

Message from the Editorial Team

Introducing the Sixth 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. In the following pages, we present a snapshot of the department, aiming to give a concise overview for all readers interested in learning more about it. This magazine highlights the major events and activities that took place during the academic year 2023-2024.We extend our heartfelt gratitude to all the faculty, staff, and students who generously dedicated their time and efforts to this magazine. Special thanks to the Head of the Department Prof. Tom V. Mathew and the CEA faculty advisors, Prof. Eswar Rajasekaran, Prof. Solomon Debbarma and Prof. Srineash V K for their invaluable suggestions. We hope this magazine caters to a wide range of readers. While we have made every effort to ensure the content is error-free, we apologize in advance for any unintentional mistakes that the readers may find. Our aim in publishing this magazine is to create a cherished keepsake for the graduating class, as we bid them farewell during the Institute's 62nd Convocation. To the class of 2024, we extend our heartfelt wishes for success in all your future endeavors.



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We appreciate your understanding and cooperation in these matters, and we hope you enjoy reading and exploring the content we have prepared for you.

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Message from the HOD



Prof. Tom V. Mathew Head of Civil Engineering Department, IIT Bombay Transportation Systems Engineering

A very warm 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 (54 regular Faculty, 1 Emeritus Fellow and additionally 2 Adjunct and 2 Visiting Faculty), it provides high-quality teaching and research. We provide very attractive facilities and an environment for those who join the department as Faculty or Students. Currently, there are about 350 doctoral students, 250 master's students, and 650 B. Tech students are enrolled in the department. We are supported by 26 permanent staff including both technical and administrative staff. We are also have large number of project staff working in the department helping various sponsored research projects.

Among JEE (Advanced) qualified candidates who opt to join the undergraduate (UG) program, 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 large number of applications received for the PhD program, only less than 5% get admission to the department. Our department received in 2024-25 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, 3 final year UG Civil Engineering student of SVNIT joined UG Civil Engineering program at IIT Bombay.

The recent QS world ranking 2024 shows our department's world ranking is 42, with all of India ranking number TWO in the domain of Civil Engineering. National Institutional Ranking Framework (NIRF) by the Ministry of Education, IIT Bombay is 3rdin the country, and tops in the area of innovation. 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.

Message from the HOD

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, Geotechnical Engineering, Water Resources Engineering, Structural Engineering, Ocean 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. Currently there are about 25 post docs are working in the department. 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 a revenue of about 70% for the entire institute's related consultancy projects in the F.Y. 2023-24 through the industry projects. This is one of the major contributions of the department to make an academic institute selfsustained 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 Engineering/1977) has generously donated for instituting the "Kanitkar Merit Awards" for toppers of 3rd-year and 4th-year B.Tech. Civil Engineering with an award amount of INR 2,50,000/-each. Another alumnus Mr. Pankaj Jagtap (B.Tech./Civil Engineering/1995), has started the "Anantrao Jagtap Chair" position for an outstanding faculty member who is working in the domain of Construction Management.

Message from the HOD

Late Prof. R. S. Ayyar's family (elder daughter of Prof. Ayyar, Ms. Ranjini is an alumnus, B.Tech. Civil Engineering) 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 Engineering/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. Tom V. Mathew Head, Department of Civil Engineering, IIT Bombay



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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. J. Indu** has been selected to receive the inaugural "C1973 Research Excellence Award" this year. This award has been instituted by the Batch of 1973 who are celebrating the Golden Jubilee of their graduation from, IIT Bombay.
- **Prof. Deepankar Choudhury**, FNASc, FNAE, has been elected as a Fellow (FASc) of the Indian Academy of Sciences (<u>IASc</u>), <u>Bangalore</u>, <u>effective from January 2024</u>.
- **Prof. Eswar Rajasekaran** has been invited as a visiting faculty in the University of Toulouse III-Paul Sabatier in Toulouse, France.
- **Prof. Manasa Ranjan Behera** been nominated to the Empowered Committee for Industry & International Collaborations (ECIIC) on "Blue Economy" formed by MoE.
- **Prof. Deepankar Choudhury**, has been nominated as the Nodal Officer and a member of India Universities and Institutes Network for Disaster Risk Reduction (IUINDRR-NIDM), Ministry of Home Affairs.
- **Prof. Deepankar Choudhury** has been awarded the "Best Teacher of Geotechnical Engineering Award 2023" in its first year of inception, at the inaugural function of Indian Geotechnical Conference IGC-2023, held during 14-16 December 2023 at IIT Roorkee.
- An Indian patent certificate awarded on 8th Feb. 2024 for an innovation carried with Two B.Tech students **Mr. Harphool Singh Meena** and **Ms. Ranu Meena** during 2014 and 2015. This is on cleaning of floating debris in open channels mentor faculty **Prof. V. Jothiprakash.**
- Mr. Aravind Jagilinki (Roll No. 204040034), Chitrangini Sahu, and Sanjukta Das, Ph.D. scholar has been selected during the recent conferences HYDRO 2023 and INGWC 2023, mentor supervisor Prof. T. I. Eldho.
- **Mr. Ravi Jangid**, Roll No. has been awarded the best paper of the conference in the recently organized Structural Engineering Conference (SEC23) mentor supervisor **Prof. Manish Kumar**.
- **Dr. Shivang Shekhar**, a former Ph.D. student of **Prof. Jayadipta Ghosh** and now a faculty at IIT Mandi. Their technical paper <u>https://ascelibrary.org/doi/10.1061/JBENF2.BEENG-5947</u> featured in the ASCE Editor's Choice article in ASCE Journal of Bridge Engineering.
- **Dr. Gaurav Misuriya's** a former Ph.D. student of **Prof. T. I. Eldho**, thesis titled "Turbulent Flow and Scour Characteristics Around Bridge Piers over Gravel Bed", has been selected for the award of the "Indian Society of Hydraulics Best PhD thesis Award", 2023.

Department Awards

- **Dr. Pankaj Kumar** a former Ph.D. student of **Prof. B V S Viswanadham**, has been selected for IGS Mr. H.C. Verma Diamond Jubilee Award 2023 for their "Innovative Instrument Design" on "Design and Development of an In-flight Hybrid Loading Simulator for Geostructures in a Geotechnical Centrifuge".
- Dr. Chaidul Chaudhuri a former Ph.D. student of Prof. Deepankar Choudhury, has been selected for IGS – YGE Best Paper Biennial Award – 2023 for paper "Buried Pipeline subjected to Static Pipe Bursting Underneath: a closed-form Analytical Solution" published in Géotechnique 72, No. 11, 974–983 (2022).
- **Dr. Chaidul Chaudhuri**, former PhD scholar of **Prof. Deepankar Choudhury** has received prestigious Marie Curie Fellowship to work at Univ. of Nottingham, UK.
- Dr. Ahmad Rajabian a former PhD student of Prof. B. V. S. Viswanadham, has been selected for IGS-Shri R.N. Prasad Biennial Award 2023 for paper "Centrifuge Study of a Retrogressive Seepage-Triggered Landslide in Silty Sand Slopes" published Indian Geotechnical Journal, 52, Issue 6 (pp.1313–1324).
- **Ms. Athira K. V.**, Roll No. 184040020 a Ph.D. scholar has won the second prize in the student poster competition 2024 AMS 38th Hydrology Conference, mentor supervisor **Prof. Eswar Rajasekaran**.
- **Prof. Deepankar Choudhury** has been invited as a member of the Board of Studies of Structural Engineering as nominated by the Academic Council of VJTI as per UGC guidelines for 3 years.
- **Prof. Subimal Ghosh** has been elected as a Fellow (FNASc) of the National Academy of Sciences, India (NASI), Prayagraj in 2023.
- **Prof. Subimal Ghosh** has been selected for the prestigious European Geosciences Union (EGU) Alexander Von Humboldt Medal 2024.
- In October 2023, Elsevier Stanford University published the list of the world's top 2% researchers, where 68 total faculty members from IIT Bombay are listed out of which 9 are from the Civil Engineering department. They are **Profs. R. S. Jangid, Bellie Sivakumar, Subimal Ghosh, Deepankar Choudhury, Tarun Kant, D. N. Singh, Nagendra R. Velaga, M. C. Deo, Jayadipta Ghosh.**
- A New book "An Introduction to Advanced Fluid Dynamics and Fluvial Processes" is published by **Prof. T. I. Eldho** and **Prof. B. S. Mazumder** (former Visiting Professor, Department of Civil Engineering, IIT Bombay).

Alumni Contributions

Kanitkar Merit Award

Aim of the Award: The Civil Engineering department presents the Kanitkar Merit Award at the end of each academic year to encourage and foster healthy academic competition among undergraduate students, promoting academic excellence in Civil Engineering.

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

Recipient of the Award in 2022: Bhuvan Aggarwal, an institute student with Roll No. 190040026, received the "Kanitkar Merit Award - 2022" as the top student with a CPI greater than 9.0 at the end of the 3rd year of his B.Tech in Civil Engineering. He was awarded INR 250,000.00, along with an additional INR 22,000.00 from the office of the Dean (Alumni and Corporate Relations), totaling INR 2.72 lakhs for his outstanding academic performance.

Note: If the top student does not achieve a CPI above 9.0 out of 10, the award will not be given that year.

Dr. Manu Akula Memorial Award for Academic Excellence in CTaM

In memory of the late Dr. Manu Akula, a former B.Tech. Civil Engineering student at IIT Bombay from the class of 2008, his family, friends, and well-wishers established the "Dr. Manu Akula Memorial Award for Academic Excellence in Construction Management" in 2023.

An award of INR 50,000 (Rupees fifty thousand) will be given to each of the two top students in the B.Tech. Civil Engineering program specializing in "Construction Management" who successfully complete the elective course by the end of their 4th year.

An MoU was signed between IIT Bombay, IIT Bombay Heritage Foundation, Mr. Anirudh Akula, and Dr. Ihab Ismail on 24th April 2023 to formalize this award.





Alumni Contributions

Prof. R. Subrahmonia Ayyar



IIT Bombay, along with Mrs. Parvathy Subrahmonia Ayyar and her daughters, Mrs. Ranjani Saigal and Dr. Jayashree Subrahmonia, honored the legacy of the late Prof. R. Subrahmonia Ayyar. Prof. Ayyar was a former Head of the Department of Civil Engineering and former Dean (AP) at IITB, and a cherished member of IIT Bombay's extended family.

To honor his memory, they launched two special initiatives for the Civil Engineering department:

1. Establishing a Chair Professorship in the Department of Civil Engineering.

2. Naming the 1st floor Conference Room of the Civil Engineering Department as the Prof. R. S. Ayyar Conference Room.

These initiatives were made possible through generous funding from Prof. Ayyar's family, including the donation of two flats.

The Civil Engineering department of IIT Bombay is extremely grateful to Prof. Ayyar's family for their generous contributions to the department.

Anantrao Jagtap Chair for Construction Management

Aim of the Award: Mr. Pankaj Jagtap has sponsored a chair professorship in memory of his late father, Shri. Anantrao Jagtap, who was a Civil Engineer with a passion for Construction Management. This position, called the 'Anantrao Jagtap Chair for Construction Management', aims to attract young and talented faculty members from around the world. The goal is to provide them with the support needed to develop a world-class Construction Management program at IIT Bombay, aiming to make it a leading program both nationally and internationally.

Criteria for the Awardee: The recipient should have a strong reputation for promoting Construction Management. They should have initiated new academic programs, improved existing ones, and contributed to academic activities that benefit IIT Bombay. The awardee should provide technical and intellectual leadership in Construction Management and work towards establishing the Civil Engineering department at IIT Bombay as a global leader in the field.

Recipient of the Award: Prof. Venkata Santosh Kumar from Delhi was appointed as the inaugural "Anantrao Jagtap Assistant Chair Professor" on March 5, 2022, for a three-year term. He is the first Assistant Professor at the institute to hold a named Chair position. This appointment will support junior researchers at the institute in pursuing outstanding research and advancements in Construction Management within the Civil Engineering department at IIT Bombay.

Research Highlight: On the role of climate change in the 2018 flooding event in Kerala

Manish Kumar Dhasmana, Arpita Mondal, and Mariam Zachariah

Extreme precipitation and floods affect millions of people in India, resulting in loss of lives and property and damage to agriculture. Such events have become increasingly common in recent decades and are expected to become more frequent under future climate change. In August 2018, the state of Kerala in India experienced an unprecedented flooding event, resulting in widespread devastation. This catastrophic event was characterized by extreme precipitation, which led to one of the worst floods in the region's history. The state received 164% of its long-term average precipitation during the period from August 1 to August 19, 2018, occurring in two main episodes. The second episode, from August 14 to 19, was particularly intense due to an active depression over the coast of Odisha, which brought heavy downpours to Kerala. Understanding the role of climate change in such hydroclimatic extremes is crucial for developing effective mitigation and adaptation strategies. We tried to address this by providing a formal attribution analysis of the 2018 Kerala floods using the probabilistic event attribution (PEA) framework.

We employed three distinct methods within the PEA framework to assess the influence of climate change on the 2018 Kerala floods:

- General Circulation Models (GCMs) Approach:
 - Utilized Historical and HistoricalNat runs from CMIP6.
 - These runs represent scenarios with and without anthropogenic climate influences, respectively.
- Time-Slice Method:
 - Analyzed observed records from 1901-2018, divided into two periods (pre-1950 and post-1950).
- Scaling Method:
 - The observations were scaled to 1901 and 2018 climates, considering nonstationary distribution parameters.

The analysis defined the 2018 precipitation event by the return period of the 4-day cumulative precipitation over the Periyar River Basin (PRB) from August 15-18. The subsequent flood event was characterized by the return period of the 1-day maximum streamflow at one of the PRB outlets, where the maximum impact was reported.

The results from all three methods were consistent, indicating that the 2018 precipitation and flood events were exceptionally less likely to have been caused by anthropogenic climate change.

The risk ratio (RR) for the precipitation event ranged from 0.31 to 0.82, while the RR for the flood event (streamflow) ranged from 0.55 to 0.8 (Figure 1). These findings suggest that the likelihood of such extreme events due to human-induced climate change is relatively low. Additionally, the study highlighted the role of antecedent soil moisture conditions in driving floods in the PRB. These conditions were found to be a primary factor in the flooding event and were unchanged in simulations with and without climate change. This emphasizes the importance of considering local environmental factors in addition to broader climatic changes when analyzing flood risks.



Figure 1: Return levels and RR of annual maximum precipitation ((a), (c), (e)) and streamflow ((b), (d), (f)) for factual (blue) and counter-factual (orange) scenarios and the return period of the 2018 flooding event (vertical line) based on the GEV distribution, using (a), (b) GCM-based method, (c), (d) scaling method, and (e), (f) time-slice method. Envelopes represent the 5–95th percentile ranges for each run, estimated using bootstrapping with 1000 realizations.

The study underscores the complexity of attributing individual extreme events to climate change. While a growing body of evidence links human activities to increased frequency and intensity of hydroclimatic extremes globally, the regional impacts can vary significantly. The Kerala floods of 2018 provide a case study where local factors played a crucial role, and the direct attribution to climate change is less clear.

The 2018 Kerala floods were devastating with significant human and economic costs. This study provides valuable insights into the role of climate change in such events. While the study suggests that anthropogenic climate change played a limited role in this particular case, it also highlights the need for continued research into the complex dynamics of regional hydroclimatic extremes. Effective flood management and mitigation strategies must consider both global climate trends and local environmental conditions.

References

Dhasmana, M. K., Mondal, A., & Zachariah, M. (2023). On the role of climate change in the 2018 flooding event in Kerala. Environmental Research Letters, 18(084016). DOI: 10.1088/1748-9326/ace6c0

Modifying air lime as a practical repair mortar of heritage structures

Athira VS and Swathy Manohar

Heritage structures are standing reminders of a country's culture. It is imperative to repair and rehabilitate them. The re-introduction of materials with similar properties that of ancient materials is necessary for the repair of heritage structures, because of the consistent incompatible issues observed in the recent interventions in historical constructions using modern materials. Our research group works on this area to address the issue. One of the major plaster and mortar material used in ancient structures is lime and the study tries to revive lime-based binders as repair mortars modifying them to adapt the current requirements as well. 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 workable, setting and carbonation properties of lime without altering the porosity of lime mortars.

The study explores development of compatible repair materials using lime combined with mineral admixtures such as slag and red mud, along with an organic set regulator, jaggery – which can act as a water retainer, water reducer and set controller. Heritage structures such as Charminar, Padmanabhapuram palace is observed to have a combination of lime with jaggery, further jaggery was a very widely used organic across Indian heritage. Moreover, these additions do not hamper the other properties of lime mortar, in fact they improve them.



Figure 1: Flow diameter variations with mineral and organic admixture addition (left), carbondioxide mineralised with red mud and organic addition (right)

Figure shows the variations in flow diameter with mineral and organic admixture (jaggery) addition. Jaggery evidently acts as a dispersing agent in any lime based mortar. They can directly reduce the water demand of lime based mortars and can even retain the water in the system. Additionally, lime is also observed to be a potential binder for CO2 mineralization which is least 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. Figure (right) shows the CO2 uptake of lime, red mud added lime and jaggery modified red mud based lime mortars after 28 days of exposure. 6% of the lime mortar was already carbonated, however reduced to 3% with red mud addition. Jaggery could maintain the CO2 uptake in the level of 6%, hence has a positive impact on the system. 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.

Landslides and Seismic Damage to Bridges: A Critical Infrastructure Challenge

Nouman Aijaz, Jayadipta Ghosh

Landslides triggered by seismic events pose serious risks to bridges and critical elements of transportation infrastructure. The combination of ground shaking, and subsequent slope failures can inflict severe damage or even collapse bridges, especially in steep terrain where soil and rock destabilization during an earthquake can lead to immediate or delayed landslides. For example, the 2008 Wenchuan earthquake triggered numerous landslides, some causing bridge failures, as shown in Fig. 1(a). These events impact bridge abutments, piers, and foundations, presenting complex challenges for structural engineers.





Bridges designed before modern seismic codes might not withstand the lateral loads from landslides, often overlooked in traditional seismic designs. A performance-based assessment is essential, involving evaluations of bridge behaviour under various seismic and landslide scenarios using probabilistic models for uncertainties in seismic activity and soil stability. This includes nonlinear time history analyses (NLTHA) applying different ground motions and dynamic landslide pressures, as shown in Fig. 1(b). Probabilistic Seismic Demand Models (PSDMs) are developed for two cases: earthquakeonly and combined earthquake and landslide scenarios, resulting in two PSDMs, as depicted in Fig. 1(c). Following this, fragility curves are developed to illustrate the comparison between the earthquake-only scenarios and the combined earthquake and landslide scenarios, as shown in Fig. 4(d). These curves provide a clear visualization of the increased vulnerability of the bridge under the combined loading conditions, especially in higher damage states, highlighting the critical need for comprehensive assessments that account for both seismic and landslide risks. This analysis underscores the importance of integrating multi-hazard scenarios into the design and evaluation processes to ensure the structural resilience of infrastructure. Future research should focus on refining these models and exploring additional factors that may influence structural performance under complex loading conditions.

Science, Technology, Citizen Science and Mumbai Flood App

Mayank Gupta1, Aniket Navalkar1, Puja Tripathy1, Deepak Silaych2, Gulshan Kumar2, Sanghita Basu1, Sheeba Sekharan1, Archismita Banerjee1, Raghu Murtugudde1, and Subimal Ghosh1,2 1Centre for Climate Studies, Indian Institute of Technology Bombay, Mumbai – 400 076, India 2Department of Civil Engineering, Indian Institute of Technology Bombay, Mumbai – 400 076, India

As extreme events like floods become more frequent due to climate change, dissemination of accurate forecasting is essential. This allows urban authorities to develop effective mitigation strategies and helps citizens plan their activities safely in advance. Additionally, integrating citizen science is crucial, as it not only generates valuable data and insights from citizens but also helps identify and remove bottlenecks, making the system more resilient. Under HDFC-ERGO funding, a team of Professors, staff, and students, from Climate Studies and Civil Engineering has developed an experimental Rainfall forecasting and flood monitoring system (mumbaiflood.in) to address the challenges of urban flooding in Mumbai, a city frequently impacted by severe monsoon rains. The system provides a user-friendly portal where citizens can access hyperlocal rainfall forecasts for the next three days at 36 locations across Mumbai, monitor live water levels at six flood hotspots in the city, check the levels at three key water bodies responsible for Mumbai's drainage, and receive alerts for stations of local railway, Mumbai's lifeline, based on current rainfall amounts. Moreover, a unique feature of the system is its integration of citizen science, allowing users to report flooding incidents and share on-the-ground conditions by filling out a form, with the hotspot information then displayed live to the people of Mumbai. The system further leverages crowdsourcing by analysing the tweets to gauge public sentiment during these events, providing valuable real-time insights.



Figure 1: The diagram showcasing the different components of the portal mumbaiflood.in. (a) The forecast for next three days (right side, coloured bars) and comparison between observed (grey bars) and predicted (star marked) for the previous three days; (b) The comparison of the past forecasts and observed data; (c) Spatial map of 36 hyperlocal automatic weather station (from MCGM) and predicted locations of Mumbai; (d) The location of water level monitoring stations; (e) The water level sensors installed on the Vakola Nalla and RA kidwai road, Wadala of Mumbai; (f) The form for reporting water logging information from the citizens. The maps showing markings of citizen flood hotspot, Rail alerts, and sentiment analysis of tweets are not shown. Please visit mumbaiflood.in for more detail.

The project showcases the design and implementation of a comprehensive city-wide system that employs the latest scientific forecasting techniques and engages with the multi-layered structure of urban local bodies (ULBs) to establish a monitoring setup on the city infrastructure. This sets a precedent for future projects of this nature for a city. The forecasting process involves downscaling the Global Forecast System (GFS) to hyperlocal stations using AI/ML, which has outperformed other available forecasting systems. The monitoring setup involves obtaining rigorous permissions from the respective ward officers, safety approval by engineers, securing electrical connections, and getting approval from nearby residents for a metered connection to install water level sensors on streetlights and footpaths. The participatory approach through 'Reported Flood' not only informs citizens and ULBs of hotspots to take proactive measures in real-time but also uncovers previously undetected flood locations, thereby enhancing urban flood modelling. The tweet classification, based on natural language processing, reveals positive sentiments that highlight the enjoyable aspects of Mumbai rains, while negative sentiments reflect the distress associated with flood events. The station alerts are based on high rainfall within a short span, using data from the nearest weather station provided by the disaster wing of the Municipal Corporation of Greater Mumbai (MCGM). The future scope of the project includes downscaling forecasts to hourly intervals and releasing flood forecast maps for Mumbai, providing hyperlocal information on potential flooding. The successful implementation of mumbaiflood.in paves a way for industry and research institutes to develop a city-scale urban services that can be expanded to other cities.



CEA Council 2023-24



Prof. Deepankar Choudhury Head of Department



Aditya Kumar Dept. General Secretary



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Prof. Eswar Rajasekaran Faculty In-Charge



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Satish Patel PG Cultural Representative



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Deepak Silaych

Web Secretary

Ashish Sagar MTech Representative

Cea Events

The Civil Engineering Association (CEA) was established to enhance knowledge distribution and address key challenges in the civil engineering industry. It serves as a platform for corporates, professors, and students, reflecting its status as a leading organization for civil engineers. The CEA includes both students and faculty, fostering a collaborative environment that bridges the gap between academia and industry. The association promotes civil engineering by organizing events that keep members informed about the latest industry developments and innovations. Understanding the importance of hands-on experience, the CEA regularly arranges site visits, enabling direct interaction with industry experts and offering practical insights into real-world engineering practices. Beyond technical pursuits, the CEA also values holistic development, engaging in social events as part of its extracurricular activities. By fostering collaboration and offering practical experiences, the CEA plays a pivotal role in shaping the future of civil engineering professionals.

SUMMER OF CORE

Summer of Core is an intensive summer program designed for students interested in honing skills in software like MATLAB, AUTOCAD and excel. The program is designed to provide students with a comprehensive experience in core. Students work on real-world projects and, engage in process optimization. The program is aimed at developing practical skills and problem-solving abilities, with guidance from expert mentors. Upon completion of the program, participants receive a certificate of completion, recognizing their achievements in the program. Additionally, the program offers internship opportunities, providing students with the opportunity to gain practical experience in the industry



ESPORTS WEEK

A Week-long Gaming Event Uniting Departments with a Range of Games. It was organized to promote a sense of camaraderie and provide students with an opportunity to showcase their gaming skills. The event was open to students from all departments and featured a range of popular games, including Call of Duty (COD), Valorant, Chess, BGMI (Battlegrounds Mobile India), and Clash Royale. And lastly the winners of the Esports Week were awarded prizes based on their performance in each game.



CEA Events

PG ORIENTATION

The Postgraduate (PG) Orientation Program was a significant event for new PG students, marking the start of their academic journey. It provided a chance to connect with peers, faculty, and the institution. The highlight was a speech by Professor Pushkin Kachroo from the University of Nevada, Las Vegas (UNLV), who offered valuable insights into the importance of research in both academic and professional fields.

UG ORIENTATION

The Undergraduate Orientation, both formal and informal, welcomed new students and helped them feel part of the academic community. The event aimed to create a supportive environment, encourage networking, and introduce students to the department's resources and opportunities. The formal session began with a welcome from the department head, who stressed the importance of academic excellence and community involvement. The faculty members outlined the curriculum, research areas, and extracurricular activities, while the faculty advisors were introduced to support students throughout their academic journey.

CONVOCATION CEREMONY

The 61st Convocation Ceremony was a memorable event celebrating the achievements of the 2023 graduating class. Distinguished guests, including Chief Guest Prof. T. G. Sitharam, a noted civil engineering academician, and Guest of Honour Shri V. P. Baligar, a visionary bureaucrat, graced the occasion. The ceremony was filled with pride as the Chief Guests inspired graduates to pursue excellence and contribute to society. It concluded with the distribution of degrees and medals, honoring the graduates' accomplishments.



TEACHERS DAY

The Teachers' Day celebration was a heartfelt event filled with gratitude. Teachers received personalized pens as tokens of respect, and students expressed their appreciation through personal notes, deeply touching the professors. Awards were given to faculty members for their exceptional contributions. The evening featured informal interactions, a cake-cutting ceremony, and snacks, making the celebration memorable and warm.

BOLLYWOOD CULT NIGHT

The event celebrated Bollywood culture and provided an entertaining evening for students. Freshmen showcased their talents through dance, music, and stand-up comedy, with performances set to popular Bollywood songs. The audience enjoyed fun games like Bollywood trivia, dance-offs, and charades. The highlight of the evening was the Mr. and Mrs. Freshers contest, recognizing students with charisma, talent, and personality.



CIVIESTA

Civiesta, the Civil Engineering Sports Week, took place from January 27 to February 2. The event promoted sportsmanship and teamwork through various sports, including football, cricket, badminton, volleyball, kho-kho, and table tennis. Winners and runners-up were awarded for their dedication and sportsmanship. Civiesta offered students a chance to engage in healthy competition and connect with peers outside the academic setting.



SILVER JUBLEE REUNION

The Silver Jubilee Reunion for the Class of 1998 was held at IIT Bombay from December 22-24, 2023. Former Civil Engineering graduates returned to relive old memories, and the Civil Engineering Association welcomed them with a commemorative souvenir. This batch also made a record donation of INR 57 crore, the highest ever by a silver jubilee batch at IIT Bombay.



TRADITIONAL DAY

During Traditional Day, students dressed in traditional clothing from various cultures. The Open Air Theatre became a vibrant hub for cultural exchange, featuring performances of traditional music, dance, and drama. The event celebrated the beauty and richness diverse cultural traditions, of fostering unity and strengthening within bonds the college community.



VALEDICTORY FUNCTION

The Valedictory Function (VALFI) marked the end of the college journey with a graduation ceremony. It began at Jalvihar with final year students in formal attire and a photoshoot. The event continued at FC Kohli Auditorium with speeches from the HOD and Professor Solomon Debbarma, along with presentations on the students' achievements. Awards were given to the graduating batch to honor their college experiences, and the event concluded with a dinner at Civil Cafe.

Gallery













































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 not only demonstrate their innovative ideas and engineering skills but also gain valuable insights from experienced professionals. This grand event acts as a catalyst for nurturing inventiveness, promoting entrepreneurship, and sparking creativity among students. With anticipation and excitement, we look forward to the opportunity to connect and embark on this exhilarating journey with all of you.Spanning two captivating days in the heart of March, Aakaar stands as the pinnacle of technical festivals, hosting a variety of competitions that resonate throughout the nation yearround. The horizon beckons, and we are always eager to unite and embark on this remarkable odyssey together.

Inauguration

Chief Guests: The Inauguration Ceremony featured the esteemed guests: K.M Chandrashekhar, Former Cabinet Secretary of India. Ved Parkash Dudeja Vice Chairman of RLDA.

CEO Power Hour



The "CEO Power Hour" lecture series made a remarkable debut as a new addition to the 16th edition of Aakaar, Asia's largest Civil Engineering Festival, hosted by IIT Bombay on March 16, 2024. This series brought together industry leaders to share their expertise and insights on pivotal topics in engineering and infrastructure.

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



- Mr. Ajay Kapur, CEO of Adani Cement Mr. Ajay Kapur presented on "Advancements in Concrete Technology: Paving the Way for Future Infrastructure Projects." His session provided a comprehensive overviewof the latest innovations in concrete technology, highlighting their potential revolutionize infrastructure development.
- Mr. Gaurav Pandey, MD & CEO of Godrej Properties Ltd. Mr. Gaurav Pandey discussed "Residential Real Estate in India," delving into the current trends, challenges, and opportunities in the Indian housing market. His insights offered a valuable perspective on the evolving landscape of residential real estate in the country.
- Mr. V. N. Heggade, Former CEO of STUP Consultants Mr. V. N. Heggade explored "Towards Net-zero: Smart Engineering Strategies for Carbon Neutral Construction," focusing on innovative approaches for achieving sustainability in construction.

Panel Discussion

A panel of esteemed dignitaries gathered at Aakaar 2024 to discuss and debate the topic "Smart Engineering for Tomorrow's Infrastructure." This engaging discussion provided the audience with valuable insights and perspectives from renowned and experienced professionals. The distinguished speakers who participated in this year's panel were: Madan Biyani, CFO, Jkumar Infraprojects Manoj Rustagi, CSIO, JSW Cement Rahul Sharma, CIO, TATA Projects Amol Patil, Sr. Specialist GM, Sika Dr. Sagar Malsane, Acting Dean, NICMAR.



AAKAAR Symposium:2024

Aakaar's Symposium is one of the biggest of its kind in the nation and features different kinds of research presentations from students. It provides 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. The Symposium aims to elevate research and civil engineering to a whole new level.

International Civil Engineering Symposium (ICES)

Since its inception, Aakaar at IIT Bombay has embarked on a grand adventure. Over the past six years, the International Civil Engineering Symposium (ICES) has garnered significant international participation. In its seventh edition, Aakaar once again showcased top research from around the world at ICES. This event provides a platform for aspiring researchers to present their work to the country's most talented professors, esteemed academics, and leading professionals in the field of civil engineering.

Paper Presentation

The ICES Paper Presentation offers students interested in research a platform to showcase their work to some of the nation's most accomplished professors, industry leaders, and experts in the field of civil engineering.

Poster Presentation

Aakaar introduced the Poster Presentation as a concise method for showcasing your study and understanding of a subject. This format involves analyzing, evaluating, and synthesizing the concept, as well as creatively presenting your research findings.

Thesis 180

Originally introduced last year as the 3 Minute Thesis Talk (3MTT), the event has been rebranded as Thesis 180. The competition cultivates PhD researchers from different IITs and NITs, who take part in presentation and research communication. It celebrates the exciting research taking place in India. Participants curate their thesis in such a way that they can express it in 3 minutes and deliver it to a jury that doesn't belong to the Civil Engineering specialization. This year marks the second edition of this event, coinciding with Aakaar's 16th edition in 2024.

COMPETITIONS:

BRIDGE-IT

This competition challenges participants to create the most efficient bridge using popsicle sticks, cotton threads, and adhesive while meeting specific criteria.



SEISMIC

Participants in SEISMIC must design a sustainable and earthquake-resistant structure using basic popsicle sticks to encourage the study of earthquake engineering among students.

CONQUER-IT

In this competition, participants are tasked with designing and casting high-strength, permeable pervious concrete to meet specified requirements.

LOGiQ

An online quiz series for civil engineering enthusiasts in India, covering basic to advanced concepts across various disciplines. Aakaar hosts LOGIQ in three phases: Phase-I, Phase-II, and Phase-III.

Industrial Design Problem

Showcase your creativity and innovation in the Aakaar Industrial Design Competition sponsored by HCC, focusing on "diesel reconciliation and optimization at project sites" as the challenge statement provided by HCC.

Workshops: Bridging Theory and Practice

Workshops serve as the perfect platform to connect theoretical knowledge with practical applications. At Aakaar 2024, workshops introduced leading professional software used in the construction field. Learning from top experts, participants gained in-depth knowledge of these tools, which will undoubtedly enhance their understanding of the subject. These sessions also offered opportunities to interact with like-minded individuals and seek clarification from professionals.

Revit Architecture Workshop

An immersive session in collaboration with Autodesk, unlocked the power of Revit Architecture. Participants elevated their design skills with Revit, the cutting-edge architectural design software revolutionizing the industry. This workshop provided hands-on experience and advanced knowledge, helping attendees stay ahead in the field of architectural design.







MISSIONS AND GOALS

Established in March 2021, the EERI IIT Bombay Student Chapter aims to advance earthquake engineering and related fields through study, practical application, and research. The primary objective is to encourage students to pursue careers in these areas by building relationships with experienced professionals. The chapter has outlined the following goals:

- Organize talks by industry experts and notable researchers in earthquake engineering.
- Conduct workshops tailored to students' interests.
- Create a global platform for students to engage in various EERI competitions and activities.

Organize outreach programs in local schools and organizations to enhance awareness of earthquake hazards.

CHAPTER ACTIVITIES

- Introduction session for new postgraduates and undergraduates in the civil engineering department at EERI.
- Orientation for the Seismic Design Competition (SDC).
- Special lecture by Mr. Umesh Rajeshirke, Managing Director of Spectrum Consultants Pvt. Ltd, discussing "Design and Construction of Cable-Stayed and Extradosed Bridges" scheduled for March 2, 2023.

QUAKEZONE

"Quakezone" is the official newsletter of the EERI IIT Bombay Student Chapter, released periodically. Issue 5 came out in December 2022, with Issue 6 following in May 2023. This newsletter offers unique perspectives on the newest research, designs, structures, and ideas in earthquake engineering. It also essential information features about conferences. upcoming events and "Quakezone" is distributed to all students, guests, and professors in the Department of Civil Engineering.



EERI IIT Bombay Student Chapter

EARTHQUAKE ENIGMA

The Earthquake Enigma event blends education with fun! In this online competition, students take on the role of "Googlers" and tackle questions and challenges that require them to use Google searches for solutions. These carefully designed questions aim to encourage critical thinking and immerse participants in the field of earthquake engineering. The Earthquake Enigma attracted over 225 participants from 30 colleges.



SEISMIC DESIGN COMPETITION (SDC) 2024

This chapter provides students with an international platform to participate in the Earthquake Engineering Research Institute's (EERI) flagship event, the Seismic Design Competition (SDC). In this competition, organized by EERI, participants design and construct a cost-effective building model capable of withstanding seismic loads. The SDC draws participants from prestigious universities and organizations around the world each year. IIT Bombay has been the sole representative from India in this competition for the past four years.

In our first year, we had a fantastic start by winning the "Charles Richter Award for the Spirit of the Competition" at the Seismic Design Competition (SDC) 2021, which was held online. This was the first time an Indian team had ever won an award at the EERI SDC. In 2022, 21 undergraduate students from the Department of Civil Engineering participated in the in-person SDC held in Salt Lake City, Utah, USA. Their building model successfully survived two major earthquakes without any damage, placing Team IIT Bombay 16th overall out of 32 teams.

IIT Bombay participated for the fourth time in the annual SDC 2024. SDC 2024 was held in Seattle City in Washington State, USA. 21 students from the Civil Engineering Department, IIT Bombay participated in SDC 2024. Six students from the team got the chance to represent team IIT Bombay in Seattle City in Washington State, USA. The competition spanned four days, progressing with different evaluation stages at each day. The team performed well but unfortunately, the structure collapsed. We ranked 3rd among all the collapsed structures. The improvement of IIT Bombay in SDC every year is highly commendable!

Glimpse of SDC 2024

MOVING AHEAD

Being a newly established chapter in the institute, we are expanding our range of activities. Our future endeavors are designed to not only benefit the institute's students but also the broader community, focusing on increasing awareness about seismic hazards and their prevention. These plans involve hosting regular lecture series by experts across different domains, providing software training, and conducting outreach programs within the institute and neighboring schools.

EERI IIT BOMBAY WELCOMES ALL

The EERI chapter at IIT Bombay is open to all. Embracing a wide range of disciplines within earthquake engineering, our chapter includes both postgraduate and undergraduate students from our institute. Our diverse community provides a unique opportunity to share knowledge, conduct research and fieldwork, develop managerial skills, and promote teamwork. Join us now and contribute to "Reinforcing Resilience."



TEAM SHUNYA Building a sustainable future

Team Shunya is a group of passionate students from I.I.T. Bombay dedicated to creating sustainable housing through innovative solutions. They're making a global impact with their eco-friendly initiatives. With their Solar Electric Vehicle (SEV) team, they're set to transform the automotive industry using advanced solar technology, championing clean energy in transportation, and inspiring a greener future.

TEAM SHUNYA

<u>STUDENT SUCCESS STORY</u> <u>Building a Sustainable Future: IIT Bombay's Team SHUNYA</u> <u>Wins Solar Decathlon</u>



Team SHUNYA, comprising a dedicated group of students from IIT Bombay and sustainability enthusiasts, placed first at the prestigious US Solar Decathlon Design Challenge 2024. The team took the premier spot in the Multifamily Building Division for their innovative Project Samsara. This achievement marks their third consecutive win at the prestigious international competition, held from April 19-21, 2024, at the National Renewable Energy Laboratory, Golden, Colorado.

Team SHUNYA, initiated 12 years ago by Prof. Rangan Banerjee (now the Director of IIT Delhi), embodies a commitment to promoting sustainable housing in an urbanizing nation. Their latest project, Samsara, embodies this vision, aiming to enhance health and safety within slum rehabilitation housing (SRH) in Mumbai, India. The project incorporates innovative void strategies, daylight autonomy, ventilation, and energy performance, coupled with a membrane-based heat pump system and a smart demand management system, resulting in a 60% increase in habitable area and a 35% improvement in daylight autonomy.

TEAM SHUNYA



The team that represented IIT Bombay in Colorado consisted of five passionate students:

- Mr. Prabhat Sharma (Team Lead, MSc PhD 3rd year, DESE)
- Mr. Ali Khan (Project Engineer, MTech 2nd year, CUSE)
- Mr. Varun Phadke (Junior Design Architect, MTech 1st year, CUSE)
- Ms. Simran Chaudhary (Junior Design Architect, MTech 1st year, CUSE)
- Ms. Zenab Kagzi (Junior Design Engineer, MTech 1st year, ESED)

They were guided by Prof. Gurubalan Annadurai, whose expertise and mentorship were crucial to their success.

"Participating in the US Solar Decathlon and representing India has been an incredible privilege," expressed the team. "We are deeply grateful to the US Solar Decathlon and IIT Bombay for providing the platform and support to realize our dreams and showcase India's potential."

Project Samsara is a testament to the team's dedication and innovative thinking. The retrofit proposal not only increased the building's habitable space but also made it Net Positive Energy, IGBC Net Zero Water, and Net Positive Carbon over its lifespan, all without displacing any tenants. These achievements were made possible through architectural interventions, new HVAC systems, and solar energy solutions for community kitchens, addressing both environmental sustainability and community well-being.

The journey to this victory was filled with challenges, from site constraints and structural limitations to improving community health and planning logistics for construction. Yet, through collaboration and determination, the team overcame each obstacle, demonstrating resilience and ingenuity.

A total of 40 teams representing 37 collegiate institutions participated in the Solar Decathlon Design Challenge 2024. Teams competed in one of four divisions:

TEAM SHUNYA



- Attached Housing
- Multifamily Building
- Education Building

Team SHUNYA's victory in the Multifamily Building Division, against strong competition from The University of Arizona and the University of Missouri, marks a significant achievement in the realm of sustainable design in multifamily housing.

The team gratefully acknowledged the unwavering support and guidance of their esteemed faculty advisors, alums, and mentors, who played a pivotal role in their success. "Every success we celebrate is built upon a foundation of challenges, sleepless nights, and hard work," the team reflected.

Team SHUNYA's triumph at the Solar Decathlon is not just a win for IIT Bombay but a beacon of hope for sustainable development and innovative housing solutions in India and beyond.

In celebrating Team SHUNYA's remarkable victory, we not only commend their dedication and ingenuity but also recognize the nurturing environment fostered by IIT Bombay. With its unwavering support and commitment to excellence, IIT Bombay continues to empower its students to push the boundaries of innovation and sustainability, leaving an indelible mark on the global stage. As Team SHUNYA's triumph demonstrates, when passion meets opportunity, the possibilities are limitless, echoing the ethos of IIT Bombay's mission to inspire, innovate, and lead. Once again, congratulations, Team SHUNYA!



Abhay Soni Strategy&

Hello everyone! My name is Abhay Soni.Growing up, I wasn't particularly into sports, but I was passionate enough about my hobbies to join the Aquatics team.As part of my 3rd year, I completed my summer internship at a strategy consulting firm, which, as the name suggests, is a top-tier strategy consulting firm. **Can you briefly describe your daily activities and responsibilities as an intern?**

My typical day started at 9:30 AM at the client office with a quick update meeting, followed by analysis or a market visit. While

working on a retail case in Pune, I visited the market to understand how the business operated on the ground.

Can you briefly describe the courses you took and recommend any additional courses or resources for those aiming for this internship?

Consulting involves breaking down complex problems into manageable parts. Preparation mainly includes solving cases. My strategy was to cover the CIC, use the case playlist on YouTube, form case practice groups with friends, and read key books from IIM Ahmedabad's SRC.

So what are some of these strategies you used to maintain a good work life balance?

Essentially, a good work-life balance comes from finishing your work on time. When you get back home, you want to make sure you're stress-free and have completed all your work, which comes from constant diligence and maintaining a dynamic daily task list. I personally recommend maintaining a task list and tagging it with a priority to ensure you don't miss anything.

What advice do you have for students moving from core to non-core fields?

When I transitioned from core to non-core with Angelika, I realized my interest in problem-solving went beyond standard IOS codes in civil engineering. I craved tackling unforeseen and diverse issues. To make this shift, identify your niche and explore opportunities that align with it. Reach out to seniors to learn from their experiences and understand their transition from core to non-core.



Hrithik Mhatre American Express

Hello, I am a fourthie and i did an internship at American express in my third year, considering pursuing an MS after completing my B-Tech degree.

Selection Process:

The initial stage includes a test on ML theory and case studies. This is followed by two interviews: the first focuses on ML fundamentals relevant to the industry, and the second includes a case study and a guesstimate exercise related to the company.

Preparation and Projects:

For machine learning, take Andrew Ng's Coursera course for theoretical knowledge. Engage in projects with SoC, SoS, and FinSearch, and consult professors for BTP or R&D opportunities in the Civil Engineering department. Consider a data science minor. Use TED Puzzles for practice and UGAC blogs for case studies.

Work-life:

The work schedule is quite flexible: you'll work from home for three days and be in the office for just two. It's best to handle your tasks during office hours when you can get support from others, as working from home outside these hours may lead to frustration. Many colleagues are from IIT and IIM, so they understand the challenges new interns face and are eager to help with any questions. You can choose from one of the three available work slots each day.

Challenge:

Industry projects differ from theory, requiring you to learn company-specific software for data analysis and machine learning. Initially, much of your previous knowledge may seem irrelevant. The first one to two weeks can be tough as you adapt to new software and adjust to a new city, including its environment and food.

Advice:

If you stop coding, you'll quickly forget what you've learned, so it's important to practice for at least an hour a day. Build a detailed resume showcasing solid projects. Make sure you're clear on all the concepts in your field of study, and include any positions of responsibility if you're pursuing a non-tech path.



Harshita Jaju Strategy&

Key Qualities:

Selection Process:

Preparation Tips:

Strategy& follows a structured recruitment process: attend their PPT, apply through IAF, undergo resume shortlisting, a buddy round, and then 1-2 case interviews plus an interview with a partner.

Use Case Interview Cracked (CIC) videos, practice with peers, get feedback from seniors, prepare for HR questions, and be familiar with your resume.

Confident communication, structured thinking, and engaging well with the interviewer were crucial in securing the position.

How did you prepare, and what additional learning resources or courses would you recommend to someone preparing for an internship in Strategy&?

For internship prep, start with Case Interview Cracked (CIC) introductory videos, practice with peers, and get feedback from seniors. In the days before the interview, prepare for HR questions and review your resume thoroughly.

What learning and development opportunities are available for interns beyond their specific project or role?

During my internship, I had plenty of learning opportunities. I was given a good amount of work from the start. As I showed that I could handle my tasks and take responsibility, I was given more independent work to do, which helped me grow and contribute more to the team.

Can you provide more insight into the day-to-day responsibilities and tasks of interns ?

Consulting interns use Excel for data analysis and PowerPoint for presentations. They clean data, build models, create slides, and contribute to team meetings, research, reports, and client communications. The role requires adaptability, ownership, and a proactive approach.



Mihir Borse L&T

Selection Process

The selection for an internship at L&T largely focuses on evaluating resumes to check for relevant software skills and interests. The interview assesses motivation and commitment, ensuring candidates are likely to stay engaged throughout the internship. Key qualities for securing a position include demonstrated leadership and management skills. The focus is less on technical expertise, which is usually judged from the resume, and more on your ability to work effectively in a professional environment.

Preparation and Resources

For preparation, students should take elective courses relevant to their target sector. AutoCAD is a recommended skill. Consulting with professors for additional insights and connections can also be beneficial.

Skills and Knowledge Gained

During the internship, practical exposure to large-scale projects like the Navi Mumbai International Airport and the Mumbai-Ahmedabad Bullet Train provided a deeper understanding of real-world construction processes. The focus was on management and simplification of technical details for on-site workers, rather than purely technical skills.

Projects and Impact

Interns typically work on significant projects. Interns handle tasks related to scheduling, on-site management, and project coordination.

Interns gain insights into corporate dynamics, project management, and safety practices. Mentorship is provided to guide project work and personal development.

Challenges and Adaptation

Initial challenges include adapting to the work environment and long hours, especially in hot climates. Overcoming these challenges involves focusing on the core aspects of the job.

Career Opportunities

Exceptional performance can lead to strong recommendations from mentors, which are valuable for further studies or career advancements., even more so than academic references.



Mahek Maheshwari NoBroker Hello, I'm Mahek Maheshwari, from Bharuch, Gujarat, is currently a 4th-year Civil Engineering student at IIT Bombay. During her third year, she interned at NoBroker and has been involved with the investment team and the IITB Rocket team.

Describe the Selection Process at NoBroker

The selection process began with an initial test round that included aptitude questions and a product case study. Candidates who performed well were shortlisted for the interview stage. The

interview itself began with an introduction, followed by a detailed

review of the resume. The interview also included a guesstimate question and some puzzles.

What Was the Most Challenging Task During Your Internship?

The most challenging task during her internship was understanding the entire business in order to work efficiently.

How Did You Apply Theoretical Knowledge in Your Internship?

Applying theoretical knowledge during the internship involved talking to many people and analyzing the resources provided by the company. This helped her learn more about her work and identify areas for improvement.

Preparation Tips for Internships

When preparing for internships, practice guesstimates, puzzles, aptitude, and quick math online. Create a strong resume highlighting key experiences, and research the company thoroughly before the interview.

Advice for Transitioning from Civil Core to Non-Core

Transitioning from a core to a non-core field, as the institute provides many opportunities it is easy to make the transition. However, it's important to be specific about one's interests in a specific non-core field and to seek relevant internships to gain experience in that area.

Future Steps Post-Internship

Looking ahead, to learn how to create product decks, as many companies require this for shortlisting. She also intends to learn Figma. The interview process for future roles will likely be similar to her internship experience.

Advice for Upcoming Internship Season

For the upcoming internship season, I advise strengthening my resume and practicing for tests if it's not strong enough. I should also prepare for interviews by practicing guesstimates, puzzles, and aptitude tests while being thorough with my resume.

Words by Graduating students



Sharad Vishwakarma B. Tech **Introduction:** I'm a software engineer .From the first COVID batch of 2020. During my time at IIT Bombay, I was a part of the Institute Tech Council, Tinkerer's Lab, and the student mentorship program, IIT Bombay Racing Driverless team and also participated in PAF. Originally from Silvassa, a place known for its delicious mangoes and cheap drinks.

My go to spot: Tinkerer's lab

The thing I'll miss the most : My friends have been an amazing bunch with great vibes and humor who stayed with me right from the start.

Happiest moment:

Looking at my family from the stage during the commencement ceremony

Advice to juniors:

Make the most of your time—explore different activities, go for POR's, enjoy night-outs, trips with friends, random dates, and save the studying for exams.

Skills that I gained here:

Managing my anger issues, mastering last-minute prep, and overcoming the anxiety I used to feel when things didn't go as planned.



Anshul Pawar B. Tech

Hi, I'm Anshul Panwar, soon graduating from the civil department. I joined in 2020 with a sports background, having represented my district. After a break since 10th grade, I returned to sports at the institute, playing hockey (shocking even for me ^(c)) and winning a bronze at Inter-IIT. I served as Sports Convener, Institute Hockey Secretary, and General Secretary of Sports Affairs. I'll be joining SLB as a field engineer.

Tagline: Supportive with allies, uncompromising with rivals **Message to Juniors:** Stay open-minded. Day 1 jobs are rare, so explore other opportunities. Don't limit yourself.

The thing I'll miss the most about insti: The unique blend of academics and extracurriculars.

Happiest Moment at insti: Getting Elected as GSSA My go-to-spot: Gymkhana The most quirky tradition of insti: GPL My Academic life:



B. Tech

Introduction:

Hi, I'm Sarthak Raj, a recent civil engineering graduate. I was part of the institute tech community and spent 2 years with team AUV. I've mentored around 50 mentees across ISMP, DAMP, DCAMP, and ITSP. Now, I'm a software engineer.

The most unforgettable memories :

Sharad Vishwakarma What I'll miss most about the institute are the people, the greenery, Boathouse, H18 rooftop, the strong sense of community, and the crazy stories.

Your advice for juniors :

For career advice, consider these key points: what fields are viable options for you, your aptitude in the chosen field, any personal traits or background that give you an edge, and the scope of the field-will you be happy if the path changes? Remember, failures and rejections happen to everyone. A strong resume and interview prep are important, but even one success after many failures can define your career.

Skills gained here :

I've improved my self-esteem, networking skills, and ability to make a strong impression in interviews and beyond.

Why you opted for software engineering:

I've always excelled in math, problem-solving, and algorithmic thinking, with a family background in software engineering giving me an edge. Initially considering electronics, I switched to software and did multiple internships to gain experience—it just clicked.

Summing up academic years over the institute with an emoji :

I think I speak for the entire batch of 2024 when I say 💀 🐏

Something I wanted to do but never had the courage to:

Nothing, to be honest. I'm very decisive and oddly fearless . You only live once, you know.

Thing I'll miss the most about the insti: The greenery and spaciousness, the sense of community

Placement Stats

Civil Engineering 2023-24



Number of job offers :

- 2019-2020:100
- 2020-2021:103
- 2021-2022:99
- 2022-2023:174
- 2023-2024:146

M.Tech M.Tech+ Ph.D.

Dual Degree

B.Tech

Ph.D.

Placement in each program :

- B.Tech: 97
- M.Tech: 41
- Ph.D:5
- M.Tech + Ph.D : 1
- Dual Degree : 2



Artworks by Students





The IIT Dream

हार नहीं मानूँगा , रार नहीं ठानूँगा , जीवन की इस अप्रेम मेंट मे , जीत के दियाँऊंग , इस मेंट का लक्ष्य ॥त ही सही , नहीं तो NIT ही सही , नहीं तो ता तजुबी ही सही , पर इस प्रेम ने हमें , लड़ना तो सिया ही दिया । अवसर है तो लवड़ के दियाओ , नहीं है तो जीवन में आगे बढ़ के दियाओ, नहीं है तो जीवन में आगे बढ़ के दियाओ , नहीं है तो जीवन में आगे बढ़ के दियाओ , नहीं है तो जीवन में आगे बढ़ के दियाओ , याद करो वह दिन जब तुमने इस यात्रा में धेर्य और अनुशासन के महत्व को समझा था , याद करो वह दिन जब तुमने 11T के सपने को देखा था , तुम अब उस दिन जब तुमने 11T के सपने





Artworks by Students













190040070 **Piyush Choudhary**



200040004 Aashi Ranjan



200040013 Aishna Tijaria



200040021 Angoth Vidhya



200040030 **Ashish Sharma**



200040037 Bootharaju Madhav



190040113 Shreyas Nagu



200040007 Abhinandan Bhardwaj



200040015 Akkabathula Kartheek



200040022 Anjali



Atharva Nema



200040038 Chaitanya Langde



190040137 **Shameem Ahmed**



200040010 Aditya



200040016 **Akshat Jain**



200040023 Anmol Bhatwalkar



200040032 Avinash Kumar



200040039 **Danish Aziz**



200040001 Aaditya Ola



200040011 Aditya Kumar



Alakh Agrawal





Avinash Nikam



Devaansh Patel



200040002 Aakash Kumar Jha



200040012 Aditya Sharma



200040020 Ande Vasanth



200040025 Anuj Jakhar



200040035 Ayush Parmar



200040041 **Devang Tiwari**



























200040042 Devanshu Saraf



200040049 Dylan Rodrigues



200040057 Gourav Dhaka



200040063 Himanshu Suvata



200040069 Kale Rushikesh



200040074 Ket Vikram Kishor



200040043 Dhananjay Kumar



200040051 Gaurav



200040059 Gundepogu Prakash



200040065 Ishan Gupta



200040070 Kanak Athnere



Kishan Kumar



200040044 Ms. Dhruvi Amaliya



200040052 Gaurav Prajapati



200040060 Gunupuru Sai



Ishit Garg



200040071 Karan Bhushan



200040077 Maitreya Varun



200040046 Dinku Khichi



200040054 Gautam Asodiya



200040061 Harsh Somani



Shubham Jadhav



200040072 Kartik Saxena



200040079 Manvi Baid



200040047 Divyansh Agarwal



200040055 Ghayre Sunil



200040062 Himanshi Yadav



200040068 Jeevan Rohitas



200040073 Katole Paarth Vivek



200040081 Mittal Gaurang



200040082 Vinayak Mittal



200040088 Nidhi Chaudhary



200040098 Pintu Kumar Saw



200040104 Prarthana Kumari



200040110 Priyanshu Meena



200040117 **Rajesh Meena**



200040083 Mudke Nilkanth



200040090 Nitesh Mandal



200040099 Piyush Raj



200040105 **Prashant Shivhare**



200040113 **Raghav Rander**



200040118 Rajurkar Ketaki



200040084 Mukul Raj



200040091 Nitin Singh



200040100 Pooja Saini



200040106 Prateek Jha



200040114 **Raghav Rawat**





200040086 Neha Kumawat



200040092 **Parimi Sudheer**



200040101 **Prableen Kaur**



Praveen Diwakar



200040115 **Raghav Sheoran**



200040121 Aditya Rana





200040087 Netra Parihar



200040096 **Pathula Simon**



200040103 Prapti Sao



200040109 Praveen Saharan



200040116 **Rahul Sevariya**



200040122 Ravi Agarwal











200040123 Rishikesh Gunjal



200040137 Shreyanshi Agarwal



200040145 Swasti Pahuja



200040153 Tushar Choudhary



200040164 Vishal Meena



200040125 Ravi Rathod



200040140 Somya Sharma



200040146 Tanisha Bansal



200040157 Utkarsh Bhardwaj



200040166 Vivek Singhal



200040126 Sagar Saini



200040142 Srinika Velugoti



200040147 Tanu Singh



200040159 Vadlamudi Santosh



200040168 Yash Kumar



200040129 Sakshi Sanjay



200040143 Sujas Jain



200040149 Tejasv Shrivastava



200040161 Varun P Raipat



200040169 Yogesh Meena



200040132 Sharad Vishwakarma



200040144 Sunandinee Mehra



200040152 Rishi Kumar



200040163 Vinit Kumar Meena



20D180031 Sarthak Raj





190040040 Shantanu Anil



190040001 Aashuraj Hassani



22M0595 **Rabil Jain**



22M0613 Arpan Adhikari



22M0555 **Avinash Pandurang**



22M0608 Ashutosh Kumar



22M0586 Akash Khandelwal



22M0612 **Ram Mani Chalise**



22M0596 Surabhi Praveen



22M0615 Sarthak Joshi



22M0604 Hardik Harilalbhai



22M0584 **Rudresh Dharmendra**



22M0591 Shivam Basant



22M0563 **Rugma Sunil**



22M0600 Pragya Tiwari



22M0620 Bhaskar Balaji



22M0553 Kamlesh Kushwaha



22M0585





Julfeekar



22M0602 **Aashutosh Thakur**



22M0605 Sankhat Kuldeep



213040018 Harshada Dattatraya



213046001 Anjali Choudhary Gavali Mandar Bharat Aarti



22M0590 Kavichelvan G K



22M0601 Kundan Karn



22M0606 Gonuguntla Bhavya



22M0551 Vishnu Vamsi



22M0556 **Prakhar Singh**



22M0609 Sachin Yadav



22M0589 Anagha Murali



22M0611 Saroj Sah Teli











22M0575 Neduri Harsha



22M0554 Amit



22M0619 Irfan Ali



22M0603 Sujit Narayan Singh



22M0574 Saurabh Khandelwal



22M0542 Sachin Gupta



22M0544 Khan Gazanfar Ali Ateeque Ur



22M0564 Aiswarya S Raj



22M0570 Samagra Vijaywargiya



22M0545 **Rishav Kumar**



22M0548 Ashish Sagar



22M0561 Suvatman Dhar



22M0616 Abhishek Mina



22M0547 Monu Thakur



22M0546 Satish Patel



22M0560 **Dilshad A**



22M0543 Riya Mishra



22M0617 **Rohan Ileyas**



22M0549 Karmakar Akash Chaitanya



22M0562 Pranjal Kumar



22M0558 **Chetan Singh**



Landge Makrand



Dilip Yadav



23M0628 Aye Kyaw Zan

Graduating Students of 2024 (PGDIIT)



22M0588 Harshit Kumar



Graduating Students of 2024 (PhD)



174040015 Anusha Adavikottu



174046013 Sooraj Krishnan





174040011 Vinayaraj V. S.



184040010 Shahana A



184044002 Satwik Pankajkumar



164043002 Yogeendra R. Holebagilu



174046003 Nartu Manoj Kumar



184040019 **Rohit Sharma**



174040006 **Bijul Raveendran**



144040020 Ankita Kumar



134047002 Vijay Balwant Malti





194046002 **Dinesh Bishnoi**



194048002 Malla Vijayeta



174043002 Roopashree M.S.



Prashant Sandipan



Tanniru Srinivasarao Sayantan Chakraborty



184044006 Namrata Gupta



184040009 **Akshay Prakash**



184040008 Chitrangini Sahu



184044004 Jaikishan Damani



184046010 Kukku Sara P E

