CONFERENCE REPORT

ABOUT CONFERENCE

The push for sustainability is transforming industries, economies, and societies, with automation playing a key role in shaping a sustainable future. The "Automation for a Sustainable Future" conference will explore how automation, driven by AI, robotics, and IoT, addresses environmental challenges while promoting economic growth and social well-being. Automation optimizes resource use, cuts waste, and reduces carbon emissions across sectors like manufacturing, logistics, energy, and agriculture. It also supports the transition to a circular economy, strengthens supply chains, and enables smart infrastructure for sustainable urban development. The conference will bring together leaders, policymakers, and technologists to discuss how automation can drive energy efficiency, enable sustainable practices, and ensure social inclusion and economic resilience. Keynotes and panels will highlight real-world applications, innovative solutions, and case studies, offering insights into how automation can be aligned with global sustainability goals. By addressing the challenges and opportunities of automation, the event will show how technology can foster an economically viable, environmentally sustainable, and socially inclusive future. Join us to explore automation’s role in building a sustainable world.

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INAUGURAL CEREMONY

The sacred **“Yajña”** performed by our Honorable Vice Chancellor and esteemed dignitaries was a deeply spiritual and culturally significant ceremony that marked the auspicious beginning of the event. Rooted in the ancient wisdom of the Vedas, Yajña symbolizes purification, dedication, harmony, and collective well-being. The ceremony was conducted according to traditional Vedic rituals in the presence of learned priests, faculty members, guests, and participants. The sacred fire (*Agni*) was invoked as a divine witness, representing purity and the medium through which offerings are conveyed to higher energies. As the holy mantras were chanted, offerings such as ghee, herbs, and grains were respectfully placed into the fire, symbolizing the surrender of ego and the dedication of efforts toward a noble cause.

The **Kul Geet** (University Anthem) is a soulful and inspiring composition that reflects the vision, values, traditions, and aspirations of an institution. It is not merely a song, but a symbol of unity, pride, and collective identity for students, faculty members, and administrators.


INTERNATIONAL CONFERENCE
ON
AUTOMATION FOR SUSTAINABLE FUTURE 2.0
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The inaugural session of the *International Conference on Automation for Sustainable Future (Hybrid Mode)* was marked by inspiring and insightful speeches delivered by the Vice-Chancellor, Registrar, and the Chief Guest. The session set a visionary tone for the conference, emphasizing innovation, sustainability, and academic excellence. Overall, the combined speeches reflected a shared vision of fostering research excellence, promoting sustainable automation, and strengthening collaboration between academia and industry. The inaugural addresses successfully inspired participants and set a strong foundation for the technical sessions of the conference.

Speech of Honorable Vice Chancellor

Speech of Honorable Registrar

Speech of the Vice Chancellor of Shridev Suman Uttarakhand University

Abstract Book Inauguration

Memento Distribution for the Dignitaries


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Prize Distribution for the best academic performances

Prize Distribution for the best HAKATHON

A sacred **Yajna ceremony** was solemnly conducted at *Punya Bhumi Gurukula Kangri*, Haridwar, in a spiritually uplifting atmosphere filled with Vedic chants and devotional fervor. The event witnessed the participation of faculty members, students, scholars, and invited guests who gathered to seek divine blessings for peace, prosperity, and holistic development.

The ceremony commenced with the chanting of Vedic mantras by learned Acharyas, invoking positive energies and spiritual harmony. The sacred fire (Havan Kund) was lit following traditional rituals, symbolizing purification of the environment and inner consciousness. Offerings such as ghee, herbs, and samidha were made into the holy fire while reciting sacred hymns from the Vedas.

Keynote Address

Day-1, 27-Feb 2026

Venue: Main Seminar Hall; Mode: offline; Time: 09:00-12:00

Keynote Speaker

1. G.D Thakre, Indian Institute of Petroleum (IIP), Dehradun.

Strengthening by Effective Integration of Artificial Intelligence

The lecture on **"Strengthening by Effective Integration of Artificial Intelligence"** delivered by **G. D. Thakre** explained how tribology, the science of rubbing, friction, and wear, plays an important role in modern engineering applications. The speaker discussed the development of advanced greases tested for space missions of the **Indian Space Research Organisation**, including the **Chandrayaan Mission**, as well as lubricants designed for **Indian Railways** and helicopter transmission gearboxes.

He highlighted the use of bio-based and plant-derived lubricants, ester and cycloaliphatic ester oils, and tree-based oils that are environmentally friendly and show high oxidation stability. The lecture also covered compatibility behavior of new-generation lubricants, wear rate measurement using twin-disk tribo testing with thin layer activation, and the role of additives. A major focus was on the integration of artificial intelligence through tribo-informatics, where AI and molecular dynamics simulations help predict lubricant behavior, conformational changes during esterification, and properties such as wetting behavior, polarity, dipole moment, surface tension, and overall performance, making lubricant development faster, smarter, and more efficient.


Strengthening Tribology by Effective Integration of Artificial Intelligence (AI)
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2. Prof. Amit Kumar, **Nanjing University of Information Science and Technology** (NUIST), China

   Greenhouse emissions from hydropower reservoir: Challenges & opportunities.

The lecture on "Greenhouse Emissions from Hydropower Reservoirs: Challenges and Opportunities" delivered by Amit Kumar, Professor at Nanjing University of Information Science and Technology (NUIST), China, explained that although hydropower is considered a clean energy source, its reservoirs can release significant greenhouse gases (GHGs). He highlighted that the carbon intensity of hydropower can reach around 463 kg CO_2 equivalent per MWh^{-1}, and such emissions are difficult to measure due to complex natural processes. The lecture discussed the global increase in reservoir areas and how reservoirs emit carbon dioxide and methane, especially in tropical regions where emissions are generally higher.

The professor explained the processes and pathways through which GHGs are produced and released from reservoirs, along with sampling and monitoring methods. Factors such as water depth, trophic level, organic matter, and nutrient load were shown to strongly influence emissions, leading to variation in carbon intensity across different reservoirs. The risks of eutrophication, both current and future, were also discussed. A comparative case study of net GHG emissions from Indian and Canadian hydropower reservoirs highlighted regional differences. The lecture concluded by discussing the use of empirical models to predict GHG emissions and emerging technologies that can help manage and reduce emissions from hydropower reservoirs, presenting both challenges and opportunities for sustainable hydropower development.


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Paper Presentation Sessions

Technical session-1 (TS-1)

Venue: Seminar Hall-2; Mode: offline; Time: 12:00-2:00

Chairman: Dr. Mangeram, GED

Co-Chairman-Dr. Mohit Tyagi, PEC, Chandigarh

Keynote Speaker:

1. Dr. Kishan Kumar, Dept of computer science, GK(DU)

Generative AI & Its Applications

The lecture on "Generative AI & Its Applications" delivered by Kishan Kumar from the Department of Computer Science, Gurukula Kangri (DU) provided a clear overview of how generative artificial intelligence has evolved from 2015 to 2024. He explained that Generative AI (Gen AI) has grown rapidly with the development of Artificial Neural Networks (ANN), deep learning, transformer models, and advanced generative models. The lecture also introduced concepts such as agentic AI and AI agents, which can perform tasks autonomously and make decisions with minimal human input.

Dr. Kumar described the working principle of generative AI as systems that learn patterns from large datasets and then create new content similar to what they have learned. Different types of generative AI were discussed, including text, image, audio, video, and code generation. The advantages of AI-generated content, such as speed, efficiency, creativity support, and automation, were highlighted, along with concerns like misinformation, bias, data privacy, and ethical issues. The lecture concluded by explaining the wide applications of generative AI in education, healthcare, business, industry, entertainment, and software development, emphasizing its growing importance in research and innovation.

1. **Anjali Sharma**, Department of Computer Science and Engineering, Gurukula Kangri (DU) -Haridwar

ConvNeXt-Driven Image Captioning in Hindi with Adaptive Attention and Transformer Decoder

The lecture on "ConvNeXt-Driven Image Captioning in Hindi with Adaptive Attention and Transformer Decoder" delivered by Anjali Sharma from the Department of Computer Science and Engineering, Gurukula Kangri (DU) focused on connecting computer vision and natural language processing through image captioning. The speaker explained how image captioning helps machines understand images and describe them in natural language, and highlighted the special challenges involved in Hindi, such as limited datasets, complex grammar, and poor performance of existing models mainly designed for English. She identified gaps and weaknesses in current approaches, which create opportunities for using ConvNeXt as a stronger visual feature extractor. The proposed work introduced a hybrid framework with novel components like a hierarchical adaptive attention mechanism and an optimized transformer decoder to improve caption quality. The lecture covered the key contributions of the model, including its architecture, dataset preparation, training process, caption generation flow, evaluation metrics, and performance results. Overall, the talk clearly showed how the proposed ConvNeXt-based framework improves

accuracy, scalability, and effectiveness for Hindi image captioning and opens new research directions in vision–language systems.

2. **Vaibhav Chauhan**, Department of Computer Science, Gurukula Kangri (DU) -Haridwar

Leveraging Artificial Intelligence for Smart Healthcare and Monitoring

The lecture on "Leveraging Artificial Intelligence for Smart Healthcare and Monitoring" delivered by Vaibhav Chauhan from the Department of Computer Science, Gurukula Kangri Vishwavidyalaya (GKV) explained how artificial intelligence is transforming modern healthcare systems. He discussed how AI helps doctors and hospitals in faster diagnosis, accurate disease prediction, and continuous health monitoring. The lecture covered common AI techniques used in healthcare, including machine learning algorithms, deep learning models, neural networks, and natural language processing (NLP), which are applied to analyze medical images, patient records, and real-time health data. He highlighted the role of AI in predicting diseases at early stages and in developing smart monitoring systems for tracking patient health remotely. At the same time, the speaker emphasized important challenges and ethical considerations such as data privacy, security, bias in algorithms, reliability of AI decisions, and the need for human supervision. Overall, the lecture provided a clear understanding of how AI can make healthcare smarter, faster, and more efficient while also addressing its limitations and responsibilities.

3. **Lalit Johari**, Associate Professor at IFTM University, Moradabad.

Performance Evaluation of AI-Generated Responses in Mental Health Counselling with PEFT

The lecture on **"Performance Evaluation of AI-Generated Responses in Mental Health Counselling with PEFT"** delivered by **Lalit Johari**, Associate Professor at **IFTM University**, Moradabad, provided an insightful discussion on the growing role of artificial intelligence in mental health support. The speaker began by highlighting the increasing global demand for mental health services and the limited accessibility to trained professionals, which creates a strong need for scalable AI-based solutions. He discussed existing research, identified gaps in current approaches, and explained how most large language models (LLMs) offer only generic emotional support. The lecture introduced the integration of AI in mental health counselling using **Parameter-Efficient Fine-Tuning (PEFT)**, grounded in **Hill's Helping Skills Theory**, to

improve therapeutic relevance. The methodology, evaluation process, and results showed that PEFT significantly enhances empathy, semantic accuracy, and therapeutic alignment in AI-generated counselling responses, enabling a shift from generic replies to more structured and reflective dialogue while remaining computationally efficient. The lecture concluded by emphasizing that such theory-aligned AI systems can support scalable mental health conversations and may be extended in the future to develop dedicated mental health chatbots using other counselling theories, while clearly stating that these AI models simulate empathy and are not a replacement for licensed mental health professionals.


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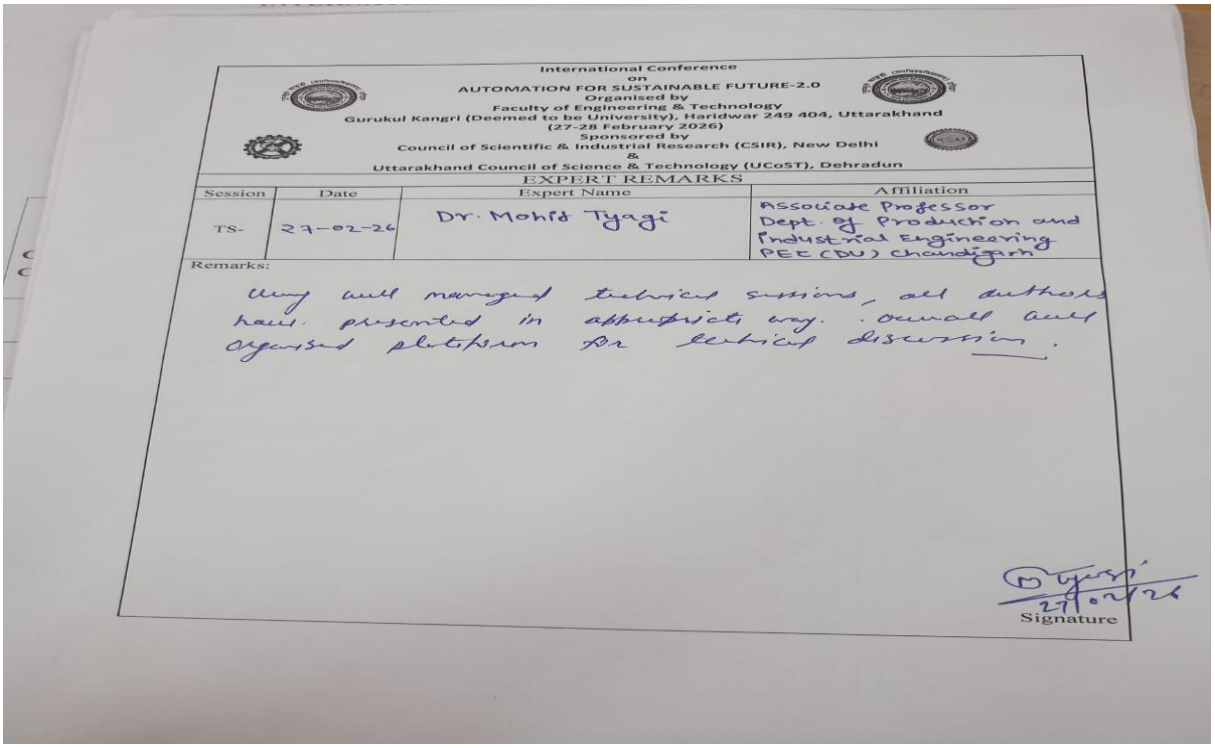
Remarks on TS-1



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Sponsored by
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&
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EXPERT REMARKS

Session	Date	Expert Name	Affiliation
TS-	27-02-26	Dr. Mohit Tyagi	Associate Professor Dept. of Production and Industrial Engineering PEC (DU) Chandigarh

Remarks:

Very well managed technical sessions, all authors have presented in appreciable way. Overall well organised platform for technical discussion.

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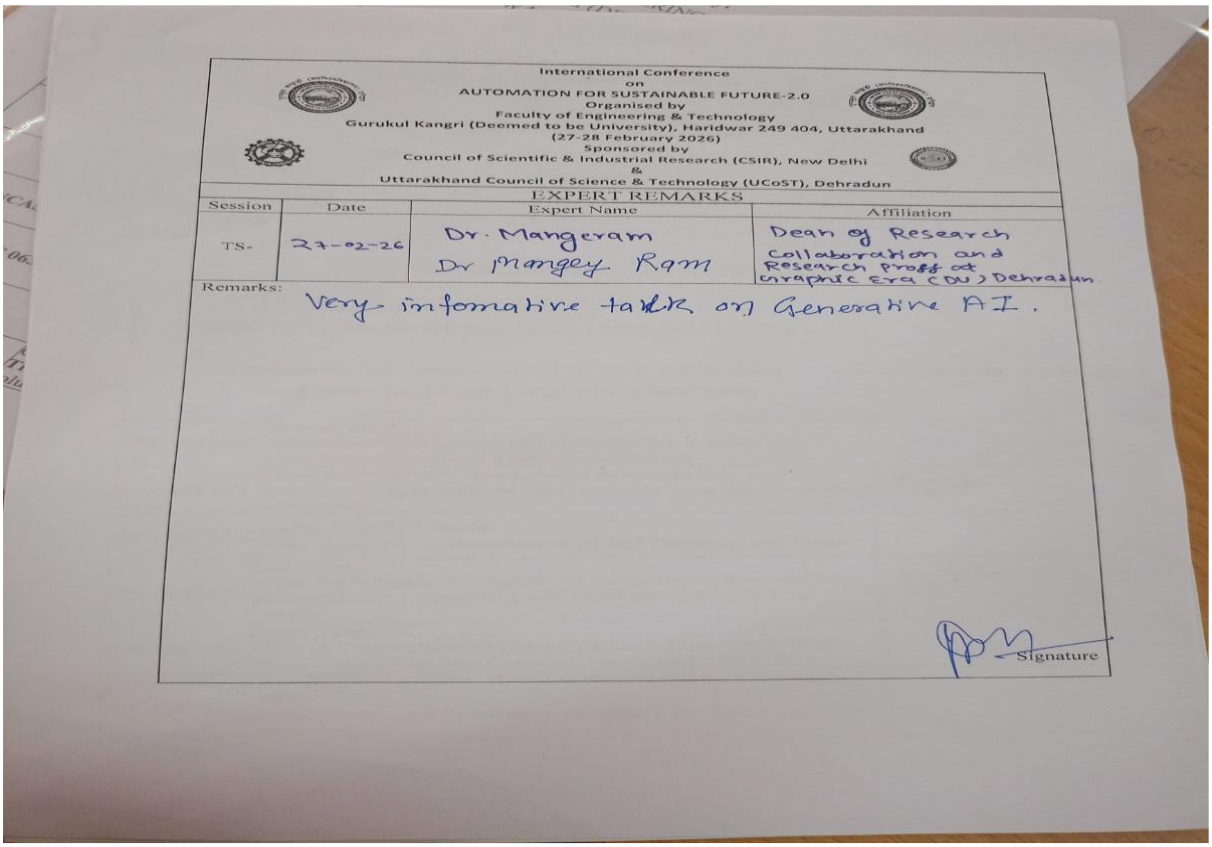

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EXPERT REMARKS

Session	Date	Expert Name	Affiliation
TS-	27-02-26	Dr. Mangeram Dr Mangey Ram	Dean of Research Collaboration and Research Prof. at Graphic Era (DU) Dehradun

Remarks:

Very informative talk on Generative AI.

Signature

TECHNICAL SESSION (TS)-02

Venue: NSH, Mode: Online Time: 12:00 pm – 02:00 pm

Chairman: Dr. Sachin, IIT Ropar

Co-Chair: Prof. Pramod, SRHU Dehradun

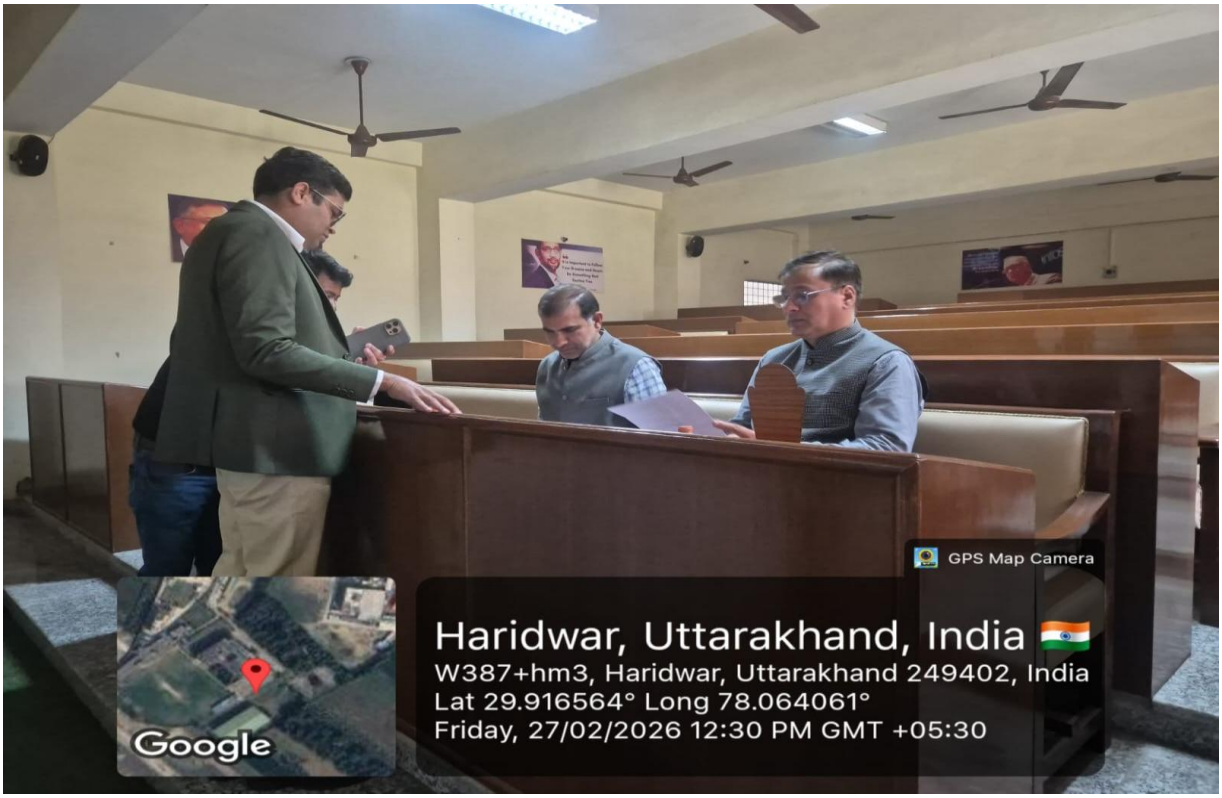
The conference was a resounding success, featuring one invited lecture and 10 online presentations. The esteemed expert in his field delivered the invited lecture.

Prof. Atulya K. Nagar, Professor of Mathematics and PVC Research from Liverpool Hope University, Liverpool, UK.

Topic: Simplicity in Complexity: Automation for a Sustainable World.

He spoke on a complicated and complex system, the characteristics of a complex system, Chaos and Sensitivity, Emergent and flocking behavior, Irreducibility, and Adaptability. Also, talk about Nanotechnology, Atmosphere and climate, Simple pendulum, double pendulum, butterfly effect and consider them as a complex system.

A total of 10 online presentations covered a wide range of topics, like the dual challenge of thermal power operations, baseload resilience, economic paradox, Indo Gangetic fog-barrier, boiler & FGD mathematics, evaluation of domain- specific language models on benchmark datasets, dicussed about the models like GPT-4, Med PaLM, Bio GPT show promise in diagnostic reasoning and treatment planning, LLMs perform well in structured reasoning, guideline-based tasks and summarization, critical cyber attack risk modelling, traditional MCDM, Quantum-Inspired Fuzzy Aggregated Multimoora frame, evolution of negative capacitance field effect transistor using drain current model.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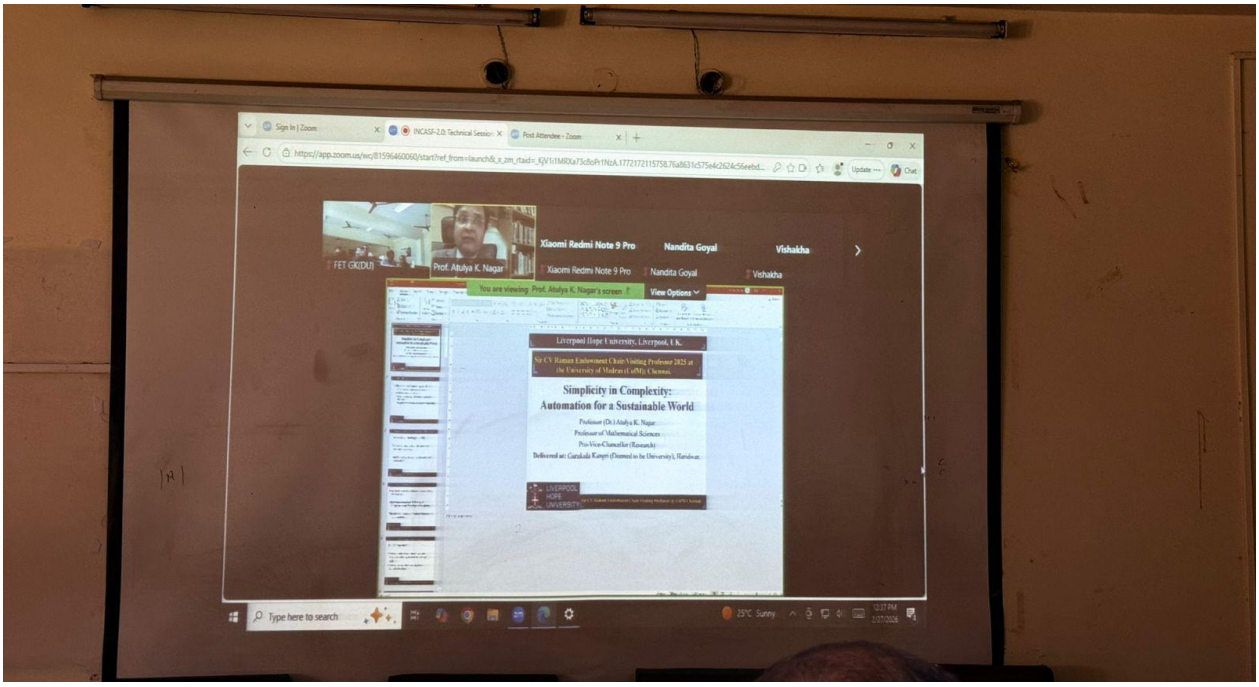
Xiaomi Redmi Note 9 Pro
Nandita Goyal
Vishakha
Prof. Atulya K. Nagar
Liverpool Hope University, Liverpool, U.K.
Simplicity in Complexity:
Automation for a Sustainable World
Type here to search

Vishakha | FET GK(DU) | Prof. Atulya K. Nagar | Xiaomi Redmi Note 9 Pro | vineet kumar

You are viewing Prof. Atulya K. Nagar's screen | View Options

Chaos and Sensitivity

- Deterministic systems can behave unpredictably
  - Sensitive dependence on initial conditions
  - Small perturbations → large consequences
  - Automation must manage uncertainty
  - Over-optimisation without robustness leads to fragility

LIVERPOOL HOPE UNIVERSITY | Sir CV Raman Endowment Chair Visiting Professor @ UofM Chennai

Next slide

When does a System become a Complex System?
Fingerprints of Complexity (1)

Irreducibility: Complex systems come as a unified whole;

... cannot be studied by breaking them into their component parts and looking at the parts in isolation. The behaviour of the system is determined by the interaction among the parts, and any "tearing" of the system into pieces destroys the very aspects that give it its individual character.

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No Notes.

Slide 9 of 42

Vishakha | FET GK(DU) | Prof. Atulya K. Nagar | Xiaomi Redmi Note 9 Pro | Nishant Munjal

You are viewing Prof. Atulya K. Nagar's screen | View Options

Edward Lorenz Chaos

- In 1963 Lorenz was trying to improve weather forecasting
- Using a computer, he discovered the first chaotic attractor → Lorenz entered the rounded-off numbers (**0.506** rather than 0.506127, a difference of less than 0.1%).
- Three variables (x, y, z) define convection of the atmosphere
- **Chaos:** Simple rules can lead to complex and unpredictable behaviour

Strange or Lorenz Attractor

$$\frac{dx}{dt} = \sigma(y - x)$$

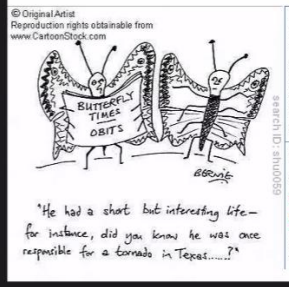
$$\frac{dy}{dt} = \varphi x - y - xz$$

$$\frac{dz}{dt} = xy - \beta z$$

... We had been used to thinking large changes need large forces. He found that small forces could have large effects.

Next slide

The Butterfly Effect



The term butterfly effect first appeared in his 1972 paper *Predictability: Does the flap of a butterfly's wings in Brazil set off a tornado in Texas?*.

To mathematicians this effect is known as *sensitive dependence on initial conditions* and it is one of the hallmarks of mathematical chaos.

Prof. Lorentz approximated the parameter. This is scientifically called truncating the number to certain decimal places!

Three time-evolving variables can describe this model of the atmosphere:
"x" the convective flow
"y" the horizontal temperature distribution
"z" the vertical temperature distribution
with three parameters describing the character of the model itself
"s" [sigma] the ratio of viscosity to thermal conductivity
"r" [rho] the temperature difference between the top and bottom of the slice
"b" [beta] the width to height ratio of the slice

Slide 29 of 42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A Comprehensive Multi-dataset Taxonomy And Environmental Attack Vector Mapping For A Self-aware Bot-based Threat Analyzer
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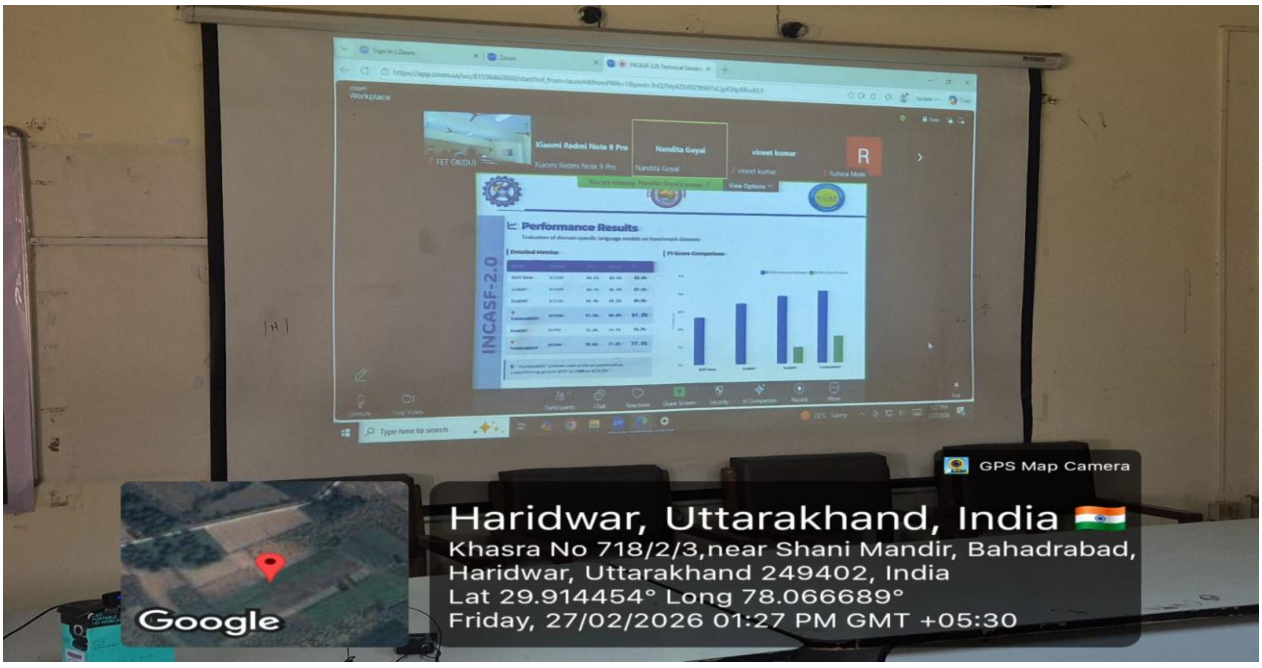
Performance Results
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Review on TS-2

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EXPERT REMARKS

Session	Date	Expert Name	Affiliation
TS-02	27-02-26	Dr. SACHIN KUMAR	IIT Ropar

Remarks:

The conference was well organised. All the lectures/ papers presented, were very informative.
Such events should be conducted to provide the platform to discuss ideas for the development.

Signature

INCASF-Schedule: 28.02.2026 (Saturday)

TECHNICAL SESSION (TS)-03

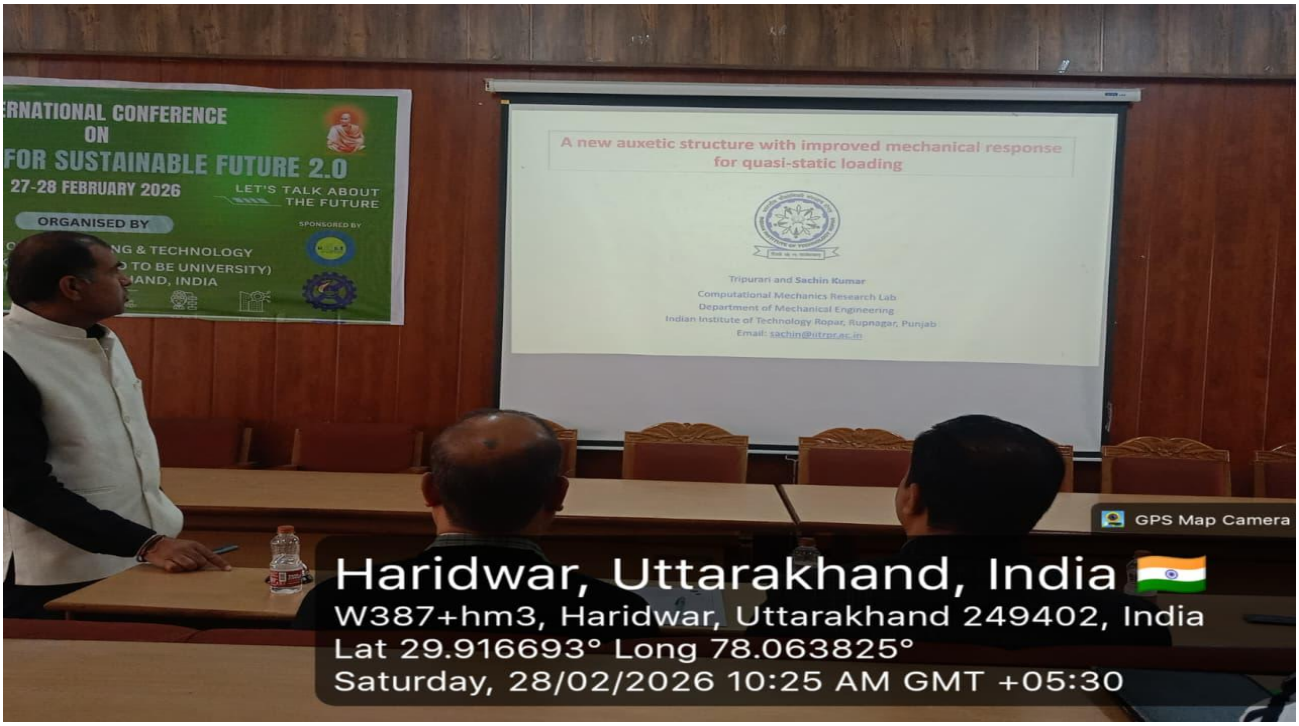
Venue: NSH, Mode: Offline Time: 09:30 am – 11:00 am

Chairman: Dr. Pushpendra Kumar, GEU, Dehradun

Co-Chair: Dr. Rakesh Bhutiayani, GK(DU) Haridwar

IL-01- Dr. Sachin Kumar, Department of Mechanical Engineering, IIT Ropar Title: A new auxetic structure with improved mechanical response for quasi-static loading.

The lecture on "A New Auxetic Structure with Improved Mechanical Response for Quasi-Static Loading" delivered by Sachin Kumar from Indian Institute of Technology Ropar focused on the design and development of innovative auxetic materials, which possess a negative Poisson's ratio. Unlike conventional materials that become thinner when stretched, auxetic structures expand laterally due to their specific internal geometry and arrangement. The speaker explained that the motivation behind developing such structures is to improve energy absorption and prevent harm during accidents, impacts, or blast events. He discussed applications in the military sector, such as body armor, blast-resistant materials, adaptive camouflage, and protective footwear, as well as in sports equipment like helmets and shoes. Biomedical applications were also highlighted, including joint fracture supports, spinal implants, vascular and tracheal stents, bone and cartilage scaffolds, tendon injury repair, and flexible patches for dynamic organs. The lecture covered key challenges in designing these materials and described the process of developing a novel 2D auxetic structure based on a detailed literature survey. The structure was further analyzed through single unit cell evaluation, calculation of Poisson's ratio, and 3D printing of polymer models for simulation and testing under quasi-static loading conditions, demonstrating improved mechanical response and practical feasibility.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A new auxetic structure with improved mechanical response for quasi-static loading
Tripurari and Sachin Kumar
Computational Mechanics Research Lab
Department of Mechanical Engineering
Indian Institute of Technology Ropar, Rupnagar, Punjab
Email: sachin@iitrpr.ac.in
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IL-06 Dr. Mohit Tyagi, Department of Production and Industrial Engineering, PEC Chandigarh Title: Sustainable Development: A Research Perspective

The lecture on “Sustainable Development: A Research Perspective” delivered by Mohit Tyagi from Punjab Engineering College discussed sustainability in a clear and practical manner. He explained sustainable development through the 3P’s—People, Planet, and Profit, and questioned whether current business practices truly meet market needs without harming nature. The lecture highlighted how present-day development often disturbs natural systems, exploits resources, and increases greenhouse gas emissions through devices and industrial activities, making many practices unsustainable and accelerating climate change. He pointed out that corporate profit-driven approaches frequently ignore environmental and climatic impacts. The concept of green business management was introduced, focusing on eco-friendly products and manufacturing, product life cycle management, supply chain network optimization, and process optimization, supported by green technologies. The use of sustainable packaging, internet-based communication, and cloud-based storage was discussed as positive steps toward sustainability. Challenges in green business management, such as lack of collaboration, authentic support, and proper evaluation metrics, were also addressed, along with the need to avoid unnecessary energy and electricity consumption. The speaker emphasized that true development means preserving natural resources for the future and highlighted a transition toward sustainable business management. The broader pillars of sustainability—economic, social, cultural, political, and environmental—were explained, along with the role of government initiatives such as United Nations Development Programme (UNDP) and NITI Aayog. The lecture concluded with insights into sustainable and innovation-driven manufacturing, the 6R principles, and the challenges and opportunities in achieving long-term sustainable manufacturing practices.


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Mementos for Invited Speakers

INCASF 059 Joshi, Jyoti; Manral, Avi Raj; Kumar, Pushpendra*; Singh, Dharmendra Pratap, GEUTitle: A Review of Origami Inspired Soft Robotics

The lecture on **“A Review of Origami Inspired Soft Robotics”** delivered by **Jyoti Joshi** presented an engaging overview of how origami, traditionally a paper-folding art, is used to design advanced soft robotic systems. The speaker explained that origami principles enable the creation of complex three-dimensional structures with mechanical functionality using simple folding patterns. She discussed design and manufacturing approaches, including computational methods and software tools such as tree methods and box-pleat patterns, which help in accurately modeling and fabricating origami-based robots. The lecture also introduced emerging technologies like 4D printing and smart composite materials that allow structures to change shape over time in response to external stimuli. Various types of actuators used in origami-inspired soft robotics were

explained, including pneumatic, hydraulic, edible, shape memory alloy, and shape memory polymer actuators. Finally, the lecture highlighted diverse applications of these systems in wheels, toys, ingestible medical devices, and air robots, showing how origami-inspired designs offer flexibility, lightweight structures, and innovative solutions in soft robotics research.

INCASF 063 Parth Mishra, B.tech 8th sem, GKV. Title: Sentinel in the Sky: A Multi-Modal Attention-Based Deep Learning Framework for Early Detection of Glacial Lake Outburst Floods (GLOFs) and Landslides in the Himalayan Region.

The lecture titled **“Sentinel in the Sky: A Multi-Modal Attention-Based Deep Learning Framework for Early Detection of Glacial Lake Outburst Floods (GLOFs) and Landslides in the Himalayan Region”** presented an advanced AI-driven approach for disaster risk reduction in the fragile terrain of the Himalayan Region. The talk explained how multi-modal data sources—such

as satellite imagery, topographical information, and climatic indicators—are integrated using attention-based deep learning models to improve early detection and prediction of GLOFs and landslides. Emphasis was placed on the ability of attention mechanisms to prioritize critical signals from complex and heterogeneous datasets, enabling timely and accurate hazard identification. The framework was highlighted as a powerful tool for strengthening early warning systems, supporting informed decision-making, and enhancing resilience of mountain communities against climate-induced natural disasters.

INCASF 095 Kumar, Sankit* Title: Groundwater quality assessment in different Blocks of Haridwar district, Uttarakhand, India

INCASF 096 Chaubey, Rajat* Title: Alkaline and microwave pre-treatment method for sewage sludge solubilization and biogas generation

INCASF 062 Kumar, Vinod* Title: Arduino-UNO-based and IoT based white button (Agaricus bisporus) mushroom cultivation

INCASF 036 Mishra, Anupama*; Danu, Neelam; Gupta, Neena; Mittal, Varsha. Swami Rama University Title: Explainable AI for Sustainable Decision-Making: A Governance-Oriented Machine Learning Approach

A lecture on "Explainable AI for Sustainable Decision-Making: A Governance-Oriented Machine Learning Approach" by Anupama Mishra highlighted the critical role of sustainable and transparent artificial intelligence in addressing global environmental and social challenges. The talk emphasized that sustainable AI must consider the entire lifecycle of AI systems from data collection and model training to deployment and disposal ensuring ecological integrity and social justice. It underlined the need to integrate both technical and socio-technical perspectives, combining data-driven solutions with governance principles. The speaker discussed the environmental implications of large-scale data growth, noting that data centers consume vast energy and generate hazardous waste, while many AI systems operate as opaque "black boxes" with high energy demands. Ethical concerns surrounding accountability, bias, and transparency in sustainable governance were also addressed. To tackle these challenges, a governance-oriented Explainable AI (XAI) framework was proposed, aiming to enhance interpretability, responsibility, and policy alignment in AI-driven sustainable decision-making processes.

INCASF 037 ARORA, JIGYASHA* Title: Pecuniary Fraud Uncovering with Intelligent and Collaborative Practices

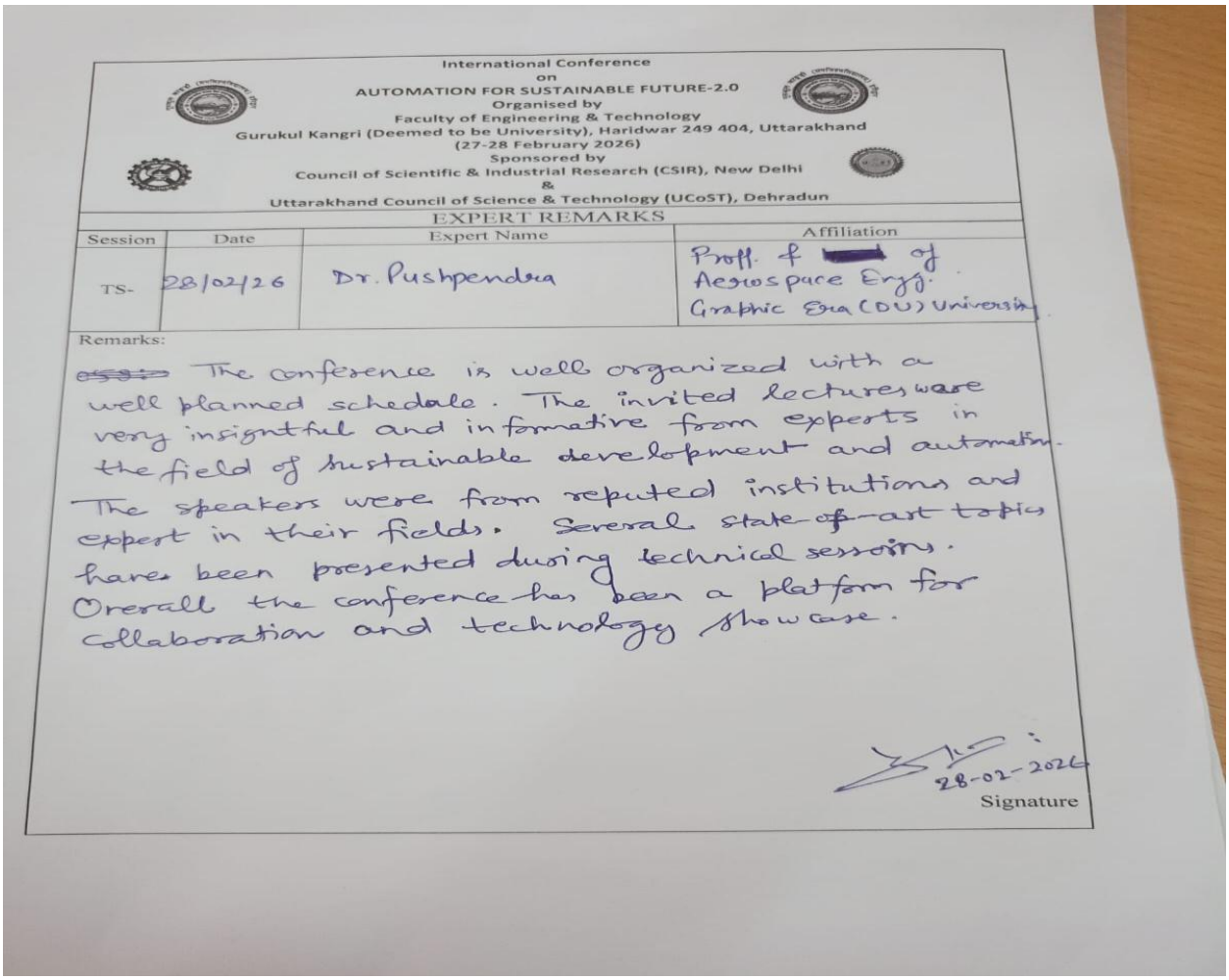
The lecture on "Pecuniary Fraud Uncovering with Intelligent and Collaborative Practices" delivered by Jigyasa Arora focused on the growing challenge of detecting financial fraud using data-driven approaches. The speaker discussed the nature of datasets used in fraud analysis, common problems such as data imbalance, noise, and privacy concerns, and the theoretical foundations behind fraud detection models. Various methodologies involving intelligent analytics, machine learning, and collaborative frameworks were explained to improve accuracy and reliability in identifying fraudulent activities. The lecture concluded by highlighting the need for a unified and scalable future framework that integrates advanced data models, real-time collaboration, and intelligent systems to enhance fraud detection and prevention in financial systems.

INCASF 114 Bhardwaj, Dr. Suyash*; Panchal, Sonali Title: Effect of Solar Radiation on Plant Aphids

A lecture on “Effect of Solar Radiation on Plant Aphids” by Sonali Panchal examined how solar radiation influences aphid populations on selected crops. The study focused on pepper, mustard, and eggplant, each infested with different aphid species, to understand plant–insect interactions under varying light conditions. The methodology involved controlled exposure to UV-A and UV-B radiation, with experiments conducted in the climatic conditions of Haridwar. The findings highlighted that increased solar and ultraviolet radiation can adversely affect aphid survival, reproduction, and behavior, while also triggering indirect ecological consequences through changes in plant physiology. The lecture concluded by discussing the future scope of this research,

emphasizing its potential application in sustainable pest management strategies and climate-resilient agriculture.

Comment on TS-3



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EXPERT REMARKS

Session	Date	Expert Name	Affiliation
TS-	28/02/26	Dr. Pushpendra	Prof. & [redacted] of Aerospace Engg. Graphic Era (DU) University

Remarks:

The conference is well organized with a well planned schedule. The invited lectures were very insightful and informative from experts in the field of sustainable development and automation. The speakers were from reputed institutions and expert in their fields. Several state-of-art topics have been presented during technical sessions. Overall the conference has been a platform for collaboration and technology showcase.

28-02-2026
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INCASF-Schedule: 28.02.2026 (Saturday)

TECHNICAL SESSION (TS)-04

Venue: OSH, Mode: Online Time: 09:30 pm – 11:00 pm

Chairman: Prof. Vipul Sharma, GK(DU), Haridwar

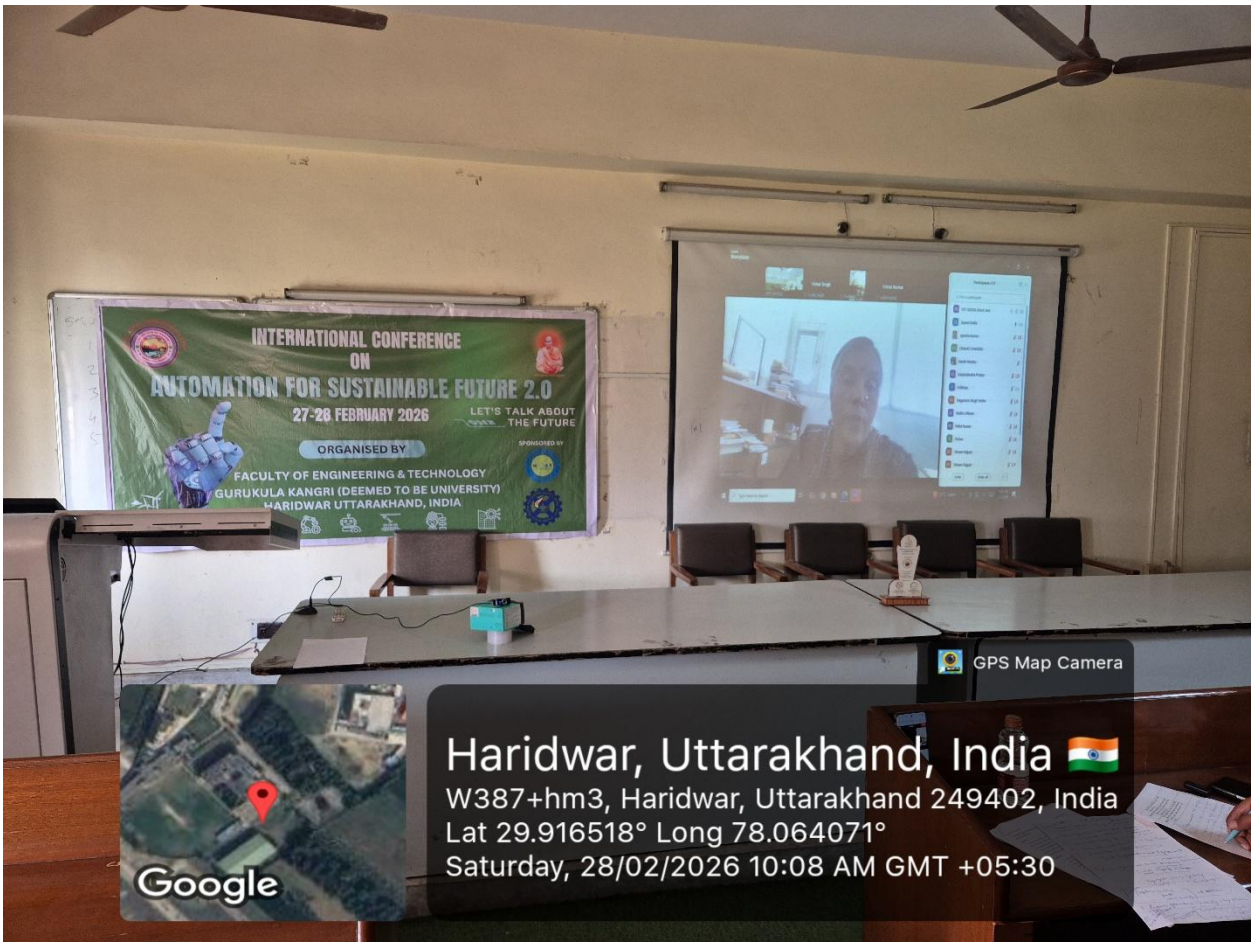
Co-Chair: Dr. Mani Madhukar, IBM

IL-04 Prof. Jayanti Dutta, Punjab University, Chandigarh, Punjab

Title: Automation for a Sustainable Future: Reimagining Pedagogy and Research in Higher Education

This lecture explores how automation and intelligent technologies are transforming teaching, learning, and research in higher education. It aligns with the vision of India's National Education Policy (NEP) 2020, which emphasizes multidisciplinary learning, digital integration, and innovation-driven research. The session discusses how automated systems can enhance academic

efficiency, support outcome-based education, and promote sustainable institutional practices. It also highlights the role of technology in fostering critical thinking, flexibility, and lifelong learning. Ethical implementation and capacity building are emphasized to ensure inclusive and responsible adoption of automation in universities.



A total of 08 online presentations covered a wide range of topics, like the Sūtra of Intelligence: Lessons for AI from Vedic Texts, Overlapping Community Detection in Social Networks, Deployment of Web Application using open-source solution Rancher Desktop to support Kubernetes containerization for clusters, Automatic Detection of Fake news using NLP, Effect of Internal Curing Using Water Absorbing Materials on Shrinkage and Cracking in PQC with Fly Ash and GGBS, SHADOWPOT- a honeypot system which used to reduce the risk of cybercrime, Numerical Simulation of Energy-Efficient Thermal Optimization in an Air-Cooled Lithium-Ion Battery Module for Sustainable Electric Vehicles, and QCaaS: A Framework for Empirical Benchmarking of Variational Quantum Classifiers and Support Vector Machines.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RESULTS AND DISCUSSIONS
CONCLUSION
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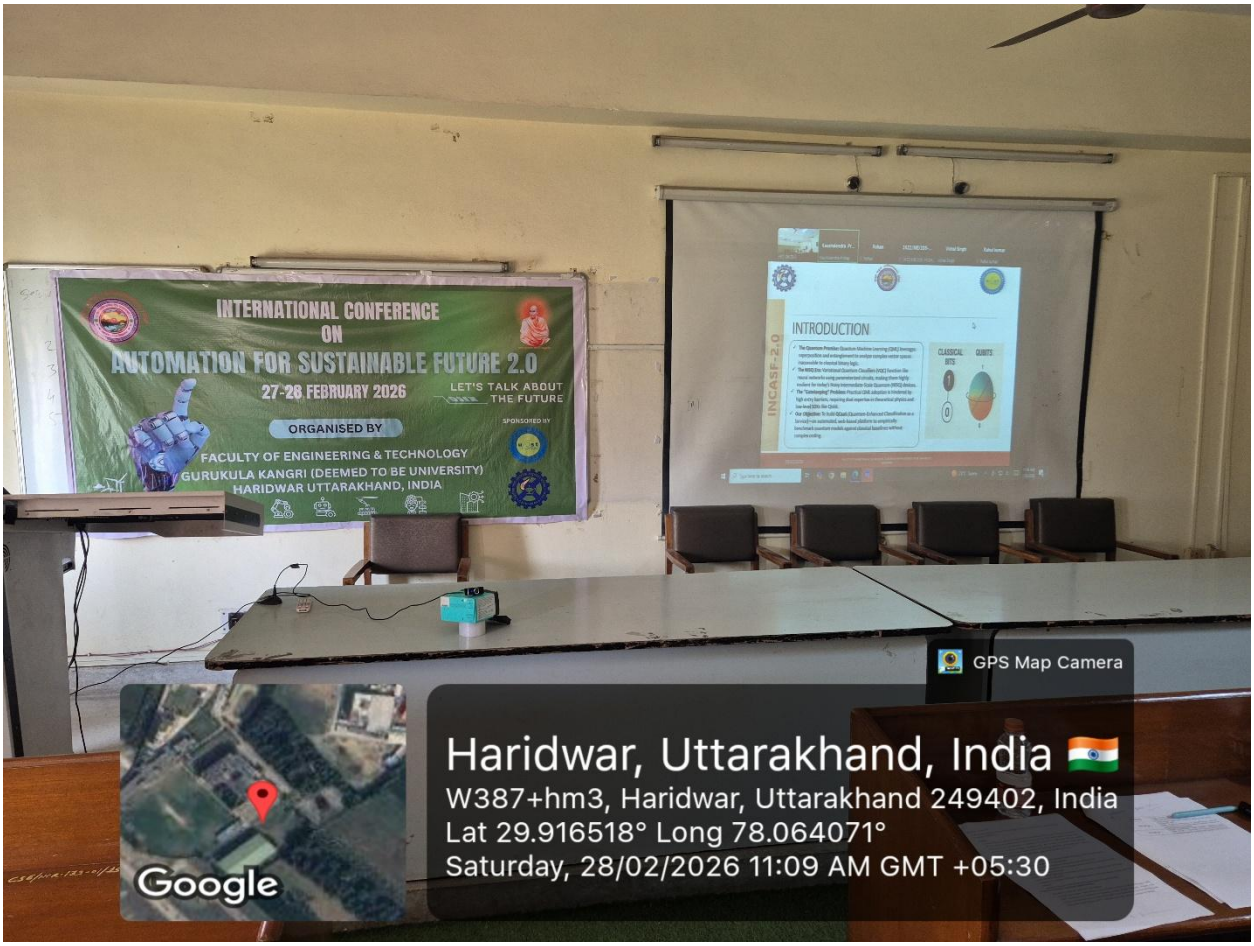
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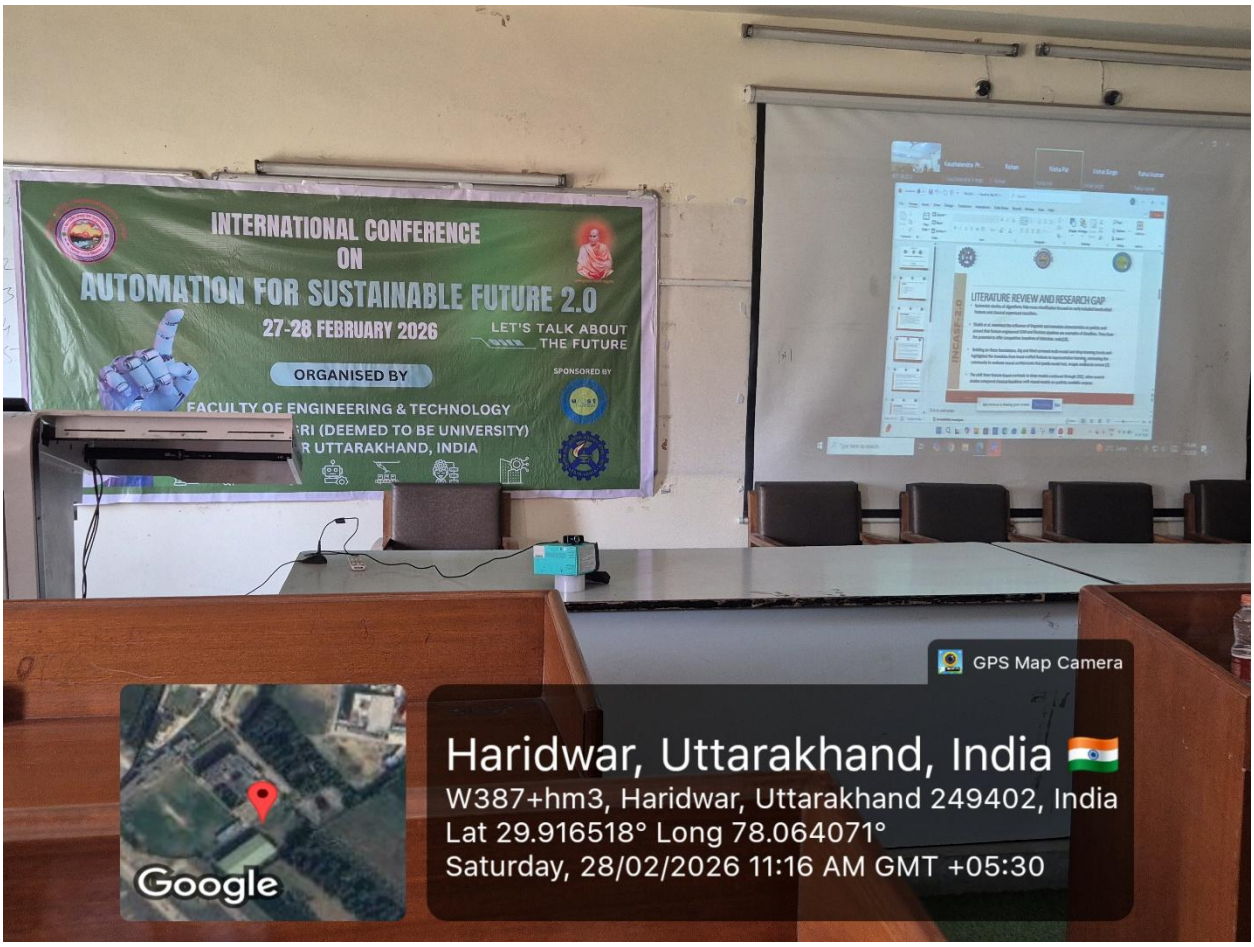
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Remarks on Session

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EXPERT REMARKS

Session	Date	Expert Name	Affiliation
TS-4	28/02/2026	Dr. Mani Madhukar.	IBM India Pvt. Ltd.

Remarks:

The talk delivered by Prof. Jayanti Datta on Automation for sustainable future evolved deep into the adoption of AI in Pedagogy and research in higher education.

The paper on Sutra of Intelligence, for VedicText inference using AI was very good, great way to infer historical texts with contemporary technologies.

Another paper on deployment of web-application using Rancher Desktop was also informative about scaling container based deployments.

Paper on Internal curing using Water absorbant materials on shrinkage also was able to cover on gaps in construction material.

Overall 7 papers were presented by researchers from various universities, had a great spread across various domains and technologies.

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EXPERT REMARKS

Session	Date	Expert Name	Affiliation
TS-4		Prof. V.P.W. Sharma	ECE Dept. G.K.V. Haridwar

Remarks:

The session run very sincerely and smoothly. Seven out of eight papers were presented in the session. All presentations were good and informative. Authors / researchers presented their research sincerely conducted in a span of time.

28/2/26
Signature

INCASF-Schedule: 28.02.2026 (Saturday)

TECHNICAL SESSION (TS)-05

Venue: NSH, Mode: Offline Time: 11:10 pm – 12:30 pm

Chairperson: Sunil Pawar, GK(DU), Haridwar

IL-11 Dr. Ashwani Jangra, GK(DU) Haridwar Title: Artificial Intelligence in Research: Transforming Ideas Into Discoveries

The lecture titled "Artificial Intelligence in Research: Transforming Ideas Into Discoveries" explored how AI-driven automation is reshaping modern research and innovation. Automation was described as the use of intelligent systems to perform tasks with minimal human intervention, enhancing efficiency, precision, and scalability. The speaker highlighted various AI-powered research tools and discussed applications in agriculture, particularly in medicinal plant cultivation through smart monitoring and predictive analytics. In the pharmaceutical sector, AI plays a significant role in drug discovery, target validation, and protein–ligand interaction studies. Special mention was made of PyRx, a GUI-based virtual screening software that integrates platforms such as AutoDock and Open Babel to facilitate molecular docking and computational drug design. The lecture also addressed AI applications in transport systems, AI chatbots and virtual assistants, environmental conservation, and healthcare innovations such as robotic surgery and accelerated drug discovery. Additionally, AI's role in data-driven decision-making and motion sensor technologies was emphasized, showcasing its transformative impact across multidisciplinary research domains.


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IL-08 Dr. Mani Madhukar, IBM Title: Future LLM Models

The lecture on **“Future LLM Models”** provided an engaging and practical overview of the next generation of Large Language Models (LLMs) and their expanding capabilities. The speaker conducted a live demonstration session to illustrate how modern LLMs function, interact, and adapt in real time. Using platforms such as IBM bots in a live environment, the session showcased how advanced conversational AI systems can process context, generate coherent responses, and assist in complex problem-solving tasks. The lecture highlighted the evolution of LLM architectures, improvements in reasoning ability, multimodal integration, and domain-specific customization. Emphasis was also placed on responsible AI development, scalability, and future applications in education, research, business automation, and intelligent digital assistants, demonstrating how LLMs are shaping the future of human–machine collaboration.


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Memento for the invited Guests

INCASF 000 Title: Psychology perspective on human-AI collaboration in sustainable industries. Siddhant Chaudhary, Department of Psychology, GKV

The lecture on "**Psychology perspective on human-AI collaboration in sustainable industries**" explored how the relationship between humans and artificial intelligence should move from fear of automation to meaningful collaboration for long-term sustainability. The speaker emphasized the importance of transitioning from automation anxiety to cooperative human–AI systems based on socio-technical systems theory, where technology and human behavior are designed to work together effectively. The psychological impact of AI on individuals was discussed, particularly in terms of autonomy, competence, motivation, and job satisfaction. The concept of job crafting was explained as a way for employees to reshape their roles in collaboration with AI, enhancing meaning, productivity, and sustainability in the workplace. The lecture highlighted that a sustainable human–AI ecosystem requires human-centered AI design, ensuring that technology supports human values, well-being, and ethical responsibility. Overall, the session stressed that AI should empower people rather than replace them, creating a balanced and sustainable future of work.

INCASF 000 Title: Application of computer vision in Real world scenario, Anshoo Bhutani, Research Scholar, GKV

The lecture on **"**Application of computer vision in Real world scenario**" provided an overview of how computer vision enables machines to interpret and understand visual information from images and videos. The speaker explained that computer vision combines image processing, machine learning, and deep learning techniques to detect objects, recognize patterns, and analyze scenes automatically. Various applications were discussed, including facial recognition, medical image analysis, surveillance systems, autonomous vehicles, quality inspection in industries, agriculture monitoring, and augmented reality. The lecture highlighted how computer vision improves accuracy, efficiency, and automation across different sectors, making it a powerful technology for solving real-world problems and supporting smart systems.

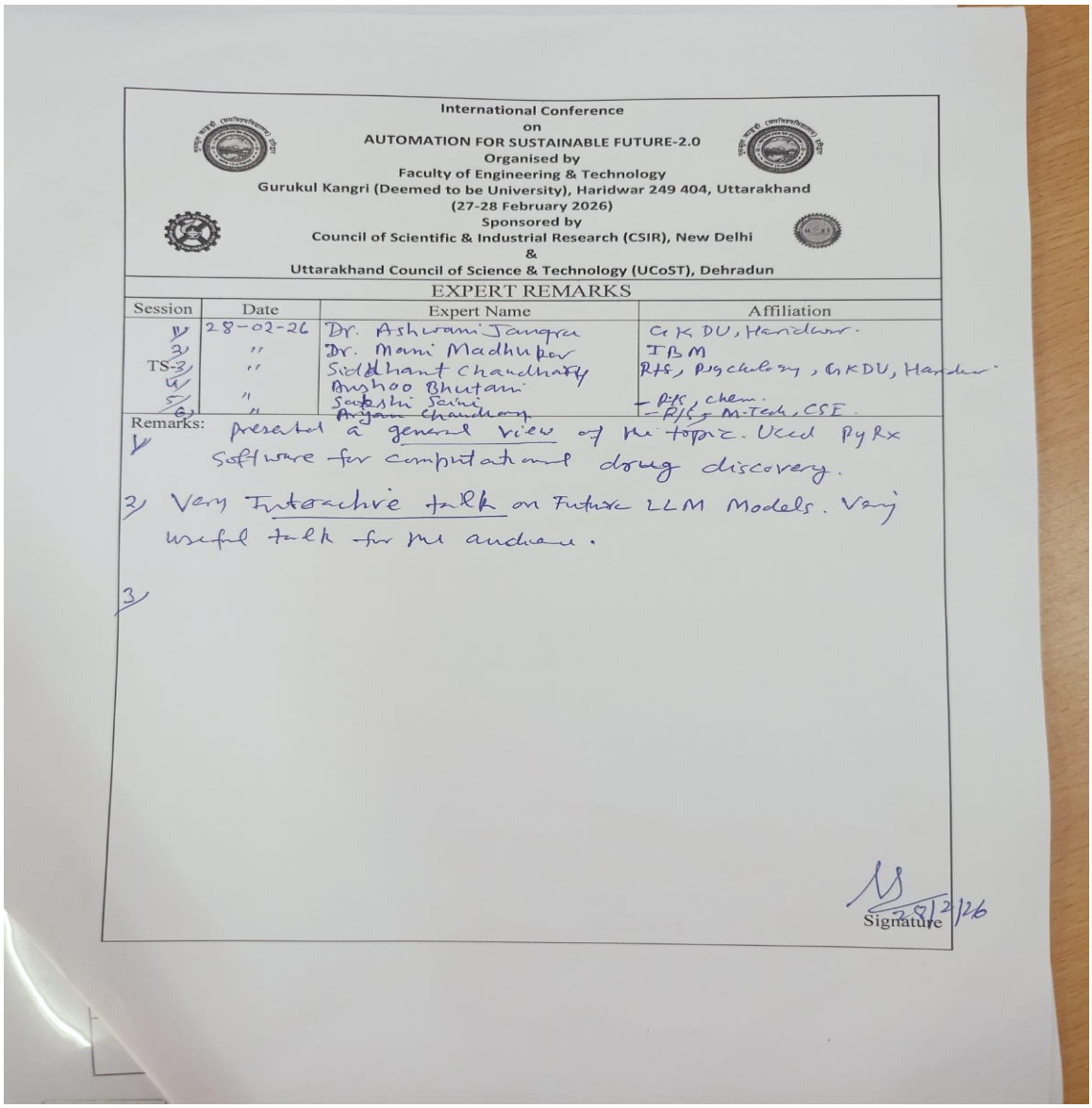
INCASF 000 Title: Generative AI for sustainable approaches: in disciplinary application in engineering education and modern research chemistry. Sakshi Saini, department of chemistry, GKV

The lecture on "**Generative AI for sustainable approaches: in disciplinary application in engineering education and modern research chemistry**" highlighted how generative artificial intelligence is transforming chemistry and engineering research. The speaker explained that generative AI enables automated molecular structure creation, material design, and optimization by learning patterns from large chemical and engineering datasets. Applications of generative AI in chemistry include reaction prediction, molecular synthesis planning, and discovery of sustainable materials with desired properties. In engineering and materials science, generative AI supports the design of new materials by tailoring molecular structures for strength, stability, and performance. The lecture also discussed the use of **IBM RXN**, a generative AI–driven tool developed by **IBM**, which assists researchers in chemical reaction prediction and molecular design. Overall, the session emphasized that generative AI significantly accelerates molecular and material development, reduces experimental cost and time, and plays a key role in building a more sustainable and automated future in science and engineering.

INCASF 068 Title: A Survey and Taxonomy of Security Threats and Countermeasures in IoT-Based Systems. Aryan Chaudhary, M.Tech CSE, GKV

The lecture on “A Survey and Taxonomy of Security Threats and Countermeasures in IoT-Based Systems” provided a comprehensive overview of the security challenges associated with the rapid growth of the Internet of Things. The speaker explained how IoT systems, consisting of sensors, devices, networks, and cloud platforms, are vulnerable to various security threats such as data breaches, unauthorized access, malware attacks, denial-of-service attacks, and privacy leakage. The lecture presented a clear taxonomy of security threats across different IoT layers, including the perception, network, and application layers, and discussed corresponding countermeasures such as encryption, authentication, access control, intrusion detection systems, and secure key management. The importance of lightweight security solutions, trust management, and secure device design was emphasized to address the limited resources of IoT devices. Overall, the session highlighted the need for robust, scalable, and layered security frameworks to ensure safe and reliable operation of IoT-based systems.

Comment on TS-5



International Conference
on
AUTOMATION FOR SUSTAINABLE FUTURE-2.0
Organised by
Faculty of Engineering & Technology
Gurukul Kangri (Deemed to be University), Haridwar 249 404, Uttarakhand
(27-28 February 2026)
Sponsored by
Council of Scientific & Industrial Research (CSIR), New Delhi
&
Uttarakhand Council of Science & Technology (UCoST), Dehradun

EXPERT REMARKS

Session	Date	Expert Name	Affiliation
1/	28-02-26	Dr. Ashwani Jangra	GKDU, Haridwar.
2/	"	Dr. Mani Madhukar	IBM
TS-3/	"	Siddhant Chandhary	RHS, Psychology, GKDU, Haridwar
4/	"	Anshoo Bhutani	+ Phy, Chem.
5/	"	Sakshi Saini	- Phy, M-Tech, CSE.
6/	"	Anjan Chandhary	

Remarks:
1/ presented a general view of the topic. Used PyRx Software for computational drug discovery.

2/ Very Interactive talk on Future LLM Models. Very useful talk for ML audience.

3/

Signature 28/2/26

INCASF-Schedule: 28.02.2026 (Saturday)

TECHNICAL SESSION (TS)-06

Venue: OSH, Mode: Online Time: 11:10 am – 12:30 am

Chairman: Dr. Gagan Mata

Co-Chair: Dr. Ashish Kumar, Manipal University, Jaipur

IL-02 Prof. Simi Bajaj, Western Sydney University, Sydney, Australia

Title: The AI–Cyber Arms Race: What Happens When Attackers Automate Faster Than Defenders? This talk examines the escalating battle between AI-powered cyber attackers, traditional cyber models collapsing, Autonomous malware, Real time CAPTCHA Solving and increasingly automated defense systems. As malicious actors leverage machine learning to scale phishing, malware generation, and vulnerability discovery, defenders face mounting pressure to respond in real time. The session explores risks, asymmetries, and the strategic consequences when offensive automation outpaces security capabilities. It also highlights the need for adaptive AI defenses, policy frameworks, and resilient cybersecurity architectures to restore balance in the digital ecosystem.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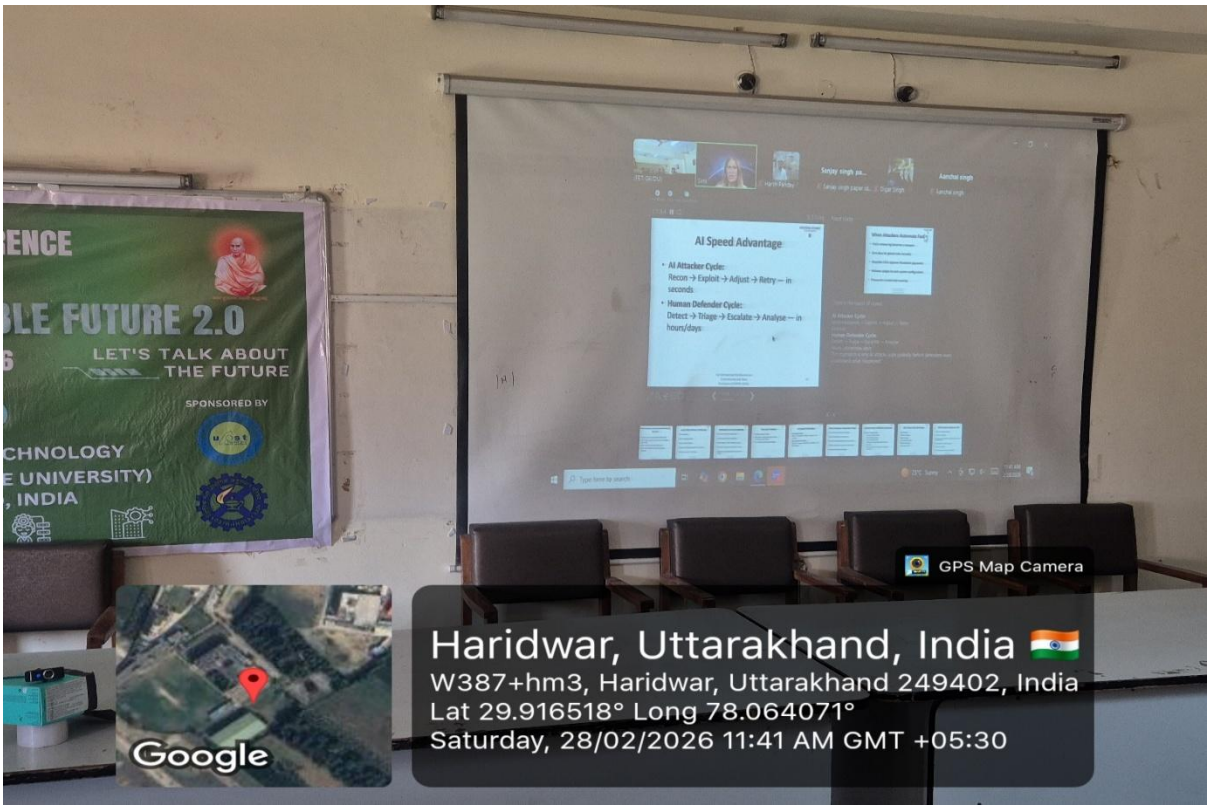
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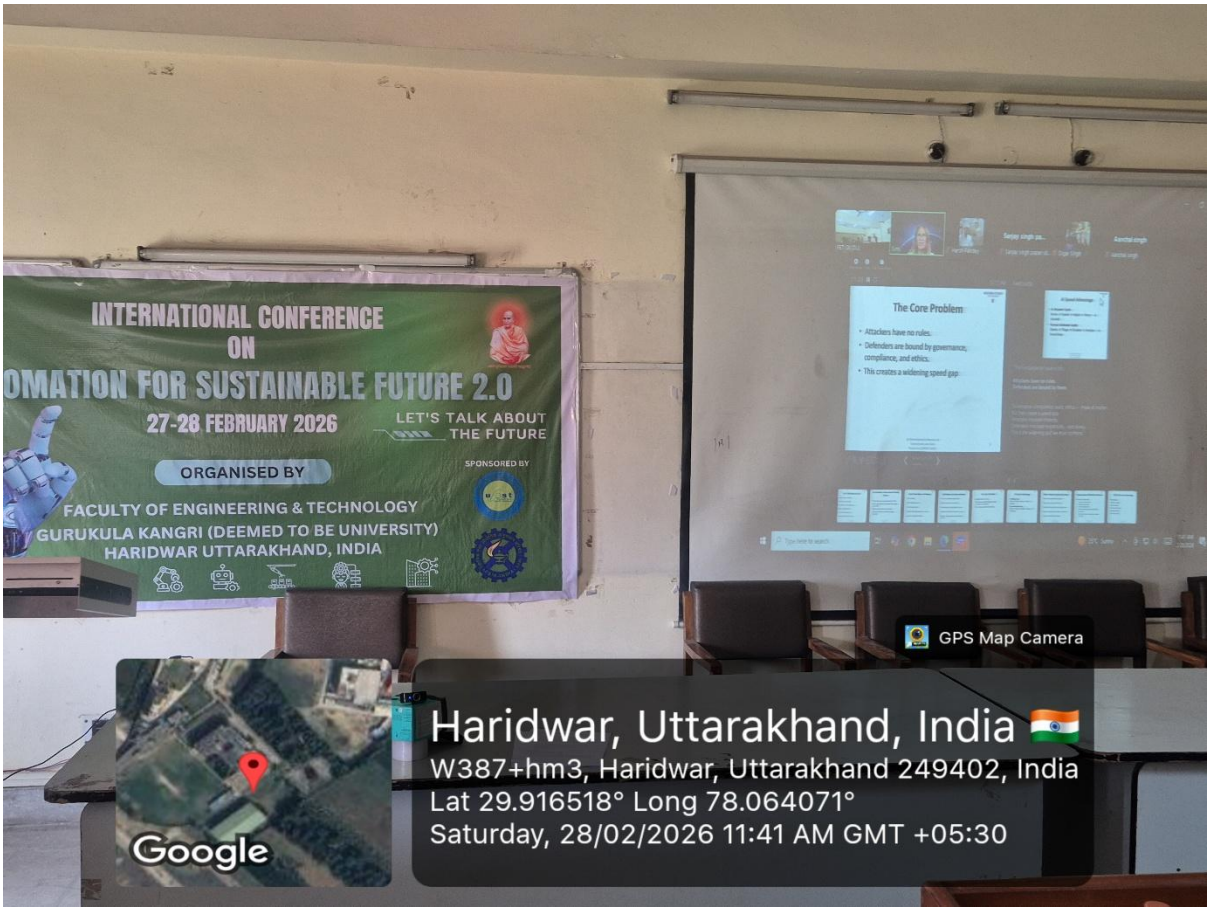
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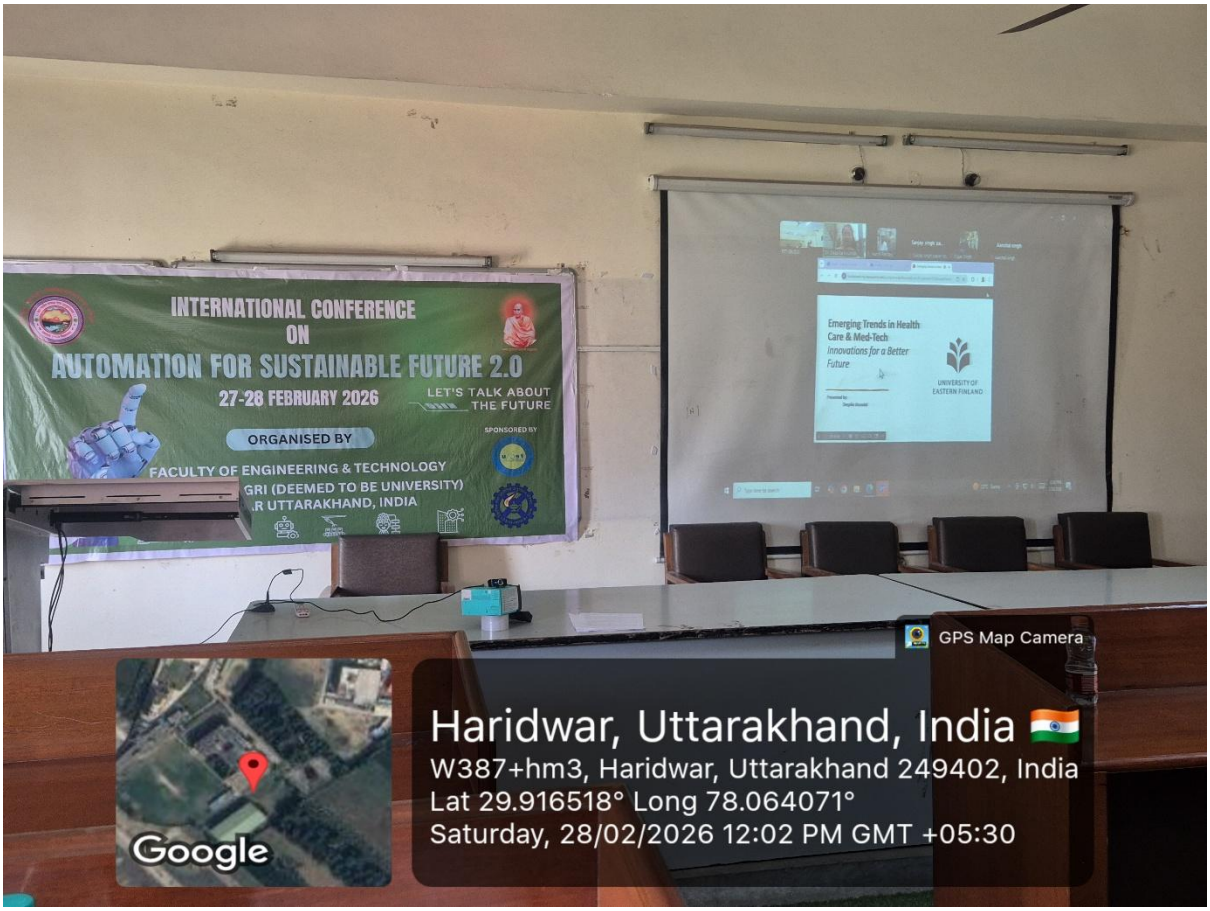
IL-08 Dr. Deepika Koundal, University of Eastern Finland, Finland

Title: Emerging Trends in Health Care & Med-Tech Innovations for a Better Future

This session explores the latest advancements transforming healthcare, from AI-driven diagnostics and wearable health monitoring to robotic surgery and personalized medicine. Med-Tech-from reactive to proactive care. It highlights how digital health platforms and telemedicine are improving access, efficiency, and patient outcomes. If AI is bias, there is a risk of context blindness and overconfidence. Also, Human+AI is the best model. It also explains telehealth and virtual care-care beyond clinical walls, wearables and remote monitoring, robotic surgery, pharmacy automation, precision medicine, customized care beased on one's biology, blockchain for health data, virtual model of a patient.

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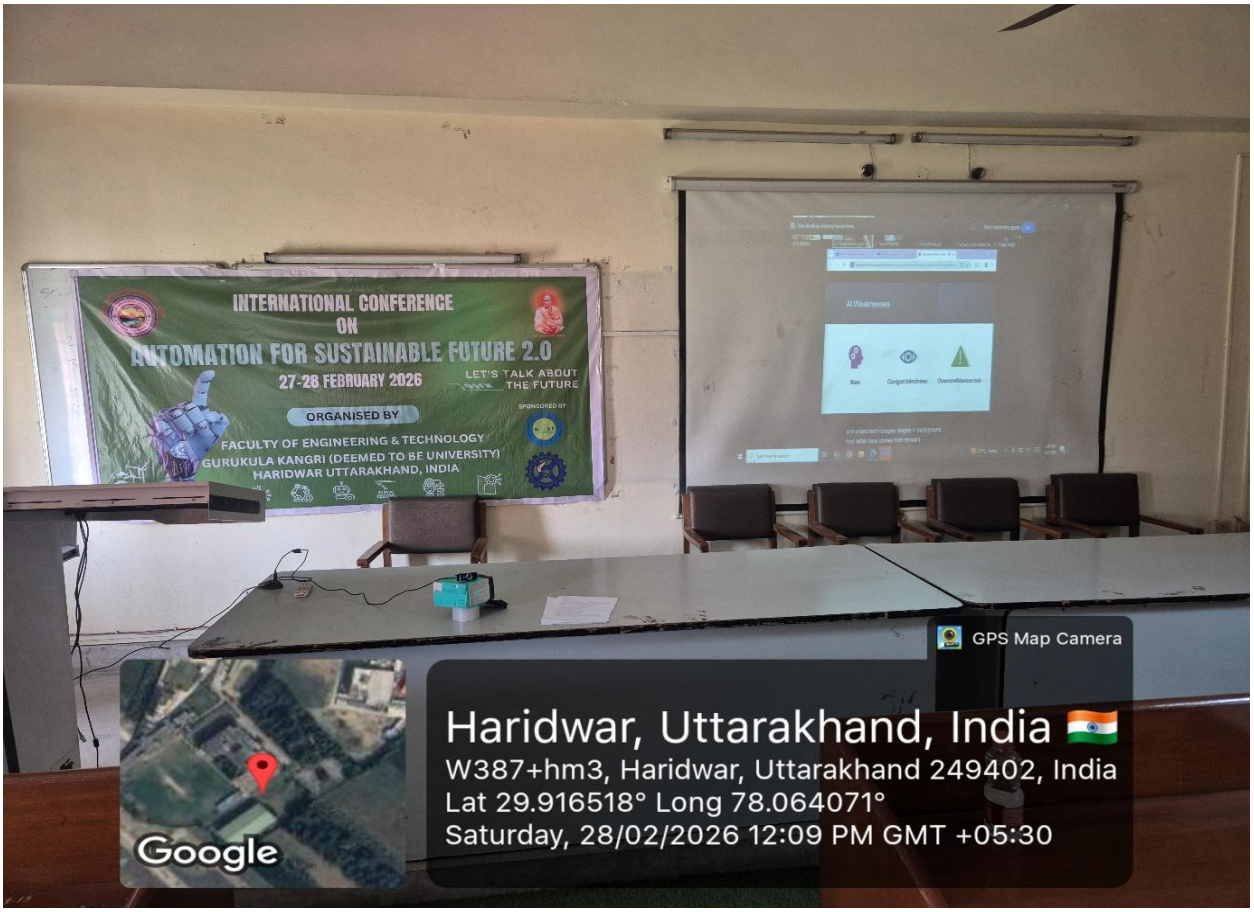
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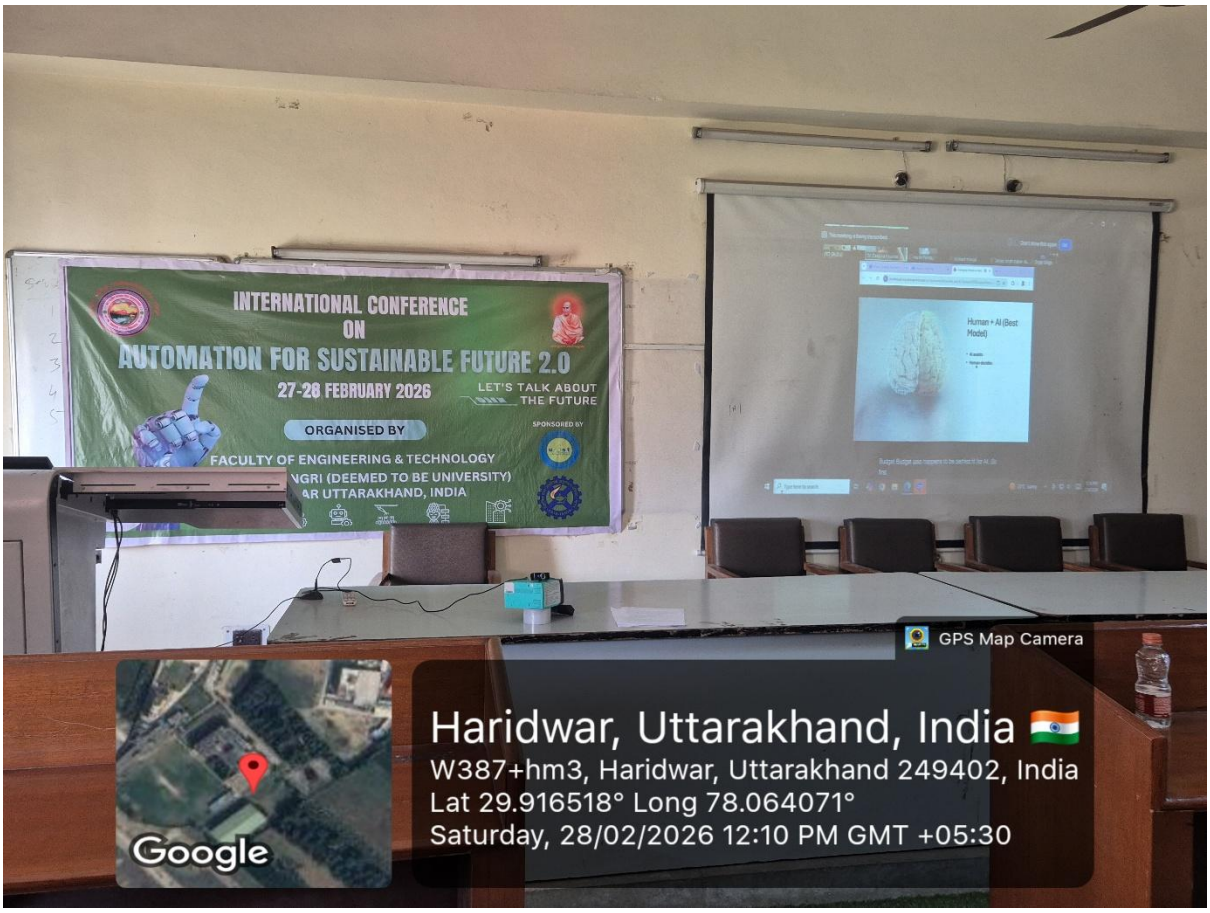
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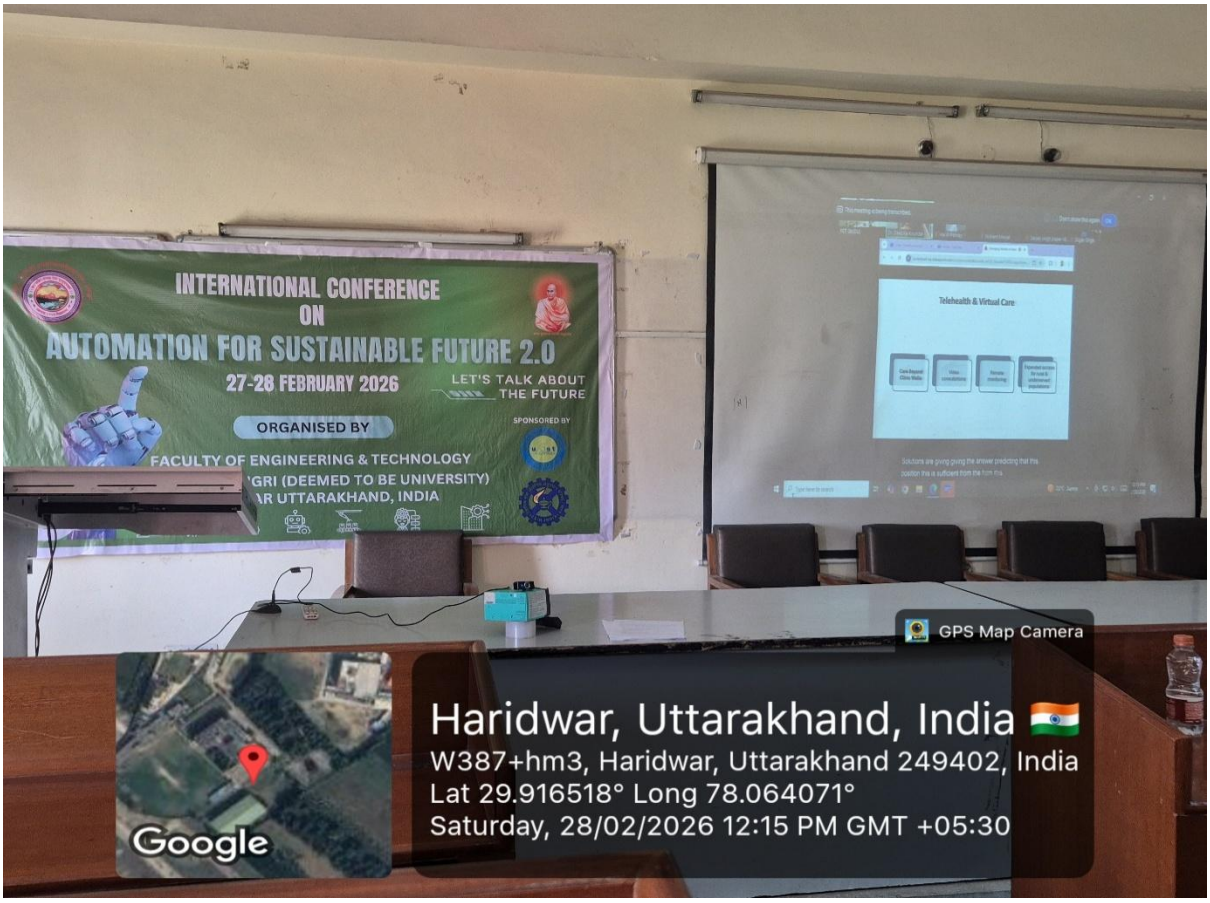

A total of 06 online presentations covered a wide range of topics, like Fusion Model-Based Ensemble Framework for Advanced Phishing URL Detection, Phosphorylated Psyllium Husk as a Sustainable Biopolymer for Modified Drug Delivery Devices, and an AI-based micro zone disaster risk scoring system, Metaverse-enabled Agriculture conceptual opportunities and risks, AI-driven multicultural workplaces, sustainable innovative behaviour and psychological safety, and Advanced image signal processing for medical analysis.


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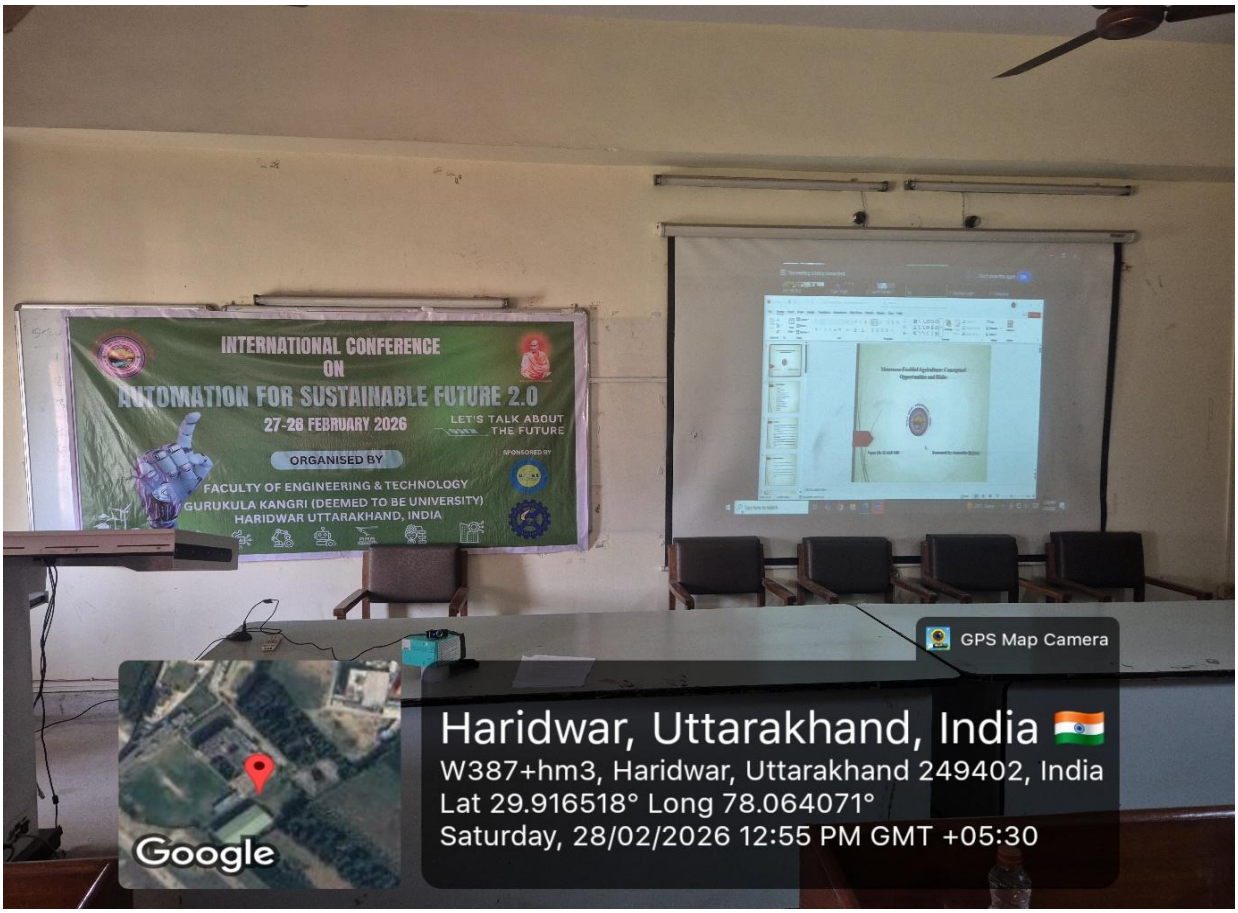
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DIGITAL MICROAGGRESSIONS AND PSYCHOLOGICAL SAFETY IN AI-DRIVEN MULTICULTURAL WORKPLACES
AANCHAL SINGH
Department of Psychology
Gurukula Kangri (Deemed to be University)
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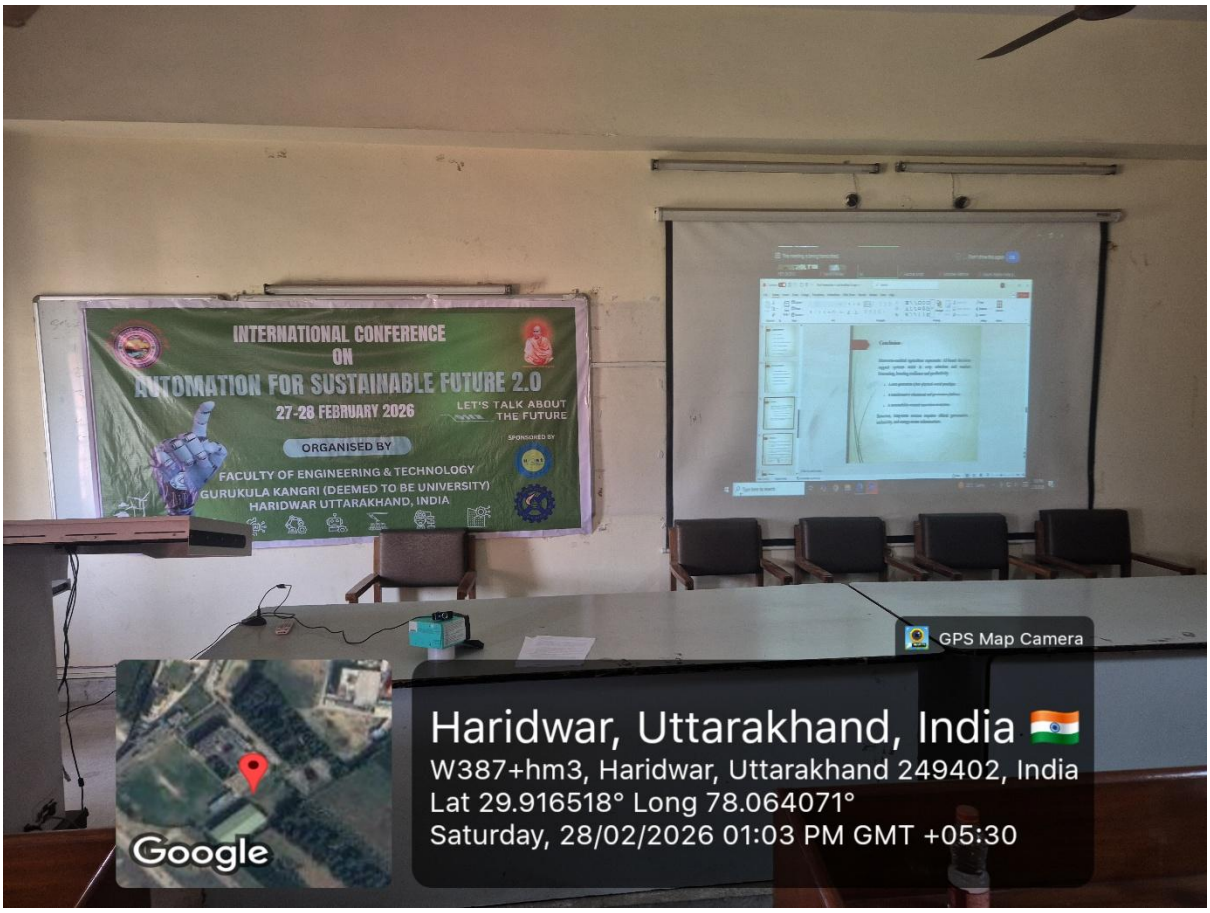
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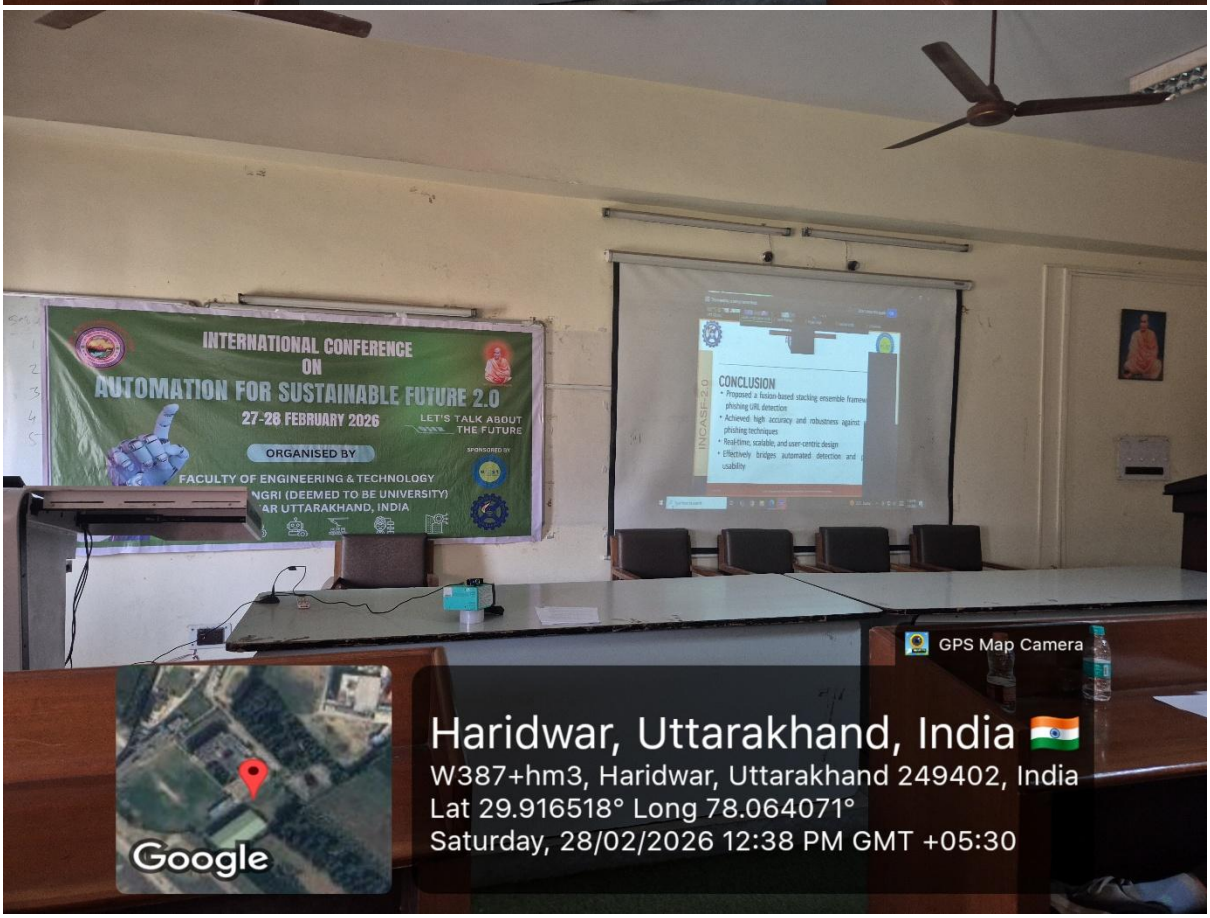
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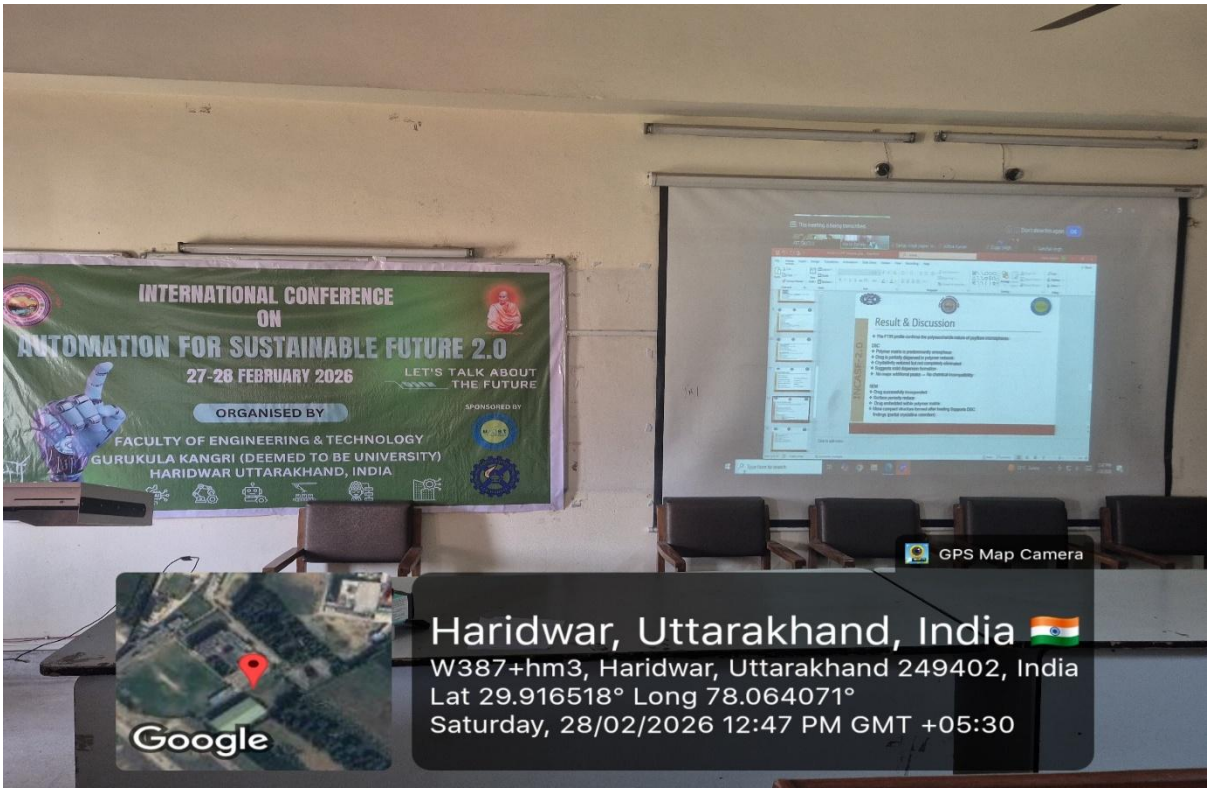
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HARIDWAR UTTARAKHAND, INDIA
Advanced Image Signal Processing For Medical Analysis
GPS Map Camera
Haridwar, Uttarakhand, India
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INTERNATIONAL CONFERENCE
ON
AUTOMATION FOR SUSTAINABLE FUTURE 2.0
27-28 FEBRUARY 2026
LET'S TALK ABOUT THE FUTURE
ORGANISED BY
FACULTY OF ENGINEERING & TECHNOLOGY
GURUKULA KANGRI (DEEMED TO BE UNIVERSITY)
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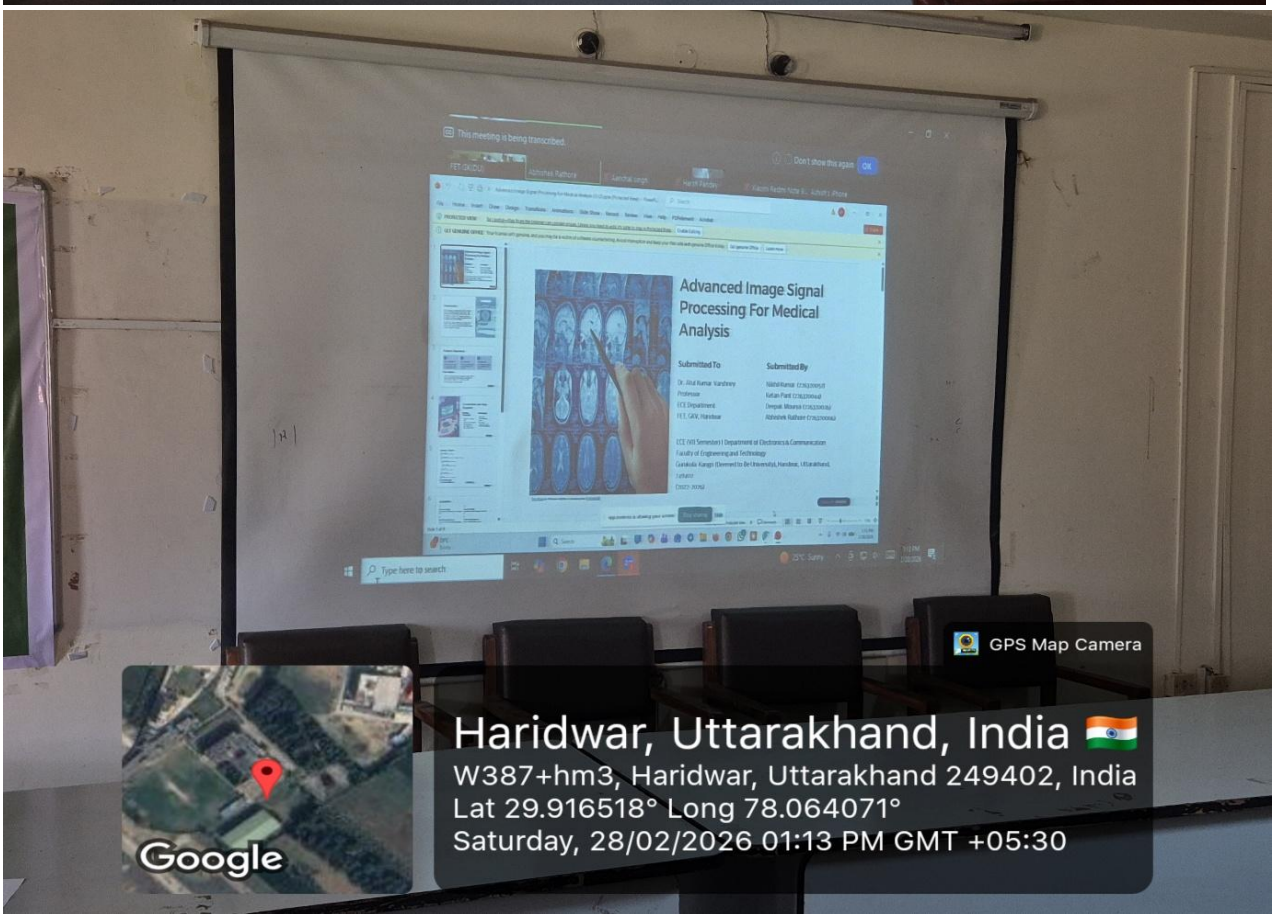
This meeting is being transcribed.
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Comment on Session-06

International Conference
on
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Organised by
Faculty of Engineering & Technology
Gurukul Kangri (Deemed to be University), Haridwar 249 404, Uttarakhand
(27-28 February 2026)
Sponsored by
Council of Scientific & Industrial Research (CSIR), New Delhi
&
Uttarakhand Council of Science & Technology (UCoST), Dehradun

EXPERT REMARKS

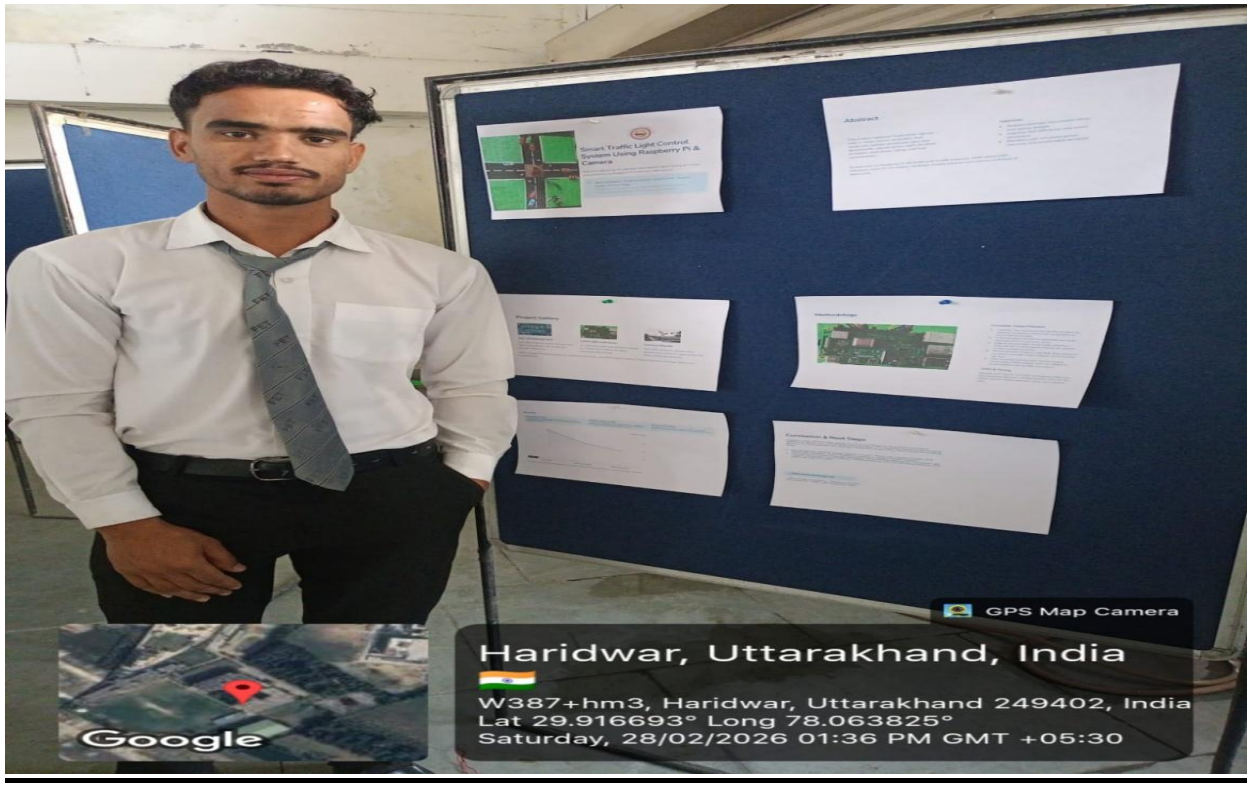
Session	Date	Expert Name	Affiliation
TS-2	27/02/2026	Dr. PRAMOD KUMAR	SRHU D. DUN

Remarks:

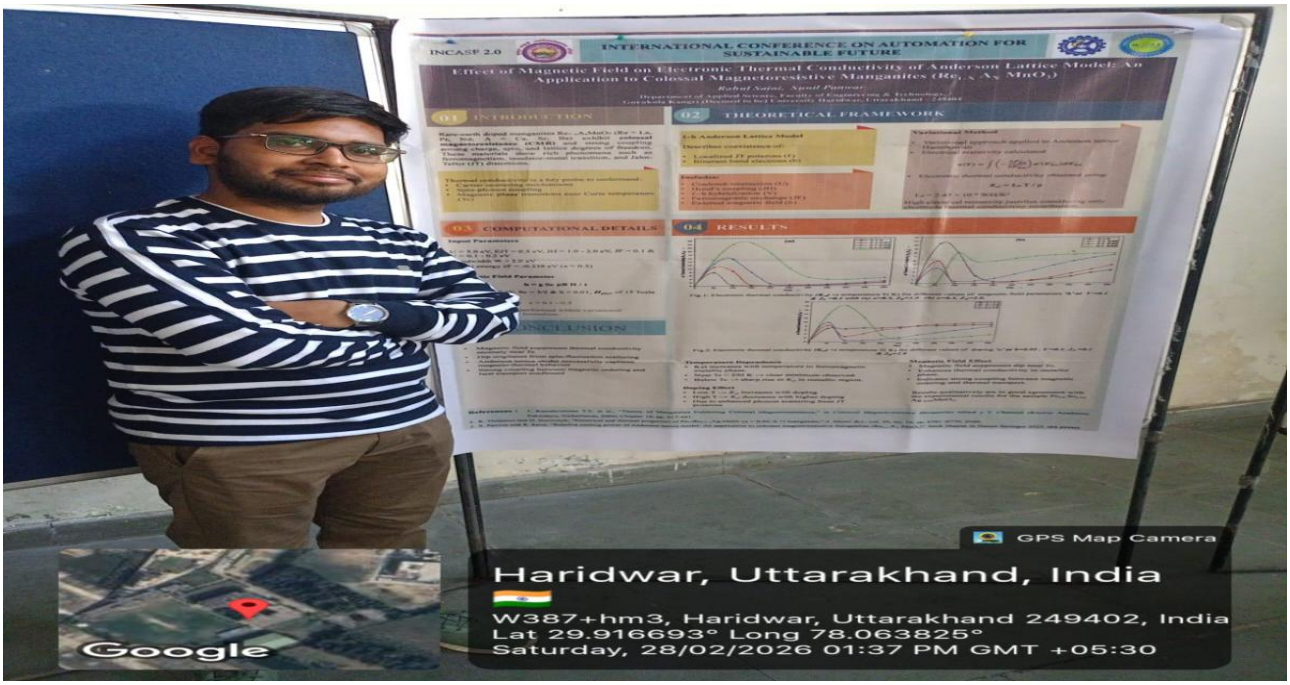
9410728057

27/02/2026
Signature

Technical session-7 (Poster presentation)



Rohit Choudhary, P-31



Rahul saini

Vaishnavi Arya and Pragati

Riya Sharma, Vartika joshi, Priyansha kumari, Alpika verma and Nandini malik

National Science Day

To commemorate National Science Day, celebrated in honor of the discovery of the Raman Effect by C. V. Raman, our institution organized a **Student Science Exhibition** on 28 February 2026. The event aimed to promote scientific awareness, creativity, and innovation among students. The dignitaries appreciated the efforts of students and teachers in organizing the exhibition. The Student Exhibition on National Science Day was a grand success. It provided a valuable platform for students to showcase their talent, enhance their scientific temperament, and develop confidence. The event inspired students to think creatively and contribute towards scientific progress and sustainable development.


EXHIBIT
Digital Entrepreneur for Uttarakhand
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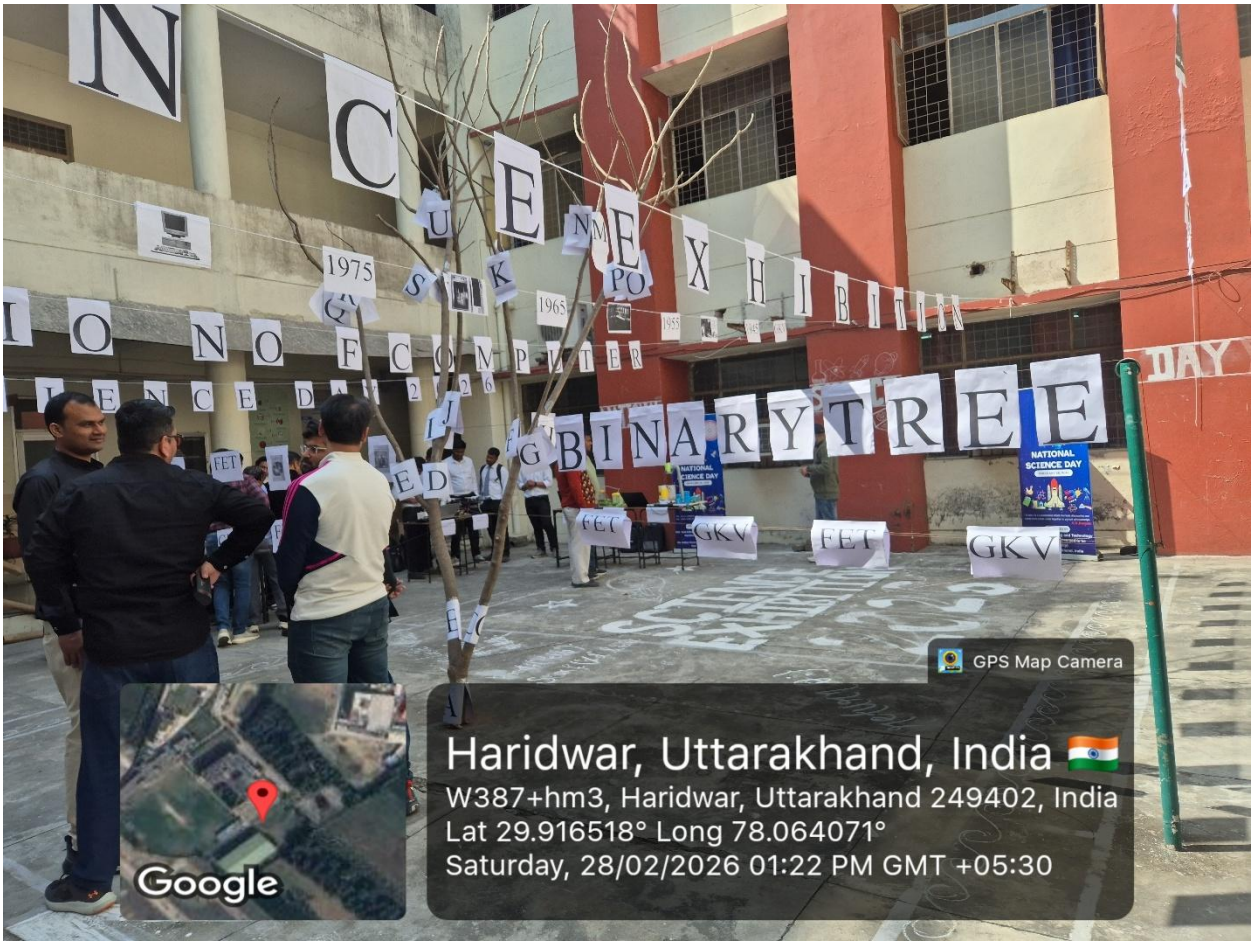
BINARY TREE
NATIONAL SCIENCE DAY
GKV
FET
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SCIENCE DAY 2026
EVOLUTION OF COMPUTERS
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Report on International Conference

Distinguished Chief Guests, Esteemed Keynote Speakers, Respected Delegates, Industry Experts, Researchers, Students, and Participants joining us both physically and virtually,

As we arrive at the conclusion of the *International Conference on Automation for Sustainable Future*, it is with immense pride, gratitude, and optimism that I stand before you today.

Over the course of this conference, we have witnessed an exchange of knowledge, innovation, and vision. From insightful keynote addresses to engaging technical sessions, panel discussions, and research presentations, this gathering has truly embodied the spirit of collaboration.

I am happy to announce that International Conference on "Automation for Sustainable Future" was held successfully at Faculty of Engineering & Technology, Gurukul Kangri (Deemed to be university), Haridwar. The conference has witnessed a huge participation for offline and online sessions. The researchers from 5 countries and 15 states shared their views and vision towards sustainable development in the field of science and technology.

Chief guests for the conference are Prof. N. K. JOSHI, Hon. Vice Chancellor, Shri Devsuman University-Uttrakhand, Key note Speakers are Dr. G.D. Thakre, CSIR-IIP Dehradun and Dr. Amit Kumar, NUIST-Nanjing China. They were accompanied by Prof. Pratibha Mehta Luthra, Hon. Vice Chancellor, GK(DU) Haridwar, Prof. Satyadev Nigmalankar, Registrar, GK(DU) Haridwar, India. Prof. Mayank Aggrwal, Dean, FET, GK(DU) Haridwar and Prof. Vipul Sharma, Head, ECE Department, FET, GK(DU) Haridwar.

In this conference, we have 6 technical sessions including online and offline participation along with a session on poster presentation. A total of 16 invited lectures, 126 paper presentations and 20 poster presentations were delivered during the conference. The invited lectures from academicians, scientist and researchers from diverse field enlightened us regarding the need and current research work going on sustainable development through the artificial intelligence

Some of the prominent invited lectures were delivered by Prof. Krishan Kumar, GK (DU), Dr. Simi Bajaj, Western Sydney University, Australia, Dr. Pramod, Shri Ram Himaliyan University-

Dehradun, Dr. Sachin Kumar, IIT Ropar, Dr. Mange Ram, Graphic Era, Dr. Mohit Tyagi, PEC Deemed to be University etc. the usefulness of technology to achieve the sustainable development of country.

Throughout this conference, we have explored:

- Smart and intelligent systems
- Artificial intelligence and machine learning applications
- Sustainable manufacturing technologies
- Renewable energy integration
- Industry 4.0 and digital transformation
- Robotics and advanced control systems

As we close this chapter, let us remember that sustainability is not a destination but a continuous journey. Automation must be guided by ethics, responsibility, and long-term vision. The discussions initiated here should not end today; they should evolve into collaborations, joint research projects, industry partnerships, and policy innovations.

Let this conference serve as a platform where ideas turn into action, research transforms into real-world impact, and innovation contributes to global sustainability goals.

May the connections formed here grow stronger. May the knowledge shared here inspire new breakthroughs. And may our collective efforts lead to a smarter, cleaner, and more sustainable world.

On behalf of the Faculty of Engineering & Technology, I thank you all for making this International Conference a success.

Wishing you safe travels, continued success, and meaningful collaborations ahead.

Thank you.

Different Committee Member list

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Organized by

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(27-28 February 2026)
Sponsored by
Uttarakhand Council of Science & Technology, Dehradun

Chairman Prof. Mayank Agarwal Dean, FET **Co-Chairman** Dr. M. M. Tiwari **Convener** Dr. Tanuj Garg **Co-Convener** Dr. Gajendra Singh Rawat	**Mentors & Welcome Committee** Prof. Vipul Sharma Dr. Sunil Panwar Dr. Vivek Goel	**Organizing Secretary** Dr. Sanjeev Kumar Lambha **Co-Organizing Secretary** Dr. Nishant Kumar
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Project/ Science Exhibition Committee Convener Mr. Shashank Sharma Members Dr. Mayank Pokhriyal Dr. Sanjay Kumar Mr. Ashwani Mr. Deshraj	**Alumni Committee** Convener Dr. Nishant Kumar Members Mr. Avishant Mr. Gaurav Kumar Mr. Prateek Agarwal Dr. Mayank Pokhriyal Dr. Dharmendra Balyan	**Accounts Committee** Convener Dr. Lokesh Joshi Members Mr. Anniruddh Yadav Mr. Neeraj Kumar Mr. Naveen Kumar (Accounts)
	Cultural Committee Convener Dr. Prashant Kaushik Members Mr. Lokesh Bhardwaj Mr. Ashwani Mr. Vivudh Fore	**Technical Assistance Committee** Convener Mr. Vikas Kumar Deshwal Members Mr. Apoorv Kaushik Mr. Devanand Joshi Mr. Shyam Kumar Kashyap

Valedictory session

The valedictory session on **“Automation for a Sustainable Future 2.0”** marked the successful conclusion of the program with a brief summary of the key learnings and outcomes. The Chief Guest delivered an inspiring address, emphasizing the importance of innovation and sustainable technological development. Prize distribution was conducted to recognize outstanding participants and contributors. The session concluded with a heartfelt vote of thanks expressing gratitude to the organizers, speakers, guests, and participants for making the event a success.


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Prize distribution


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Oath-taking ceremony

The oath-taking ceremony on voting and voters' rights was conducted during the conference to promote democratic values and civic responsibility. Participants pledged to exercise their right to vote ethically, responsibly, and without fear or influence. The ceremony emphasized the importance of informed voting in strengthening democracy. It concluded with a collective commitment to uphold voters' rights and democratic principles.


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The End