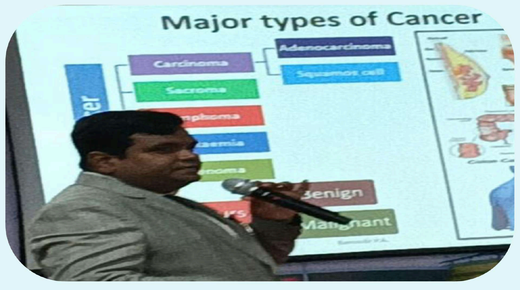
10. Event Photographs

Inaugural Function of ICBTSD-2025

Proceeding Release Ceremony ICBTSD-2025

Keynote Speaker Dr. Archana Thosar



Keynote Speaker Dr. P. A. Bansode

Ph.D Completed Faculty (2025-26)

Dr. Aashish Ainath Joshi
Ph.D In Electronics Engineering
Topic : BIOMEDICAL IMAGE ANALYSIS AND MODELING OF PROXIMAL FEMORAL FRACTURE : AN OPERATIVE PLANNING

Dr. Swati Satish Mane
Ph.D In Chemistry
Topic : INSTRUMENTAL ANALYSIS AND APPLICATIONS OF EXTRACTS OF COMMONLY CONSUMED TEAS IN INDIA

Fabtech College of Engineering & Research
An Autonomous Institute

Quarterly Scientific News Bulletin "Fabtech SciConnect"

1ST ISSUE -January 2026

Message from the Secretary

It gives me immense pleasure to announce that our institute has launched a new initiative—the quarterly Scientific News Bulletin titled 'Fabtech SciConnect'. The inaugural issue will be released on the occasion of the 77th Republic Day. This bulletin provides a dedicated platform to showcase scientific activities, research outcomes, innovations, and academic contributions of our faculty, students, and collaborators. It aims to foster scientific temper, encourage knowledge sharing, and systematically document the institution's academic and research progress. The launch on Republic Day reflects our commitment to national development through science and research. I encourage all contributors to actively participate and enrich this initiative.

Editorial

I Dr. Vidyarani Kshirsagar editor of this bulletin glad to present before you that the first edition of Fabtech SciConnect on 77th Republic Day. The quarterly news bulletin ' Fabtech SciConnect ' strives to spread the updates in the field of Science and Technology to the readers. The highlights of activities at institute and department levels have been presented. I hope the readers will get some quality content related to various disciplines of Engineering and Technology.
Thank you.

About the International Conference on Breakthrough Technologies & Sustainable Development (ICBTSD 2K25)

During this quarter, the International Conference ICBTSD 2K25 was organized by Fabtech Technical Campus, Sangola, during December 23-24, 2025. The conference was technically supported by the Board of Research in Nuclear Sciences (BRNS). This conference has provided a multidisciplinary platform for researchers in science, pharmacy, engineering, and technology to present innovations with societal relevance, particularly encouraging young researchers. The inaugural session was graced by Colonel Prof. Karbhari Kale, Vice-Chancellor, DBATU Lonere, and Prof. Dr. Navanath Pasalkar, Former DTE Director. The conference featured seven plenary speakers. A total of 284 papers were received, of which 161 papers were presented across five technical sessions.

Conference glimpses are presented on Page 4

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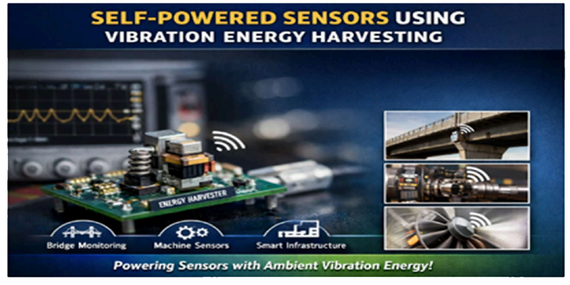
Self-Powered Sensors Using Vibration Energy Harvesting



Self-powered sensors using vibration energy harvesting represent a major advancement in smartmonitoring systems. These devices convert ambient mechanical vibrations from machines, vehicles, and structures into electrical energy. By eliminating the need for external power sources or frequent battery replacement, they enable long-term and maintenance-free operation. Such sensors can be deployed on bridges, rotating machinery, railway tracks, and industrial equipment. They continuously measure parameters such as vibration, strain, temperature, and displacement. The collected data helps in real-time condition monitoring and early detection of faults or structural damage. This approach significantly reduces downtime and maintenance costs in critical infrastructure. It also improves safety by providing timely warnings before catastrophic failures occur. Vibration energy

- Contributed by: Prof. R. S. Autade, Dept.of Mechanical Engineering

Tech Education in Flux: Global Tech Leaders Push for Stronger CS and Mathematics Foundations

As generative AI writes code faster than students can learn it, an unexpected consensus has emerged among the world's most influential technology leaders: students must return to the foundations of computer science and mathematics. Figures such as Elon Musk, Sam Altman, and Sergey Brin argue that in the age of artificial intelligence, the most difficult subjects matter more than ever. Anxiety is evident in classrooms and coding labs, as tools like ChatGPT and Gemini solve equations instantly, debug programs effortlessly, and answer complex questions with unsettling precision. This has led many students to believe that computer science has peaked or that mathematics is no longer essential. However, global technology leaders strongly reject this assumption, emphasizing that while AI automates tasks, it does not replace understanding. Musk stresses that foundational principles endure even as tools evolve rapidly, while Altman describes this moment as a high-leverage opportunity for computer science, where deep knowledge of how systems are designed, constrained, and deployed holds immense power. Speaking at Stanford, Altman highlighted that now is exactly the right time to study computer science, not despite AI, but because of it. Sergey Brin reinforces this view by cautioning against abandoning technical fields out of fear, noting that AI is equally capable in traditionally non-technical disciplines. His focus on curiosity-driven learning underscores a crucial truth: intelligence is not disappearing, only its routine, mechanical aspects are being automated. AI is not stealing intelligence but commoditizing its easier components, such as routine coding and formulaic problem-solving. What remains irreplaceable is human judgment—the ability to question assumptions, detect flawed reasoning, and understand complex systems from first principles. This shift is already reshaping education, with regions integrating computational thinking into core curricula and recognizing computer science as equivalent to mathematics. The message to students is clear and paradoxical: as writing code becomes easier, the demand for those who truly understand it grows exponentially. Far from diminishing the value of computer science education, the era of AI has elevated it to unprecedented importance.

Source:[1] The Times of India. (2026, January 20). "What Musk, Altman and Brin agree on: Students should pay attention to computer science." Retrieved from https://timesofindia.indiatimes.com/education
[2] ACM Communications. (2023, August 30). "The long road to computer science education reform." Communications of the ACM. Retrieved from https://cacm.acm.org/opinion/the-long-road-to-computer-science-education-reform/
[3] Code.org. (2024). "Computer Science and AI Foundations curriculum." Retrieved from https://courseinfo.code.org/csaif/

-Contributed by : Dr. Trupti Bansode Dept. of Computer Science and Engineering

Biomedical Image Modeling: Transform Orthopedic Surgery

Biomedical image modeling has revolutionized orthopedic surgery by transforming medical imaging data into precise, actionable three-dimensional digital representations that overcome the limitations of traditional two-dimensional imaging. Using high-quality CT or MRI data, anatomical structures are segmented through advanced techniques, increasingly powered by deep learning models such as convolutional neural networks and U-Net architectures, which significantly enhance accuracy while reducing manual effort. The segmented data are then converted into detailed three-dimensional surface meshes using algorithms such as marching cubes, achieving an optimal balance between anatomical fidelity and computational efficiency. These patient-specific models enable surgeons to visualize, rotate, and analyze complex anatomy with unprecedented precision, greatly improving preoperative planning. In cases such as acetabular or tibial plateau fractures, three-dimensional visualization clarifies fragment displacement and supports accurate reduction strategies, while in orthopedic oncology, precise tumor delineation and neurovascular mapping assist in planning resections that preserve function. Virtual surgical simulation further allows surgeons to rehearse procedures, perform simulated osteotomies, evaluate fixation options, and plan corrections for complex multi-planar deformities. Patient-specific instruments and implants, designed from imaging data and fabricated using three-dimensional printing, contribute to reduced surgical time and improved alignment consistency. Beyond geometric modeling, finite element analysis predicts biomechanical behavior under physiological loading by integrating spatially varying bone properties derived from CT Hounsfield units, aiding fracture risk assessment, implant optimization, and fixation evaluation. Artificial intelligence enhances the workflow through automated segmentation, landmark detection, and predictive outcome modeling. Despite challenges related to pathological anatomy segmentation, computational demands, and workflow standardization, ongoing research and technological advances promise real-time augmented reality integration, digital twin development, and cloud-based accessibility. Collectively, biomedical image modeling marks a paradigm shift toward quantitative, patient-specific precision medicine in orthopedic surgery, improving safety, outcomes, and overall quality of life for patients.

Source:1. Joshi Aashish, Karande Kailash, Gunaki Ravindra. "Finite Element Analysis of Proximal Femur Fractures: Evaluating Fatigue Performance and Factor of Safety of DHS Screw Fixation. "Biomedical & Pharmacology Journal 2025;18(3). Oriental Scientific Publishing Company Publisher Available from: https://bit.ly/3lj3xZw
2. Joshi Aashish and Karande Kailash (2025). Book chapter titled as"Comprehensive Way for Modeling of Femur Bone Fracture from CT Images". In: Singh, S., Arya, K.V., Rodriguez, C.R., Mulani, A.O. (eds) Emerging Trends in Artificial Intelligence, Data Science and Signal Processing. AIDSP 2023. Communications in Computer and Information Science, vol 2440. Springer Nature Link, Cham. https://doi.org/10.1007/978-3-031-88762-8_13 Published May 2025.

-Contributed by: Dr. Aashish Ainath Joshi Dept. of Electronics & Telecommunication Engineering

Use of Artificial Intelligence in Geotechnical Engineering

Artificial intelligence (AI) is increasingly transforming geotechnical engineering by enhancing the prediction, analysis, and optimization of soil–structure interaction problems. One of the primary applications of AI lies in predicting soil properties and behavior, where machine learning techniques such as neural networks and support vector machines analyze data from boreholes, laboratory tests, and in-situ measurements to estimate parameters like shear strength, compressibility, and permeability. These predictive capabilities allow engineers to forecast settlement behavior of soils under various loading conditions, leading to more reliable designs of foundations, retaining walls, and embankments. AI also assists in evaluating bearing capacity, optimizing foundation dimensions, and reducing the risk of structural failure. In slope stability and landslide assessment, AI models integrate geotechnical parameters with topographical, rainfall, and vegetation data to identify failure-prone zones. Advanced approaches including decision trees, fuzzy logic, and deep learning effectively capture complex nonlinear relationships, providing more accurate hazard predictions than conventional analytical methods, especially in hilly and seismic regions. In site characterization and monitoring, AI plays a vital role in interpreting data from geophysical surveys, cone penetration tests, and continuous in-situ sensors. Pattern recognition and anomaly detection algorithms process real-time monitoring data to identify abnormal behavior such as excessive deformation or sudden pore pressure changes, enabling early warning and preventive action in tunneling, excavation, and embankment projects. Furthermore, AI supports optimization in geotechnical design by performing parametric studies, sensitivity analyses, and risk assessments efficiently. By simulating multiple design scenarios, engineers can identify cost-effective and sustainable solutions while maintaining safety standards. Despite challenges related to data quality, model validation, and the need for interdisciplinary expertise, AI continues to revolutionize geotechnical engineering. As data availability and algorithm robustness improve, AI integration will become essential for developing safer, smarter, and more efficient geotechnical infrastructure projects worldwide.

-Contributed by: Dr. Vageesha. S. Mathada, Dept. of Civil Engg

Creativity

Creativity is a journey—a journey of experiences and of perceiving the world differently in a practical and meaningful way. This journey involves a continuous process of learning from failures, discovering something new, developing persistence, and gradually moving toward expertise. Creativity is a mindset that allows individuals to view the world from a different perspective, and this mindset takes time to develop and expand. Studies have shown that every child is born with creative potential, and it is largely influenced by upbringing and environment. When individuals are given freedom of thought, action, and implementation from an early age, they are more likely to become creative by learning through small creative adventures.

In today's fast-paced world, creativity is no longer just a desirable trait; it is a necessity in both personal and professional life. Creativity drives innovation, problem-solving, and personal fulfillment. In the business world, it distinguishes organizations by fostering innovation and providing a competitive advantage. On a personal level, creativity enriches life by helping individuals see the world in new ways and discover meaningful paths toward their goals.

Creativity is the result of continuous effort and consistent thinking, combined with the ability to transform imagination into reality. It is an ongoing process rather than a single event. As the saying goes, "The stone is broken by the last stroke of the hammer, but that does not mean the first stroke was useless." Every effort contributes to the final outcome. True creativity requires commitment and persistence toward one's art or field of study.

Creative individuals are often free and independent in their thoughts, dreams, and actions. Creativity involves moving beyond conventional methods and forming connections between ideas and experiences. Research indicates that creativity tends to decline with age; while nearly 98 percent of children under five display high creativity, this figure drops significantly by adulthood. Great achievements, such as Newton's work on gravity or Einstein's theory of relativity, were the result of years of persistent study rather than sudden inspiration.

-Contributed by: Mayuri Mahadev Jagadale, B.Tech Computer Science and Engineering

"AI Hai Bhai! (Learning Never Dies)"

In the age of data, vast and wide,
Where logic meets curiosity side by side,
AI awakens with a curious spark,
Train the model, test once more,
Each iteration makes it smarter than before
Deep Learning dives layers deep,
Neurons awake, connections leap,
From images, speech, and hidden clues,
It learns the world the way we do.
Reinforcement Learning plays a game,
Reward and penalty shape its brain,
Trial and error, explore, retry,
Fail, learn fast, then reach the sky.
But tech never stands still in time,
Today's breakthrough is tomorrow's baseline,
Algorithms evolve, data grows,
So updating basics is how progress flows.
Learn with joy, not fear or stress,
Debug the mind, refactor success,
Stay curious, keep skills alive,
In AI's journey—learn, train, and thrive!

Structured Poetic Analysis

-Contributed by: Dr.Somnath Thigale, Dean-R&D,Professor & Head AI&DS Dept.