

International Conference on Contemporary Trends in Multidisciplinary Research and Innovation (ICCTMRI – 2023)

Organized by

Birla Institute of Technology Mesra, Off-campus Jaipur, Rajasthan, India

(27th -28th July, 2023)

Conference report (Dept of CSE)

Invited Talk

Speaker : Dr .Soumya Banerjee

Senior Associated Researcher / Scientist (ML/AI)

National Institute for Research in Computer Science and Automation (INRIA)AIO, Paris, France

Title : Interpretable & Explainable Machine Learning (IML/XAI) in IIoT domain : Can scope of Bayesian Optimization in IML/XAI be far behind ?

Abstract

The trend of connected and IoT allows the generation of massive amounts of data to foster inferences and decisions be after a precise analysis. Mostly un-labelled data through any Machine learning or AI algorithms make it possible to extract meaningful insight and provide relevant decisions that affect human lives, society and environment. The applications are envisaged from healthcare, recognition, recommendations, predictive maintenance to financial autonomous and IIoT security paradigms. Considering such wider ranges of application domain of ML/AI. it becomes crucial to comprehend how and why decisions are made. However, as machine learning models become more powerful, they often become more complex but less transparent. These powerful models are generally called 'black-box' and they suffer from opaqueness. In other words, they exclude the internal logic from their users/interfaces. Therefore, recently, the concept of Explainable Artificial Intelligence (XAI) and Interpretable Machine Learning (IML) has put more insight to elaborate IML/XAI algorithms in action. Explainable/interpretable AI systems enables to shine a light on the kernel of the black-box models to reveal unseen/hidden information such as feature importance and correlations between features. However, only IML/XAI is not independent enough following massive amount of IoT data traces. Therefore, following black-box optimization problem like material design(smarter material design), Power plant tuning, Data centre cooling, Hyper-parameter tuning requires substantial treatment of optimization algorithms to put the concerned data into ordered dimension. This treatment of Bayesian optimization could put stronger development primitives for IML/AI blackbox. This talk will outlines the development and deploying IML/XAI algorithms and optimization in IIoT domain, while proving a niche background of the algorithms and its associated components.

Invited talk1

Soumya

02:37

02:47 / 47:18

Invited talk1

Interpretable & Explainable Machine Learning (IML/XAI) domain : Are Bayesian Optimisation and IML/XAI far from each other?

Dr. Soumya Banerjee,
 Associated Sr. Researcher INRIA-AIO Paris,
 Research Professor & Associated Researcher CNAM-CEDRIC Lab., Paris France
 VP Innovation & Research Trasnna Solutions Ltd. Europe,
 Technical Consultant Huawei Technologies, UK,
 Board Member & CTO, Mext Metaverse B2B, Paris.

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 Ecole des transitions écologiques

International Conference on Contemporary Trends in Multidisciplinary Research and Innovation (ICTMRI- 2023) organized by Birla Institute of Technology Mesra, Off Campus Jaipur, India, 27th-28th July, 2023

- Ex-Industrial Research Fellow, University College Cork, Ireland,
- Ex-Invited Professor, CNRS INSA De Lyon, France
- Ex-Invited Professor, TU Ostrava, Cz Republic,
- Ex, Senior Associate Professor, Dept. of Computer Sc, Birla Institute of Technology, Mesra, India
- Ex-Technical Lead Yahoo Research Barcelona, Spain,
- Ex Technical Consultant FaceBook / Meta London, UK
- Ex- Researcher University of Western Ontario - Canada .
- Senior Member IEEE, Member ACM

Slide 1 of 62 English (United States)

43:45 / 47:18

Invited talk1

Thank you !

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43:45 / 47:18

Track1 (CS)

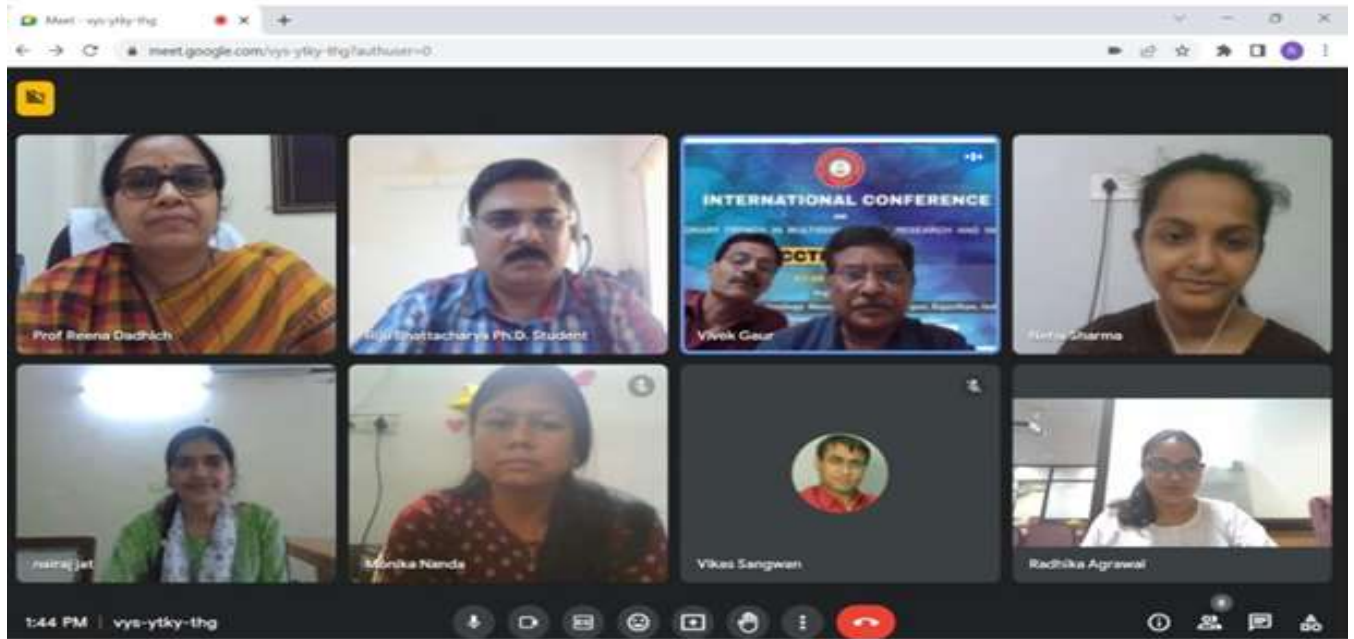
Session chair: Dr. Reena Dadhich, Professor, Dept. of CS and Informatics, University of Kota, Kota

Session Coordinators: Dr. Vivek Gaur & Mr. S. C. Gupta

Student Coordinator: Ms. Radhika Agarwal

<u>CODE</u>	<u>AUTHOR</u>	<u>CO-AUTHOR</u>	<u>TITLE</u>	<u>ABSTRACT/SUMMARY</u>
T1(CS)-101	Kapil Kumar Sharma	Varun Bhardwaj	Forth Revolution in Insurance Industry Through Internet of Things(IoT)	<ul style="list-style-type: none">- This paper discusses the growth of IoT in the present world.- The influence of IoT in different industries.- The big challenges in adopting IoT are also mentioned.
T1(CS)-104	Shivani Sharma	Dr. Monika Rathore	Evaluation of Data Mining Approaches in Detection and Diagnosis of Diseases in Medical Data Warehouse	Paper Not Presented
T1(CS)-106	Dr. Rekha Jain	Manisha , Dr. Ashish Sharma	Role of AI in IoT based Healthcare Solutions a Review	Paper Not Presented
T1(CS)-110	Nairaj Jat	Dr Manisha Gupta	An Analysis on Blend Edge Square Multiband Microstrip Patch Antenna for Wireless Telecommunications	<ul style="list-style-type: none">- In this paper the Dimension of antenna is calculated.- Fractal geometry method is used for improving impedance matching and size decreasing- Design of antenna, Structure of iterations and Radiation patterns were discussed.
T1(CS)-117	Monika Nanda	Dr. Amit Dixit , Dr. Shamimul Qumar	NB-IoT coexistence with 5G new radio (5G NR): A Survey	<ul style="list-style-type: none">-This paper discussed about Narrowband Internet of Things (NB-IoT)- What are channels and signals?- In this paper a review channel communication characteristics of 5G NB-IoT from the

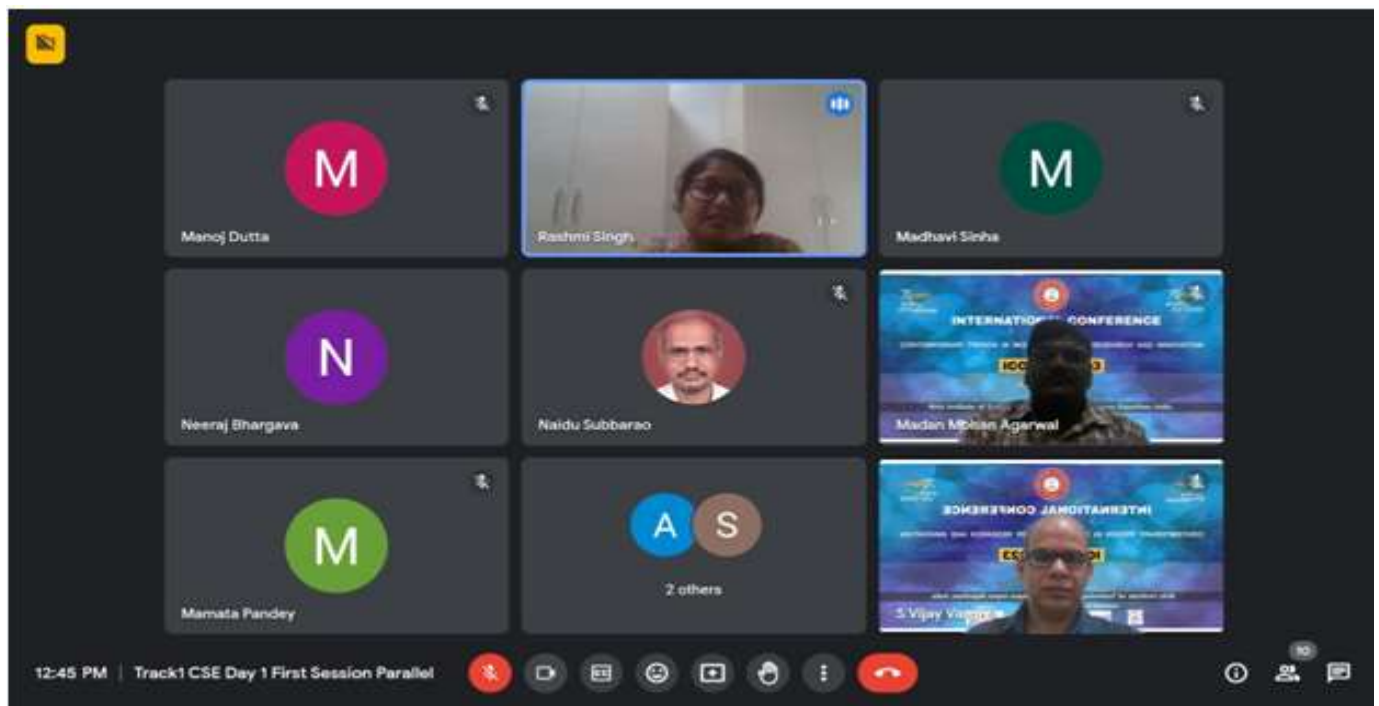
				perspective of the physical (PHY) and medium-access control (MAC) layer are presented.
T1(CS)-137	Riju Bhattacharya	Dr Naresh Kumar Nagwani, Dr Sarsij Tripathi	Predicting Links in Social Networks Using Graph Convolutional Network Approach	<ul style="list-style-type: none"> - This paper displayed the use of graph convolutional networks (GCN). - What is a Social network and link prediction. - A node and its structural properties were discussed. - The framework of link prediction was displayed through a graph.
T1(CS)-141	Neha Sharma	-	Unveiling the Influence of Cloud Computing in Enabling Emerging Mobile Cloud Applications	<ul style="list-style-type: none"> - What is Cloud Computing - The role played by cloud computing in facilitating the development and deployment of emerging mobile cloud apps. - Architectural approaches such as hybrid and federated models were discussed. - The benefits, challenges, and future prospects of Cloud computing.



Track 2 (CS)**Session chair:** Dr. Neeraj Bhargava, Professor, MDS University, Ajmer**Session Coordinators:** Dr. Shripal Vijayvargiya, Dr. M.M. Agarwal**Student Coordinator:** Ms. Anisha Agarwal

<u>CODE</u>	<u>AUTHOR</u>	<u>CO-AUTHOR</u>	<u>TITLE</u>	<u>ABSTRACT/SUMMARY</u>
T1(CS)-153	Rashmi Singh	Dr. Shailendra Kumar Singh, Dr. Niraj Mishra	Use of Mobile Phone with the innovation of e-learning for Students Perception and Reality	<ul style="list-style-type: none">- Use of mobile devices that provide better collaborative opportunity and empower to student engage in content formation & communicate using social network- Use of mobile phone improves student's interaction with the instructor and has a complementary effect on higher education in cooperation and satisfaction
T1(CS)-167	Tanmay Khandelwal	Dr. Vivek Gaur	Load Balancing in Cloud Computing	<ul style="list-style-type: none">- Paper Not Presented
T1(CS)-170	Manoj Kumar Dutta(S)	Swatilekha Das, Rudra Sankar Dhar	FWM based wavelength converter design for all optical WDM networks : A simulation study	<ul style="list-style-type: none">- A simulation based model has been developed for the generation of new sideband frequencies using FWM.- FWM is third order type non linearity and it occurs when 2 or more different wavelength launched into a fiber and because of electric susceptibility new wavelength generate
T1(CS)-173	Vaibhav Goyal	Dr. Vivek Gaur	Virtualisation in cloud computing: A Review	<ul style="list-style-type: none">- Paper Not Presented
T1(CS)-179	Shivangi Sharma	---	Artificial Neural Network	<ul style="list-style-type: none">- Paper Not Presented

T1(CS) - 180	Siddharth Mishra	---	Cyber Security Awareness : Empowering Individuals in Digital Era	<ul style="list-style-type: none"> - Emphasize the importance of understanding cyber threats, recognizing common attack vectors and adopting preventive measures - The abstract discuss the impact of cyber security awareness on personal privacy and data security
T1(CS) - 181	Mamata Pandey	Dr. Anup Kumar Keshri	Ensembled machine learning for ECG based identification using features extracted from digital ECG signal using Deterministic Finite Automata	<ul style="list-style-type: none"> - Paper presents method for identifying an individual using ECG signal - A Deterministic Finite Automata approach is used to identify PQRST points which are used to calculate set of features. - This paper presents a comparative study of different study of machine learning models.



Track 3 (CS)

Session chair: Dr. Pratistha Mathur, Professor, Manipal University, Jaipur

Session Coordinators: Dr. V. Pathak, Dr. Seema Gaur

Student Coordinator: Ms. Ridya Gupta

<u>CODE</u>	<u>AUTHOR</u>	<u>CO-AUTHOR</u>	<u>TITLE</u>	<u>ABSTRACT/SUMMARY</u>
T1(CS)-188	Ankit Grover	Dr. K.P. Sharma	Schemes for effective Web Scraping and Comparative study between Traditional and Robotic Process Automation scraping : Review	<ul style="list-style-type: none">- Web scraping techniques and their integration with Robotic Process Automation (RPA) for data extraction.- Comparison between Web scraping, and RPA.- Evaluation of the strengths and limitations of each approach.
T1(CS)-191	Krish Agrawal	Aryan Goyal , Yathest Sharma, Santosh Kr. Sharma	Robotics & Artificial Intelligence (AI).	<ul style="list-style-type: none">- Impacts of AI and how it is revolutionizing the healthcare industry by enhancing diagnosis accuracy, optimizing treatment plans, and improving patient outcomes.- Machine learning algorithms analyze vast amounts of medical data, aiding in early disease detection and personalized treatment recommendations.
T1(CS)-193	Mayank Jain	Khush Khandelwal, Mayank Jain, Krishna Khandelwal, Santosh Kumar Sharma Assistant Professor	Human-Computer Interaction (HCI) and User Experience (UX)	<ul style="list-style-type: none">- Characteristics and limitations of HCI must be taken into account to ensure a seamless user experience.- The presence of different notification APIs requires developers to create specific code for each platform.
T1(CS)-195	RADHIKA AGRAWAL	Dr. Ranjana Agarwal	Uses of data science in different domains: A review paper	<ul style="list-style-type: none">- This review paper provided utility of data science techniques in industries such as healthcare, finance, marketing, and cyber security, among others.- Impact of data science in decision-making, predictive modeling, pattern recognition, and data-driven insights across diverse sectors.

T1(CS)-196	Shubham Kumar Sain	Bhaskar M Gupta, Utkarsh Sharma, Shubham Kumar Sain, Santosh Kumar Sharma	Wearable Electronics and Health Monitoring	<ul style="list-style-type: none"> - Wearable self-powered system that combines a stretchable glucose sensor and supercapacitor-biofuel cell (SC-BFC) on a textile substrate. - The system harvested and stored human-generated energy from sweat-based BFC, allowing continuous glucose monitoring. - Photovoltaic energy conversion and replaceable batteries for self-sustaining power, resulting in a reliable and convenient solution for real-time health monitoring.
T1(CS)-200	Kartikay Verma	---	Cyber security education and training	<ul style="list-style-type: none"> - Paper Not Presented
T1(CS)-201	Abhishek kumar	Dr. K.P. Sharma, Assistant Professor, NIT jalandhar, Supervisor	Unveiling the Limitations and Exploring Diverse Applications of BERT: A Survey	<ul style="list-style-type: none"> - Limitations of BERT, a popular natural language processing (NLP) model. - Drawbacks of BERT such as high computational costs and limited context understanding. - The model's versatility in various domains, including text classification, question answering, and language translation.

ANKIT GROVER is presenting

Classified

Literature Survey : Web Scraping Related Works

Web scraping is a technique used to extract data from websites by automating the retrieval and extraction process. It involves gathering information from web pages and converting it into a structured format for further analysis or use. Several research papers have explored various aspects of web scraping, shedding light on its methods, applications, and challenges.

Table 1. Key focus and Contributions provided by web scraping-based research's

Research Paper	Key Focus and Contributions
Mosad Ahmad Khder (2021)	<ul style="list-style-type: none"> Provides a comprehensive analysis of web scraping methods, procedures, and applications. Covers data extraction, cleaning, and integration. Offers insights into the state of the art in web scraping and its potential applications.
Federico Polidoro (2015)	<ul style="list-style-type: none"> Presents a case study on consumer electronics and airlines in Italy. Highlights challenges and possibilities of web scraping in this context. Emphasizes advantages of web scraping in enhancing precision and timeliness of official statistics calculations.
Saram Han (2021)	<ul style="list-style-type: none"> Summarizes web scraping methods and their application in gathering hospitality-related information. Discusses legal and ethical considerations. Showcases possibilities for hotel research using web scraping, such as competitor analysis and sentiment tracking.

3:41 PM | ety-qrru-evb

Meet - Track1 CSE Day 1 Second Session

3:45 PM | Track1 CSE Day 1 Second Session

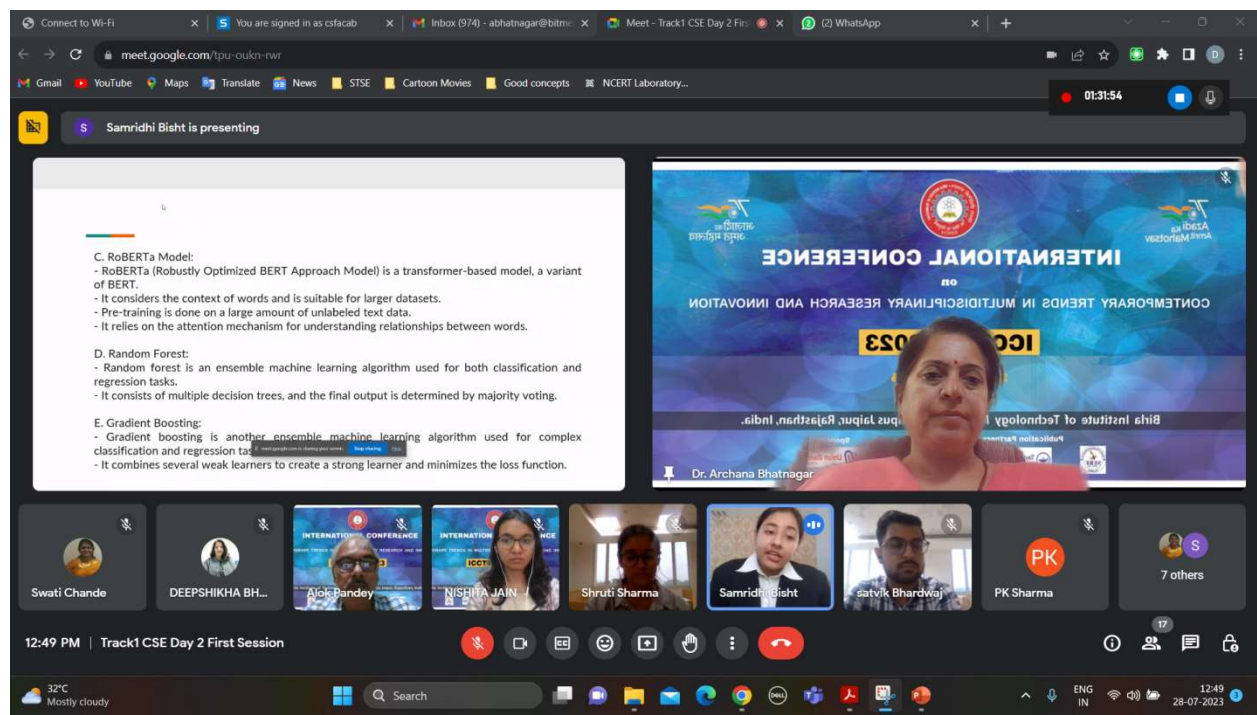
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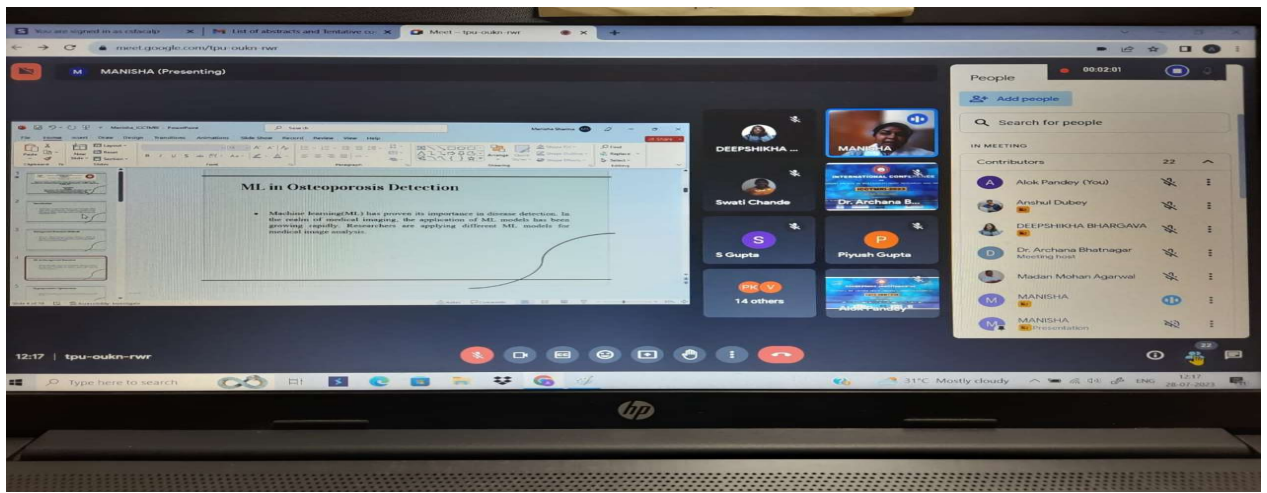
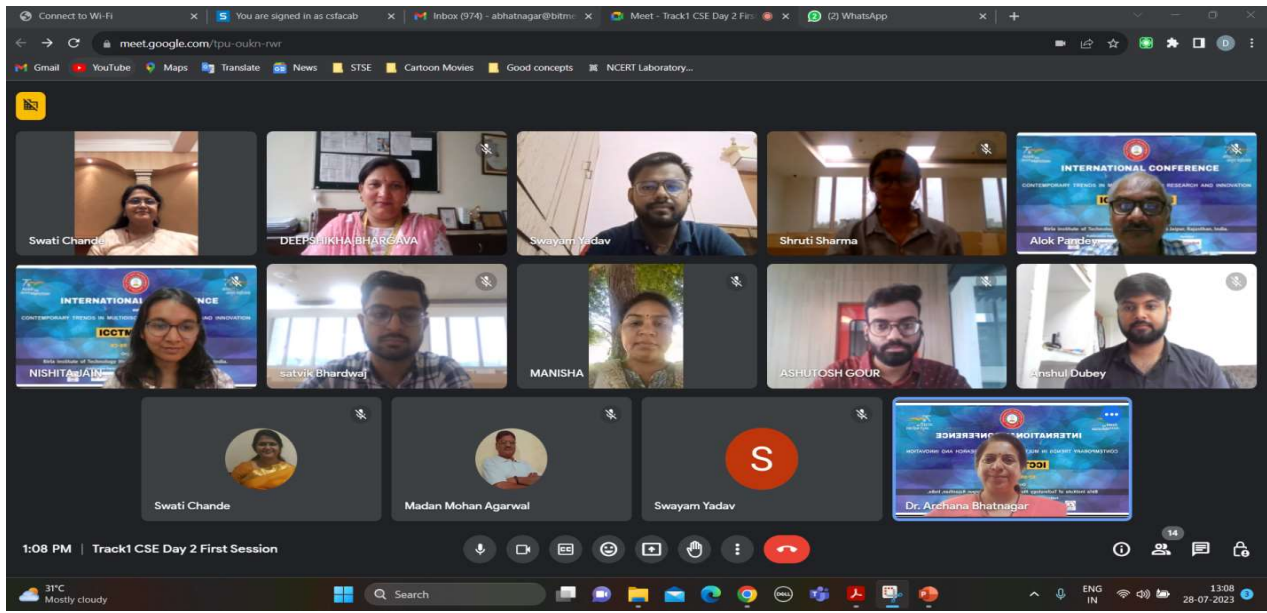
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Track 4 (CS)**Session chair:** Dr. Deepshikha Bhargava, Professor, Amity University Greater Noida, Noida**Session Coordinators:** Dr. Archana Bhatnagar, Dr. Alok Pandey**Student Coordinator:** Ms. Nishita Jain

<u>CODE</u>	<u>AUTHOR</u>	<u>CO-AUTHOR</u>	<u>TITLE</u>	<u>ABSTRACT/SUMMARY</u>
T1(CS)-202	Ashutosh Gour	Krishna Pal Sharma, NIT Jalandhar	Wormhole Attacks in underwater Sensor Networks: A Review of Mitigation Techniques	- Challenges of UWSN. - Types of Wormhole Attacks - Literature Survey and Motivation.
T1(CS)-207	Bimalendu Pathak	Dr. Madhavi sinha, BIT Mesra, Jaipur	Development of an intelligent authentication system for privacy preserving measures	- Basics of Biometric Authentication. - Intelligent Biometric Authentication System
T1(CS)-211	Anshul Kumar	Mr. Santosh Kr. Sharma	Machine Learning - based design and development for software engineering models, methods and application systems	- Introduction to Machine learning-based design. - Software Engineering models - Development of Software Engineering models
T1(CS)-217	Swati V. Chande		A Study of Research Evolution on Application of Digital Twins technology in Education	- Introduction to Digital Twins - Digital Twins technology in Education - Digital Twins technology in Education (Staff Development) - Digital Twins technology in Education (Applications in Peripheral Functions) - Digital Twins technology in Education (Safety and Security)
T1(CS)-218	Manisha	Dr. Priyanka Mishra, IIIT Kota, Dr. Basant Agarwal, Central University of Rajasthan	Hyperparameter optimization using Nature- inspired algorithm for Osteoporosis detection utilizing hand-crafted features and ML algorithms	- Osteoporosis Detection Methods - ML in Osteoporosis Detection - Hyper parameter Optimization - Proposed HPO methods

T1(CS)-220	Shruti Sharma	Satvik Bhardwaj, Samridhi Bisht	Comparative Study of Sentiment Analysis	<ul style="list-style-type: none"> - Objective of Comparative Study of Sentiment Analysis - Literature review of Comparative Study of Sentiment Analysis - Methodology and results
T1(CS)-221	Swayam Kumar Yadav		Transforming India's Banking Sector: The Future of Block chain Technology	<ul style="list-style-type: none"> - Overview of India's Banking Sector and the need for Transformation - Challenges India's Banking Sector - What is Block Chain - Decentralization - Data Security

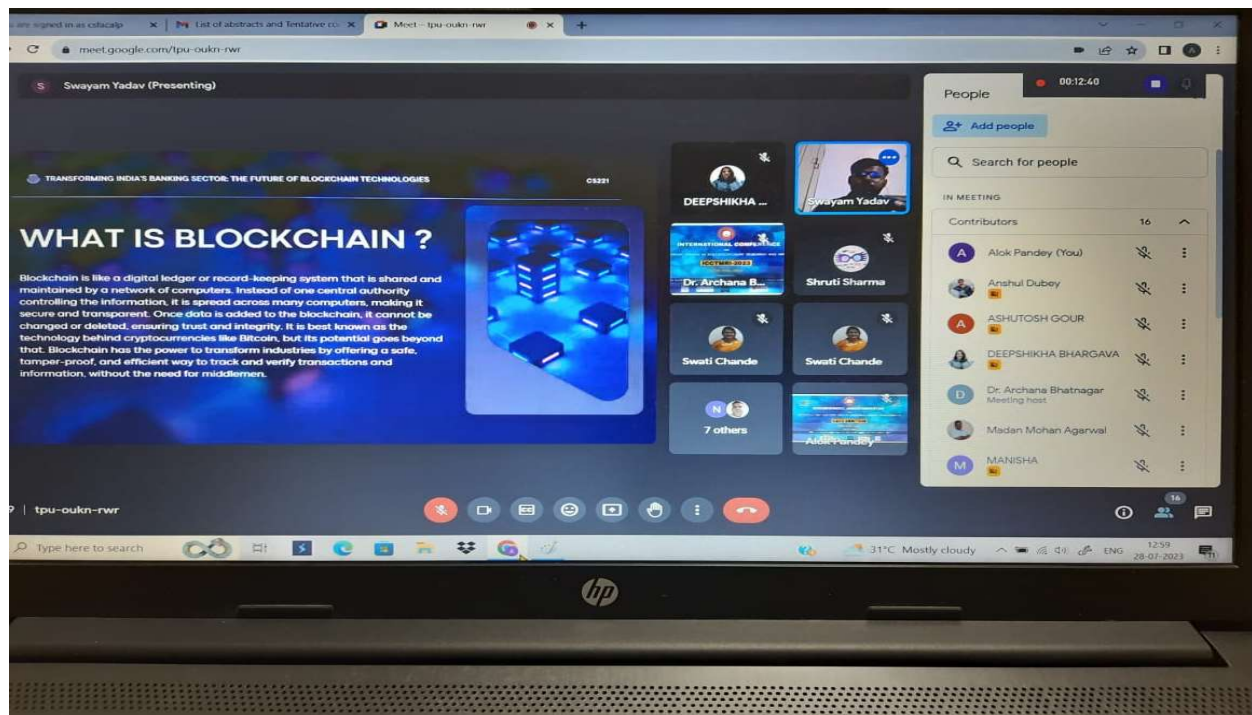


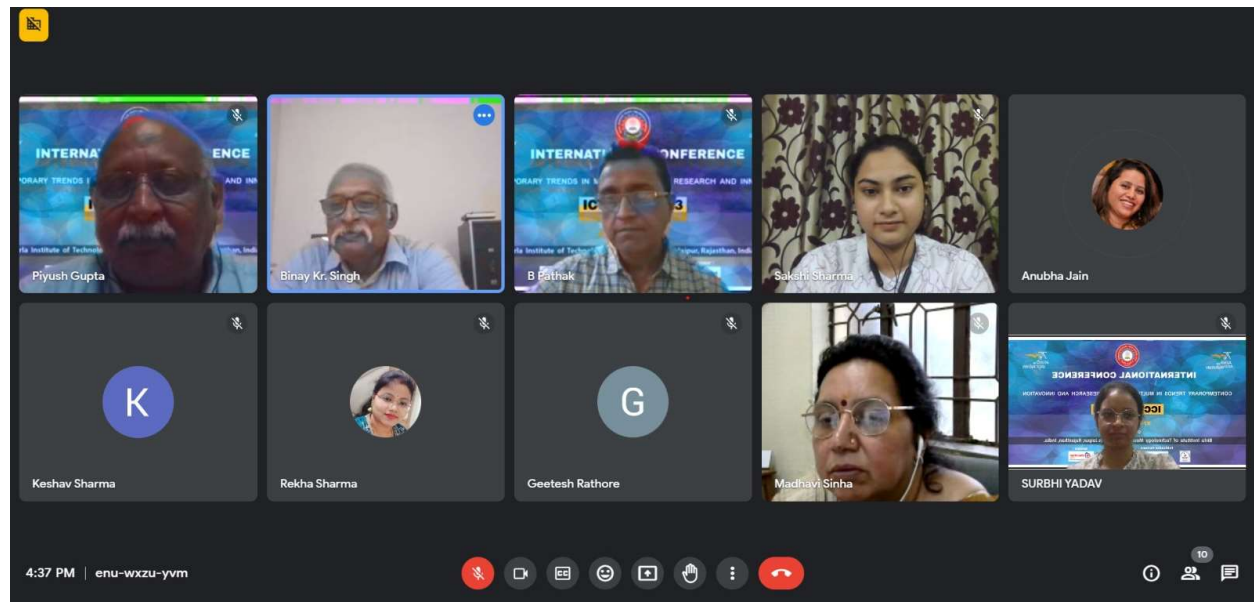
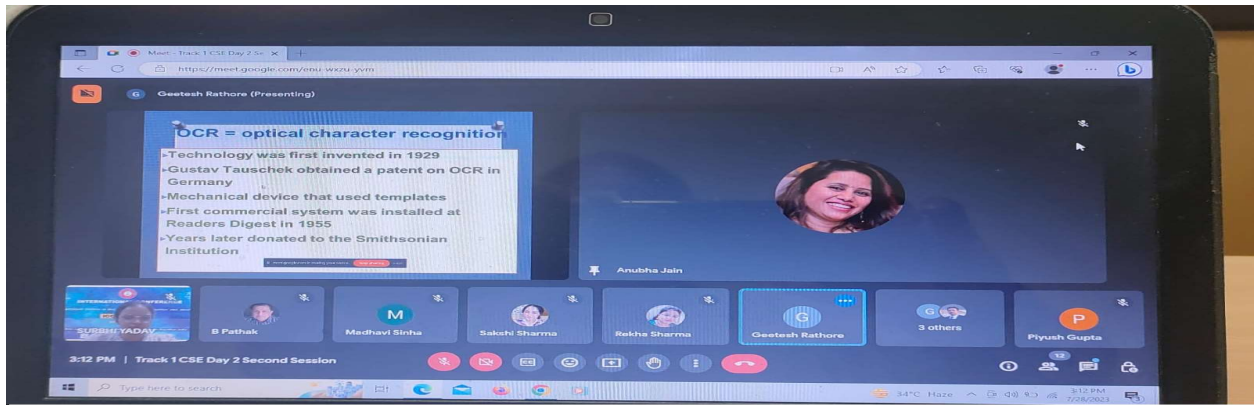


Track 5 (CS)**Session chair:** Dr. Anubha Jain, Associate Professor, IIS (Deemed to be University), Jaipur**Session Coordinators:** Dr. Piyush Gupta, Mr. B. Pathak**Student Coordinator:** Ms. Surabhi Yadav

<u>CODE</u>	<u>AUTHOR</u>	<u>CO-AUTHOR</u>	<u>TITLE</u>	<u>ABSTRACT/SUMMARY</u>
T1(CS)-222	Tejesh Pandey	---	Cyber security and AI: Protecting Critical Infrastructure and Data	Paper Not Presented
T1(CS)-223	Geetesh Rathore	Tanishq Singh Rajawat, Pulkit Sharma, Siddharth Soni	A Comprehensive Review of Optical Character Recognition: Advancements, Techniques, and Algorithms (Till 2023)	<ul style="list-style-type: none">- Optical Character Recognition (OCR)- A pattern analysis technique- challenges associated with OCR, with a particular focus on its impact in industries such as banking, healthcare, legal, logistics, and market
T1(CS)-235	Rekha Sharma	Prof. Reena Dadhich	Scheduling of Cyber Security Activities in Indian Context	<ul style="list-style-type: none">- Cyber security issues in India- Cyberattacks and its different types- Co-operation and collaboration of Government with the PPP (Public Private Partnership) to reduce the chances of cybercrimes in India
T1(CS)-247	Keshav Sharma	Mr. Binay Kumar Singh, Senior Scientific Officer	Geospatial Data Integrated with Artificial Intelligence and Big Data	<ul style="list-style-type: none">- Analysis and mapping of different amenities in the state of Jharkhand- Python tools used for complex and large geospatial datasets about the earth's surface- Artificial intelligence may be used with geospatial data
T1(CS)-248	Binay Kumar Singh	Surendra Singh Yadav VGU Jaipur	Cluster Analysis for characterization of SCATSAT Data for Land use/Land Cover of Rajasthan state	<ul style="list-style-type: none">- Cluster Analysis for characterization of SCATSAT Data- Derived parameters from Ku band SAR (non-imaging scatterometer data) to characterize the spatial and temporal signatures of regional

				land surfaces in Rajasthan and other parts of India - Data from ScatSAT sensors can be utilized for oceanography and the identification of oceanic disasters.
T1(CS)-263	Anju Sharma	Dr. Madhavi Sinha, Tanvi Sinha	A Differential Evolution algorithm using constraint handling function for optimized routing in mobile ad hoc network	<ul style="list-style-type: none"> Paper Not Presented
T1(CS)-178	Sakshi Sharma		Brain-Computer Interface: The Icoinc Face Of Neurorevolution	The rapid evolution of Brain-Computer Interface (BCI) technology recent advancements in BCI technology Human-machine Interaction





Binay Kr. Singh is presenting

Results

4:31 PM | enu-wxzu-yvm

Sakshi Sharma is presenting

CONCEPT & FUNCTIONING

DECODING THE LANGUAGE OF THE BRAIN

Our brains are composed of billions of interconnected neurons, and these neurons communicate with one another through electrical impulses. Remarkably, every thought, movement, or sensation we experience is accompanied by unique patterns of brain activity.

BCI researchers harness this neural activity, utilizing innovative sensors and signal processing techniques to capture and interpret the brain's electrical signals.

These signals hold the key to unlocking the intentions and desires that lie within our minds.

Neural patterns, BCI systems can translate these patterns into specific commands for machines to execute.

3:59 PM | enu-wxzu-yvm

Keshav Sharma is presenting

Follow along at ppt.ms/h1hmtwcr

Geospatial Data – AI & Big Data

- The topic of geographic artificial intelligence (GeoAI) combines advances in spatial science with the quick development of AI and large data techniques. It has three main components: data-driven, knowledge-driven, and emphasizes geographical applications.
- AI is used in GIS for:
 - Data cleansing
 - Image interpretation
 - Semantic classification and segmentation etc..

3:52 PM | enu-wxzu-yvm

Dr. Anju Sharma

Convener

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