

EDIFICE

VOL 10- ISSUE I

**THE NEWSLETTER OF THE DEPARTMENT OF
CIVIL ENGINEERING**



JUNE 2025

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1. FROM HOD'S DESK

Dr.N. Sivakumar
Professor and Head of the Department

"Hard work surpasses innate talent when the latter lacks diligence."

As Winston Churchill aptly stated, "Success is not final, failure is not fatal: it is the courage to continue that counts."



With great enthusiasm, we present the June 2025 issue of Edifice, the official Department of Civil Engineering newsletter, which celebrates our academic milestones, research achievements, industry collaborations, and outstanding student accomplishments. Guided by the new 2024 regulations, our curriculum bridges strong theoretical foundations with hands-on practical training—underpinned by expert guest lectures, workshops, webinars, and value-added courses in structural design, site engineering, and project execution. Students have engaged in internships at premier institutions, participated in site visits, and excelled in national-level competitions, including quizzes, hackathons, technical symposiums, and project expos, bringing top honors and inventive solutions to the department. Domain experts have shared deep insights on topics like blast-resistant concrete, clean energy systems, and slope stability, fostering innovation and industry relevance.

Our vibrant student chapters and technical organizations actively host events that apply classroom learning to real-world challenges. We are also proud to welcome several new doctoral scholars from diverse backgrounds, whose contributions are strengthening our research culture. At the heart of the department is a commitment to holistic development: our students are not only academically accomplished but also collaborative, leadership-driven, and ready to shape the future of engineering. As Robert Browning aptly said, "The best is yet to come." Here's to a successful, innovative, and inspiring academic year ahead—together.



2.FACULTY ARTICLE

INTEGRATED FARMING FOR CLIMATE RESILIENCE IN INDIA: A HOLISTIC APPROACH TO SUSTAINABLE LIVELIHOODS - DR. ASWIN SRIRAM G

1. Introduction

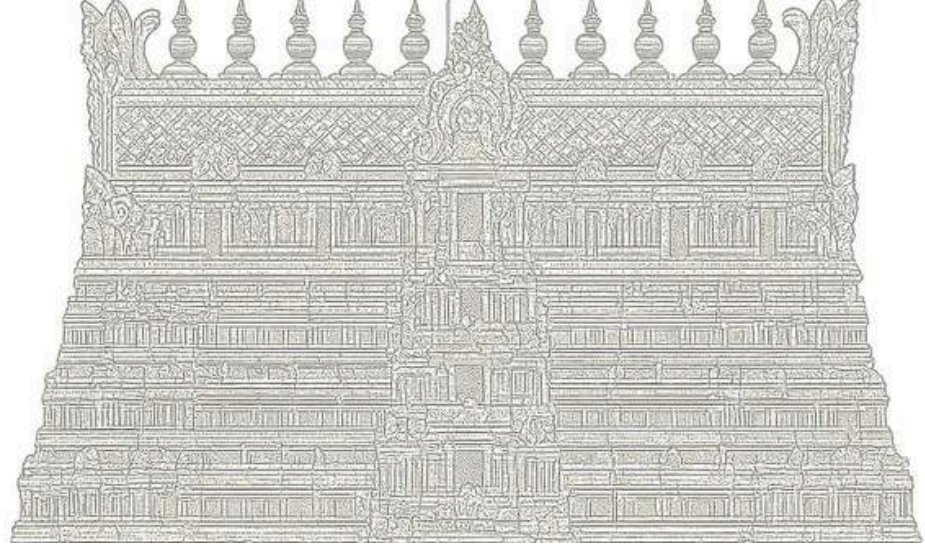
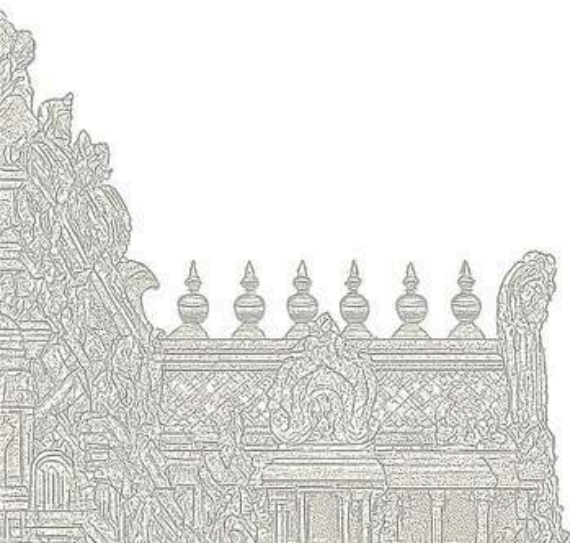
The world today stands at a critical juncture where environmental degradation, resource depletion, and climate volatility are converging into a complex global crisis. The Intergovernmental Panel on Climate Change (IPCC) has warned that the planet is already experiencing a temperature rise of over 1.1°C above pre-industrial levels, with far-reaching consequences. India, in particular, is grappling with erratic monsoon patterns, intensifying heatwaves, water stress, and decreasing agricultural productivity.



According to the Economic Survey of India (2022–23), nearly 52% of India's net sown area is rain-fed, making agriculture highly vulnerable to climatic shocks. Meanwhile, growing urbanization is aggravating the problem by putting immense pressure on food supply chains, freshwater availability, and waste management systems. Traditional agriculture systems, which depend heavily on chemical inputs, large-scale land use, and seasonal rainfall, are proving inadequate in the face of climate uncertainty. Moreover, with the rapid expansion of cities, peri-urban and urban spaces are generating increasing volumes of household waste and greywater, which often go untreated and unmanaged. This dual problem — shrinking agricultural viability and escalating waste — demands a novel, decentralized, and resilient solution.

Integrated farming offers such a solution, where food, water, and waste are managed synergistically in a closed-loop system. It is a model where aquaponics, hydroponics, and aeroponics are integrated with aquaculture-based wastewater reuse and organic composting, enabling food production using minimal land, recycled water, and waste-derived nutrients.

By connecting natural biological cycles, integrated farming turns every household or community space into a micro-ecosystem — producing vegetables, fish, and compost while minimizing environmental impact. This approach is not merely a scientific advancement; it is a moral and ecological imperative. In the Anthropocene era, where human actions are directly altering planetary systems, integrated farming presents a way to decouple development from destruction. It promotes climate resilience through water conservation, waste valorization, carbon footprint reduction, and local food security — all while supporting key Sustainable Development Goals (SDGs).



Tamil Nadu, one of India's most agriculturally diverse and culturally rich states, has historically placed a high value on farming as both an economic backbone and a way of life. From the fertile plains of the Cauvery Delta to the terraced fields of the Western Ghats, agriculture has shaped the social, cultural, and environmental landscape of the region for centuries. Ancient Tamil literature like the Thirukkural and Sangam poetry glorified agricultural labor and emphasized the ethical stewardship of land and water.

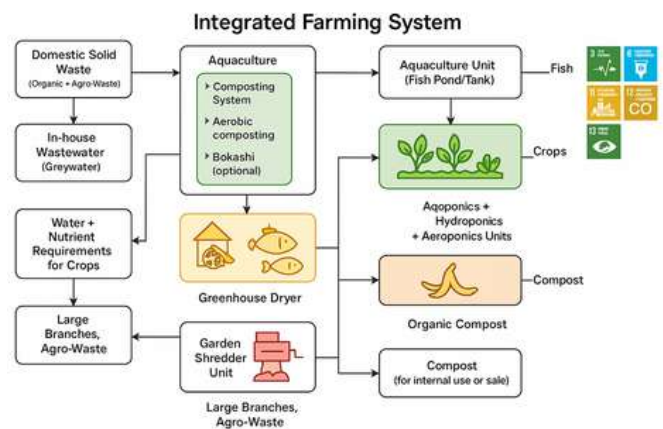
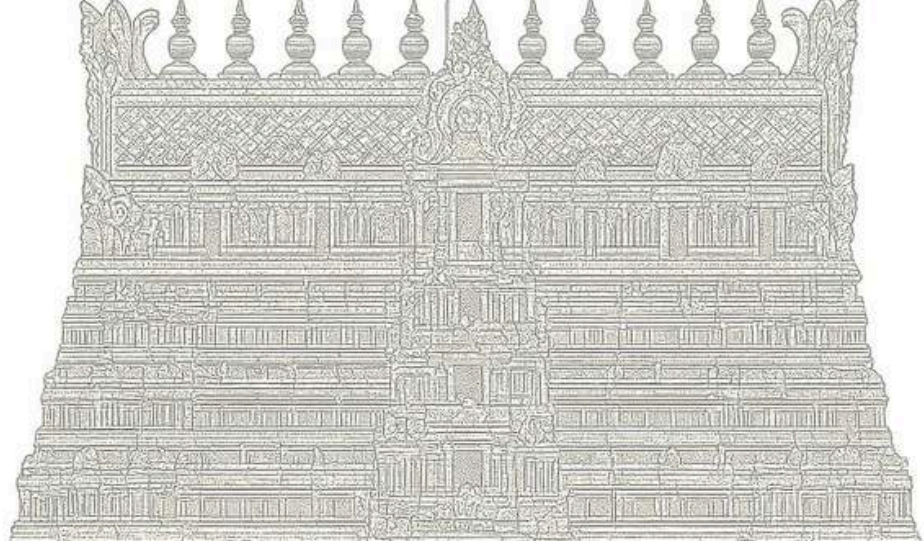
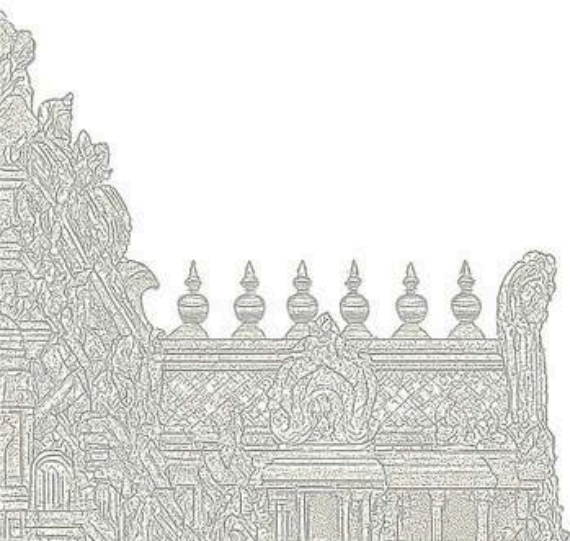


Fig.1 – General schematics of Integrated Farming

Today, even as the state urbanizes rapidly, agriculture continues to play a crucial role in rural employment, food security, and ecological balance. Government schemes such as the Tamil Nadu State Agricultural Marketing Board, the Tamil Nadu Organic Certification Department (TNOCD), and the Mission on Sustainable Dryland Agriculture (MSDA) reflect the state's commitment to modernizing agriculture while respecting its traditional roots. However, challenges such as groundwater depletion, monsoon unpredictability, and shrinking cultivable land demand innovative interventions. Integrated farming, with its emphasis on circularity, low water demand, and small-space viability, aligns naturally with Tamil Nadu's agricultural ethos and offers a scalable model for sustaining this vital sector in the face of climate change.

Integrated farming presents a transformative opportunity for Tamil Nadu to align its agricultural heritage with future-ready, sustainable practices. By coupling this model with Micro, Small, and Medium Enterprises (MSME) development, the state can foster decentralized entrepreneurship in areas such as compost production, aquaponic crop sales, and small-scale aquaculture. Such integration not only enhances self-sufficiency but also empowers local communities, particularly in peri-urban and rural areas, to participate in climate-resilient food systems. With Tamil Nadu's policy support and legacy of innovation in agriculture, integrated farming can serve as a living model of sustainable development—bridging ecological balance, economic viability, and community welfare. This approach positions every household not just as a consumer, but as a micro-enterprise contributing to a regenerative, low-carbon future.





2. Components of the Integrated Farming System

AQUAPONIC SYSTEM

2.1 Aquaponics, Hydroponics, and Aeroponics

These soilless farming techniques rely on nutrient-rich water to grow crops in confined spaces with minimal water use. In aquaponics, fish effluent provides the nutrients needed for plant growth. Hydroponics uses water-soluble mineral nutrients in a closed loop. Aeroponics involves suspending plant roots in air and misting them with nutrient solution, reducing water usage by up to 90% compared to conventional farming.

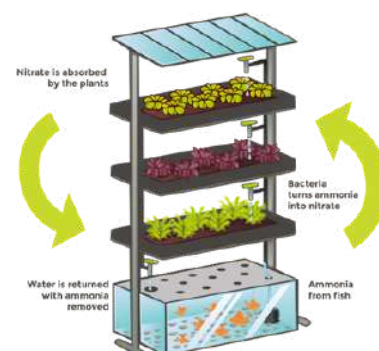


Fig.2- Modus Operandi of Aquaponics

2.2 Aquaculture-Based Wastewater Reuse

Greywater generated from kitchens and bathrooms, when partially treated, can be reused in aquaculture systems. The system supports fish such as tilapia or catla, which help biologically filter the water. This treated water can then be used in aquaponics, establishing a water-efficient circular chain.



An Aquaponic Fish farm in Tirunelveli
Source – Elite organic farms

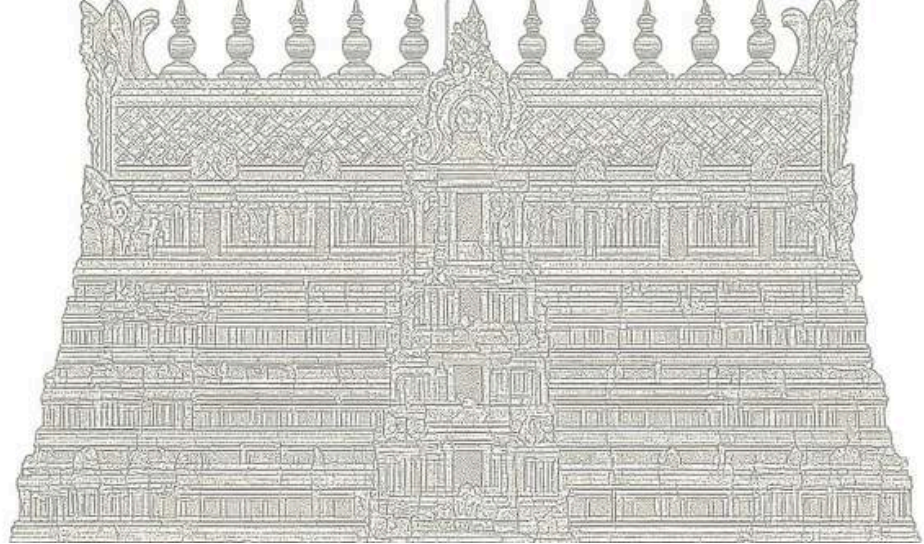
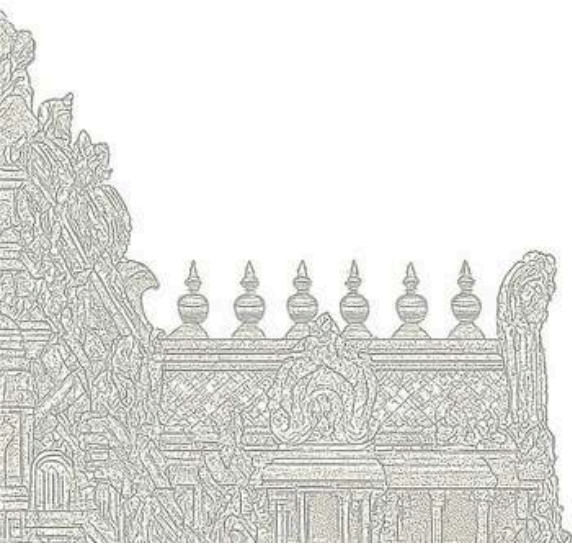
2.3 Composting Using Domestic Organic Waste

Household organic waste, including food scraps and garden clippings, is processed through aerobic composting or vermicomposting. Additionally, a greenhouse dryer is employed to pre-dry wet waste such as fruit peels. A garden shredder helps reduce bulkiness of agro-waste, enhancing composting efficiency.

2.4 System Integration and Workflow Design

A systems-based approach is adopted where outputs from one component feed into another. Wastewater from aquaculture enters aquaponics. Compost derived from domestic waste nourishes plants grown via hydroponics or in auxiliary soil-based setups. The greenhouse dryer and garden shredder serve as pre-treatment units. This integrated sequence ensures a near-zero waste operation.





2.5 Revenue Generation Potential

The model generates three core revenue streams:

- Crop Production: High-yield leafy greens, herbs, and vegetables can be harvested every 30-45 days and sold in local markets.
- Fish Cultivation: Small-scale aquaculture can yield up to 20 kg of fish monthly per 1000-liter unit.
- Compost Sales: High-quality organic compost fetches a premium rate from nurseries and kitchen garden communities.

This multi-stream income can provide Rs. 3000–5000 per month in urban or peri-urban settings, depending on scale and market linkages.

2.6. Environmental and Climate Benefits

The integrated system addresses multiple environmental concerns:

- Water Conservation: Water recirculation minimizes fresh water demand.
- Waste Reduction: Organic waste is diverted from landfills, reducing methane emissions.
- Carbon Footprint Reduction: Reduced reliance on chemical fertilizers and transport-intensive food systems.
- Climate Resilience: Localized food systems reduce vulnerability to supply chain disruptions.

2.7. Alignment with Sustainable Development Goals (SDGs)

- SDG 2 (Zero Hunger): Promotes household food security.
- SDG 6 (Clean Water and Sanitation): Enables water reuse.
- SDG 11 (Sustainable Cities): Encourages urban self-reliance.
- SDG 12 (Responsible Consumption): Establishes circularity.
- SDG 13 (Climate Action): Reduces emissions and enhances adaptation.

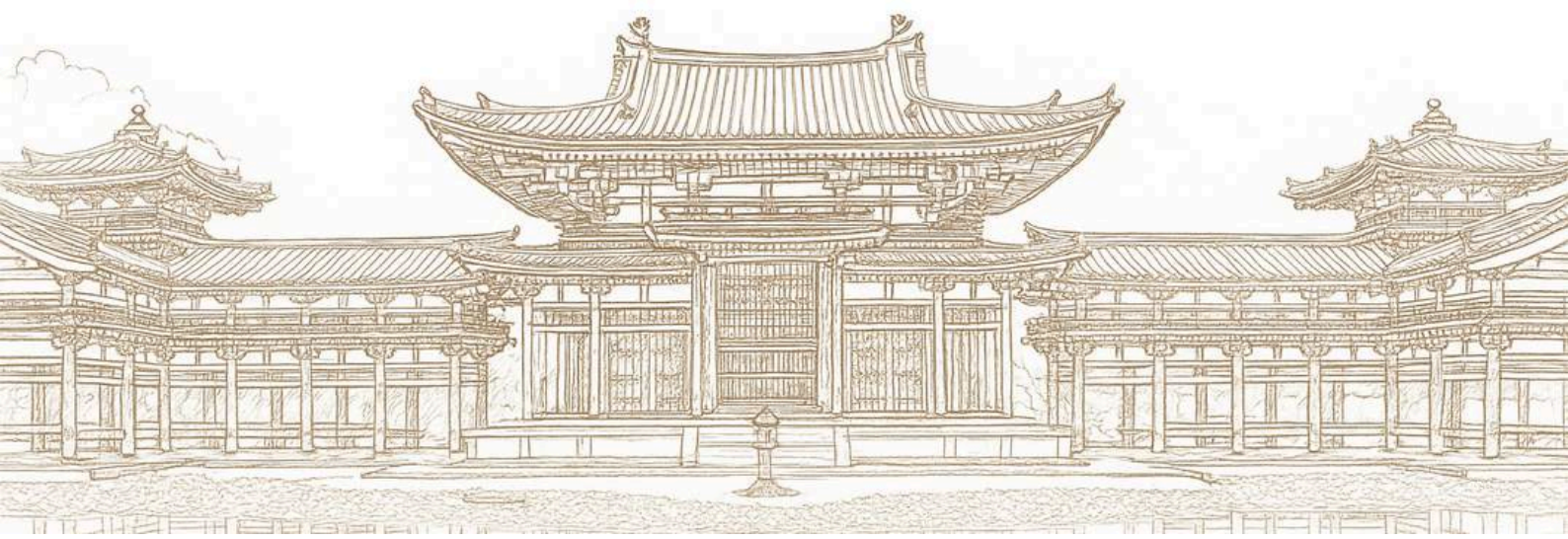
2.8. Technical Feasibility and Scalability in India

The proposed model is adaptable across various Indian climatic zones. With low capital investment and modular design, it can be adopted by:

- Urban households (rooftop/terrace setups)
- Rural households (backyard scale)
- Schools and community centers (educational farms)

Affordable sensors can be integrated for pH, temperature, and moisture monitoring to improve crop yields. Government schemes like Rashtriya Krishi Vikas Yojana (RKVY) and urban agriculture initiatives can provide financial support.





2.9. Challenges and Mitigation Measures

- Initial Setup Cost: Can be addressed through subsidies or cooperatives.
- Knowledge Gaps: Resolved through training workshops and digital resources.
- Maintenance Needs: Simplified automation and shared community infrastructure can ease operational loads.

3. Conclusion

Integrated farming offers a powerful, localized response to the intersecting challenges of climate change, food insecurity, water scarcity, and waste mismanagement. By closing the loop between food production and resource recovery, it fosters a regenerative model that is both environmentally sustainable and economically viable. In the context of Tamil Nadu, where agriculture is deeply rooted in cultural identity and livelihoods, this model resonates strongly with traditional values and modern needs. When supported by MSME frameworks, integrated farming transforms into a decentralized enterprise platform capable of generating income, reducing ecological footprints, and strengthening community resilience. It empowers individuals and households to transition from resource consumers to sustainable producers. The model's adaptability to both urban and rural settings ensures wide applicability, while its alignment with multiple SDGs makes it a strategic tool for long-term development planning. By promoting local innovation, skill development, and circularity, integrated farming can catalyze a green transformation rooted in grassroots action. Its implementation calls for multi-stakeholder involvement, including government support, civil society participation, and public awareness. Ultimately, integrated farming represents not just a technique, but a paradigm shift toward climate-resilient, self-reliant, and sustainable living in India.





3. NOTABLE ACHIEVEMENTS OF STUDENTS

We are immensely proud to announce that our students have collectively secured **61 awards** across various intercollegiate and national-level competitions this academic year. These achievements span prestigious events conducted by top institutions such as **IIT Madras, Anna University, SSN College of Engineering, Rajalakshmi Engineering College, Sri Venkateswara College of Engineering, Crescent Institute of Technology, SRM Valliammai Engineering College, Chennai Institute of Technology, and Annamalai University**. From technical symposiums and quizzes to design challenges and project expos, our students displayed commendable performance in every arena.

The awards include top positions in events such as paper presentations, ideathons, debates, technical quizzes, project displays, and even sports tournaments. Their active participation and consistent wins in flagship events like **CEA Fest, Civilisation, Artifex, ConCraze, Ziggurat, Encender, and Fenestra** highlight their passion, creativity, and technical prowess. This remarkable success reflects the department's strong foundation in academic excellence, innovation, and a drive to excel beyond the classroom. 🎉🏆

To know more
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Civil Engineering Students Achievements in Various Competitions



4. PLACEMENT ACTIVITIES (AY 2024-2025)

The placement season for Civil Engineering Department just concluded with massive support rendered by CDC- placement cell, student placement coordinators and department placement club. We have achieved more than 60 percentage placement in both on-campus and off-campus mode. Majority of the placement offers are Core category with companies like Amazon with a salary of ₹16.38 LPA, Wood with ₹6.0 LPA, Worley with ₹7.5 LPA, Dow Chemicals with ₹8.4 LPA, Zepto with ₹4.5 LPA, and Technip Energies with ₹6.1 LPA.

There are few off-campus recruitment in progress and we are confident that we will reach very good results in the coming months. One of our students, has also secured an admission in NUS for his higher studies master program. The Civil Engineering Department of Sri Sivasubramaniya Nadar College of Engineering organized internships for students of the 2022–2026 batch across different sectors, including core civil engineering companies, government agencies, and research institutions. A total of 60 students are currently pursuing internships after their semester exams between from May 2025 to June 2025, with duration ranging from one to two months.

The internships were classified into three main categories: core civil engineering companies, government agencies, and research institutions. Core companies, such as Larsen & Toubro Limited (L&T), Dow Chemicals, and Technip Energies, are providing training in construction, structural analysis, and project management. Government agencies, including Chennai Metro Rail Limited (CMRL), Water Resources Department (WRD), and Public Works Department (PWD), focuses on infrastructure and public works. Research institutions, such as the NIT – Calicut, and NATPAC (National Transportation Planning and Research Centre), offers opportunities to engage in advanced research and development. The department of civil engineering wishes all the best for the students on their future endeavours.

Dr. Aswin Sriram G
Placement Coordinator



5. FACULTY DEVELOPMENT PROGRAMME-2025

Dr. R. Vijayalakshmi and **Dr. Manthiram Karthick** organized a Faculty Development Programme on "Smart materials and AI in Civil Engineering" from 09-12-2024 to 14-12-2024.

The Faculty Development Programme on **Smart Materials and AI in Civil Engineering** at SSN CE, in civil engineering department explored advanced materials and intelligent technologies revolutionizing infrastructure design and construction. The program covered applications of AI in structural health monitoring, predictive maintenance, and sustainable construction using smart materials, enhancing research and pedagogical capabilities of educators. Faculties from various institutions participated.



Prof. V. Sampath, Formerly Professor (HAG) Department of Metallurgical and Materials Engineering Indian Institute of Technology Madras visited the department of civil engineering on 09-12-2024 and delivered lecture titled "Shape Memory Alloys in Structural Engineering Applications." As a part of FDP



6. INTERNATIONAL CONFERENCE - 2025

SPICE 2025: The International Conference on Sustainable Practices and Innovation in Civil Engineering (SPICE) is organized annually by the Department of Civil Engineering. This year marked the 6th edition of the conference. SPICE 2025 provided a platform for academicians, researchers, students, and industry professionals to exchange innovative ideas and sustainable solutions in the field of Civil Engineering. The conference featured keynote addresses by distinguished experts from institutions such as Walailak University, Thailand; Petra Christian University, Indonesia; CSIR - National Environmental Engineering Research Institute (NEERI), India; IIT Tirupati, India; this was followed by multiple paper presentation sessions. A total of 122 abstracts have been received from various parts of the country and abroad.



SPICE 2025



7. ACTIVITY ROUNDUP – PROFESSIONAL SOCIETIES

7.1 Association of Civil Engineers (ACE)

Dr. Sivapriya S.V organized a hackathon to " CIVHACKATHON 360" on 24.03.2025 for I, II-, III- and IV-year students under the banner of Association of Civil Engineers



CIVHACKATHON 360

Dr. S.V. Sivapriya organized a guest lecture titled "Practical Implementation of Shear Strength Parameters and Slope Stability Concepts" delivered by Er.Sureshkumar.L, Asst Engineer, CPWD, Chennai on 02.04.2025 held at, Department of Civil Engineering for under the banner of ACE.

7.2 Institution of Civil Engineers (ICE) UK

Dr. Surendar Natarajan & Dr.Sivakumar N organized an International Guest Lecture on " Blast Resistant Concrete: A new innovative concrete material to resist the blast loading delivered by Dr Mohammed Alias Yusof Professor, Civil Engineering, Universiti Pertahanan Nasional, Malaysia on 23-01-2025 for the civil engineering students under the banner of Institution of Civil Engineers (UK), Students chapter.



International Guest Lecture on " Blast Resistant Concrete

Dr Preethi. V & Dr. Sivakumar N organized an International guest lecture titled "Clean energy systems - Research, Development and Demonstration delivered by Prof.A.M.Kannan, Arizona State University, US on 30-01-2025 held at EEE Seminar Hall for civil, mechanical, EEE & Chemical engineering students.

Dr. Radhika organised a guest lecture titled "Civil Engineering Testing Solutions by ITW India Pvt Ltd (BiSS-Division)" delivered by Dr. Somayya Ammanagi on 24th February 2025 at Department of Civil Engineering for BTech students.

Dr. Surendar Natarajan & Dr. Sivakumar N organized the National-level Technical Competition on " ICE Tech Fest" - ICE ENGINUITY -25 on 04.04.2025 under the banner of ICE (UK) Student Chapter.



PAPER PRESENTATION



CROSSWORDS



MOVIE MANIA



IPL AUCTION

" ICE Tech Fest" - ICE ENGINUITY -25 on 04.04.2025





Dr. Radha S & Dr. Surendar Natarajan organized the technical presentation on "Instrumentation and Canal Automation" with technologies of Edge Wireless Communication in Dam Areas, Machine Learning in Disaster Communication and Early Warning Systems, AI-Driven Edge Computing for Real-Time Monitoring in Dam Infrastructure, Integration of AI-IoT for Structural Health Monitoring: Convergence of artificial, Underwater Technology and LoRA WAN Based Communication on 12.04.2025. Dr. M. Selva Balan, Scientist 'E' (Joint Director), Ministry of Jal Shakti, and Head acted as speaker in Technical Presentations.



Dr. M. Selva Balan, Scientist 'E' (Joint Director), Ministry of Jal Shakti- Interacted with SSN Faculty Members



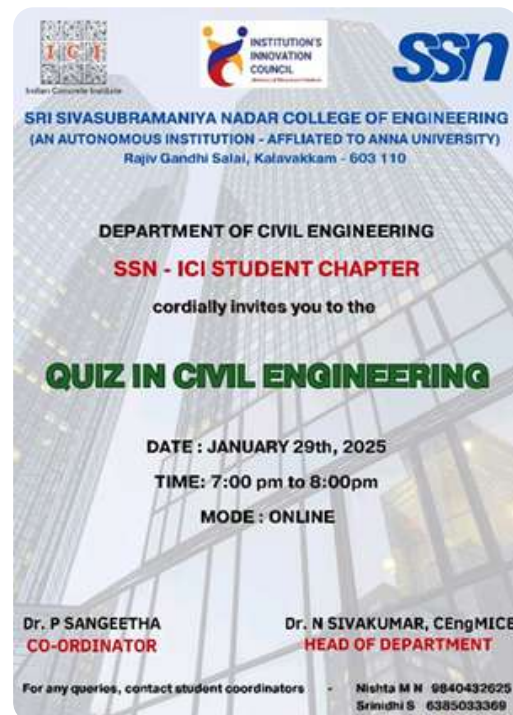
7.3 Indian Concrete Institute (ICI)

ICI conducted various events like guest lecture, online lecture series and ICI fest.

Dr. Sangeetha P organized a Quiz Competition on 28-01-2025 for Civil Engineering Students under the banner of ICI Student Chapter.

Dr. P. Sangeetha organized the National-level Technical Competition on "ICI Tech Fest" on 20.03.2025 under the banner of ICI Student Chapter.

Dr. N. Sivakumar organized an Industrial Visit to CMRL - Precast Yard at Semmancheri, OMR on 18.03.2025, coordinated by **Dr. P. Sangeetha**, under the banner of ICI Student Chapter



7.4 Institution of Engineers India (IEI)

IEI organized an online guest lecture, value added courses .

Dr. Vijayalakshmi & Dr.Sivakumar N organized a guest lecture titled "Conservation And Restoration Of Heritage Buildings" delivered by Mr. Kalyanasundaram, Former Superintending Engineer Tamil Nadu Public Works Department on 09-01-2025 for Second year students civil engineering students under the banner of IEI Student Chapter.

Dr. R. Vijayalakshmi organized a guest lecture titled "Aluminium Form Work & Mivan Technology" delivered by "Mr. B. Gurunathan, Asst.Vice President – Projects, MAN INFACONSTRUCTION LIMITED" on "24/02/2025" held via Online platform" for "Fourth Year Civil Engineering Students" under the banner of "Institution of Engineers (India) Student Chapter."

Dr. Vijayalakshmi R organized Value Added Course on "Safety in Construction" for second year civil engineering students during 17-03-2025 to 28-03-2025.



7.5 Indian Green Building Council (IGBC)

IGBC Professional society conducted events like seminar, workshop.

Dr. Srinath Rajagopalan and Dr. Aswin Sriram organized a seminar to first year students of Department of Civil Engineering on the topic Igniting Entrepreneurial Minds: A talk on Startups and Innovation. The talk was given by Mr. T. Giridharan, SSN Ifound CEO on 26.02.2025 at the Civil seminar Hall under the banner of IIC 7.0 & IGBC student chapter

7.6 KRACIVA

Dr. S.V. Sivapriya has organized and **Dr. Manthiram Karthick** coordinated appreciation day on 07.04.2025 under the banner of KRACIVA (Fun Club) and ACE.



8. MOU

An MoU has been signed between Northeastern university and SSN CE for a period of 3 yrs.

A Memorandum of Understanding (MoU) was initiated between Sri Sivasubramaniya Nadar (SSN) College of Engineering and the CSIR-Structural Engineering Research Centre (CSIR-SERC) on 13.05.2025, at the CSIR-SERC campus in Chennai.

A Memorandum of Understanding (MoU) has been signed between Taiwan Carbon Shuttle Technology Co., Ltd and Sri Sivasubramaniya Nadar (SSN) College of Engineering for a duration of three years.

9. SITE VISIT

Dr. Srinath R and Dr. Surendar Natarajan organized a site visit to Sewage Treatment plant for III-year civil engineering students to SSN CE on 17.2.2025



Site Visit to Sewage Treatment-SSN CE

10. INDUSTRIAL VISITS

Dr. Surendar Natarajan & Dr. Sangeetha P organized an Industrial Visit to Idukki Dam on 21-12-2024 for the Final Year Civil Engineering Students Batch of (2021-2025).

Dr. Surendar Natarajan & Dr. Sangeetha P organized an Industrial Visit to Sea Blue Shipyard-Cochin on 23-12-2024 for the Final Year Civil Engineering Students Batch of (2021-2025).



**Idukki Dam Downstream Side Visit
on (21-12-2024)**



Dr. Radhika V organized Industrial Visit for II-year civil engineering students to “Rainbow Pipes” from 28.02.2025 to 04.03.2025, Manipal, Karnataka.



**Industrial Visit to Rainbow pipes-Manipal, Karnataka
(II-year Civil Engineering Students)**

Dr. Surendar Natarajan organized an Industrial visit for III-year civil engineering students to “Mattupatty reservoir- Idukki district, Kerala” on 04.3.2025 along with **MS. Sumetha R**, under the banner of ICE Student Chapter.



**Industrial Visit to Mattupatty Reservoir- Iddukki District, Kerala
(III-year Civil Engineering Students)**



Dr. Surendar Natarajan organized an Industrial visit for III-year civil engineering students to “Tata Tea Factory-Munnar Kerala” on 05.3.2025 along with **MS. Sumetha R**, under the banner of ICE Student Chapter.



Industrial Visit to Tata Tea Industry -Munnar, Kerala (III-year Civil Engineering Students)

Dr. N. Sivakumar organized an Industrial Visit to CMRL - Precast Yard at Semmancheri, OMR on 18.03.2025, coordinated by Dr. P. Sangeetha, under the banner of ICI Student Chapter.



Industrial Visit to CMRL- Civil Engineering Students



11. PUBLICATIONS

The Department of Civil Engineering has published **17 research articles** in the last six months across reputed journals spanning Q1 to Q4 categories, showcasing the quality and diversity of ongoing research. In Structural Engineering, significant contributions have been made toward understanding the performance of advanced concrete systems and the application of artificial intelligence for modeling composite behavior and fiber-reinforced concrete. **Sustainability in construction** has also been a focus, with studies exploring the reuse of glass waste and granite dust in concrete. In Geotechnical Engineering, researchers have examined complex pile behavior under lateral loads, innovative uses of natural and industrial waste for soil reinforcement, and the potential of recycled materials in geotechnical applications. The Water Resources and Environmental Engineering group has addressed key challenges through research on **wastewater treatment technologies, groundwater-surface water interactions, and eco-friendly solutions for urban environmental issues**. These interdisciplinary efforts highlight the department's commitment to advancing civil engineering knowledge through impactful and relevant research.

To know more 📌

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12. CONFERENCES

The faculty members of the Department of Civil Engineering at SSN College of Engineering have actively contributed to the academic and research community by participating and presenting technical papers at prestigious national and international conferences. Their work spans key specializations including Structural Engineering, Water Resources Engineering, Geotechnical Engineering, Transportation Engineering, and Environmental Engineering.

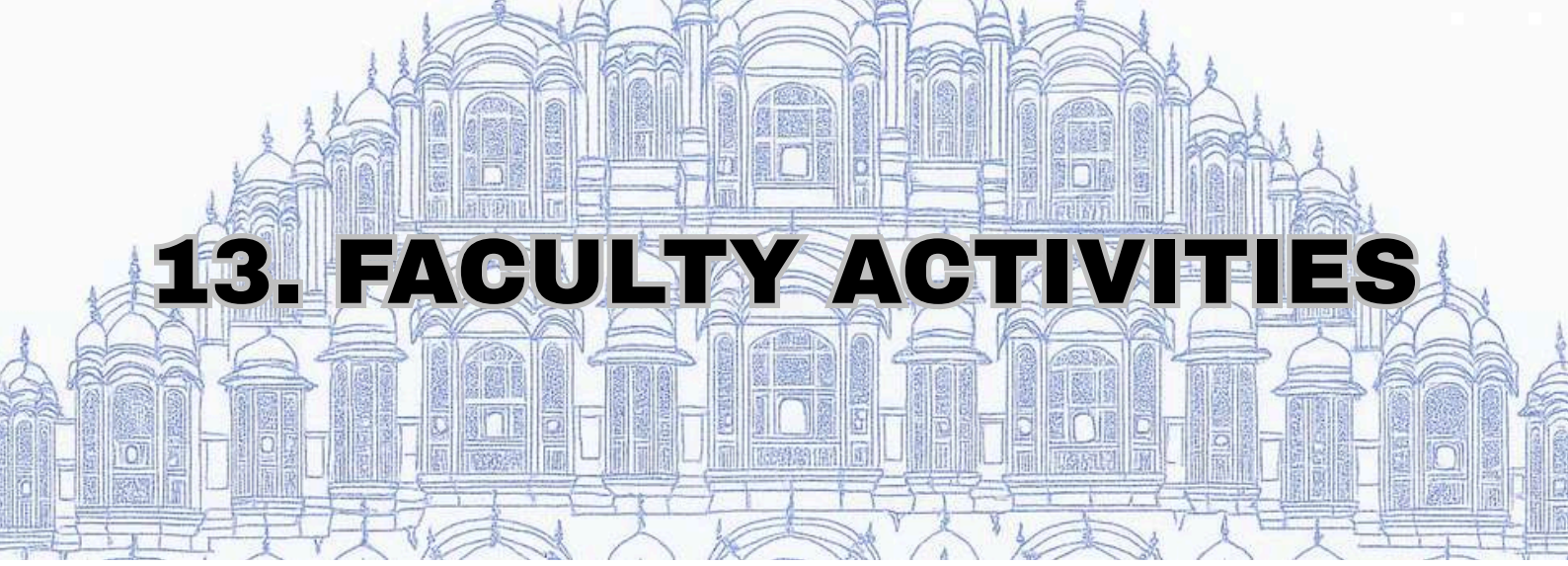
In Structural Engineering, faculty presented papers on advanced composite materials, seismic-resistant structures, and performance-based design. In Water Resources Engineering, innovative research was showcased on hydrologic modeling, climate change impacts, and sustainable watershed management. Geotechnical Engineering presentations highlighted advancements in ground improvement techniques, soil-structure interaction, and slope stability analysis.

Faculty specializing in Transportation Engineering contributed papers on pavement design, traffic modeling, and sustainable urban mobility solutions. In the field of Environmental Engineering, key topics presented included wastewater treatment, solid waste management, and green building practices. These participations not only reflect the department's research depth but also foster collaborations and bring global visibility to SSN's ongoing commitment to engineering innovation and sustainability.

To know more 📌

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13. FACULTY ACTIVITIES

The Civil Engineering faculty actively participated in various academic, research, and professional development initiatives throughout the academic year. Many faculty members served as external examiners, question paper setters, and doctoral committee members across multiple institutions. They also delivered invited lectures and keynote speeches on topics such as sustainable construction, offshore foundations, wastewater treatment, and geospatial hydrology, contributing significantly to academic discourse.

Faculty members chaired technical sessions in national and international conferences, and several served as editors or reviewers for high-impact journals. Their contributions spanned across publications like **Elsevier**, **Springer**, and other reputed platforms. Research and innovation were actively pursued, with multiple grant applications submitted under national and international schemes. Internally and externally funded projects were awarded in areas like **stormwater management, greywater treatment, and smart farming systems**. Additionally, consultancy services were rendered to government bodies and private firms for technical evaluations, soil testing, and structural assessments.

Faculty development remained a priority with participation in several **FDPs and workshops on smart materials, AI, optimization techniques, and water system design**. Workshops were also organized for students in areas such as **finite element analysis and geotechnical engineering**. The department contributed to curriculum development and syllabus framing at university level and took part in reviewing and improving academic programs. Several faculty-led student projects received funding from recognized platforms, supporting innovation at the undergraduate level. Overall, the faculty demonstrated strong leadership and commitment to academic excellence, industry collaboration, and research-driven innovation.

To know more 🖱️

[CLICK HERE](#)

NOTABLE VISITORS



Mr. Vairavelan, GUVI has visited the department of civil engineering on 14-12-2024 and provided “Hands-on Training session on Sketchup”.

Dr Mohammed Alias Yusof, Professor, Civil Engineering, Universiti Pertahanan Nasional, Malaysia delivered a Guest Lecture on Blast Resistant Concrete: A new innovative concrete material to resist the blast loading”.

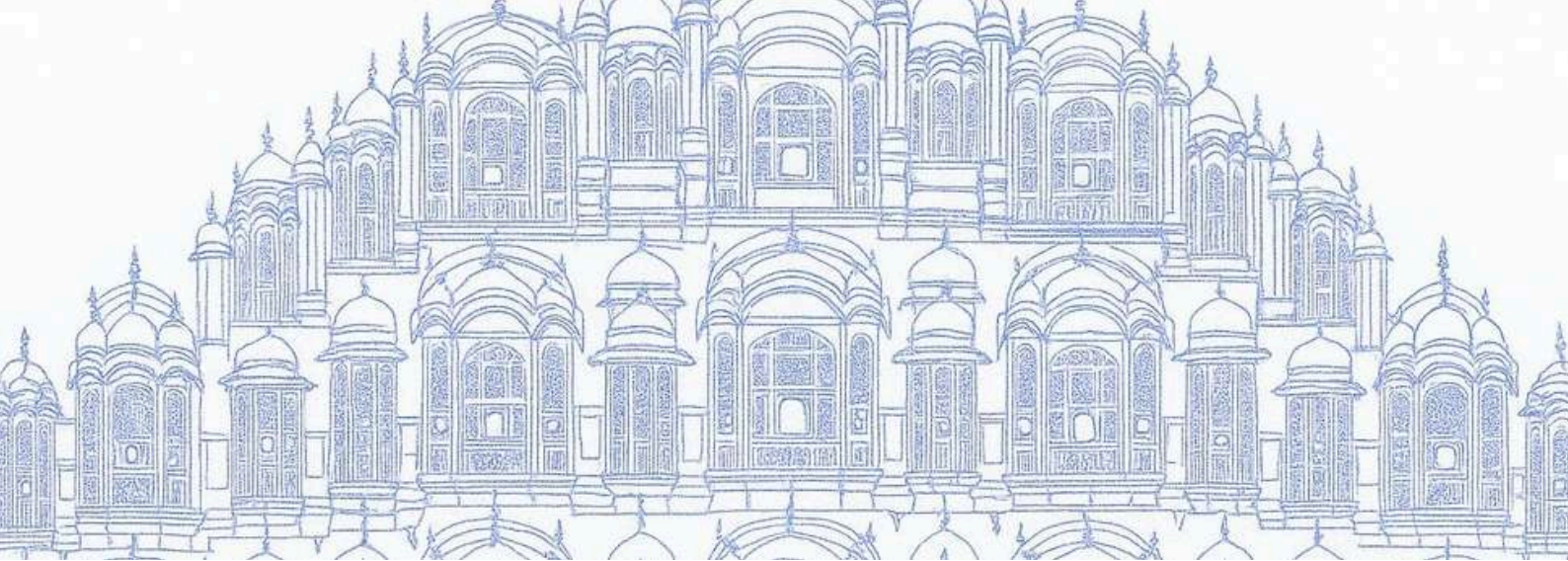


Prof.A.M.Kannan, Arizona State University- Guest lecture “Clean energy systems”.



Er. Sureshkumar.L, Asst Engineer, CPWD, Chennai" delivered a Guest lecture titled “Practical Implementation of Shear Strength Parameters and Slope Stability Concepts" on 02.04.2025.





Mr. Vishnu Balaji
(Batch 2019-2023)



Ms. Jemimah
(Batch 2020-2024)

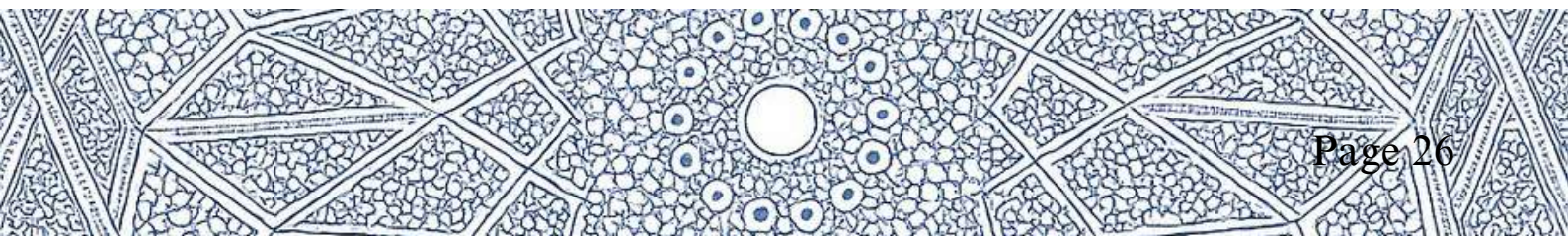


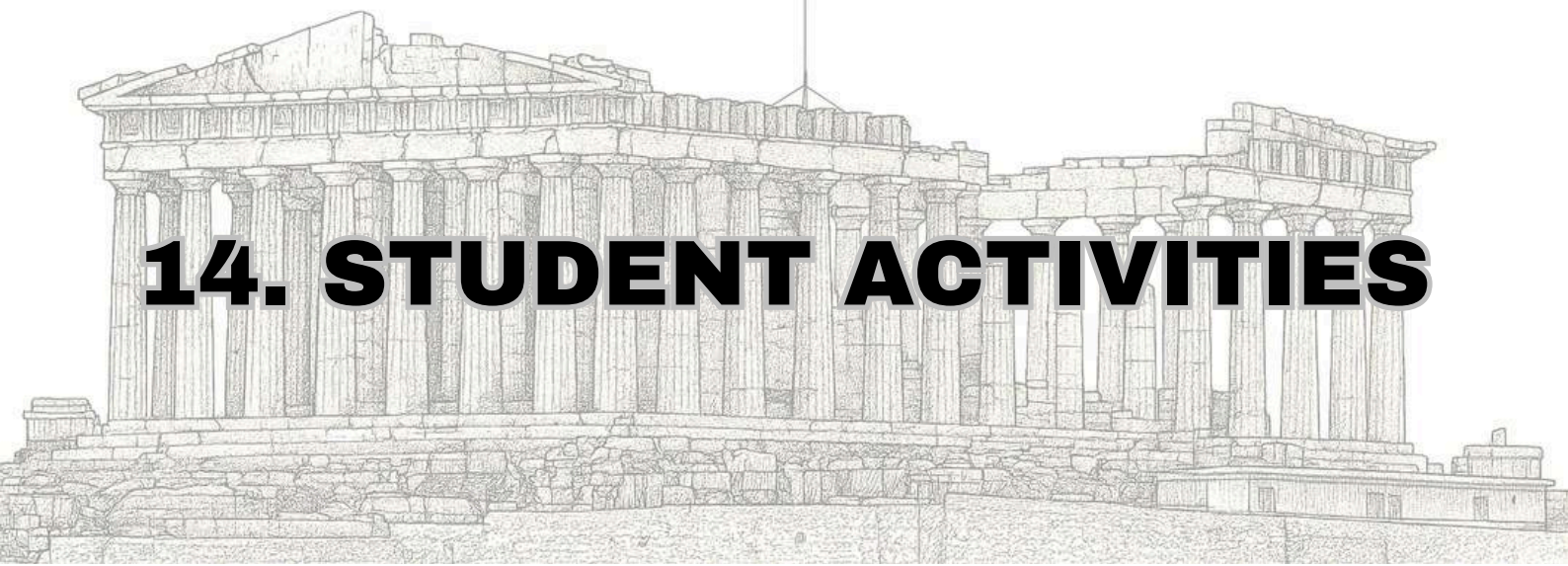
Mr. Shashankar Venkatarao
(Batch 2018-2022)



Mr.Naveenraj
(Batch 2020-2024)

Dr.S.Elavenil, (Subject Expert) Professor and Dean, School of Civil Engineering, Vellore Institute of Technology, Chennai and **Mr.J.Venunadh** (Industry Expert), General Manager - Design (Civil), VA Tech Wabag Ltd., Chennai- acted as Board Of Studies member for R 24 to seek the approval of 3rd and 4th semester subjects was conducted on 25.04.2025 through online mode.





14. STUDENT ACTIVITIES

Over the past six months, the Department of Civil Engineering at SSN College of Engineering has witnessed vibrant student participation across co-curricular, extra-curricular, and professional development domains, reinforcing the department's commitment to holistic education.

In the co-curricular sphere, second- and third-year students actively participated in technical symposiums and competitions hosted by premier institutions including IIT Madras, Anna University, and Sri Venkateswara College of Engineering. Events such as paper presentations, design challenges, quizzes, and software-based contests saw strong representation from SSN, with notable wins in events like **BID-360**, **Bridge Mania**, **Cadathon**, **Infravision**, and **Civil Consultant**—held as part of flagship symposiums like **Civilisation'25**, **CEA Fest**, and **Ziggurat'25**.

To build technical and professional competencies, students pursued certification programs on tools like **SketchUp**, **BBS**, and **Navisworks**, and explored emerging domains like AI in Infrastructure. They also enhanced their communication skills through English proficiency programs and gained practical experience via hands-on training in first aid, disaster management, and sustainable construction techniques.

On the extra-curricular front, students showcased creativity and team spirit through reel-making, performing arts, decoding games, and sports events such as volleyball. Their active involvement in college fests and interdisciplinary contests demonstrated a balance of technical and creative engagement. Industry exposure was bolstered through internships at reputed public sector enterprises, offering students practical insights into engineering practices. Academically, students advanced in research activities, with several completing seminars on specialized topics—paving the way for higher studies and deeper subject expertise.

To know more 📌

[CLICK HERE](#)





15. NON-TEACHING STAFF ACTIVITY

During this period, non-teaching staff members participated in an online webinar on “**Aluminum Form Work & Mivan Technology**” conducted on 24th February 2025. The session was organized by the Department of Civil Engineering, SSN College of Engineering, and covered the use of modern formwork systems in construction, particularly focusing on speed, efficiency, and quality in mass housing projects.

On the same day, they also attended a guest lecture on “**Civil Engineering Testing Solutions**” conducted by ITW India Pvt Ltd (BISS Division). This lecture focused on testing technologies, equipment, and procedures used in civil engineering, giving practical insights into structural and material testing applications in the field.

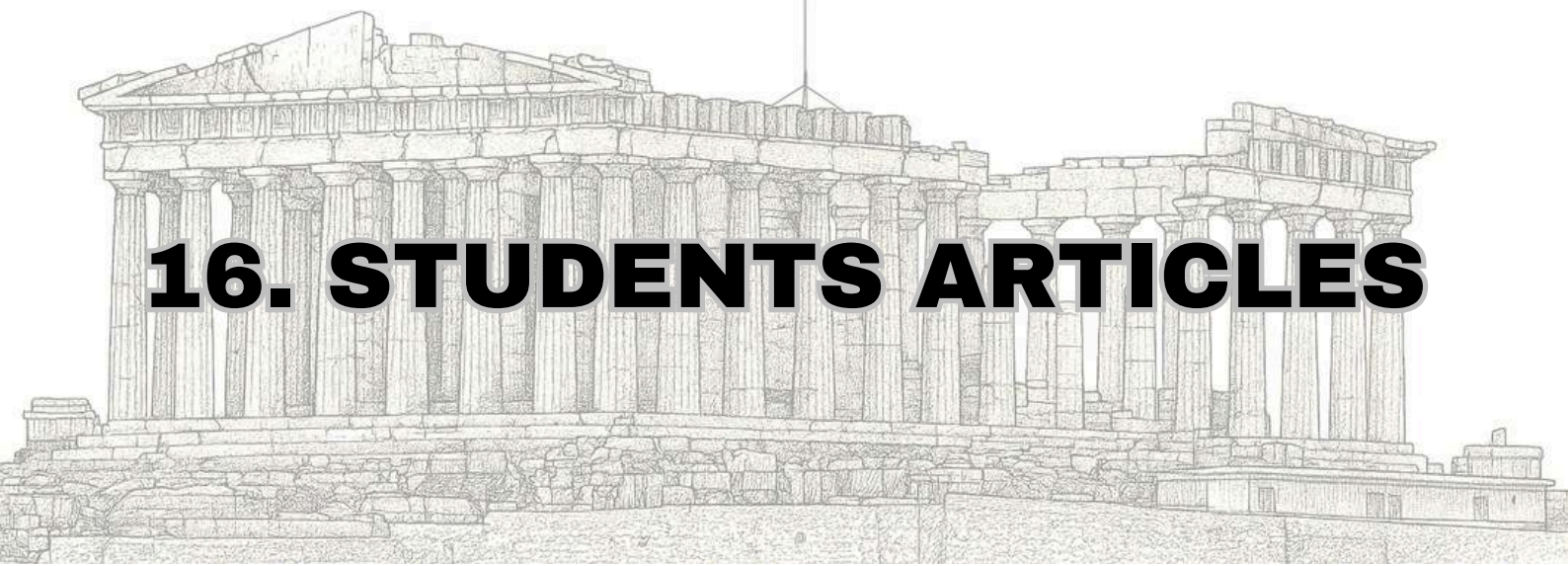
In addition to these technical sessions, several non-teaching faculty members completed various online certification courses through Alison to enhance their knowledge and skillsets:

- A course on MS Project 2013 – Advanced Level focused on improving project planning, scheduling, and tracking abilities.
- The Fire Safety Awareness course was completed to improve understanding of fire prevention, emergency procedures, and workplace safety protocols.
- A course on the Basics of Concrete Testing provided insights into standard methods for evaluating concrete properties and performance.
- Two PowerPoint-related courses—“Create Powerful Presentations with PowerPoint” and “Advanced Features in Microsoft PowerPoint”—were completed, aiming to enhance presentation and reporting skills for effective communication.

To know more 📌

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16. STUDENTS ARTICLES

FLOOD MANAGEMENT SYSTEMS IN URBAN CITIES

S Madheswaran, II Year

Introduction

Urban flooding is an increasingly common and devastating challenge across the globe. With rapid urbanization, climate change, and aging infrastructure, cities are facing unprecedented flood risks that endanger lives, damage infrastructure, and disrupt economies. Flood management systems, therefore, play a critical role in safeguarding urban environments and ensuring sustainable development.

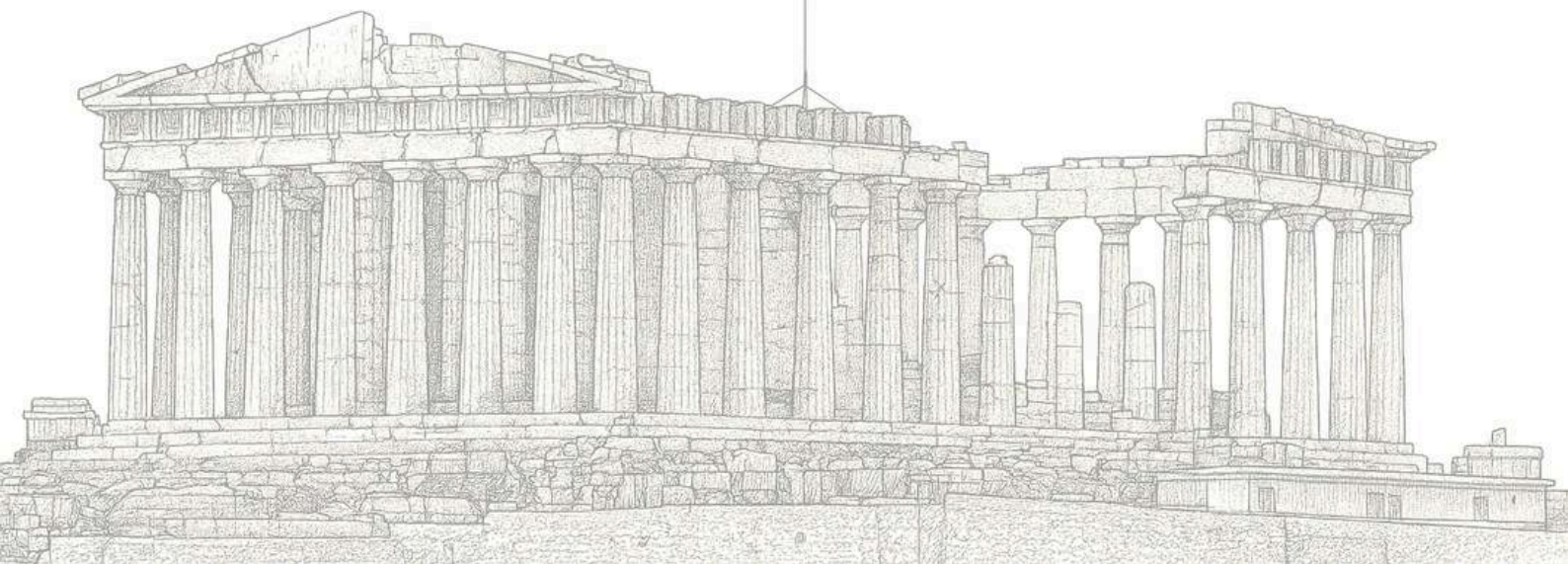
This article explores the causes of urban flooding, the key components of modern flood management systems, and examples of innovative strategies employed in global cities.

Understanding Urban Flooding

Urban flooding typically occurs when rainfall overwhelms the capacity of stormwater drainage systems. Key causes include:

- **Increased Impervious Surfaces:** Roads, pavements, and buildings prevent rainwater from naturally infiltrating into the soil.
- **Insufficient Drainage Infrastructure:** Outdated or poorly maintained drainage systems cannot cope with high-intensity storms.
- **Climate Change:** More frequent and severe rainfall events are becoming the norm due to global warming.
- **Poor Urban Planning:** Encroachments into natural floodplains and wetlands reduce the city's natural defence mechanisms.





Flood Management Systems

Effective flood management requires a combination of structural and non-structural measures, along with active community engagement.

1. Structural Measures

These involve physical infrastructure designed to control and divert floodwaters:

- **Stormwater Drains & Retention Basins:** Modern drainage systems that can store and gradually release excess water.
- **Flood Barriers & Levees:** Physical structures to protect vulnerable urban areas from river or coastal flooding.
- **Green Infrastructure:** Parks, green roofs, and permeable pavements that absorb rainwater and reduce runoff.

2. Non-Structural Measures

Focus on planning, policy, and awareness:

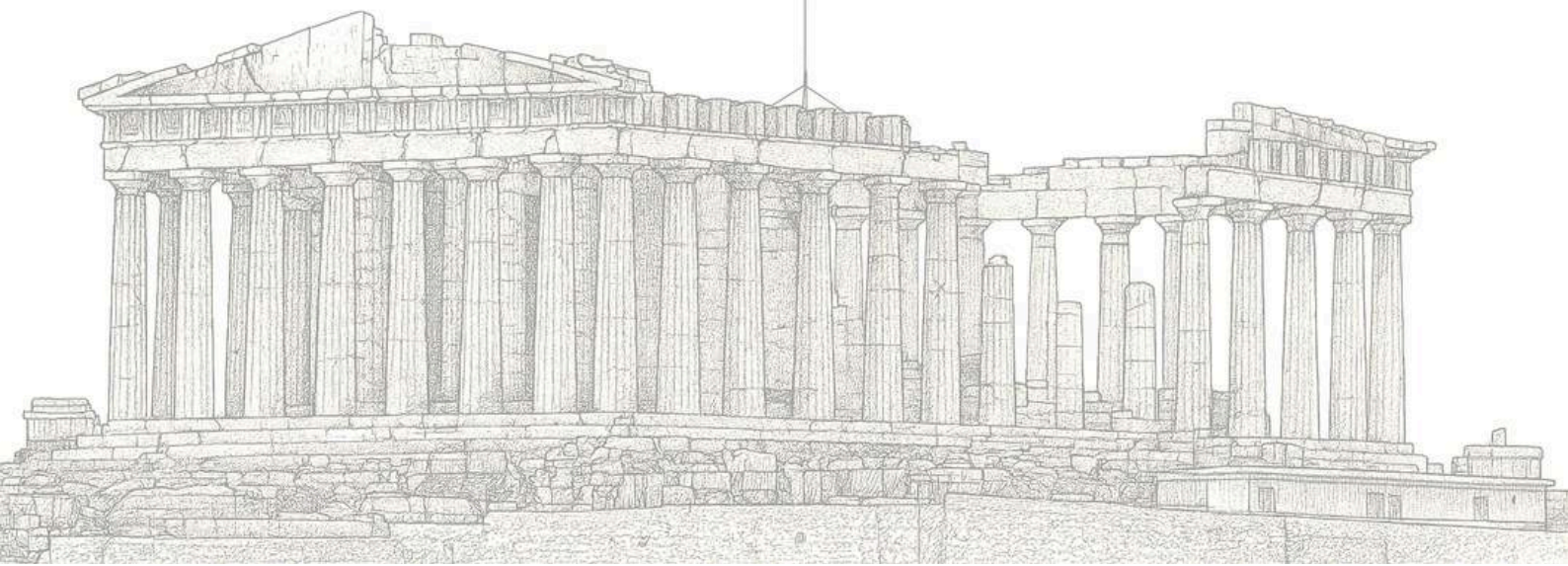
- **Zoning Regulations:** Preventing construction in flood-prone zones.
- **Flood Forecasting Systems:** Using IoT sensors and satellite data for real-time flood predictions and warnings.
- **Public Awareness Campaigns:** Educating communities on emergency response and flood preparedness.

Example of Flood Management

Singapore – Smart Drainage Systems

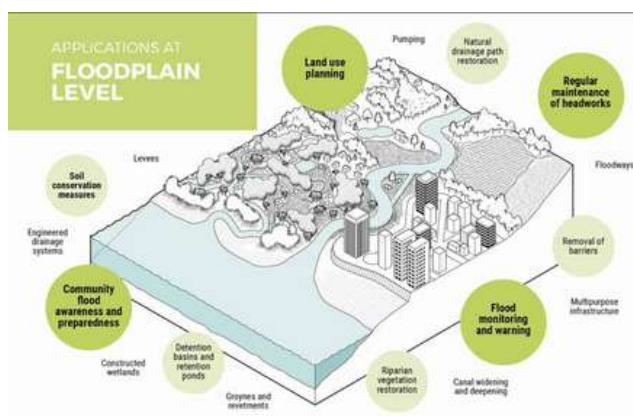
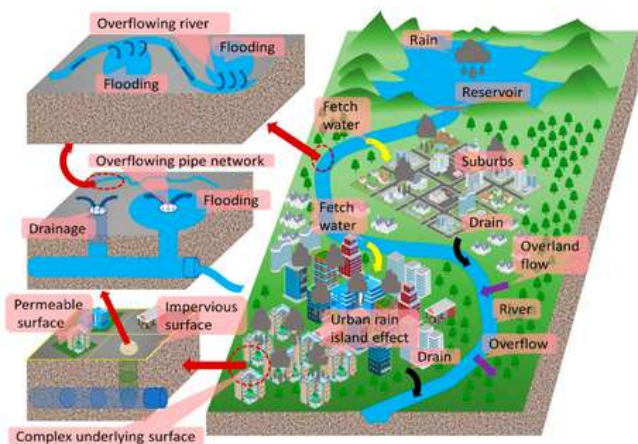
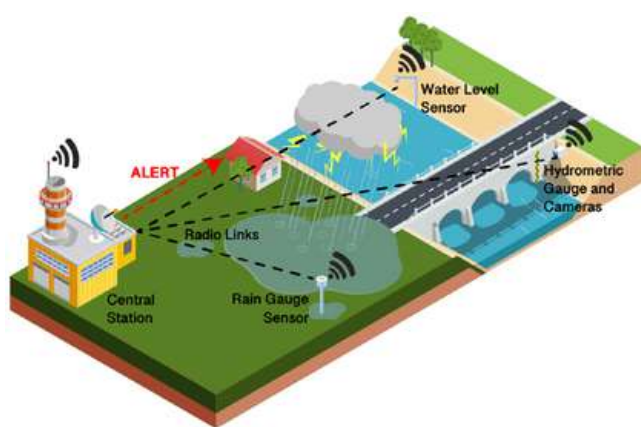
Singapore has invested in a "Smart Water Grid" and deep tunnel sewerage systems to manage stormwater efficiently. It uses real-time monitoring and automated gates to control water levels and prevent flash floods.



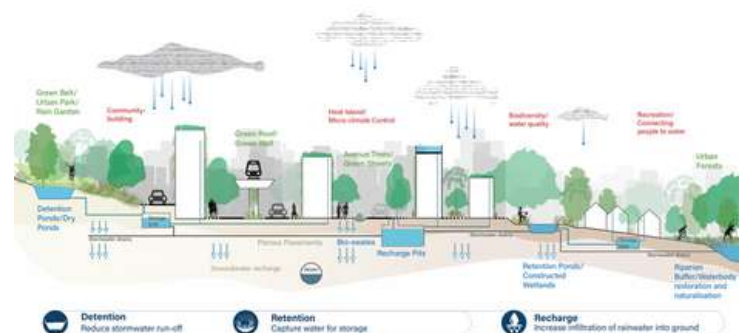


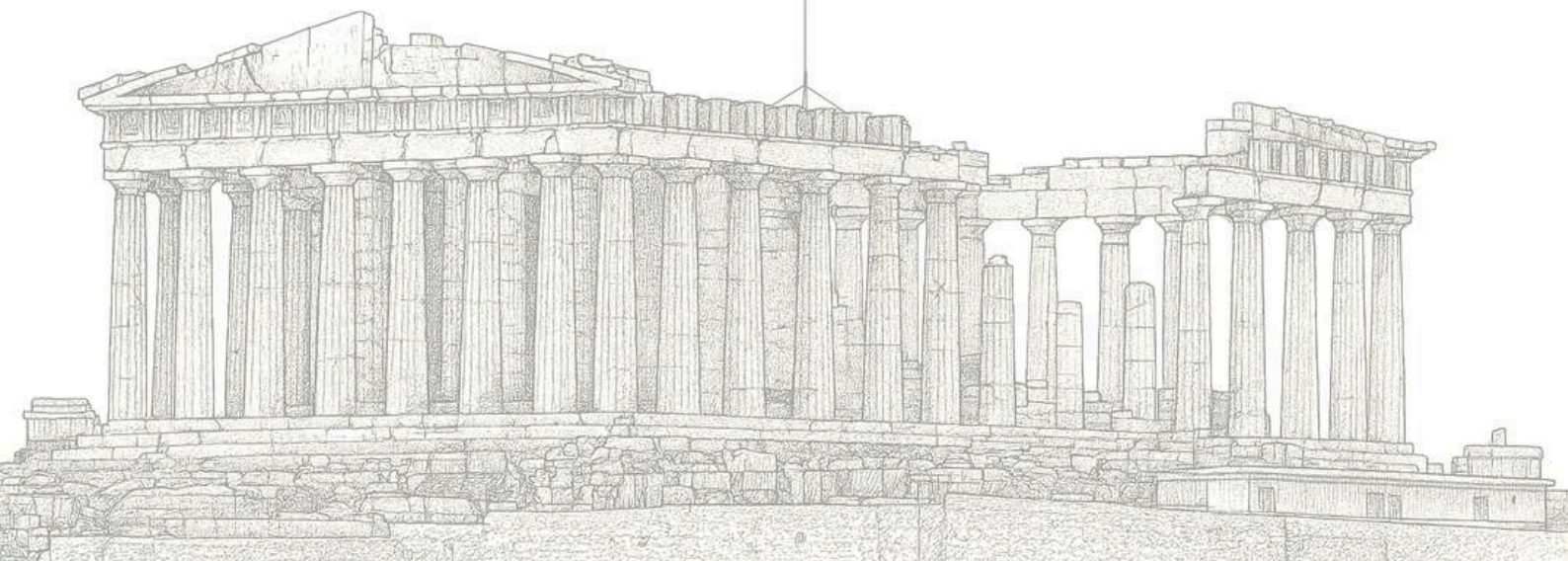
Conclusion

As the impacts of climate change intensify, cities must move toward resilient, adaptive, and inclusive flood management systems. The future lies in smart cities that integrate digital technology with green infrastructure, and in policies that prioritize long-term resilience over short-term fixes.



Conceptual section of an urban flood resilient "Sheher" (city) and its diverse co-benefits using Water Sensitive Urban Design (WSUD)

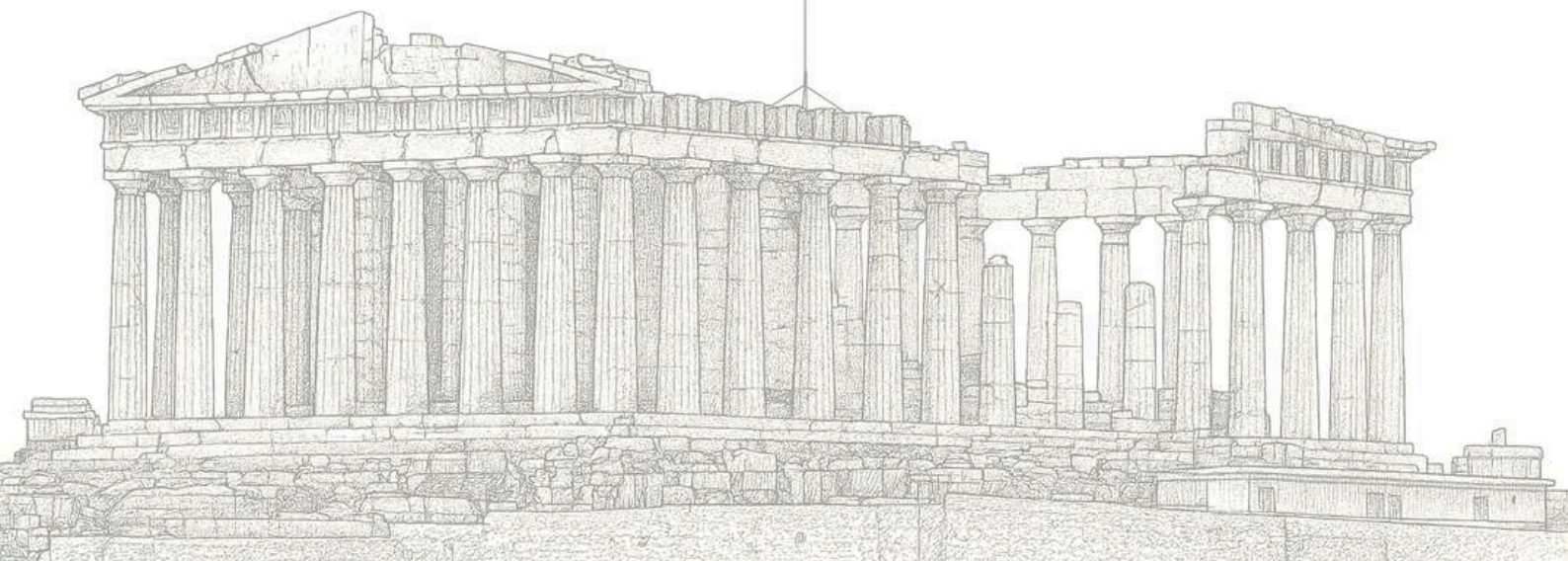




**ASSESSMENT OF THE CONTRIBUTION OF MUNICIPAL SOLID WASTE
DUMPING COUPLED WITH OPEN BURNING TO THE
CONTAMINATION OF THE SURROUNDING ENVIRONMENT BY
PLASTICIZERS**

Felix Joshua J- III year





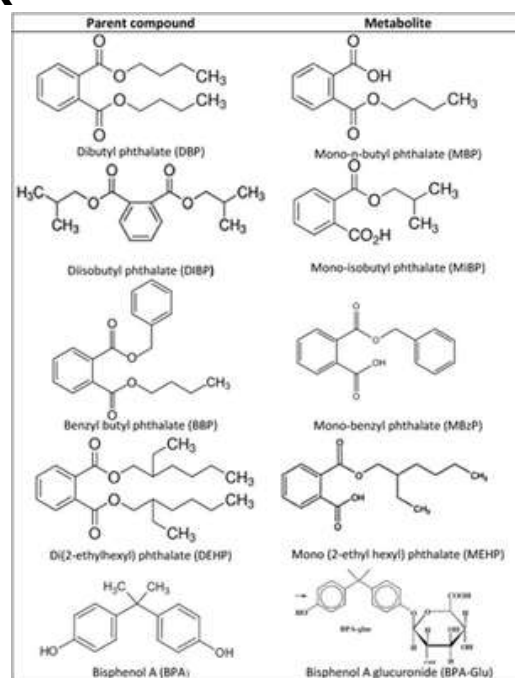
Introduction

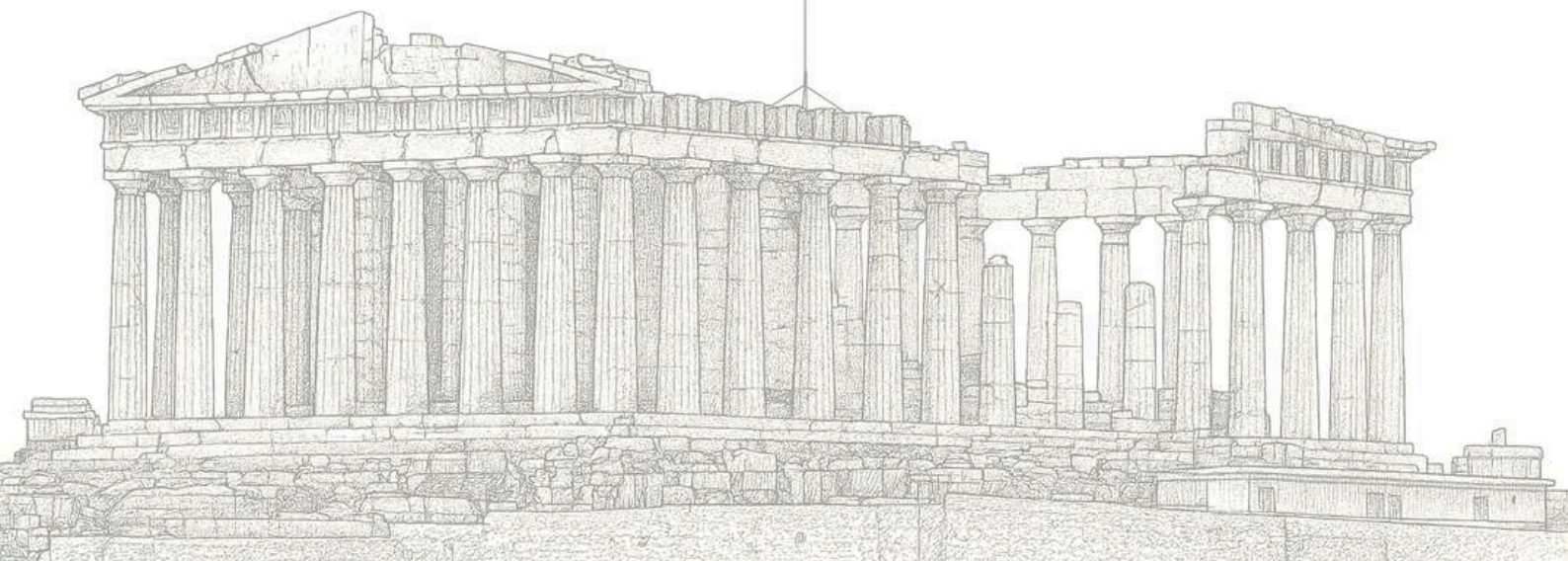
The increasing production and improper disposal of plastic waste, especially in developing countries, have raised major environmental and health concerns. Among the practices contributing significantly to environmental degradation are open dumping and burning of municipal solid waste (MSW), which often contains large quantities of plastic. A key concern is the release and dispersion of plasticizers—chemical additives such as phthalates and bisphenols that are not chemically bound to the plastic matrix—into air, soil, and water systems, resulting in widespread contamination (Net et al., 2022).

Plasticizers: Composition and Environmental Risk

Plasticizers are widely used to enhance the flexibility and usability of plastics, especially polyvinyl chloride (PVC). Common plasticizers such as di(2-ethylhexyl) phthalate (DEHP), benzyl butyl phthalate (BBP), and bisphenol A (BPA) are known endocrine disruptors and potential carcinogens (Sánchez Bravo et al., 2023). These compounds are highly mobile, particularly under conditions of heat and UV exposure, making them susceptible to leaching from dumped waste or volatilization during open burning (Rochman et al., 2023).

A study conducted by Velvizhi et al. (2024) directly assessed plasticizer contamination near MSW sites in India. The research found elevated levels of phthalates and other additives in soil, surface water, and even vegetation samples adjacent to an open dump-and-burn site. These findings emphasize how plastic waste mismanagement can directly introduce hazardous chemicals into the terrestrial and aquatic environment.



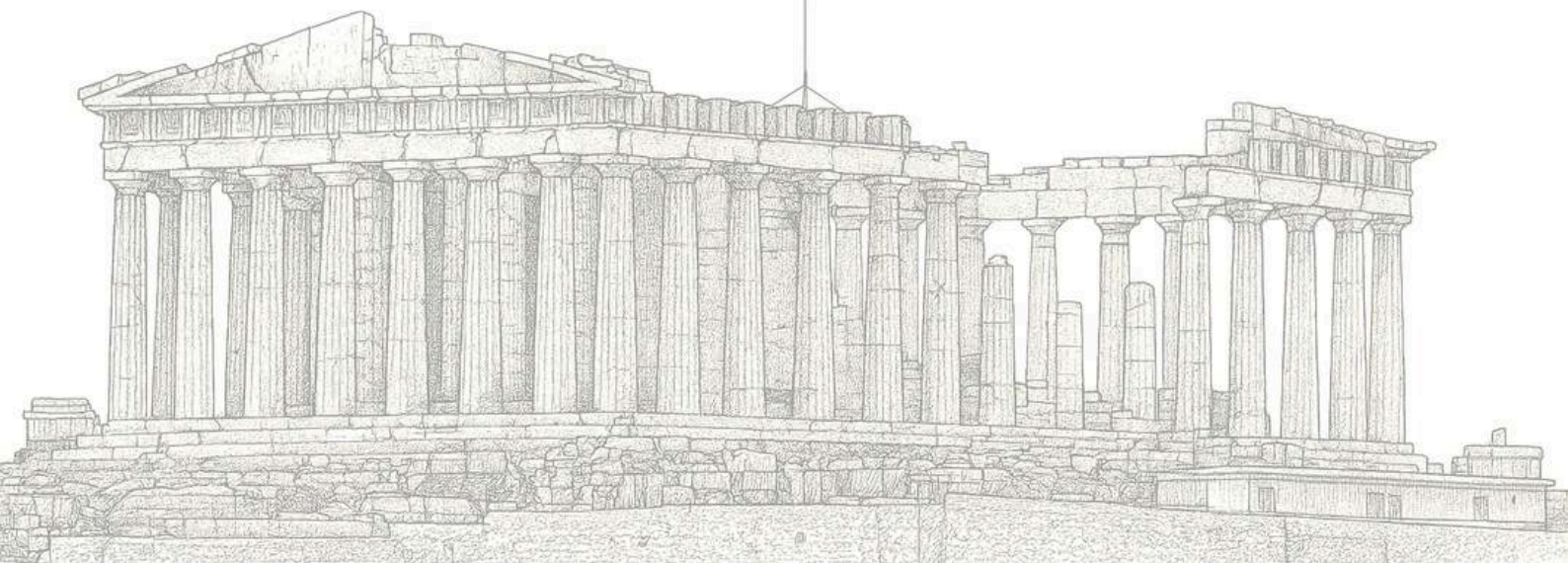


Open Burning: A Pathway for Atmospheric Contamination

Open burning of plastic waste is a significant but often overlooked source of environmental plasticizer emissions. Burning plastics, particularly at low temperatures and without emission controls, releases plasticizers into the atmosphere in both particulate and gaseous forms (Wiedinmyer et al., 2023). Airborne plasticizers can deposit over large areas, contaminating soil and water bodies far from the original source.

Studies in both urban and rural settings have found a strong correlation between plastic burning and elevated fine particulate matter (PM_{2.5}), which often carries traces of DEHP, PBDEs, and BPA (ACS Environ. Au, 2023). In addition, combustion products of plastics serve as clear indicators of refuse burning in ambient air (Gullett et al., 2006).





Leaching of Plasticizers from Dump Sites

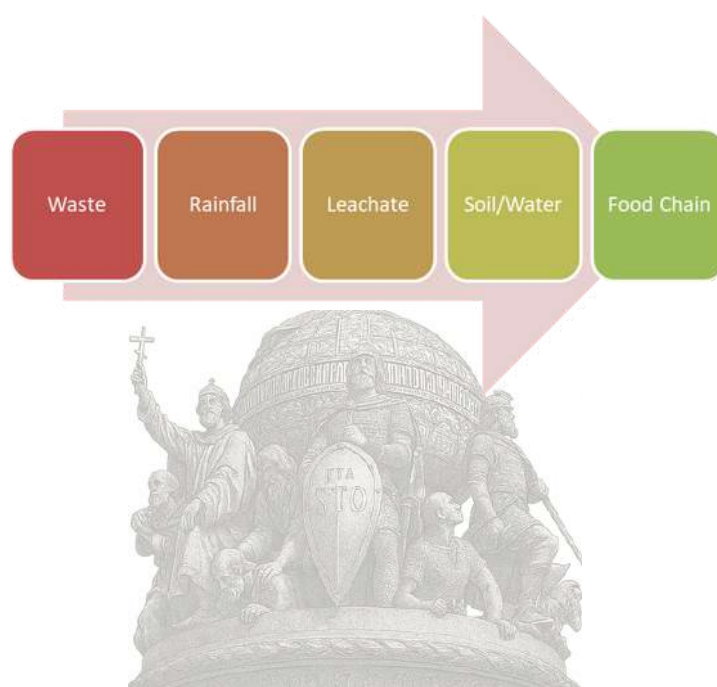
Plasticizer contamination does not only occur through air; it also happens via leachate. Landfills and informal dump sites, particularly in areas with high rainfall or poor containment systems, generate leachate that transports phthalates into groundwater and nearby surface water. For instance, a study in Poland showed measurable concentrations of phthalates in leachate from municipal landfills, further proving that plastic additives migrate through water pathways (Fudala-Ksiazek et al., 2017).

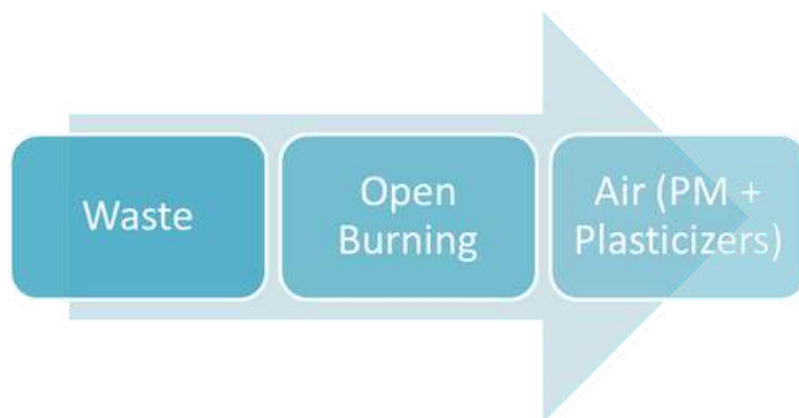
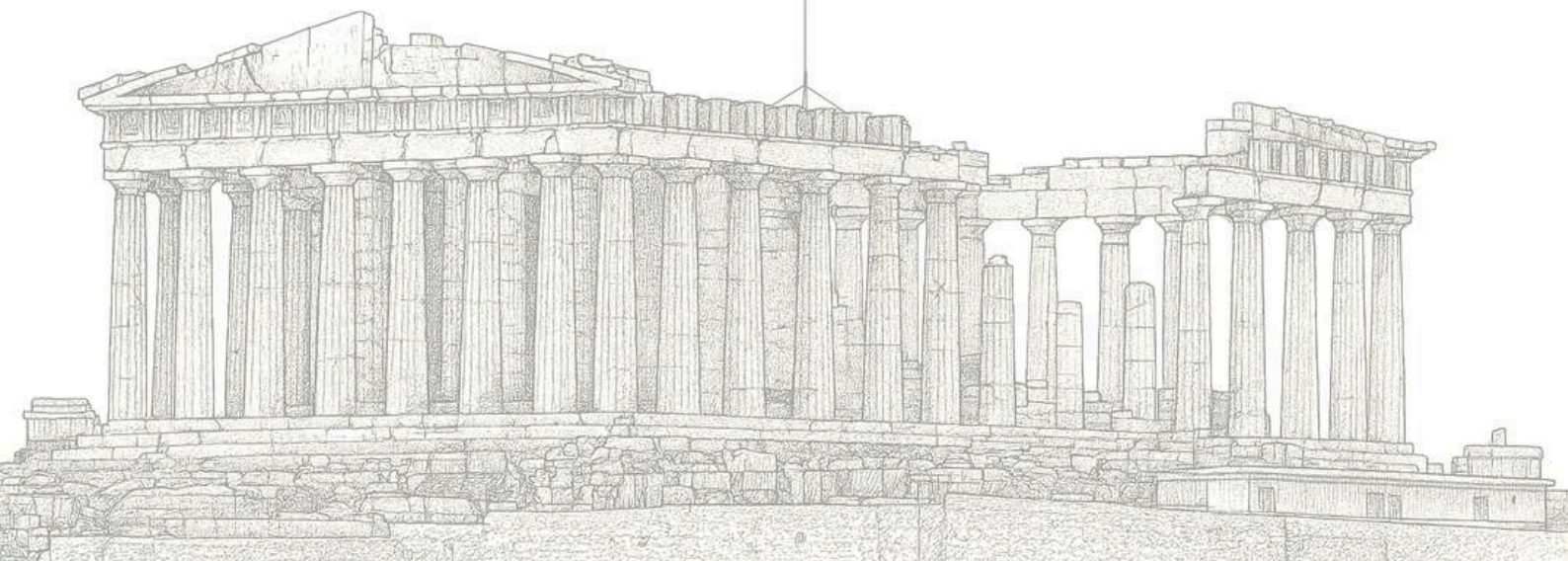
Additionally, plastic waste fragments into microplastics and nanoplastics, significantly increasing surface area for additive leaching. This is especially concerning in underserved communities where waste burning and dumping are common, amplifying exposure risks (Yadav et al., 2023).

Health and Ecological Risks

Plasticizers released into the environment are linked with multiple health effects. Chronic exposure to phthalates and bisphenols has been associated with endocrine disruption, reproductive toxicity, and developmental issues in both humans and wildlife (JAPI, 2023). Ecosystems near waste sites face risks such as altered microbial diversity in soil, reduced crop yield, and bioaccumulation of plasticizers in aquatic organisms, affecting food webs (Net et al., 2022).

The “One Health” framework increasingly recognizes that environmental contamination from plastics—including plasticizers—directly affects human and animal health (JAPI, 2023).





Need for Monitoring, Policy, and Safer Alternatives

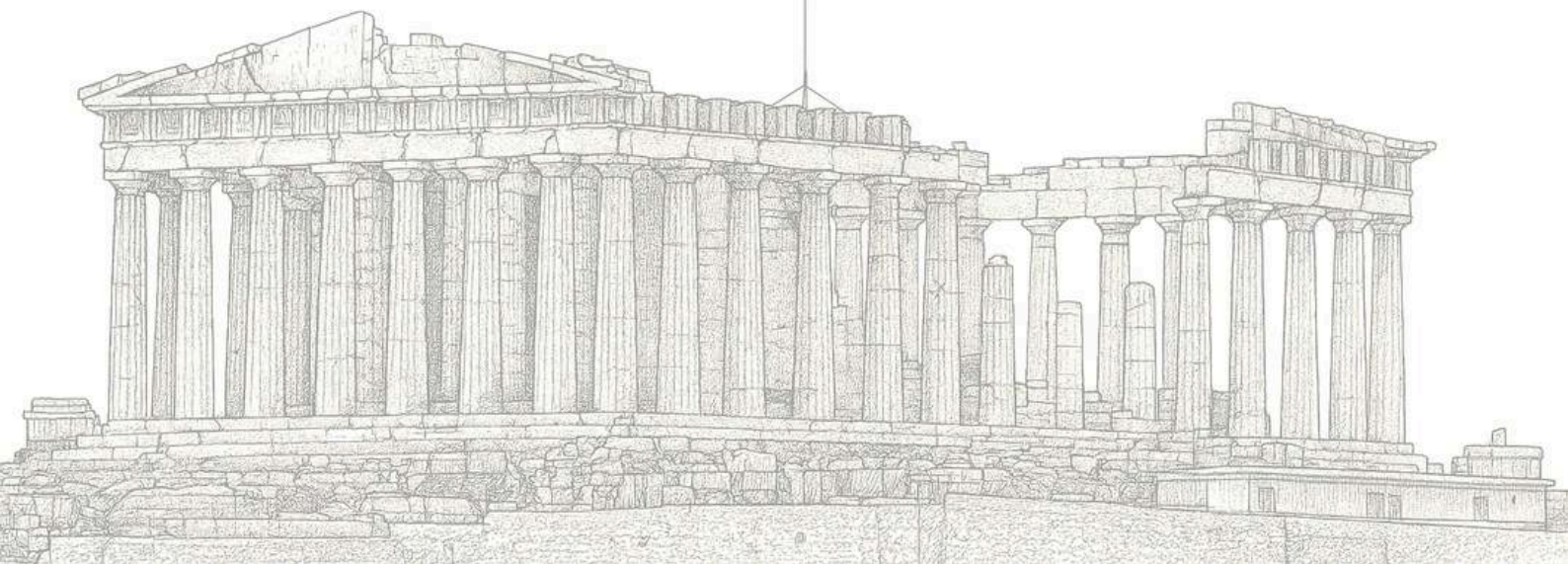
Despite the severity of the issue, regulatory efforts on plasticizers remain weak, especially in developing nations. There is a critical need for stricter waste segregation, enforcement of bans on open burning, and improved landfill management. Simultaneously, environmental monitoring of plasticizer concentrations in air, soil, and water is essential for accurate risk assessment (Velvizhi et al., 2024; OAEP, 2023).

Emerging policies should also incentivize the use of bio-based or safer alternatives to toxic plasticizers and promote extended producer responsibility (EPR) to hold manufacturers accountable for end-of-life plastic management.

Conclusion

Municipal solid waste dumping and open burning are major contributors to environmental plasticizer contamination. These practices enable plasticizers to enter ecosystems through air and water, creating serious health and ecological risks. A combined approach involving policy reform, public awareness, and scientific monitoring is necessary to mitigate the impact and transition to a safer waste management system.





References

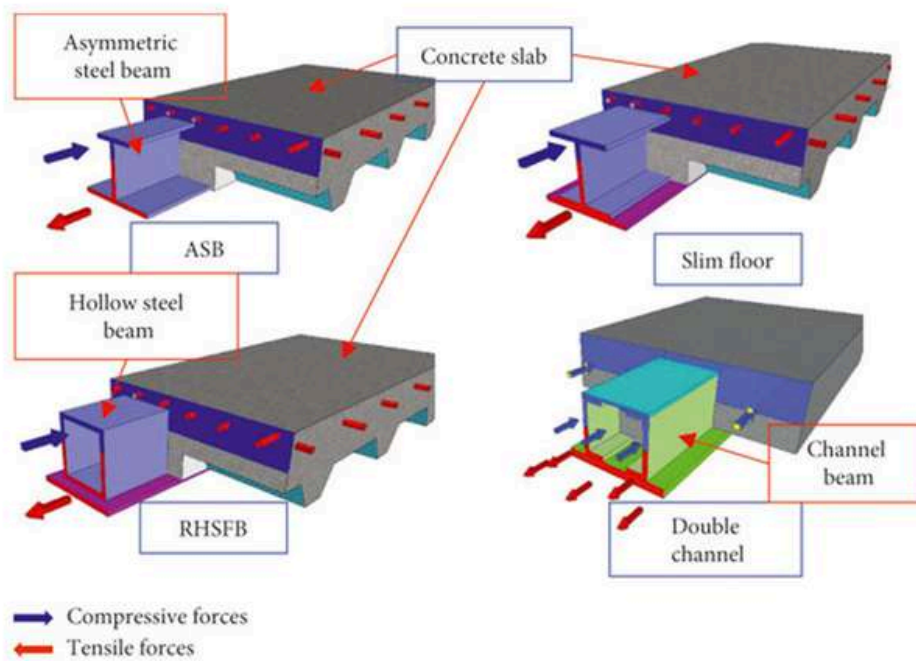
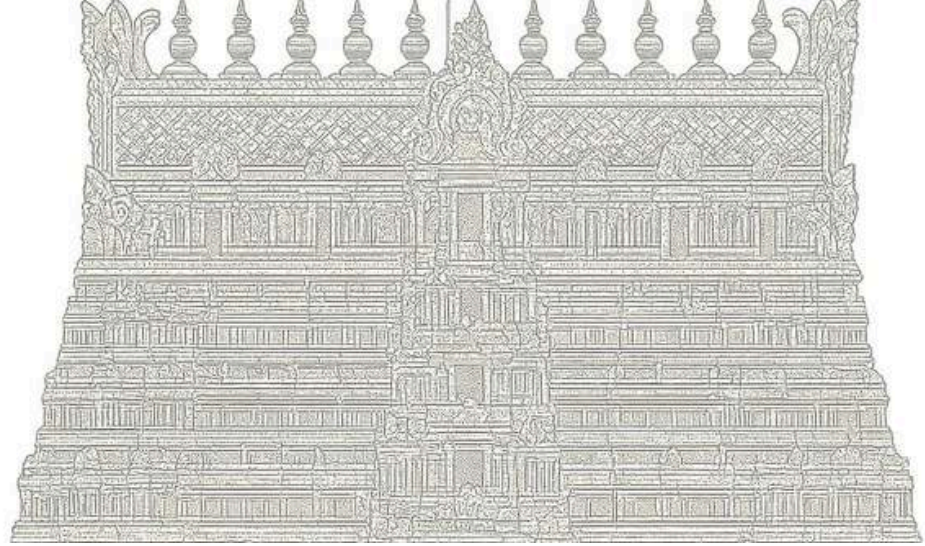
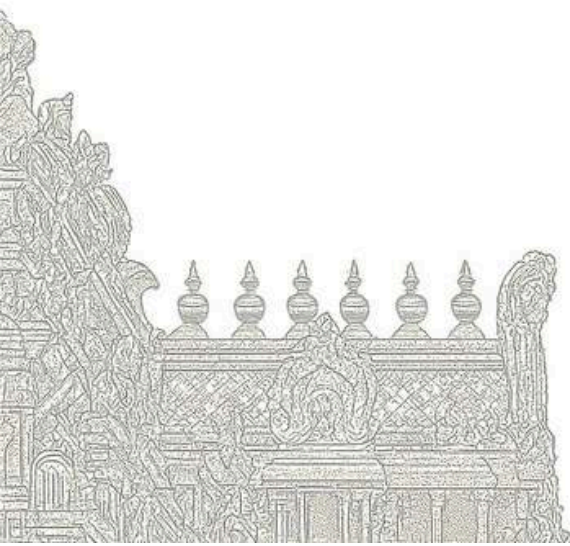
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FULL-SCALE SYSTEM TESTING OF ASYMMETRIC STEEL I-BEAMS IN SHALLOW DEPTH COMPOSITE FLOOR SYSTEMS

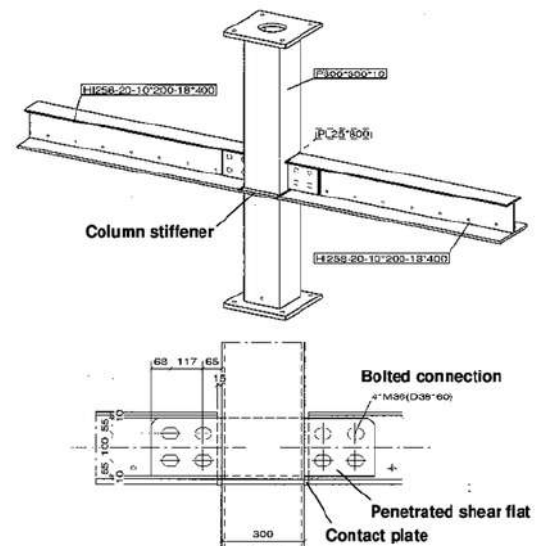
B. Revanth Kumar III year Civil Engineering

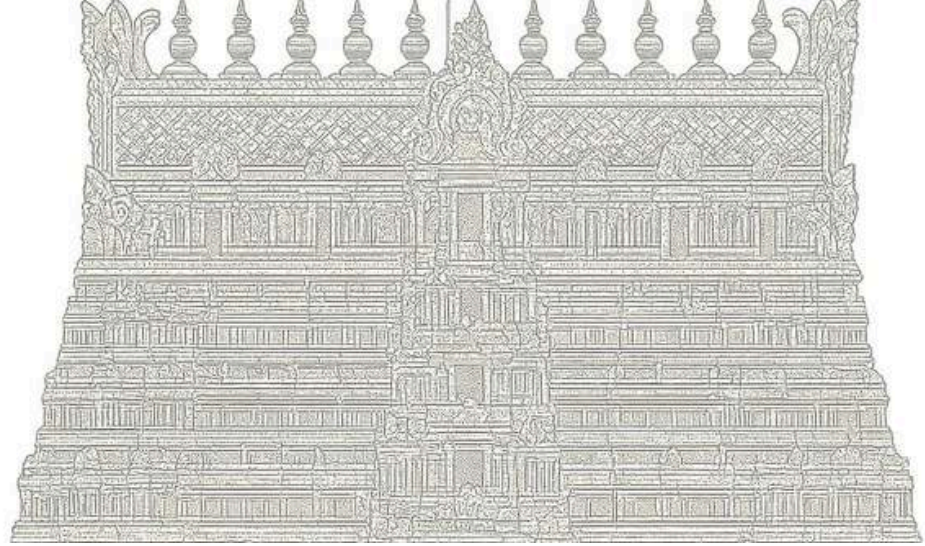
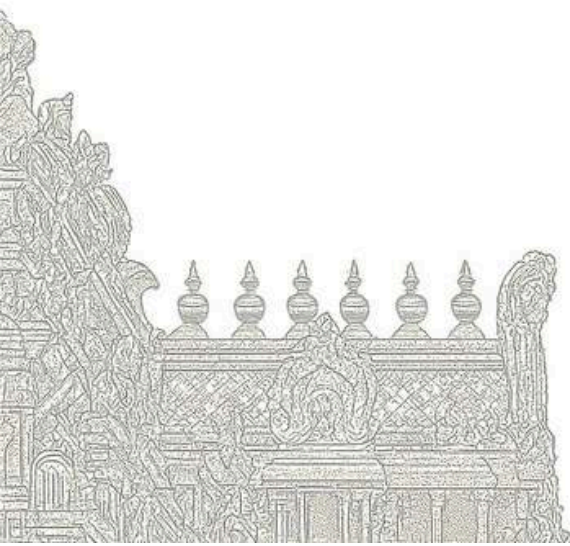
In recent times, I came across a detailed study that explored the full-scale testing of asymmetric steel I-beams in shallow depth composite floor systems, and I found the concept both fascinating and highly relevant to the challenges faced in modern construction. The study focused on optimizing floor systems by reducing the structural depth without compromising strength or safety—a critical goal in high-rise buildings, commercial spaces, and areas with strict height restrictions.





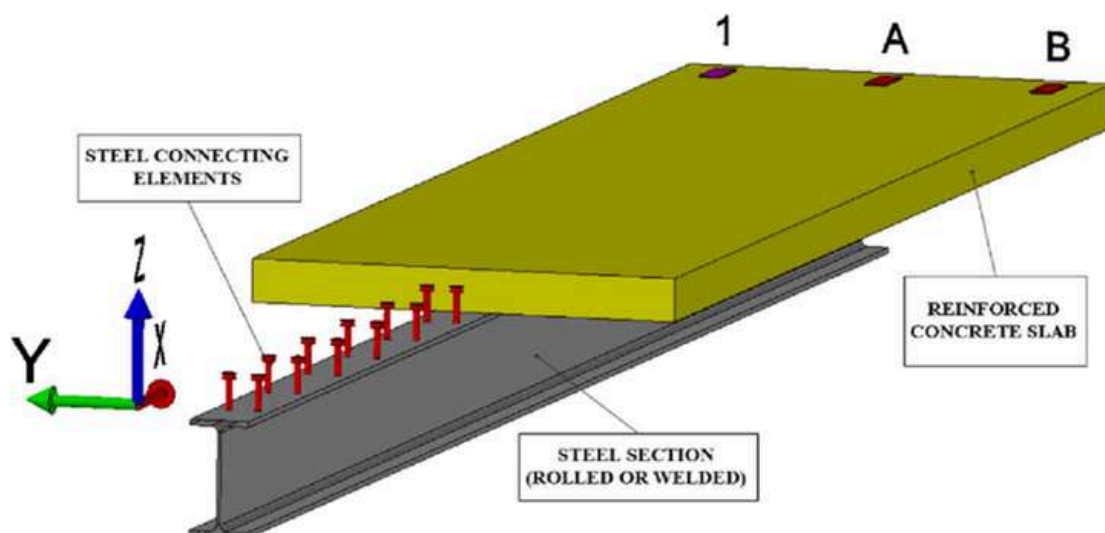
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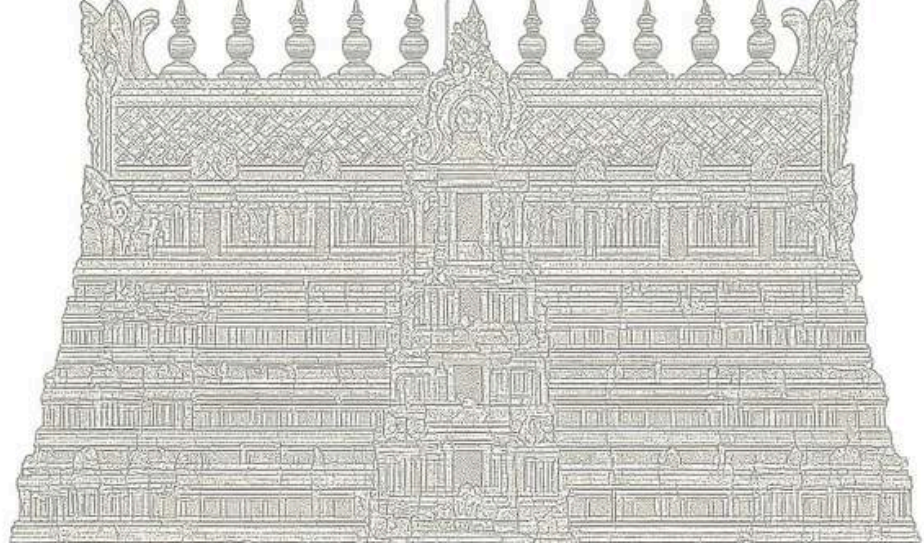
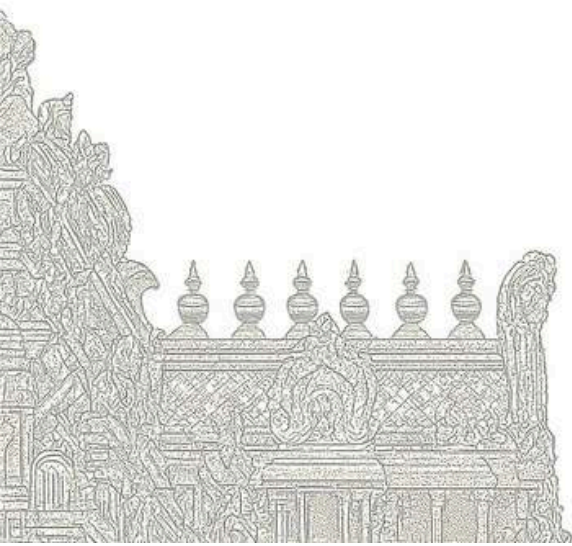




In the study, full-scale specimens were tested under static loading conditions. The steel beams were fitted with shear connectors on the top flange to ensure proper composite action with the concrete slab. These shear connectors played a key role in transferring forces between the steel and concrete, ensuring that the two materials worked together under loading. Normal-weight concrete was used in the slab, and reinforcement was placed to simulate actual floor systems.

The experimental setup involved applying a gradually increasing load using hydraulic jacks while carefully monitoring deflection, strain, and cracking. The results showed that the system behaved very well under both service and ultimate loads. Deflections were within acceptable limits, and flexural cracks appeared where expected, mostly at mid-span and under loading points. Most importantly, the failure was ductile, characterized by yielding of the steel section rather than any brittle cracking or connector failure.





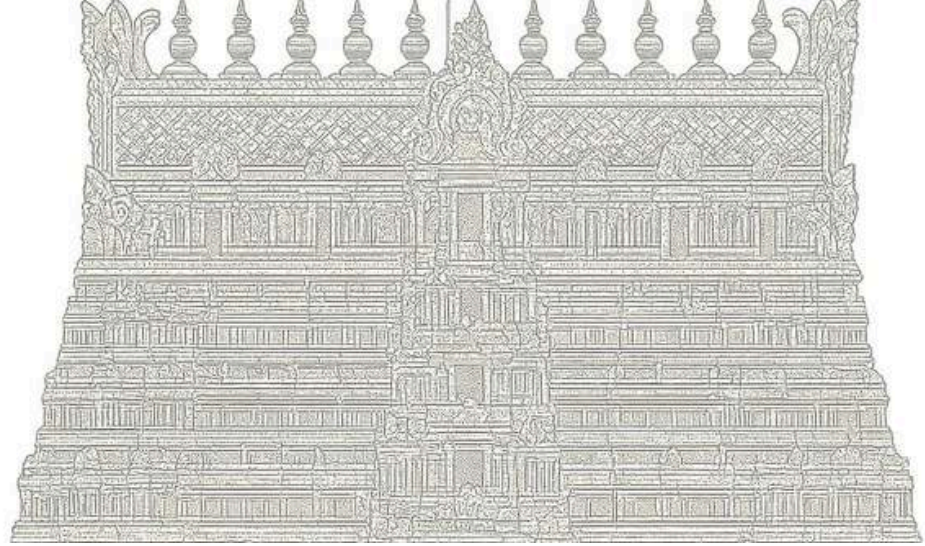
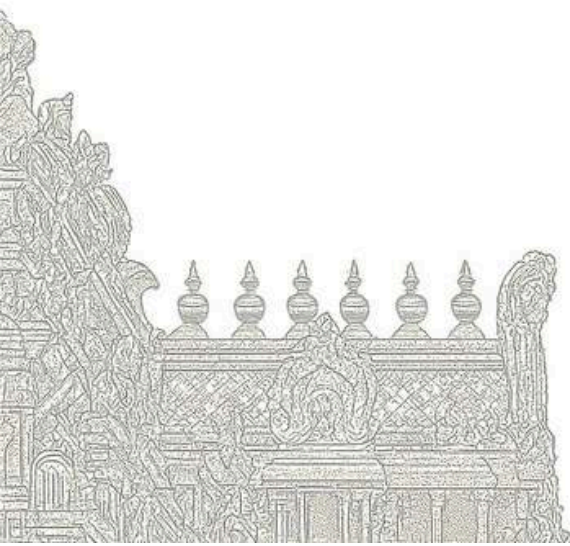
- One major takeaway from the study was the confirmation that asymmetric I-beams can be safely and efficiently used in shallow composite floor systems. They offer multiple benefits:
 - Reduced overall structural depth
 - Material efficiency (especially steel savings)
 - Consistent and predictable behavior under loading
 - Compatibility with modern construction methods, including precast slabs

Another interesting point was that even though the top flange was smaller, there was no compromise in composite action, thanks to proper connector detailing. The connectors did not fail, and there was no significant slip observed during the tests. This highlights the importance of detailing in composite design.

For practical applications, such systems could be highly useful in metro stations, commercial complexes, or parking garages—anywhere that benefits from headroom maximization. Also, in urban environments where building height is regulated, reducing floor height can help add more storeys or increase usable space.

Though I didn't personally conduct the experiment, going through the methodology and results helped me understand how theory translates into practical systems. The full-scale aspect of the testing also emphasized the importance of validating design assumptions with real-world behavior—something that's especially important when introducing less conventional designs like asymmetric sections.





VEHICULAR AD-HOC NETWORK

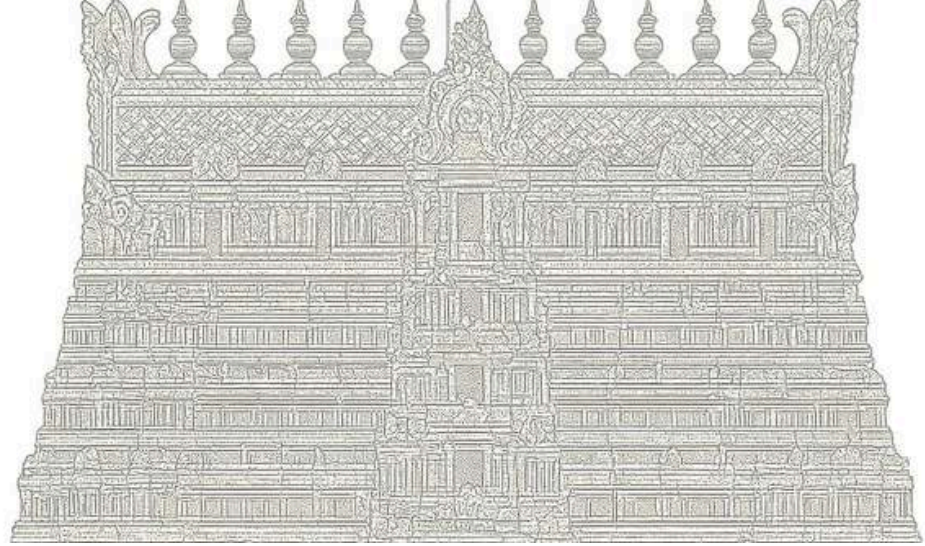
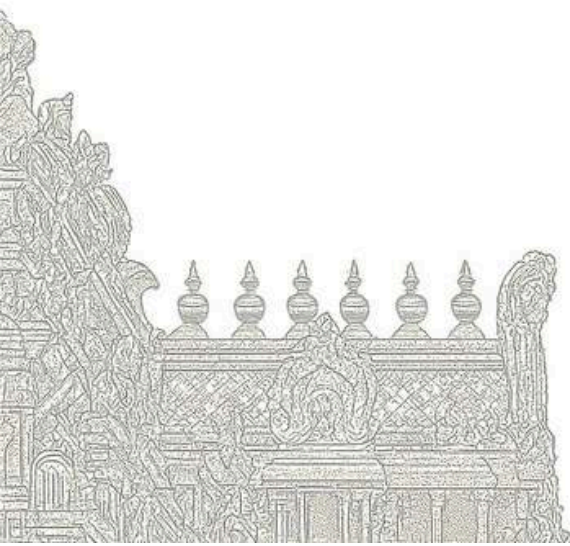
Sri Bharathan, III year

VANET is a sub-class of Mobile Ad-Hoc Network (MANET) and a component of Intelligent Transportation System that provides communication among nearby vehicles and roadside infrastructure. This type of network uses vehicles as mobile nodes that belong to a self-organizing network without prior screening or knowledge of each other's presence. The network turns every participating vehicle into a wireless router or node, allowing vehicles in a distance of approximately 100 to 300 m from each other in urban scenario to connect and create a network with a wide range. This range extends to around 1000 m in highway scenario. Nodes may intermittently fall out of the signal range and can join in, thereby dynamically establishing connections between the vehicles such that an internetwork is created.

Vehicle-To-Vehicle (V2V) and Vehicle-To-Infrastructure(V2I) Communications :

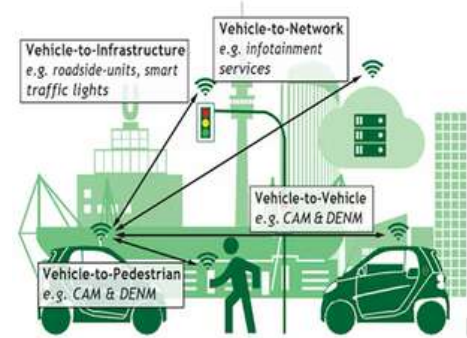
VANETs comprise two main modes of communication, vehicle to infrastructure (V2I) and vehicle to vehicle (V2V). The former is for communication between the on-board units (OBUs) on vehicles and an infrastructure, through RSUs. The latter is between vehicles that connect through OBUs. OBUs are network nodes mounted to vehicles and therefore inherently mobile and wireless. RSUs are stationary network nodes and are usually mounted in an elevated position on existing transportation infrastructure, such as traffic lights, street lights and road signs. RSUs provide a wireless link to vehicles and a wireless or wired link to the infrastructure.





Access control (MAC):

In any networking environment, one of the key aspects of the communication protocol stack is the MAC layer. The MAC layer determines the node which is given access to the physical medium. MAC mechanisms could be categorised as contention-based and contention-free. Contention-based approaches rely on carrier sensing, back-offs and retry schemes, whereas contention-free approaches rely on time-division multiple access and synchronisation schemes.



MAC mechanisms could also be categorised based on the entity in which the control of the medium access resides. The importance and the strong need for a highly optimised MAC layer is demonstrated by the fact that the time two vehicles are within communication range could be as low as 30 s for two vehicles each travelling at 120 km/h in opposite directions, with a range of 1000 m.

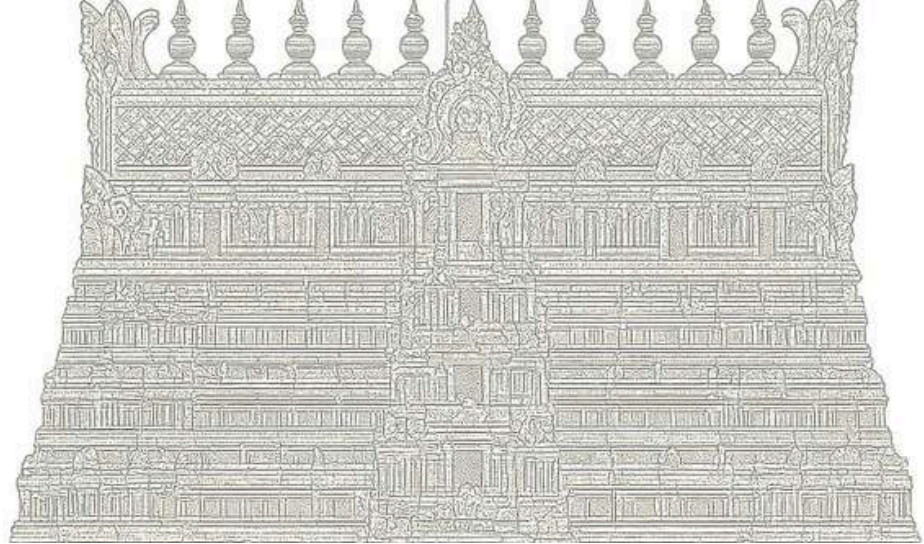
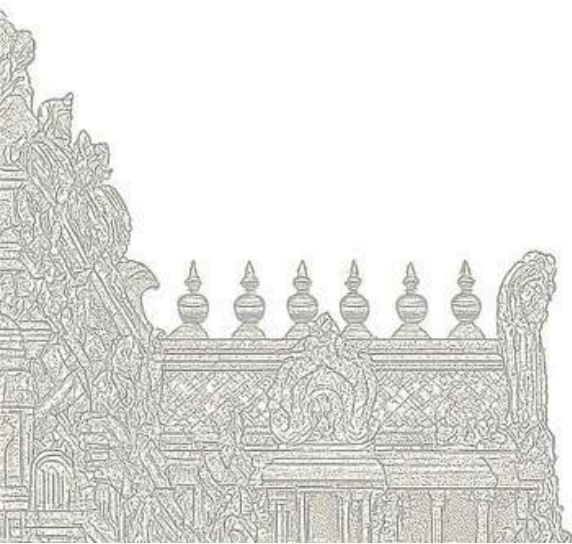
Future MAC Challenges for VENET:

Contention, location of control and node dependence : Unbounded delays could exist, which is problematic for safety critical messages as well as infotainment that relies on a minimum QoS. It does, however, guarantee QoS.

Synchronisation and dependence on external timing (GPS) : Although many cars are expected to be equipped with navigation devices in future, this reliance could be problematic in scenarios where GPS reception is hampered (such as tunnels, between high buildings etc.), making it difficult for GPS-based proposed approaches to continue to operate.

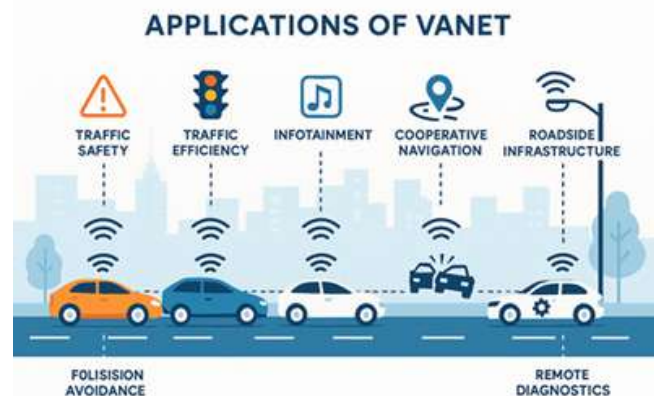
Dynamic adaptation based on varying number of nodes : The contention-free MACs typically have a design parameter specifying how many nodes could be allowed into a group, token ring or TDMA sequence. This approach suffers from a limitation since the group size is optimised a priori for a traffic load and scenario, and if possible this limitation should be avoided.





Supporting emergency messages and infotainment : The majority of MACs reviewed focused on safety message transmissions, rather than on non-time-sensitive message transmission. Future MAC methods should address this requirement by explicitly providing a means of transmitting high volume information with less stringent time-critical requirements while still providing timing guarantees for those with time- sensitive characteristics.

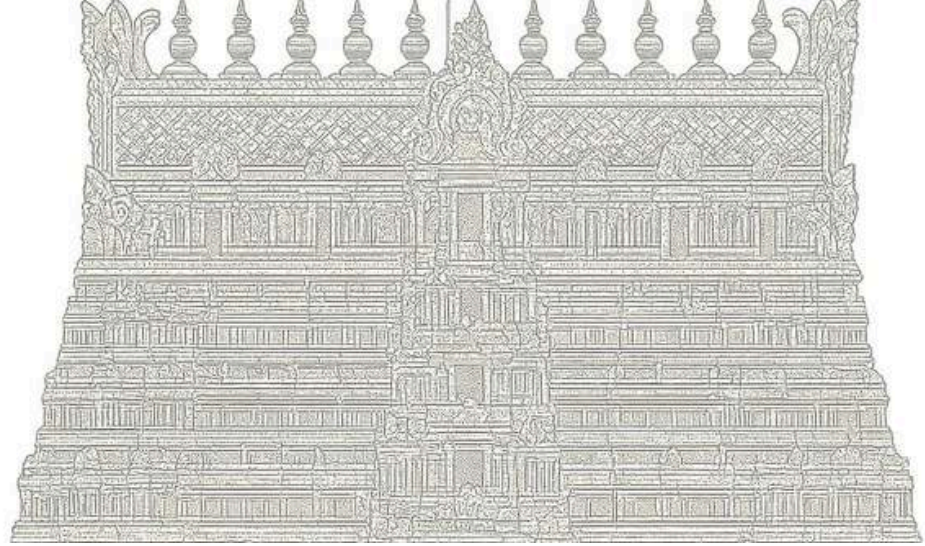
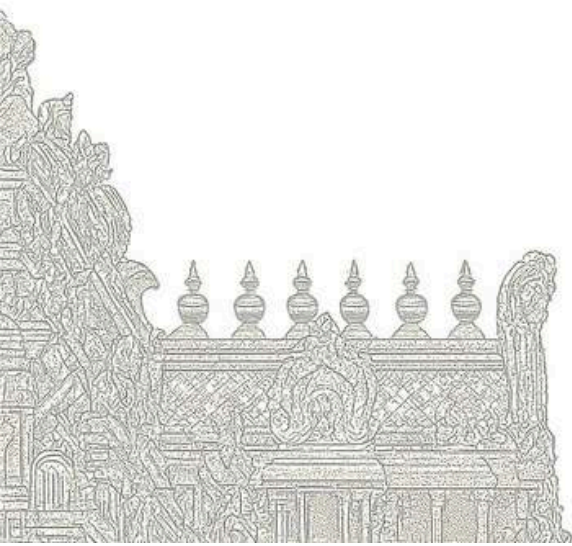
Coverage of traffic scenarios : A large number of the available MAC methods are purpose- made for highway scenarios and do not address the different requirements presented by urban and sub-urban traffic scenarios. Future MAC solutions for VANET should take into account these additional traffic scenarios in their designs and architectures.



Conclusion :

Vehicular Ad-Hoc Networks (VANETs) play a critical role in the development of Intelligent Transportation Systems by enabling seamless communication between vehicles and infrastructure. Through Vehicle-to-Vehicle (V2V) and Vehicle-to-Infrastructure (V2I) communications, VANETs enhance road safety, traffic efficiency, and infotainment services. However, ensuring reliable communication in such highly dynamic environments requires robust Medium Access Control (MAC) protocols. Current MAC challenges include handling high mobility, ensuring synchronization, adapting to varying node densities, and balancing safety-critical and infotainment message delivery. Future advancements must focus on creating adaptive, low-latency, and QoS-guaranteed MAC solutions tailored for diverse traffic scenarios including urban, sub-urban, and highway environments. With continued research and development, VANETs will become a cornerstone of smart and connected transportation systems.





WHEN BIG DREAMS DON'T FLY: UNDERSTANDING WHY MEGA PROJECTS GET DROPPED USING BENEFIT-COST RATIO

Chennai Monorail – Vandalur to Puzhal corridor, CMRL Phase II Siruseri to Kilambakkam Corridor, and the Sethusamudram Shipping Canal Project—these are some of the ambitious infrastructure projects once envisioned by the government. However, despite initial enthusiasm, these projects were eventually shelved. The question is: Why do such promising plans get dropped?

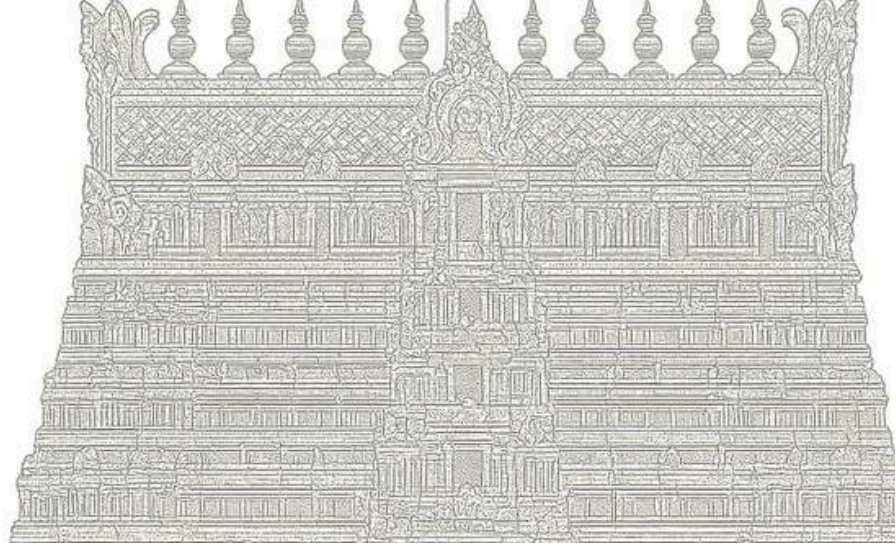
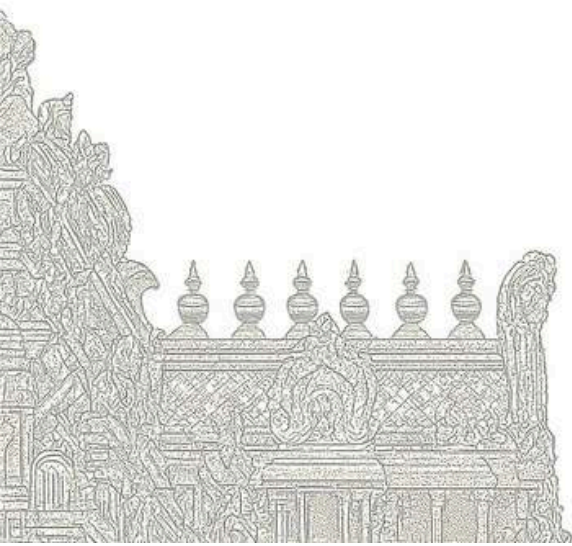
To answer that, we need to look beyond mere construction plans or political announcements. The answer lies in something called the Benefit-Cost Ratio (BCR) — a powerful economic tool that helps governments evaluate the true worth of a project.

The projects done by the government cannot always be evaluated based on the profit that is earned, as is done in the private sector. It totally depends on how much it helps the public. So, a Detailed Feasibility Report (DFR) is prepared and every benefit of the project is calculated. For example, let's consider that a dam is being built in the river that's flowing across a village. Building it requires huge investment from the government. So, the government now calculates the benefits: the dam helps in electricity generation, irrigation to the fields increasing the production, protecting Public and Properties from flood damage, provides drinking water for the people, helps in local fishing, and acts as a local tourist attraction.

Now, all these means of benefits are considered as the outcome in terms of revenue and converted to present worth using different formulas and methods (using single payment method or uniform series method). Based on how the data of revenue is available (Whether the revenue is in installments every month or as a single payment).

So, what do we mean by present worth? As time goes by, the value of ₹1 keeps on depreciating. So, the value of ₹1 after 10 years from now will not be the same as what it is today. So, the revenue earned after 5 years or during a stipulated time, or in installments, is converted and brought to the present worth. This is then divided by the cost invested.





Converting these benefits into revenues(in monetary terms) is the difficult task in BCR as some benefits like dam helping in saving the property from flood can be estimated as revenue but dam saving lives from floods cannot be easily estimated in monetary terms as we cannot express life in terms of money or give a fixed value to it. So at times certain benefits are not considered in this calculation , which also acts as a disadvantage .

Formula:

$$\text{BCR} = \text{Present Worth of Benefits} / \text{Present Worth of Costs}$$

If the value is more than 1, then it is considered a feasible project. If the ratio comes to a value of 2, then for every rupee invested, a benefit of 2 rupees is obtained in various different forms by the public.

Conclusion: Why BCR Matters

For public infrastructure, profit isn't the only motive. Governments must weigh social utility, long-term benefits, and indirect advantages. But these must still be measurable, and that's where Benefit-Cost Ratio plays a vital role.

Projects with $\text{BCR} > 1$ are typically green-lit, while those with $\text{BCR} < 1$ are reconsidered, redesigned, or dropped—no matter how grand they seem on paper.

So, the next time you see a megaproject being announced—or scrapped—you'll know there's more behind the scenes than politics. It's math, economics, and a whole lot of public interest calculation at work.



17. ALUMINI WRITE UP



ABISHEK SRINIVAS.C
CIVIL:2019-2023.

Hello everyone,

As a graduate from the Civil Engineering Department at SSN College of Engineering, I wanted to share some insights from my journey, especially for those preparing for competitive exams like GATE, UPSC Engineering Services, or pursuing higher studies abroad.

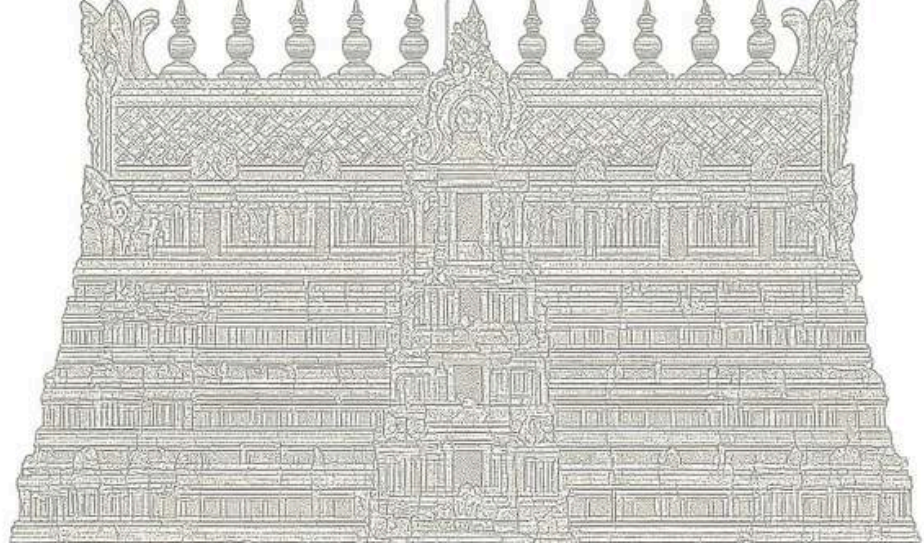
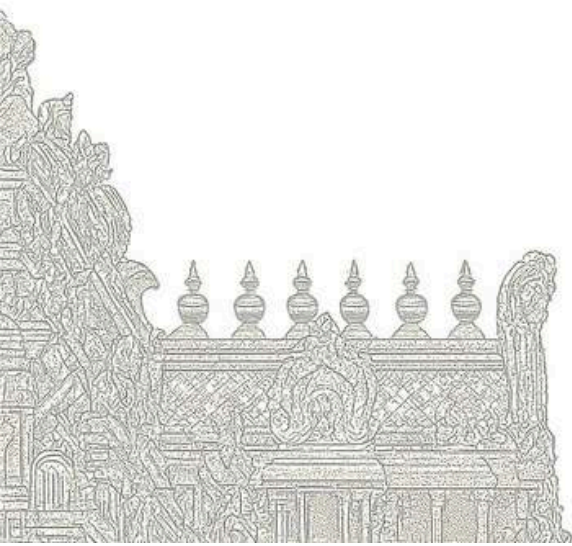
When I first joined SSN, I was captivated by the vibrant campus life and the plethora of opportunities available. The Civil Engineering department offers a rich blend of theoretical knowledge and practical exposure. We've had site visits, workshops on topics like Finite Element Analysis, and even sessions on sustainable construction practices. These experiences have been invaluable in grounding my understanding of real-world engineering challenges.

However, as someone aiming for competitive exams like the GATE and UPSC Engineering Services, I realized early on the importance of structured preparation. The curriculum at SSN is rigorous but aligning it with exam syllabi requires additional effort. I started by setting a daily schedule, dedicating specific hours to subjects like Structural Analysis and Environmental Engineering, which are crucial for these exams.

One of the challenges I faced was managing time effectively. With ongoing projects, assignments, and college events, it was easy to get overwhelmed. But the supportive environment at SSN made a significant difference. Our professors are approachable and often provide guidance on balancing academics with external preparations. Moreover, study groups with peers have been a great way to stay motivated and share resources.

Participating in departmental events also helped enhance my profile. For instance, being part of the Civil Engineering Association allowed me to engage in technical quizzes and seminars, which indirectly benefited my exam preparation by broadening my knowledge base.





Balancing Academics and Exam Preparation

During my time at SSN, I found that aligning our rigorous curriculum with competitive exam syllabi required strategic planning. I dedicated specific hours daily to subjects like Structural analysis ,Water resources rand Environmental engineering, which are pivotal for these exams. The faculty's support was instrumental; their guidance helped me focus on key areas and provided clarity on complex topics.

Leveraging Campus Resources

LSSN offers a plethora of resources that can aid in exam preparation. Participating in departmental seminars and workshops not only enhanced my understanding but also kept me updated with industry trends. Engaging in study groups with peers allowed for knowledge exchange and kept the motivation levels high.

Time Management and Consistency

One of the challenges I faced was juggling project deadlines, assignments, and exam preparation. Creating a structured timetable and adhering to it was crucial. Consistency, even if it meant studying for shorter durations daily, proved more effective than sporadic long hours.

Looking Ahead

For those aiming for higher studies abroad, starting early with preparations for exams like GRE and IELTS is beneficial. SSN's alumni network is a valuable resource; connecting with alumni who have pursued similar paths can provide guidance and mentorship.

In retrospect, the key has been consistency and leveraging the resources available at SSN. While the journey is demanding, the integration of academic learning with competitive exam preparation has been a fulfilling experience.

Remember, the journey is demanding, but with determination and the right support, it's achievable. Wishing you all the best in your endeavors!





18. INDUSTRIAL ARTICLE

Artificial Intelligence & Deep Learning: Revolutionizing Modern Industry

Rathan Rishi, Managing Director, Next Step Builders

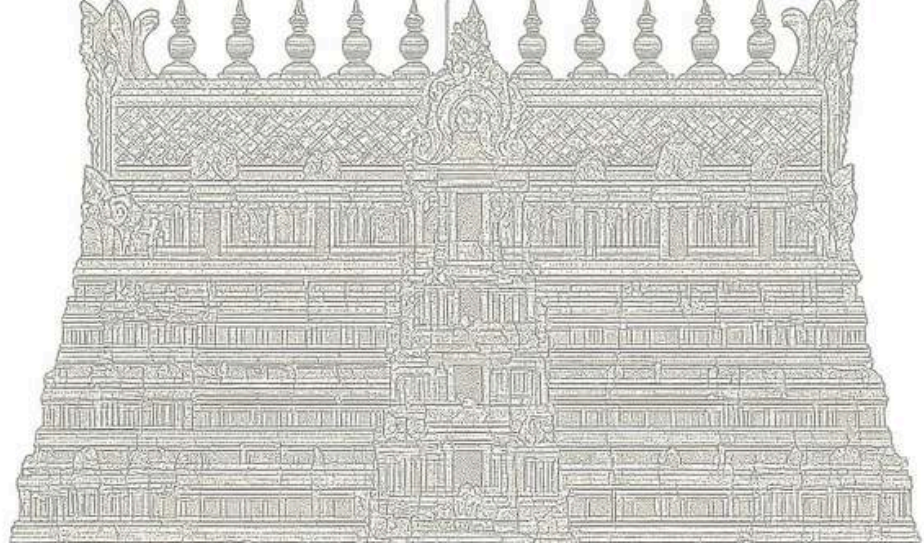
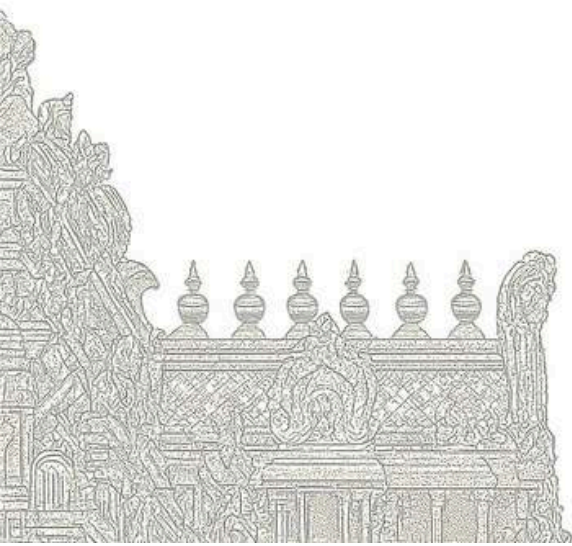
Artificial Intelligence (AI) and Deep Learning (DL) have rapidly transformed from academic concepts into core technologies powering the industrial revolution of the 21st century. These advanced technologies are redefining how businesses operate, optimize, and innovate across sectors such as manufacturing, healthcare, finance, transportation, and construction.

AI enables machines to perform tasks that typically require human intelligence — such as problem-solving, pattern recognition, decision-making, and language understanding. **Deep Learning**, a subset of AI inspired by the human brain, uses multi-layered neural networks to analyze large volumes of data and extract meaningful insights without explicit programming

In the industrial landscape, AI and DL are being employed for:

- Predictive Maintenance:** By analyzing sensor data, AI systems can predict equipment failures before they occur, reducing downtime and saving costs.
- Quality Control:** Computer vision powered by deep learning models enables real-time inspection of products, ensuring high manufacturing standards.
- Automation and Robotics:** AI-driven robots are now capable of learning from their environment, adapting to changes, and performing complex tasks with high precision.
- Supply Chain Optimization:** AI algorithms enhance forecasting, route planning, and inventory management, increasing efficiency and reducing waste.





Industries are also leveraging **natural language processing (NLP)** for customer service automation, and **generative AI** for design and simulation purposes, significantly accelerating the product development cycle.

Despite its promise, the integration of AI and DL requires careful consideration of data quality, model transparency, and ethical implications. As these technologies continue to evolve, interdisciplinary collaboration and continuous learning will be vital to harness their full potential.

In summary, AI and Deep Learning are not just buzzwords — they are powerful tools driving industrial innovation and competitive advantage. As departments, professionals, and students embrace these technologies, they pave the way for smarter, safer, and more sustainable industries.



19.EDITORIAL TEAM

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