

International Conference on Technological Advancement - 2024

Conference Tracks

1. Mechanical Engineering

Materials Processing and Characterization

- Material Characterization
- Sustainable materials
- Green Manufacturing
- Shape memory alloys
- Environmental aspects of materials
- High strain rate deformation of Materials
- Energy Materials/ Bio-materials
- Advanced machining processes
- Advances in Aerospace Materials
- Advanced metal forming, bending, welding & casting techniques
- Alternate materials /material substitution
- Composite and Polymer Manufacturing
- Metal castings and composites
- Artificial Intelligence in Manufacturing Process
- Fabrication Process of Nano materials and Nano devices
- Functionally Graded Materials
- Heat Treatment
- High-Energy Beam Processing
- High-speed and Hybrid Machining
- Laser Based Manufacturing
- Testing of Material
- Meta materials
- Multi-Physics Coupling Simulation and Optimization
- Nano materials
- Non-destructive Examination
- Powder Metallurgy and Ceramic Forming
- Recycling and re-manufacturing of Materials and Components
- SMART materials
- Super Alloys

Design and Automation

- Fracture and Failure Mechanics
- Machine Dynamics
- Optimization Techniques
- Machine conditioning monitoring
- Numerical Modelling and Simulation
- CAD/CAM, Automation & Robotics
- Industry 4.0
- Automotive Manufacturing Systems

Thermal Science and Technology

- Processes in thermal equipment
- Steam and hot water generators
- Steam and gas turbines
- Internal combustion engines
- Alternate Fuel
- Environmental protection
- Solar, wind, geothermal, biomass
- Thermal analysis
- Electrical Vehicle
- Energy Conservation, Renewable Energy Techniques
- Fluid Dynamics, Bio-fuels, Fuel Cells
- Battery thermal Management and Recycling
- Hydrogen Generation
- Heat Transfer
- Refrigeration & HVAC
- Automobile Engineering
- Defence & Aviation

Industrial Engineering & Operations Management

- Six Sigma
- Lean
- Production Planning and Management
- Engineering Management
- Inventory Management
- Production Engineering
- Supply Chain / Supply Chain Sustainability / Green Supply Chain
- Operations Research
- Product Lifecycle Management (PLM)
- Sustainable Manufacturing
- Project Management
- Environmental Systems Engineering
- Quality

2. Electronics & Communication Engineering

Wireless Communication System

- Communication Systems & Signal Processing
- Green Computing and Networking for 5G,
- Ubiquitous Computing and Sensor Networks,
- ML and DL for Intelligent WSN,
- ML and DL 5G and 6G,
- Mobile Communication networks, and Computing,
- Green communications in 5G,
- Security in WSNs,
- Communication Networks Architecture,
- Secured Routing Algorithms,
- Network Virtualization Technologies (NFV),
- Ad-hoc, Mesh, and Cellular Networks (AMCN),
- Wearable sensors for Healthcare Monitoring,
- Security in Smart cities,
- Software Defined Networks and IoT,
- Vehicular Ad-hoc Networks and Security,
- RFID, Cyber-Physical Networks, Intrusion Detection.
- High Performance Computing,
- Data centre networking,
- Cloud security and privacy.
- Optical Communication

Embedded Systems Design

- Embedded Processor and System on Chip
- Modeling and Design Automation
- Safety, Security and Reliability
- Embedded Machine Learning
- Accelerators and Heterogeneous System
- Communication and Memory Subsystem
- Embedded Operating Systems and Middleware
- Real-time and Distributed Intelligent Systems
- Embedded System for IoT & Signal Processing
- Industrial Practices and Case Studies

Robotics

- Advanced Robotics
- Robot Dynamics
- Nuclear Robotics
- Human-Robot Interaction
- Micro and Nano Robots
- Robotic Vision
- Robotic Rehabilitation Systems
- Autonomous Robots
- Cloud Robotics

- Cognitive Robotics

Internet of Things (IoT)

- Scalable IoT Architectures and the Web of Things
- Edge AI and edge computing applications
- Novel IoT Communication Technologies and Protocols
- Energy Efficiency and Sustainability in IoT
- Small and Large-scale pilots of IoT Sensing and Signal Processing
- IoT and Cyber-Physical Systems

VLSI Design & Technology

- Low-power Digital Systems
- Emerging Computing and post-CMOS Technologies:
- CAD for VLSI Design
- Test, Verification, and Reliability

Antenna Design & Measurement

- Wideband antennas
- Antenna arrays
- MIMO, smart antennas and signal processing
- Feed systems and components
- Antenna measurements
- Scattering and diffraction

- Roboethics

- Database and Distributed Ledger Technologies for IoT
- Human Interaction with IoT
- Large-Scale IoT Analytics and Internet of Behaviours (IoB)
- Real-world IoT Deployments
- Novel IoT Applications in Industry
- Novel IoT Applications for Environmental Sensing and Disaster Response
- Societal Impacts and Ethical Implications of IoT

- Analog, Mixed-Signal, and RF Circuits
- Photonic Integrated Circuits
- AI/ML Algorithms and Applications in VLSI Design and Technology

- Metamaterials, artificial materials, and metasurfaces
- Wave propagation
- Mm-wave, THz and nano-optical antennas for communication systems
- RF and Microwave
- Absorbers

3. Computer Science & Engineering/Information Technology/Computer Engineering

Education and E-Learning

- Online and Blended Learning Platforms
- Educational Data Analytics
- Gamification and Interactive Learning

- Digital Literacy and Technology-Enhanced Education
- EdTech and Online Learning Platforms

Human-Computer Interaction (HCI)

- User Experience (UX) Design
- Interaction Design and User Interface (UI) Development
- Augmented and Virtual Reality

- Usability Testing and User-Centered Design
- Human-AI Collaboration
- Emotion-aware Computing
- Ethical Considerations in HCI

- Neuro-Interfaces and Brain-Computer Interaction

Data Science and Big Data

- Big Data Analytics and Visualization
- Data Mining and Knowledge Discovery
- Data Privacy and Security

Emerging Technologies and Innovations

- Artificial Intelligence and Machine Learning
 - Deep Learning Algorithms
 - Natural Language Processing
 - Computer Vision
 - Explainable AI and Interpretability
 - Federated Learning and Privacy-Preserving AI
 - AI Ethics and Bias Mitigation
 - Reinforcement Learning and Robotics
 - AI-driven Automation and Optimization
- Quantum Computing and Cryptography
 - Quantum Algorithms and Applications
 - Quantum Cryptography and Secure Communication
 - Quantum Machine Learning

Cybersecurity and Privacy

- Network Security and Intrusion Detection
- Threat Intelligence and Cyber Threat Hunting
- Privacy-Preserving Technologies
- Secure Software Development
- Ethical Hacking and Penetration Testing

Software Engineering and Development

- Agile and DevOps Practices

- Assistive Technologies

- Stream Processing and Real-time Data Analysis
- Predictive Analytics and Business Intelligence

- Quantum Error Correction
- Scalability Challenges in Quantum Computing
- Edge and Fog Computing
 - Edge AI and Inference
 - Distributed Data Processing at the Edge
 - Edge Analytics and Real-time Insights
 - Fog-to-Cloud Continuum
 - Edge Security and Privacy
 - Green Cloud Computing
 - Energy-Efficient Hardware Design
 - Environmental Impact Assessment in IT
- Blockchain Technology and Applications
- Wearable Technology and IoT Integration
- FinTech and Blockchain Integration
- Health Tech and Telehealth Innovations
- Smart Cities and Urban Technology
- Industry 4.0 and Smart Manufacturing

- Zero Trust Security Architectures
- Secure IoT and Edge Computing
- Ransomware Detection and Prevention
- Post-Quantum Cryptography

- Continuous Integration and Continuous Deployment (CI/CD)

- Software Testing and Quality Assurance
- Software Architecture and Design Patterns
- Cloud-Native Development and Microservices
- Low-Code/No-Code Development
- AI-assisted Programming
- DevSecOps and Secure Software Development
- Serverless Computing and Event-Driven Architecture
- Cross-Platform Development

4. Electrical Engineering

Power & Energy:

- Smart Grid Technology Management Operation and Control
- Electrical Power Systems
- Generation Transmission and Distribution
- Electrical Machines
- Energy Conversions
- Renewable Energy Sources
- Power Electronics
- Energy Systems
- Power Quality
- High Voltage Engineering

Electronics & Control:

- Analog Circuits
- Filters and Data Conversion
- Analog and Mixed Signal Processing
- Embedded Computer System
- Robotics
- Biomedical Electronics,
- Industrial Electronics and Automation
- Adaptive Control
- Electric Circuit Technology,
- Electrical Circuit Technology

Sustainable Electrical Energy System:

- Renewable Energy Technologies (e.g. Solar Photovoltaic, Wind Energy, Hydrogen Energy Technologies)
- Fuel Cells and Electrolyzes
- Hybrid Renewable Energy System
- Techno-Economics Operations Green Energy Systems
- Energy Economics and Policies for Sustainable Energy Systems
- Grid Integration of Renewable Energy Technologies
- Power Conditioning Devices for Clean Energy Systems
- Electrical Energy Storage
- Electro-Chemical Energy Conversion
- Electro-Mechanical Energy Conversion,
- Electric Vehicles

5. Civil Engineering

Structural Engineering

- Concrete Materials and Reinforced Concrete Structures
- Steel Materials and Steel Structures
- Structural Rehabilitation, Retrofitting and Strengthening

- Earthquake, Wind and Fire Engineering
- Theories and Methods of Structural Analysis
- Sustainable Materials and Innovative Structures
- Advanced Simulation and Computational Studies in Structural Engineering
- Seismic Evaluation and Mitigation Techniques
- Advanced Concrete Technology

Environmental Engineering

- Life cycle assessment of products
- Application of AI and IoT in waste management strategies
- Micro plastic pollution: Environmental effects vis-à-vis Human health effects
- Liability assessment for environmental pollution

Construction Engineering & Management

- Advanced Project Management & Control (Scheduling, Estimating, QA/QC, Risk/Safety Management)
- Automation in Construction (Robotics)
- Lean Design and Construction
- Building Information Modelling
- Advanced Construction materials
- Modular Construction
- Sustainable Construction
- Project risk assessment and management
- Advanced construction techniques

Urban Planning

- Urban Planning and Resilience
- Urban Planning and Sustainable Development
- Urban Planning and Governance

Water Resources Engineering

- Groundwater/surface water Modelling.
- Water resources management and sustainability.

- Structural Health Monitoring
- Earthquake Studies Using GIS/GPS/SAR/ Remote Sensing
- Vibration Control Techniques for Structures
- Soil-Structure Interaction
- Advanced Composite Materials and Composite Structures
- Machine Learning and Artificial Intelligence for Structural Engineering

- Groundwater depletion and contamination
- Climate change and challenges of food and water scarcity
- Organic farming: A sustainable alternative for agriculture activities

- Green Construction and Energy Efficiency
- Construction safety
- Disaster Management in Construction
- Construction in Extreme Environments
- Computer-aided construction management
- Construction, environmental and information technologies
- Life-cycle integrated management information system of construction project

- Smart Cities
- Urban Ecology and Land Use Planning

- Sustainable irrigation water management.
- Water security under climate change.

- Water harvesting techniques and their relation to agriculture.
- Hydro-informatics
- Geographic Information Systems (GIS) and Remote Sensing Applications

Transportation Engineering

- Sustainable Transportation/Non-Motorised Transportation
- Transportation network modelling and optimization
- Traffic Management and Travel Demand Management
- Highway Design and Maintenance
- Freight transportation modelling, logistics, and supply chains
- Intelligent Transportation Systems
- Transportation safety and security

Geotechnical Engineering

- Geotechnical Data Analytics
- Numerical Modeling and Simulation in Geotechnical Engineering
- Geotechnical Remote Sensing
- Sustainable Geotechnics
- Geotechnics for Renewable Energy
- Geo-Environmental Engineering
- Deep Foundations
- Soil Liquefaction
- Ground Improvement Techniques

- River basin management
- Urban water management
- Water, Environment, and Health
- Water governance and capacity building for water management

- Transport planning, policy, economics and project finance
- Pedestrian Facilities and Safety
- Public Transport Planning and Management
- New Technologies in Road Construction
- AI, Big Data & IOT in Transportation
- GIS and Remote Sensing for Transportation

- Soft Soil Engineering
- Tunneling and Underground Construction
- Geo-Structural Monitoring
- Urban Geotechnics
- Geotechnical Aspects of Natural Disasters
- Geotechnics in Extreme Environments
