

MECHRONICLES

School of Mechanical Engineering,
Lovely Professional University, Punjab

MECHANICAL ENGINEERING NEWS

Green Hydrogen Revolution

The Green Hydrogen Revolution is reshaping the global energy landscape, offering a promising solution to combat climate change and transition towards a sustainable future. Unlike traditional hydrogen production methods, which rely on fossil fuels and emit significant amounts of carbon dioxide, green hydrogen is produced using renewable energy sources like solar, wind, and hydropower. This clean energy carrier has the potential to decarbonize industries, transportation, and energy storage, making it a cornerstone of the global effort to achieve net-zero emissions. Green hydrogen is produced through a process called electrolysis, where water (H_2O) is split into hydrogen (H_2) and oxygen (O_2) using electricity generated from renewable sources. This method produces no greenhouse gas emissions, making it an environmentally friendly alternative to gray hydrogen (produced from natural gas) and blue hydrogen (produced from fossil fuels with carbon capture).

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ISRO Develops World's Largest Vertical Propellant Mixer

The ISRO has developed a 10-tonne vertical planetary mixer, the largest of its kind globally, for solid propellant production. Created in collaboration with the CMTI, Bengaluru, this mixer will enhance efficiency, safety, and productivity in manufacturing solid rocket motors.

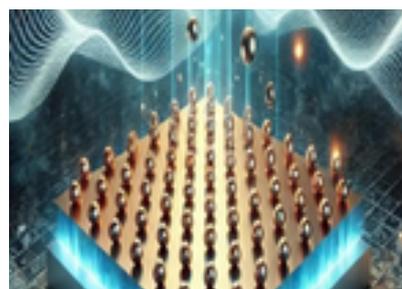
The Indian Space Research Organisation (ISRO) has achieved a significant milestone by developing a 10-tonne vertical planetary mixer, the largest of its kind globally, for solid propellant production.

Aditya-L1 Captures First-Ever Image of a Solar Flare 'Kernel'

India's Aditya-L1 mission, the country's first dedicated solar observatory, has made a groundbreaking discovery by capturing the first-ever image of a solar flare 'kernel.' This rare phenomenon was observed in the lower solar atmosphere, particularly in the photosphere and chromosphere

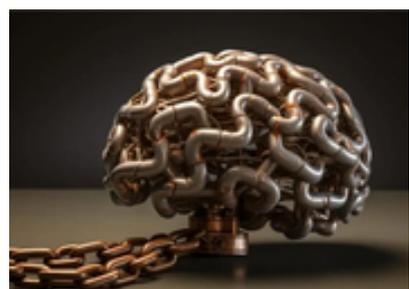


Bose Metal: A Significant Step in Physics Research



A Bose metal is an unusual metallic state where Cooper pairs (paired electrons) form but do not condense into a superconducting state, defying conventional theories that metals should either be superconductors or insulators at absolute zero

What is Chain of Thought (CoT) in AI?

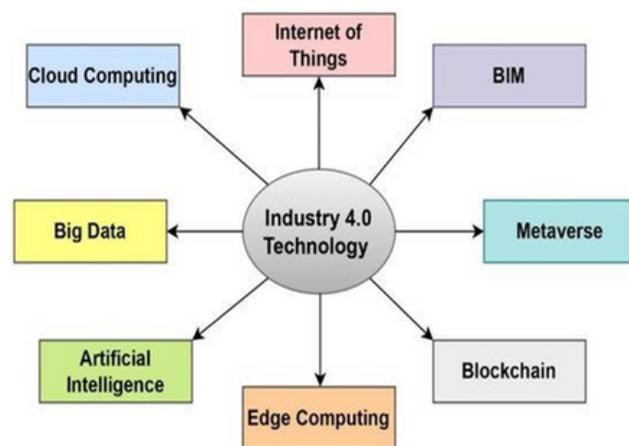
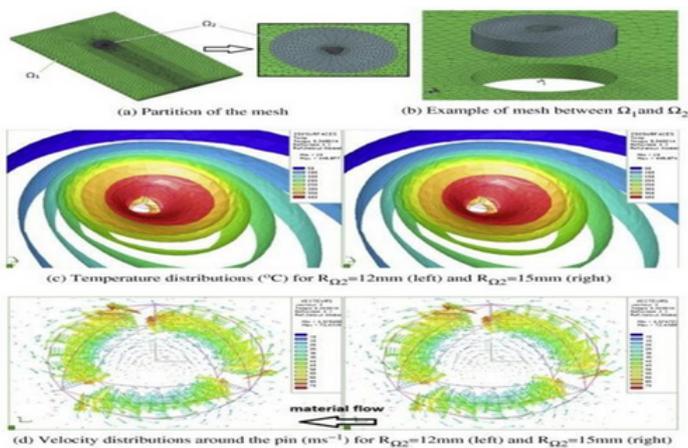


Chain of Thought (CoT) in AI refers to a reasoning technique where an AI model breaks down complex problems into intermediate, logical steps before arriving at the final answer. Chain of Thought (CoT) in AI refers to a reasoning technique where an AI model breaks down complex problems into intermediate, logical steps before arriving at the final answer.

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INNOVATION

The School of Mechanical Engineering Lovely Professional University is Elated to announce that four faculty members, Dr. Manjeet Singh, Dr. Jai Inderpreet Singh, Dr. Manpreet Singh, and Dr. Piyush Gulati—have been granted a patent for their groundbreaking invention, A Smart Utensil for Heating Food. A smart utensil for heating food represents a transformative leap in personal dining technology, combining portability, precision, and convenience into a single compact device. Designed to resemble a regular spoon, fork, or spatula, this utensil is embedded with a miniaturized heating element and advanced thermal sensors, powered by a rechargeable battery. The key innovation lies in its ability to warm food to an optimal, user-defined temperature, making it particularly useful for on-the-go professionals, travelers, or caregivers feeding infants or the elderly. The utensil connects to a mobile application via Bluetooth or Wi-Fi, allowing users to set temperature preferences, monitor heating progress, and receive alerts when the food is ready. Smart sensors continuously assess the temperature and consistency of the food to avoid overheating and ensure even warming. Constructed from food-safe, heat-resistant materials, the device features an ergonomic design and safety mechanisms like automatic shut-off and thermal insulation to prevent burns. Some models may even incorporate smart learning algorithms that remember user preferences over time and adjust settings accordingly. This smart utensil can also integrate with digital health and nutrition apps to track caloric intake, food types, and feeding times, adding value for health-conscious users. Its compact form factor and ease of use make it an ideal solution for warming baby food, liquid meals, or small solid portions in situations where traditional heating appliances are unavailable. Overall, it brings intelligence and adaptability to food consumption, making everyday dining more efficient, personalized, and connected to modern lifestyles.



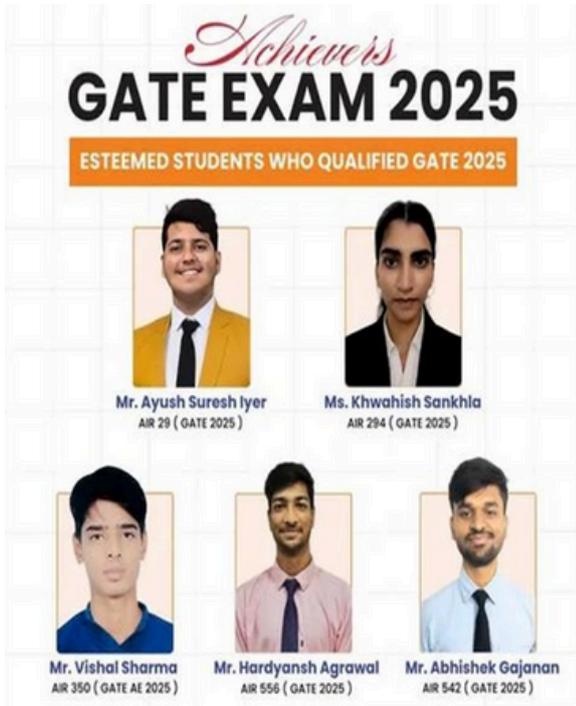
A Review of Numerical Techniques for Frictional Contact Analysis: Dr. Manpreet Singh

This review analyzes numerical techniques for frictional contact problems, highlighting their strengths and limitations in addressing inherent nonlinearities and computational demands. Finite element methods (FEM), while dominant due to versatility, often require computationally expensive iterative solutions. Alternative methods, like boundary element methods (BEM) and meshless methods, offer potential advantages but require further exploration for broader applicability. The choice of contact algorithm significantly impacts accuracy and efficiency; penalty methods, though computationally efficient, can lack accuracy at high friction coefficients; whereas, Lagrange multiplier methods, while more accurate, are computationally more demanding.

Integration of Industry 4.0 Technologies in Fire and Safety Management: Dr. Amit Kumar Thakur

The incorporation of Industry 4.0 has integrated various innovations into fire safety management, thus changing the mode of identifying, assessing, and controlling fire risks. This review aims at how emerging technologies like IoT, AI, cloud technology, and BIM are making changes to fire safety in structural structures. With IoT-enabled sensors, data, and analytics coupled with predictive algorithms for real-time scenarios, fire safety systems have become dynamic systems where early detection, quick response, and risk management can be achieved. In addition, cloud web-based solutions improve the storage of information while providing the predictive aspect for certainty of safety measures.

CAREERS AND ACHIEVEMENTS



Jyothi Kumar

A B.Tech. Mechanical Engineering graduate has recently selected as GET at Tex Fasteners, and here's a glimpse into the student's perspective and thoughts on this exciting opportunity

Student Interview

Interviewer: Can you describe your approach to working in a team, especially in a fast-paced and dynamic environment?

Jyothi Kumar: Certainly. My approach to working in a team, especially in a fast-paced and dynamic environment, is grounded in clear communication, adaptability, and a strong sense of collaboration. I believe that understanding each team member's strengths and responsibilities helps in distributing tasks efficiently and building mutual respect. In a high- pressure setting, I stay focused on the shared goal while remaining flexible to shifting priorities or unexpected challenges. I make it a point to listen actively, offer support when others need it, and contribute constructively to discussions. I'm also not hesitant to take initiative or step up when deadlines are tight. At the same time, I value feedback—both giving and receiving it—as a tool for continuous improvement

Interviewer: Lastly, what do you see as the most significant challenge facing today, and how do you think you can contribute to addressing it?

Jyothi Kumar :One of the most significant challenges facing the manufacturing industry today is the need to balance productivity with sustainability and quality, especially in the face of increasing global competition, stricter environmental regulations, and evolving customer demands.

Interviewer: Thank you for sharing your insights, It's been a pleasure talking with you, and we wish you the best of luck in your career at Tex Fasteners

Jyothi Kumar : Thank you for the opportunity. I'm excited to embark on this journey with at Tex Fasteners

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ACTIVITIES

The School of Mechanical Engineering, LPU, proudly welcomes its distinguished alumni panelists for an inspiring Alumni Homecoming

The School of Mechanical Engineering at Lovely Professional University presents an insightful webinar on Next-Gen Manufacturing: Robots, Cobots & Additive Manufacturing

UPCOMING EVENTS

Engineers' Day is celebrated to honor the invaluable contributions of engineers to society and technological advancement. In India, it is observed on September 15th to commemorate the birth anniversary of Sir Mokshagundam Visvesvaraya, a pioneering civil engineer and visionary. Engineers play a crucial role in building infrastructure, advancing innovation, and solving real-world problems. This day recognizes their dedication, creativity, and impact on economic and social development. It also inspires young minds to pursue engineering as a profession and contribute to nation-building. Engineers' Day serves as a reminder of the importance of science, technology, and innovation in shaping a better future

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