year student in the Department of Civil Engineering. Hailing from Ludhiana, a city in Punjab, I have a keen interest in various programming domains alongside my passions for reading books, playing badminton, and exploring culinary arts.

Positions of Responsibility (POR): I am not holding any active POR. However, during my academic journey, I served as a convener at WnCC in my 2nd year and as a manager in my 3rd year. Additionally, I volunteered for various Institute Activities, taking on the role of a mentor.

Early Career Path: My quest to explore different fields and career paths began during my 1st year. After being introduced to programming through CS101, I found my true passion during SOC at the end of my 1st year. This realization motivated me to pursue programming further.

Internship Preparation: With the goal of securing a software engineering internship, I devoted my 2nd-year summers to honing my skills. I immersed myself in solving problems on LeetCode, mastering data structures and algorithms, and strengthening my computer science fundamentals. This period was crucial in shaping my tech resume and creating multiple programming projects, including blockchain, web2 app development, and Android app development.

Internship Experience: As a Software Engineer Intern at Jaguar Land Rover, I was part of the DevOps team, contributing to the creation of a pipeline involving microservices and a web platform. This automation system aimed to streamline ECU communication tasks within the company's cars. I worked with C++, React JS, Python, and Google Cloud Platform, encountering and solving a diverse set of interesting problems during the internship.

Company Culture:

The company culture at Jaguar Land Rover was phenomenal, providing an enjoyable and enriching environment. Regular hackathons, team outings, and fun activities made the experience all the more delightful.

Work-Life Balance:

At Jaguar, I experienced a remarkable work-life balance, and the company's care and support for its employees were commendable. I never felt overworked and efficiently managed my time. **Conclusion:**

My internship at Jaguar Land Rover was an eye-opening experience that allowed me to discover my true interests and gain exposure to impactful tech projects. It has reinforced my enthusiasm for a career in software engineering, making me eager to contribute to the tech industry's advancements





Aaditya Ola Core Intern LARSEN & TOUBRO **Introduction:** Hello all! I am Aaditya Ola, a fourth-year student in the Department of civil engineering. I hail from Sikar, Rajasthan. In my three years at IIT Bombay, I have explored a lot and took part in various things. I was the Sports Secretary of Hostel-2 in my second year and Operations Manager at **AAKAAR**, an annual technical fest of the Department of civil engineering of IITB, in my third year. Apart from these, I was the competition coordinator in Abhuday and the operations coordinator in E-cell.

I completed an internship in non-core in my second year but did not find it interesting enough. So I started focusing on core proflie. I took up some additional learning courses in the Department of civil engineering. Also, I completed two projects: one on construction economics and the other on structural engineering in the 3rd year. These experiences contributed to my CV spikes. For my **internship at L&T**, I approached them through my contacts and then was selected based on my resume, plus an interview with the Deputy general manager and my reporting manager.

In my training period, I learned the practical implications of all theoretical knowledge I had, ranging from the factors to consider while building a multi-storey building to estimating the budget of building construction. I worked specifically on structural aspects of the building, like finding resistance against wind load and earthquakes, as well as the economic aspects of the same. Working there helped me conclude that I'll be making a career out of the core for sure. The work culture at L&T is also something that impressed me. The seniors were super supportive. The employees at L&T had a decent work-life balance, and most importantly, they enjoyed the work they were doing! Overall my work experience at L&T was beyond good, and I'm very grateful for this opportunity.

Message to juniors:

My message to the juniors would be to EXPLORE: explore everything, take your time and then decide what you want to pursue a career in. Don't hold preconceived notions like the core being very boring and all. Just try taking up some additional learning courses or projects in your second or third year; an internship is even better. Then deduce whether you find the core interesting or not. Once you find the answer, just go after your interests, and it will all be good!



Manasi Bandichode Core intern ONGC Hello everyone! My name is Manasi Bandichode, and I was born and brought up in Mumbai. I am a **dual degree** student specializing in **Construction Management and Technology** in the Department of Civil Engineering. I was the **Symposium Head at AAKAAR** 2022-23, in addition to being a core coordinator in E-Summit 2021-22 and interview coordinator in the Placement office of IITB.

I have always been keenly interested in civil engineering, which was why I chose this branch as my major. With time, I also figured out that sitting in front of a computer 24*7 was not for me, and I would prefer field jobs over cubicle ones. My initial plan was to write GATE and IES exams directly, without doing any internships. However, after my seniors and mentors suggested me to go for an internship, I decided to apply for the same. I got selected for an internship at ONGC based on my resume (there was no interview round).

I worked as a summer trainee in the **Insitute of Engineering and Ocean Technology(IEOT)** at **ONGC**. My field of training was Offshore Geotechnical Soil Investigation and Offshore Structures. In my training period, I was given immense exposure to what the company actually does. It was very fascinating to see the practical implementation or application of what I had been studying in books till then! In addition to that, I also got exposure to a completely different field, viz the oil and gas industry. Coming to the work culture at ONGC, it was more than anything I had hoped for. The environment there was very friendly, with no hierarchy issues and a perfect work-life balance. This internship turned out to be an incredible experience for me!

Message to juniors:

If you are really interested in core(just like me) and even if you want to sit for GATE or IES exams directly, still going for internships is a good idea as it will help in shaping your decisions better. Maintaining a decent CPI is also something I would like to emphasize, especially for core jobs as a good CPI indicates that you have a good grip on the core subjects. Lastly, be calm, take your time to figure out your interests and don't shy away from exploring new things.



Hello everyone, I'm Prapti Sao, a fourth-year UG student in the Department of Civil Engineering at IIT Bombay. I have been interested in bringing change in the academic policy in Insti since my 1st year. This was the reason that led me to take my 1st POR as a UGAC coordinator in my 2nd year. Furthermore, I contributed towards the academic section by being an **ISAA(Institute Secretary of Academic Affairs).** Along with academics I had stretched my arms into extracurriculars too. I have been interested in classical vocals and have been an active member of Roots.

Prapti Sao Consulting Intern Bain & Co.

Talking about my professional life:-

I got my first internship at Ebixcash(finance role) in my 2nd year of college. From the beginning, I had an interest in non-core, and from the past 2 years, I have been working as an intern at **Bain and Company**. I had realized that I am not interested in technical affairs like IT and also that I won't be enthusiastic to work in core for the next 5-10 yrs.

The field of consulting drove my attention because-1.) In one job, you get to explore a variety of arenas.

2.) Consult is a good launching platform.

3.) The culture at Bain suggests "one Bainy never lets another Bainy fail".

4.) I was interested in humanity(took as minor) and leadership. The selection process for consulting involves signing an application form(with 1 page resume). Students are then shortlisted for the

interview round. Buddies are allocated who help you prepare for the interview and clear your doubts. On the D-day, i.e. the interview day, I got the offer from **Bain and Co.** in the middle of the interview itself.

Throughout my internship period, the challenging parts were the long working hours and the new work assigned to me. So, I had a tough time getting adjusted. Overcoming these challenges made me a yet stronger version of myself and taught me better time management ability. I also learnt to become more creative and developed deep thinking to bring out innovative ideas. During my internship, I got complete exposure to the work I was doing and a broad view of what consulting is. This led to stretching my interest further in consulting and working in this field in the future.

Message to juniors-

- Take an internship as a medium to explore something/any field.
- Focus on the learning part rather than getting stressed.
- Try to constantly improve. Deeply work on your personality.
- Wherever you go as an intern, make sure to review if the work/field/place is suitable for you or not. After proper supervision, plan for your future ahead.



Varun Raipat Core Intern Oberoi Reality Hello everyone, I'm Varun Raipat, a fourth-year undergraduate student in the department of civil engineering, IIT Bombay. I have also been part of the **55th inter-IIT basketball team,** which won gold in 2022. I have served as **JSAA** in the department. I hold experience of being the ISMP and DAMP mentor. Even in the civil core, there are 2 streams we can opt for-

- Research
- Work (i.e. opt for a job)

Being from a family background that has worked in the arena of civil core and structural management, I had a keen interest in real estate. In my 2nd year of college, I applied to multiple companies through LinkedIn. Further, I got an acceptance letter from **Oberoi Reality**, and I was called for an interview. The selection process for the internship had a major weightage on the resume(which included our basic motivation to work in the company). The selection process ain't harsh in 2nd year. The internship was for 2 months where I worked as a site intern in an extra project of Oberoi Reality. I was supposed to study the standard procedure of working on new things. The work allotted followed as-

- 1.) Overviewing the work
- 2.) I was part of the quality check team
- 3.) Project Scheduling(in Microsoft project software)
- 4.) Submitting the project finally

Furthermore, moving to my internship of 3rd year which I got in **Kalp Taru**, the interview process was different from before. I applied as a structural engineering. The resume was reviewed by the technical team. There are certain domains you can work in core through an internship, such as, market research, product design, architecture design, financial plan, budget plan, project management etc. Civil engineering is all about practical experience. There's huge difference between theoretical knowledge and practical experience in this arena. An innovative perspective of yours is quite crucial in civil core.

Message to juniors -

- If you are interested in core and think you can put time and effort in this arena in the future then surely go for an intern in civil core(site visit). Rather, if you aren't interested in this, you can do the head office and have financial plans and work on product management.
- In the 2nd year, you have nothing to lose so explore as much as you can. See aspects of all domains and decide which is suitable for you.
- For practical exposure and for knowing civil engineering in depth, internship is highly recommended because theoretical knowledge is not enough.



Words by Graduating students



Bhuvan Aggarwal

B.Tech

- Best year on campus Final year
- **Message to juniors** Explore and try to grab every opportunity. If something gives you joy you shouldn't regret it
- Happiest moment on campus hehe can't tell
- Go-to spot on campus Ananta Terrace
- Quirky or unique campus traditions I hope they bring back Hostel Valfi
- Overall college experience 8/10 (covid ugghh)
- One thing you will miss the most about IITB- The people



Prithviraj B.Tech

- Best year on campus Third year
- Happiest moment The time I arrived at campus post-pandemic (in resource-constrained category, iykyk)
- **Message to juniors** Do take at least one PoR, maintain 8+ cpi (but not way above this or else you'll lose a lot), be humble and never ever forget to take help from a senior and give help to a junior! That's the golden rule
- Go-to-spot on campus NCC Area
- Unique College Tradition Keeping alarms on the last ENDSEM exams, putting some really funny songs in that and even profs loved that
- Overall college experience 8/10
- One thing you will miss the most about IITB My cat, Chad Chandramukhi, whom we lost a week after commencement
- **Favourite Professor -** Prof Pinom Ering (why? Attend her class and get to know yourself!)
- Superpower Boating in Powai Lake and direct road to Vihar Lake



• **Message to juniors** - You've got everything here. Make the best out of it and live your life to the fullest.!!

Best year on campus - Final year ;)

- Go-to-spot on campus Lakeside Road.. a different vibe ⊁
- Aspiration An entrepreneur? Maybe? Still figuring it out :)
- **Overall college experience** Some just can't be rated.. they are only to be experienced (it's a 100 out of 10)

• One thing you will miss the most about IITB - Late night walks

M.Tech

Sushanth Seepana



Yash Vinayak Patil .

B.Tech

- Best Year Final year (Final semester to be precise)
- **Happiest Moment-** Just a day before 6th semester endsem I finally got the mail of Internship offer letter from Ather Energy (the stipend was good). I went crazy screaming throughout hostel 9. It was because of my friends who constantly helped and motivated me throughout the brutal intern season. So on the same night I treated everyone with square pizza
- til Unique campus tradition GPL .Be it your birthday or your girlfriends birthday, bagging a POR, internship, PPO or placement, any competition you won, selection from a University, GPL is a constant. We all have been victims and the assailants of this tradition. Still haunts me on my birthdays (kind of miss them too)
 - **Favourite Professor** Prakash Nanthagopalan sir. He taught us 2 core(unfortunately online) and a DE which are the sole reason why I took a job in core Civil engineering. He had a very practical approach to the curriculum and always taught us with an actual live construction example. Even the assignment were like that. Most important he cared if we understand the topic and took efforts to make stuff interesting



Kartik Modi B.Tech

- Best year on campus 3rd Year (2021)
- **Message to juniors** I would say explore as many things as you can, not only in your department, club or institute but also outside. There are a lot of things happening around, so do explore. Also, never wait for someone to do anything; just do it if you want to.
- Happiest moment on campus Late night strolls, going out with friends, first night out, and many more.
- Go-to spot on campus H1, H2 Canteen
- Aspiration Travel influencer
- Overall college experience 9/10
- One thing you will miss the most about IITB Night outs and parties with friends
- **Favourite professor** Prof. N.R. Velaga, as he is very friendly to students. His way of teaching and making students understand things is extremely good, I always enjoyed his classes.





Sachin Modi M.Tech

Rohan Jha B.Tech

- Best year in campus- 2nd year(2022-23)
- **Message to juniors** Make the most of IITB by exploring, learning and embracing new experiences
- Happiest moment on campus- Mood Indigo
- Go-to-spot on campus- Sameer Hills and Vihar Lake
- Overall college experience 9/10
- One thing you will miss the most about IITB Canteens
- **Best Year on Campus -** It was definitely my final year; everything was finally back to normal, and things started to fall into place for me; I figured out what I wanted to pursue going forward
- **Message to juniors** The four years at Insti are daunting but don't worry; you will figure it out, and things will fall into place for you. And always remember, "Help will always be given at IITB to those who ask for it", so don't be afraid to ask for help.
- One thing you will miss the most about IITB The people and the culture associated with Insti



Vaishnavi Thumuganti

B.Tech

- Best year on campus Fourth year
- **Aspiration -** I want to be a researcher-entrepreneur in the field of sustainable construction
- Overall College Experience 7/10
- Favourite Professor Prof. Albert Thomas. He is my project guide, and the professor has been very supportive and caring of me while doing the project and sending out college applications. Even now, when I am travelling to the US for my Masters, professor takes an update on how everything is
- going on and gives me advice on how I should go about it
- One thing you will miss the most about IITB My friends, the comfort of a second home

Placement Stats





Civil Engineering : 2022–23



Placement in each program : B.Tech : 109 **M.Tech :** 47 **Ph.D :** 09 **M.Tech + Ph.D :** 04 **Dual Degree :** 05







Graduating Students of 2023

- Aastha Kapoor
- Abhinav Bugalia
- Abhinav Tripathi
- Aditi Gupta
- Aditya Jain
- Aditya Raj Singh Udawat
- Ajitesh Mohan
- Akash Tanwar
- Akshat Agarwal
- Aman Jain
- Amit Kumar
- Ananya Shankar Singh
- Animesh Kumar Singh
- Anishish Sharan
- Ankita
- Anubhay Kamle
- Armaan Sharma
- Arnaov Jaimini
- Ashutosh Patel
- Avadhanula Navya
- Badwe Mitali Prabhakar
- Besekar Vaibhav Sudhakar
- Bhuvan Aggarwal
- Chandan Sai Mandula
- Chetan Kumar
- Chitra Yaday
- Deshmukh Utkarsh Vinod
- Devansh Maheshwari
- Devansh Saini
- Dhavalkant
- Dinesh Patil
- Gaddipati Yaswanth Babu
- Gaurvansh Yadav
- Harsh Meel
- Harshvardhan Ashok Tidke
 Rishabh Bhandari
- Harshvardhan Siddharth
- Himanshu Dudi
- Hitesh Chand Meena
- Ishita Gupta

- **B.Tech**
- Jayant Tanwar
- Kanchi Agrawal
- Kapil Singh
- Kartik Modi
- Kaligandla Chandana Sahitya
- Ketan Agrawal •
- Khush Ranka
- Kunal Jain
- Kunal Nitin Suryawanshi
- Kurnool Sai Nikhila
- Kushal Choudhary
- Manan Goyal
- Manish Kumar
- Mayank Goyal
- Md Anish
- Nalin
- Naman Chanduka
- Neeraj Garg •
- Neeraj Meena
- Nikhil Anand
- Om Prakash
- Pradhuman Agarwal
- Pranjal Sarda
- Prerna Priya
- Prithviraj Chauhan
- Priyancy Duchania
- Pulidindi Keerthana Sagarika
- Pushpendra Singh Jadoun
- Raghav Gupta
- Rahul Meena
- Rameswaram Tejaswi •
- Rao Gajanan Sanjay
- Ravi Kumar Das
- Ravi Rai
- Rishika Rai
- Rishikesh Rajiv Vaidya
- Ritick Ranjan Prasad
- Ritveek Mahajan

- Rohan Jha
- Sachin Denwal
- Sachin Godara
- Sachin Kumar
- Sagar Dhanotiya
- Sagar Prasad ٠
- Sajeed P
- Sandeep Kumar Mundotiya
- Sarika
- Saurabh Kumar Mahra
- Saurabh Kumar Meena
- S Ezhilan
- Shersingh Meena
- Shirshika Meena
- Shubham Anjana
- Siddesh Shyam Agrawal
- Somanaboina Mrudhula
- Suresh Chouhan
- Suyash Arvind Kale

Uday Singh Meena

Vedanshi Virmani

Yash Vinayak Patil

Yogendra Choudhary

Hem Kanwar Rathore

Sharad Chandra Shekhar

Dhananjay Verma

Navneet Shakya

Banoth Kumar

Korikana Sandeep

Mannem Aravind

Shailendra Meena

Vandana Chandu

Suhani Brahme

Piyushi Susheel Hinge

Akshay Kumar

Vivitsa Jain

•

•

Yash Sharma

Thumuganti Vaishnavi

Vineet Vinayak Pahurkar

Tanmay Verma

- Abhay Saini
- Janjalkar Kiran Rambhau Shanta
- Hidhartha Shankar Das
- Gunja Shah
- Hiranya Jeet Malla
- Tejyas Dasa Singh
- Jain Mayur Kishor Chandanbala
- Sanjit Kumar Bhattarai
- Khurd Aditi Virupaksh
- Uzzwal Kumar
- Akhil Suresh Babu
- Jadhav Vishal Gajanan
- Vikash Rai
- Ganesh Rath
- Pradeep K Karandi
- Aditya Kumar Singh
- Apte Mayank Vikas
- Mohit Kumar
- Subhash Raj

M.Tech

- Sanjay Kumawat
- Chiranjiv Kumar Pandey •
- Seepana Sushanth
- Akash Nigam
- Sandipan Biswas
- Sachin Kumar Modi
- Ritik Dhalwani
- Mudit Agarwal
- Srijon Pal
- Aryan Raj
- Dasari Sandhya Rani
- Devesh Kumar
- Chhetiya Inder Manoharlal
 Abhishek Singh
- Niraj Kumar
- Shubham Kumar Sahu
- Mohammad Ibrahim
- Arjun Chandra Biswas
- Susmita Tropa Barai
- Kumari Prerna Mallik
- Aman Shrivastava

- Desai Akshay Vijay
- Rabbewar Gopal Laxmanrao
- Keshav Prakash
- Pranaya Patel
- Uttam Singh
- Aohona Arefin
- Jaiswal Himanshu Pravin
- Ankit Pandev
- Sautrik Chaudhuri
- Manish Kumar
- Harsh Gupta
- Abhishek Raman
- Rounit Mishra
- Amar Sinah
- Ankit Kumar Soni
- Pinkesh Barodiya
- Prabhat Tewari
- Somya Sahana
- Uday Shankar Dwivedi

- Kinjarapu Bhanu Teja
- Saksham Srivastava
- Tejal Sudhakar Pawar

Ph.D

- Adrija Roy
- Pankaj Kumar
- Akhil Muraleedharan
- Gaurav Misuriya
- Suma Bhanu Battula
- Tariku Asfaw Tedla
- Ann Francis
- Pushkar Ajaykumar Sharma Nedunuri Sai Surya Sree Aparna Nageeb Ul Islam
 - Kesav Unnithan Sreekuttan Lekshmi Devi
 - Chaidul Haque Chaudhuri
 - Arpita Suchismita

Mirgal Paresh Govind

Shubham Shriganesh

- Shanmukha Shetty
- Seelam Naga Poojitha
- Sahana V

Khandare

Pallavi Goswami

- **Dual Degree & IDDDP**

Shadab Akhtar

Artworks by Students



Abhishek Kumar



Yash Patil



Tanishka Yadav



Pratik Shivkumar



Artworks by Students





Yash Patil



Tanishka Yadav

Shikhar Ashutosh Moondra



Urvashi Godhane



Gallery









57











