FISAT- ICI STUDENT CHAPTER ANNUAL REPORT 2024

Department of Civil Engineering

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1. National Seminar on Concrete 3D printing

17 - 19 January 2024

The department organised a Three-day National Seminar on Recent Advances in 3D printing from 17-19 January 2024. The national seminar was partially funded by Kerala State Council for Science Technology and Environment (KSCSTE) in association with the student chapters of ICI, IGBC and ASCE.

The program was inaugurated by Dr. Rahul A V, Assistant Professor, IIT Tirupati, former faculty member at FISAT, on 17th. Dr. Rahul delivered the first Keynote address, which explored the diverse techniques and future opportunities of 3D printing of buildings. The session provided a comprehensive understanding of the basics of 3D printing and its operational mechanisms.

This was followed an online session by Dr. Manu K Mohan, Post Doc. at Ghent University, Belgium, who delved into the intricacies of 3D printing applications in buildings. The third session of the day was handled by Er. Shyju Nair, Executive member, ICI Kochi Chapter.

This session focused on the fundamentals of Mix designing, where he provided detailed explanations of each step and offered insights on how to interpret each aspect from the code. The interactive nature of the session made it particularly beneficial for both students and faculty members, providing valuable knowledge in the domain.

The second day of the seminar unfolded with a captivating keynote session led by Mr. Aswin, Official, Tvasta, Chennai. Tvasta is on of the pioneers of 3D printing of buildings in the country.An IITM Startup, they are engaged in multiple projects in the country including the first 3D printed home of Kerala at Thiruvananthapuram. Tvasta uses an indigenously developed technology, except for some components in the robotic arm, which are imported as they are not available in India. The concrete mix with a special binding material used by it is patented.

Mr. Aswin provided a comprehensive introduction to 3D technology in buildings and shared insights into various successful Twasta projects completed in India. Following the keynote, an interactive session engaged the audience, addressing numerous queries and fostering a dynamic exchange of ideas. Mr. Aswin also conducted a live demonstration of the 3D printing process directly from the Chennai 3D printing plant. Participants were treated to an insightful exploration of the practical aspects of 3D printing.

Later in the day, Mr. Tom Anto, Assistant Professor, Department of Mechanical Engineering, FISAT, hosted a session at the FAB lab of FISAT. His session focused on small-scale 3D printing, offering a detailed explanation and hands-on demonstration of the process within the lab. Participants gained valuable practical insights, enhancing their understanding of the intricacies of 3D printing technology.

The final day commenced with a session led by Mr. Mahesh C, Assistant Professor, Department of Computer Science and Engineering. The session was about intersection of machine learning and 3D printing. This insightful exploration added a unique perspective to the seminar's thematic focus.

The valedictory session featuring Dr. Robert Thomas, Regional Engineer, Kerala State Nirmithi Kendra, Ernakulam was held on 19th. Dr. Thomas captivated the audience by showcasing a construction 3D printed structure in Trivandrum through engaging videos, offering a comprehensive overview of the construction process. A thought-provoking Q&A session ensued, allowing participants to seek clarifications and deepen their understanding.

The event served as an effective platform for both faculty and students, facilitating the exchange of knowledge and practical insights into recent advances in 3D printing. The seamless integration of keynote sessions, workshops, and interactive discussions rendered the seminar an enriching and valuable experience for all participants.

2. Navigating the Future of Sustainable Built Environment

29 January 2024

Report on technical talk titled “Navigating the Future of Sustainable Built Environment” on Date 29 January 2024 by the Presenter Mr. Hariram NP, Research Scholar, University of Malaysia, Pahang.

The presentation "Navigating the Future of Sustainable Built Environment" by Hariram NP, a research scholar from the University of Malaysia, Pahang, provided valuable insights into the importance of sustainable built environments and the strategies for achieving them. The presentation emphasized the need for a holistic approach to

address the environmental, social, and economic challenges facing the built environment sector.

Key Takeaways:

1. Sustainable Built Environment: The presenter highlighted the importance of sustainable built environments in reducing greenhouse gas emissions, conserving natural resources, and promoting human well-being.
2. Challenges: Hariram NP discussed the challenges facing the built environment sector, including climate change, urbanization, and resource depletion.
3. Strategies: The presenter outlined several strategies for achieving sustainable built environments, including:
   - Integrated design and planning
   - Green building technologies
   - Renewable energy systems
   - Sustainable transportation systems
   - Waste reduction and management
4. Case Studies: Hariram NP presented case studies of successful sustainable built environment projects from around the world, highlighting the benefits and challenges of implementing sustainable design and construction practices.
5. Future Directions: The presenter concluded by emphasizing the need for continued innovation and collaboration to address the complex challenges facing the built environment sector.

Recommendations:

1. Interdisciplinary Collaboration: Encourage collaboration among architects, engineers, policymakers, and stakeholders to develop holistic solutions for sustainable built environments.
2. Green Building Technologies: Promote the adoption of green building technologies and renewable energy systems to reduce the environmental impact of buildings.

3. Sustainable Urban Planning: Encourage sustainable urban planning practices, including compact and connected urban design, to reduce the need for personal vehicles and promote walking and cycling.
4. Education and Training: Provide education and training programs for built environment professionals to develop the skills and knowledge needed to design and construct sustainable buildings and communities.

The presentation "Navigating the Future of Sustainable Built Environment" by Hariram NP provided valuable insights into the challenges and opportunities facing the built environment sector. The recommendations outlined above highlight the need for interdisciplinary collaboration, green building technologies, sustainable urban planning, and education and training to achieve sustainable built environments

3. Nirman 2K24- Seminar & Exhibition of Building Materials

02 March 2024

BAI STATECON2024, the yearly conference of Builders Association of India (BAI) was hosted by BAI Angamaly Centre on 2nd of March 2024. The conference took place at the Adlux Convention Centre, Karukutty, and offered the opportunity to listen to eminent speakers, join panel discussions, and meet other members.

As part of the StateCON, BAI Angamaly Centre jointly organised NIRMAN2K24, an intercollegiate competition on Mass Urban Modular Housing Design with a prize pool of Rs. One Lakh, that focused on innovative concepts for mass urban dwelling that was no more than 500 square feet. The purpose of the event was to foster creativity and innovation among engineering and architecture students. The proposal that was put forth needed to be novel, affordable, scalable, sustainable, and mass-producible. ICI student chapter members participated in the event.

A total of sixteen teams enrolled and submitted their plans, project specifications, elevations, budgets, and material details by February 18th, which was the deadline for registration for the project competition. A group of specialists assessed the proposals, and by February 20th, the best 10 projects had been chosen. Teams that were chosen were notified via email and were required to get ready by February 28th to submit a comprehensive entry that included a PowerPoint presentation and a 3D representation.

The top four project ideas from the ten submissions were asked to present their ideas to the judges and the public on March 2nd. The projects' specifics, their path, their sustainability features, and their benefits to society were all covered in the presentations. The presentations, which included interaction with the judges panel, lasted no more than fifteen minutes and were delivered using PowerPoint presentations.

The award distribution event by the sponsors took place after the results were declared on the same day. With a prize money of Rs. 40,000, Team SEED from SEED-APJ Abdul Kalam School of Environmental Design was declared the contest winner. The St. Gits College of Engineering, Kottayam submission won second place, and the Federal Institute of Science and Technology (FISAT) and SCMS School of Architecture entries shared third place.

4. Conventional Building Designing V/s Building Information Modeling (BIM)

05 March 2024

In the ever-evolving landscape of Architecture, Engineering, and Construction (AEC), the methods of designing and constructing buildings have undergone significant transformation.
On 5th March 2024, the department hosted a technical talk titled "Conventional Building Designing V/s Building Information Modelling (BIM)" in collaboration with the Association of Civil Engineers (ACE) and the ASCE Student Chapter.

The talk provided attendees with an opportunity to explore the fundamental differences between conventional building designing methods and the revolutionary paradigm offered by Building Information Modelling (BIM).

The session was handled by Mr. Akhil Babu, the Technical Head of SolidCAD Kottayam, and his colleague Mr. Ananthu Gopan. The session provided insights and practical demonstrations, shedding light on the transformative potential of technology in the AEC industry.

At the heart of the discussion was the dichotomy between conventional building designing methods and the innovative approach of Building Information Modelling (BIM). Conventional methods which are reliant on two-dimensional (2D) drawings and physical blueprints, have long been the cornerstone of architectural practice.
These methods are increasingly being supplanted by the modern, intelligent 3D model-based approach offered by BIM, remarked the speakers. By leveraging advanced 3D modelling technologies and incorporating additional dimensions such as time, cost, and as-built operation, BIM empowers AEC professionals to envision, simulate, and optimize building designs with unparalleled precision and accuracy.

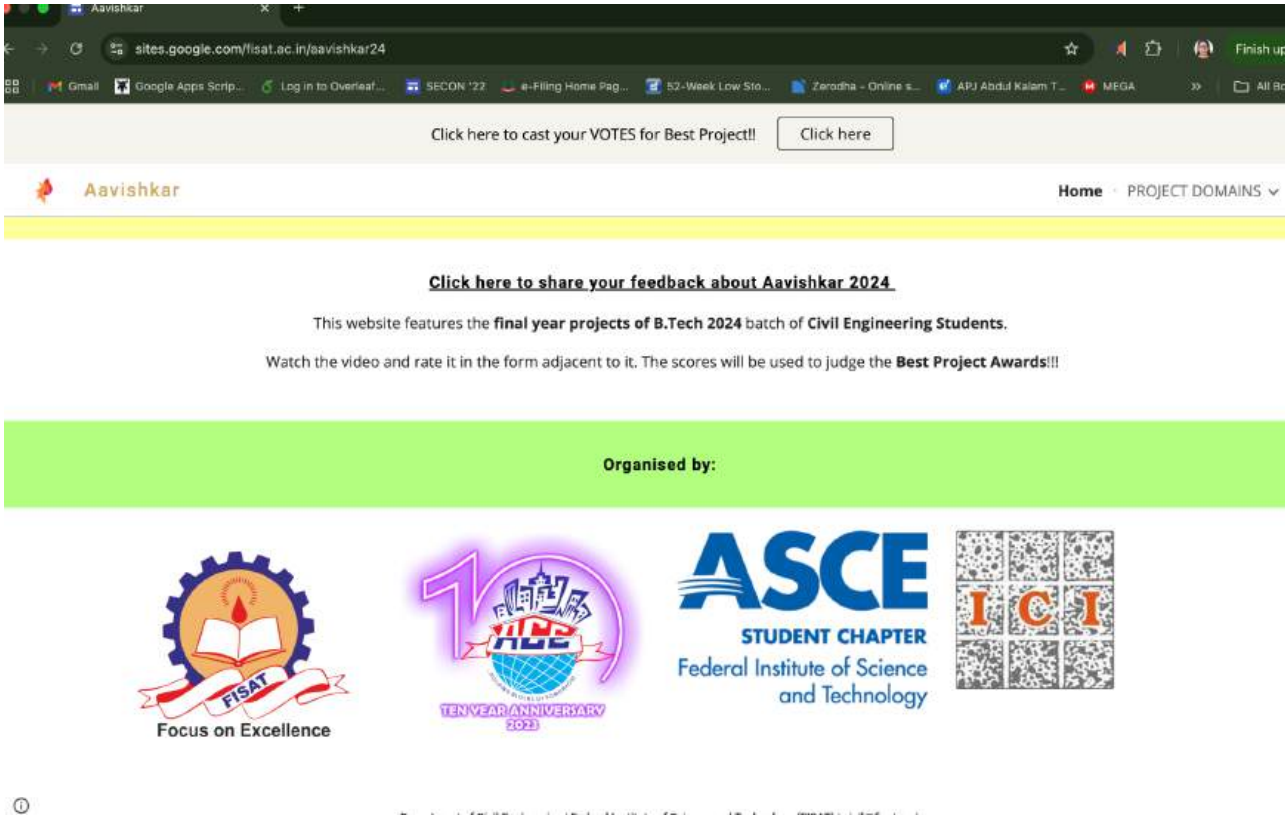
The session provided attendees with a first-hand glimpse into the applications of BIM through real-time project examples and practical demonstrations. During the session a fully designed, yet customisable residential building using Virtual Reality (VR) accessories was demonstrated.

The technical talk served as a platform for exploring the dichotomy between conventional building designing methods and the transformative potential of Building Information Modelling (BIM).

5. AAVISHKAR 2024 - Project Exhibition ICI Ultratech Awards

01 to 10 May 2024

AAVISHKAR 2024, the much-anticipated project expo of the final year students of the Department of Civil Engineering at FISAT, showcased the culmination of the students' main projects. The expo was held online, providing a platform for students to present their hard work and innovative ideas. Participants were required to upload a two-minute video of their project work on the AAVISHKAR 2024 website.



The AAVISHKAR 2024 website was made accessible to the public, allowing viewers to explore the various projects and cast their votes based on the merit of each submission. Viewers could vote in the following categories: Best Project, Best Project with Social Relevance, Best Project with Industrial Relevance, Best Innovative Project, and Award for Best Video Presentation. This interactive element engaged the community and added an exciting competitive edge to the expo.

The evaluation of the projects in each category was based on a comprehensive marks regime, ensuring a fair and thorough assessment. The merit of each project was judged by an Expert Committee, the AAVISHKAR Panel and the public rating. This multifaceted evaluation process ensured that projects were assessed from both technical and innovative standpoints, as well as their overall presentation quality.

Based on the total marks achieved, winners were determined in each category. Each winning project received a cash prize of ₹2000, recognising and rewarding the hard work and creativity of the students.

The categories and the evaluation criteria highlighted the diverse aspects of engineering projects, ensuring a holistic appreciation of the students' efforts. The "Best Project" category focused on overall excellence, while the "Best Project with Social Relevance" acknowledged projects that addressed societal needs. The "Best Project with Industrial Relevance" recognized those with practical applications in the industry, and the "Best Innovative Project" celebrated creative and forward-thinking solutions. The "Award for Best Video Presentation" acknowledged the clarity, professionalism, and impact of the video submissions.

The winners of AAVISHKAR 2024 demonstrated remarkable skills and innovation, showcasing the high caliber of education and training provided by the Department of Civil Engineering at FISAT.

6. SECON’24 - International Conference

05 to 07 June 2024

The construction industry is changing due to artificial intelligence (AI) in a number of ways. By employing AI to generate digital twins of their projects, construction companies can save time and money by testing out various scenarios prior to starting construction. By producing 3D models of buildings and other structures quickly, software driven by artificial intelligence is assisting engineers and architects in their design work. AI is also being utilized to raise construction site safety standards.

Construction businesses may significantly increase their management, speed, and efficiency by integrating AI into their workflows. SECON'24, the Eight Annual Conference and the Fifth International Conference, is organized by the Department of Civil Engineering at the Federal Institute of Science and Technology (FISAT) in Kochi, India, in collaboration with the Indian Concrete Institute (ICI) - Kochi Centre, the Institution of Engineers (India) (IEI) - Kochi Local Centre, the Indian Green Building

Council (IGBC) - Student Chapter, the Indian Society for Technical Education (ISTE) - FISAT Chapter, and the Builders Association of India (BAI) - Angamaly Centre.

The conference will focus on the main theme "Digital Twins in Construction Industry," as well as 10 tracks that will examine breakthroughs and innovations in various fields of Civil Engineering. In the course of three days, the conference intends to become a platform for researchers to present, discuss and bring out the outcomes of the research and developments in the broad domain of Civil Engineering with focus on leveraging AI in their construction workflows and the development of infrastructure. SECON'24 will be a hybrid conference enabling participation of all delegates around the globe both in person or through online media making the conference accessible to all.

7. Technical Session and Visit to Dr. Fixit , Kalamassery

25-29 July 2024

The Dr. Fixit Experience Centre is a unique initiative by Pidilite Industries, aimed at enhancing awareness and exploration of modern waterproofing solutions. It is designed to cater to architects, builders, and contractors by showcasing various waterproofing products, innovations, and application practices through visuals and demonstrations. The Experience Centre provides end-to-end solutions, shares global knowledge on waterproofing, and offers expert advice and training. It's a place where professionals from the construction industry can seek guidance and get hands-on experience with the latest waterproofing technologies.

As part of the academic curriculum, a field visit was organised for the 7th semester students of the Department of Civil Engineering, FISAT to the Dr. Fixit Experience Centre in Choornikkara, Kochi. The students were divided into three batches, each comprising a maximum of 37 students. The visit dates were 26th, 27th and 29th of July 2024. Each group was accompanied by a faculty member from the department. The primary aim of this visit was to provide students with practical insights into waterproofing technologies and their applications.

Upon arrival, the teams were warmly welcomed by Dr. Fixit professionals. The visit commenced with an introductory session in the conference room, led by Mr. Mohanan. He gave an overview of the day's schedule and expressed enthusiasm for the students' interest in waterproofing technologies. Mr. Mohanan provided a detailed introduction, emphasising the importance of waterproofing for building longevity and safety.

He discussed common waterproofing issues, solutions, and provided an overview of various Dr. Fixit products, including Dr. Fixit LW+, Pidifin 2K, and Roofseal Topcoat. The applications and benefits of each product were thoroughly explained. The session discussed proper surface preparation and the application of different waterproofing coatings. The tea break in between helped with informal interactions between students and Dr. Fixit staff.

The practical segment of the visit included live demonstrations in the designated demonstration area. Dr. Fixit professionals showcased techniques for cleaning and preparing surfaces before waterproofing and demonstrated the application of waterproofing products on various surfaces. This hands-on experience enabled students to interact with the professionals, ask questions, and discuss real-world challenges and solutions related to waterproofing. The professionals shared their experiences and offered valuable advice on best practices.

The visit concluded with a feedback session conducted by students from each of the batch, who expressed gratitude for the comprehensive and informative sessions. Certificates of participation were distributed to all students by Mr. Mohanan.

8. Concrete : An Enigmatic Designed Construction Material

23 August 2024

The Department of Civil Engineering, in collaboration with ACE, ICI, ASCE, IGBC, and IIC, organized a technical talk on “Concrete- An Enigmatic Designed Construction Material" by Er.Shyju Nair, CEO of DH Academy and Secretary of ICI Kochi Chapter, on 23 August 2024. Er.Shyju Nair, an expert in civil engineering, shared deep insights into the properties, advancements, and sustainable applications of concrete in modern construction. The session, attended by approximately 40 students and faculty members, provided an engaging platform to explore innovative practices in concrete technology. The event was highly informative and encouraged active participation, sparking discussions on future trends in civil engineering materials.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9. Site Visit to Topco Curved Structures Pvt. Ltd.

27 August 2024

Department of Civil Engineering in association with ASCE student chapter, ICI, IGBC and IIC has organized the industrial visit to Prime Steels, Kanjikode, Palakkad on 27 Aug 2024. Accompanied by Dr. Asha Joseph and Mr. Sreerath S, about 40 students from different batches of the department actively participated in this fruitful event.

10. Participate in Two-day National Workshop on "Emerging Trends in Resilient Infrastructure."

27 to 28 September 2024

A team of students from the ICI FISAT Student Chapter, under the esteemed guidance of Dr. Kavitha P.E., participated in a two-day National Workshop on "Emerging Trends in Resilient Infrastructure." The event, organized by the Indian Concrete Institute (ICI) Kochi Centre, took place on the 27th and 28th of September 2024 at the Gokulam Park Convention Center, Kochi.

The workshop served as a platform for students and professionals to explore the latest advancements in resilient infrastructure, focusing on sustainable and innovative construction practices. Eminent speakers from academia and industry shared insights on cutting-edge technologies and materials that enhance the durability and adaptability of infrastructure.

11. Green Home Tech Workshop 1.0 (Third Edition)

16 to 19 December 2024

The BAI student chapter of our department and the Builders Association of India (BAI) Angamaly centre conducted a six day skill development workshop on eco friendly home construction technology, “Green Home-Tech Workshop 1.0” for S5 CE from 11th-16th September 2023 at FISAT. This is the second add on program the department is organising in association with BAI Angamaly Centre

The objective of the add on course was to introduce the students to latest materials and construction practices in the field of pre fabricated construction. The program commenced with an ice breaking session led by Mr.Baiju, explaining about the different perspectives to life as a civil engineer, how to achieve one's own life goals, how much effort needs to be put in, eventually summarising how to own a successful life. Furthermore there was a session by Mr. Sunny elaborating on ideas on pest control in the construction field, methods on controlling pests that affect the life of building were shared. Students were batched into groups and they were encouraged to work as a team.

On the second day, students were given a session on positive attitude by Mr. Manoj Govind (CEO Skilltech), instructed them how to solve a problem in such a way that it favours everyone surrounding it. The session was eye opener, making the students realise the potential within them.

An ingrained idea about Prefabrication methods, materials and advantages were explained to students by Mr.Saijan Kuriakose (Founder,Skilltech) and Mr. Joy Paul. Mr. Saijan explained what Light gauge steel fabrication (LGSF) means, how it is going to replace conventional construction methods and materials. According to him, LGSF is a total game changer in construction as it makes a huge cut on time and money required for construction. Mr.Joy Paul described the advantages of prefabricated structures over normal concrete structures when it comes to climatic effect on structures.

Students were introduced to the eco-friendly products offered by companies like Denwud, Lamit, Aizer etc. The samples of the materials were shown during the session. The usage of upgraded products like steel fabrications, AIZER water gutters, fibre cement board, UPVC, Ceramic Roof tiles, ecolight products & cladding products were also given.

On the the last day, a site visit was organised to Green Park, Koratty, which is a Fr.Chiramel charitable trust institution. A detailed session on solar power was given by the executive of Olympus. They also introduced the various allied services the company offers. The last day of the 6 day add-on session was a mix of professional and cultural activities including presentation on topics such as UPVC, rainwater gutter, roofing products and cladding products. The winning group for best presentation was chosen and thereafter the program concluded.