

A Quarterly Newsletter

Department of Computer Science & Engineering  
January, 2021

What we have done in this quarter collectively as a  
TEAM!!!

## From the Head of Department, CSE Desk

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Welcome to the first quarterly newsletter of the Department of Computer Science & Engineering!! A New Year has begun and brings with it the promise of new collaborations, events and the hope of welcoming our students back on the campus.

A brief introduction of the Department for our new readers. Department offers B. Tech., M. Tech., M.S. and Ph.D. programmes with major thrust areas of teaching and research in Data Science, Information and System Security, Cyber Physical Systems, Artificial Intelligence, Software Engineering & Applications, Algorithms.

For the coming year, the Department has already planned on introducing Minor & Specialization in emerging areas. Parallel efforts have enhanced our computational power with the recent purchase of a supercomputing unit. This will encourage research in Artificial Intelligence, Machine Learning, and Deep Learning, to name a few.

The Department is fully geared to move forward with positive energy, cooperation and camaraderie. Wishing you all a fruitful 2021!!

**Dr. Preety Singh**  
Associate Professor & Head  
Computer Science & Engineering



## New faculty members joining the department

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**Dr. Mohit Gupta, Assistant Professor**

**Research Area:** Blockchain, Web application security

He has completed his post-graduation degree in 2011 and PhD degree in 2019 from Visvesvaraya National Institute of Technology (VNIT), Nagpur, Maharashtra, India in the area of wireless security. After completing his postgraduate degree, he worked as a software engineer at Persistent System Ltd, India. He is a member of Cryptology Research Society of India (CRSI).

**Dr. Animesh Chaturvedi, Assistant Professor**

**Research Area:** Systems/Software engineering, Data Science and Analytics, Big data, and Cloud computing



He received the B.E. degree from IET, Devi Ahilya University, Madhya Pradesh, India, in 2011 and M. Tech. degree from Indian Institute of Information Technology, Design and Manufacturing, Jabalpur, India, in 2014. He completed his Ph.D. degree from the Indian Institute of Technology, Indore, India, in 2020. He was a Postdoctoral Research Assistant in NetSys Group of King's College London, London, U.K., and working for The Alan Turing Institute, London, United Kingdom. He also did research work with IIT-Kanpur, Motorola, and Arris.



**Dr. Poulami Dalapati, Assistant Professor**

**Research Area:** Artificial Intelligence, Autonomous Agent and multiagent based systems, Distributed Systems and Transportation Scheduling.

She received her B.E. degree from West Bengal University of Technology, Salt Lake, Kolkata in 2011 and M. Tech. Degree from Birla Institute of Technology Mesra, Ranchi in 2013. She completed Ph.D. from National Institute of Technology, Durgapur, West Bengal in 2018. She has an academic experience of three years. She has also handled collaborative research projects funded by MHRD, Govt. of India.

## New Research Scholars

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Five research scholars joined the Ph.D. Programme in 2020-21 (Odd Semester)

- Ms. Jyoti Sharma
- Ms. Parul Khandelwal
- Ms. Nainsi Soni
- Ms. Shrusti Porwal
- Mr. Ram Ji Das

## New courses offered

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1. **Title:** *Information Visualization*

**Instructor:** Dr. Subrat Kumar Dash

**Course description:** The course provides the knowledge and practical skills necessary to develop a strong foundation on information visualization and to design and develop the advanced applications for visual data analysis. These concepts will help the students to ideate and evaluate the visualization designs in terms of how well they leverage the capabilities of the human perceptual machinery.

2. **Title:** *Knowledge Representation, Reasoning and Applications*

**Instructor:** Prof. Ravi Prakash Gorthi

**Course Description:** The course aims to offer a foundation in the areas of Knowledge Representation, Reasoning (KRR) and their applications. This course holds significance in modelling the real-world complex problems using the combination of KRR and statistical machine learning techniques. The course offers projects whereby the students can analyse a given problem, choose the appropriate combination of KRR and design the solutions.

3. **Title:** *Malware: Threats and Analysis*

**Instructor:** Dr. Ankit Chaudhary

**Course Description:** This course provides an advanced treatment of malware, its behaviour, and analysis in the network. It explores the threat model in cyber defence and discusses various techniques for the packet analysis to learn more about the malware.

#### 4. **Title:** *Multiagent Systems*

**Instructor:** Dr. Saurabh Kumar

**Course Description:** The course aims to provide a broad introduction to the artificial intelligence agents with an emphasis on the utilization of multiple agents to solve the complex real-world problems. It explores the concepts of agent architectures, inter-agent communication, teamwork, distributed rational decision making, agent modelling, and learning in the case of coordinated multi-agent communication. The course will help the students in formulating the solutions of different categories of problems in artificial intelligence with the use of multiple agents.

### **New Minor/Specialization in pipeline**

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**Title:** *The Department is planning for Minor in Artificial Intelligence & Data Science and Specialization in Artificial Intelligence & Data Science*

**Description:** Artificial Intelligence (AI) and Data Science (DS) are poised to disrupt our world with intelligent machines enabling high-level cognitive processes like thinking, perceiving, learning, problem solving and decision making. Coupled with advances in data collection and aggregation, analytics and computing power, AI and DS present the opportunities to complement and supplement human intelligence and enrich the way people live and work. In this context, the department aims to emphasize on the knowledge and skill development of the students in the fields of artificial intelligence and data science, so that our students will get the opportunity to excel and show their skills by solving the different real-world problems, either as an entrepreneur or as a researcher, to shape our nation in developing an intelligent community. To enable this, the Minor will be offered to students of Electronics & Communication Engineering and Mechanical-Mechatronics Engineering. The Specialization will be for Computer Science & Engineering and Communication & Computer Engineering students.

## Research and Development

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### (A) Project Grants

**Title:** *Establishing Disinfectant Hut/Tunnel*

**PI:** Mr. Vikas Bajpai, Assistant Professor

**Funding Agency:** Unnat Bharat Abhiyan (UBA), Ministry of Human Resource Development (MHRD), Government of India, New Delhi

**Amount granted:** INR 50,000

**Area:** A disinfectant tunnel/hut built to cater the needs of common people during the COVID-19 pandemic. The tunnel/hut is equipped with sensors and detectors which activates a spray from misters whenever a person enters through it. The mechanism is fully contactless. The project focused on the initial level of sanitization done using the tunnel/hut before entering the village.

### (B) Research Publications

#### Journals

- Jayaprakash Kar, "*Provably secure certificateless deniable authenticated encryption scheme*", *Journal of Information Security and Applications*, Elsevier, vol. 54, pp. 1-10, October 2020.

#### Conferences

- Aman Bhargava, Kartik Shankhavaram, Priyanshu Agarwal, and Jayaprakash Kar, "*Bitcoin Technology and its Security Challenges: A Research Survey*", *Proceedings of the 16th International Conference on Information Assurance and Security (IAS)*, 15-18 December 2020, MIR Labs, USA.
- Nirmal Kumar Sivaraman, Sakthi Balan Muthiah, Pushkal Agarwal, and Lokesh Todwal, "*Social Synchrony in Online Social Networks and its Application in Event Detection from Twitter Data*", *Proceedings of the IEEE/WIC/ACM International Joint Conference on Web Intelligence and Intelligent Agent Technology (WI-IAT)*, 14-17 December 2020, Melbourne, Australia.
- Arpan Gupta, Ashish Karel, and Sakthi Balan Muthiah, "*Cricket Stroke Recognition using Hard and Soft Assignment based Bag of Visual Words*", *Proceedings of the 5th IAPR International Conference on Computer Vision and Image Processing (CVIP)*, 4-6 December 2020, Allahabad, Uttar Pradesh, India.

## Book Chapters

- Preksha Pandey, Jatin Keswani, and Subrat Kumar Dash, “*Comparative Analysis of various Techniques used to obtain a suitable summary of the Document*”, In: Rathore V.S., Dey N., Piuri V., Babo R., Polkowski Z., Tavares J.M.R.S. (eds), *Rising Threats in Expert Applications and Solutions, Advances in Intelligent Systems and Computing*, Springer, vol. 1187, pp. 627-633, 2020.

## Books

- Sudheer Kumar Sharma, “*Effect of different sources of noise on ISI distribution*”, LAP Lambert Academic Publishing, Saarbrücken, Germany, 2020.

## **Talks and Invited Lectures**

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### Expert lectures delivered by CSE Colleagues

- Expert Lecture by *Dr. Sudheer Kumar Sharma* during the AICTE Training and Learning (ATAL) Academy sponsored Faculty Development Programme on “*Data Science and Machine Learning*”, organized by the Department of Computer Science & Engineering, KIET, Ghaziabad, Uttar Pradesh, India.

**Area:** *Modeling Biological Neuron and Information Processing*

**Date:** 21.11.2020

- Expert Lecture by *Prof. Rahul Banerjee* on “*From Scepticism to Opportunities, Challenges and Learnings: A Ringside View of the Interactive Online Learning Landscape*” in TEQIP Workshop at IIT Roorkee

**Area:** *Panic-Gogy: Perspective on Online Teaching*

**Date:** 15.12.2020

- Expert Lecture by *Dr. Saurabh Kumar* during AICTE (QIS) sponsored STTP on “*Cyber Security – Current Trends and Future Perspective*”, organized by the Department of Information Technology, Guru Nanak Dev Engineering College, Ludhiana, Punjab, India.

**Area:** *Industry 4.0 and Industrial Internet of Things*

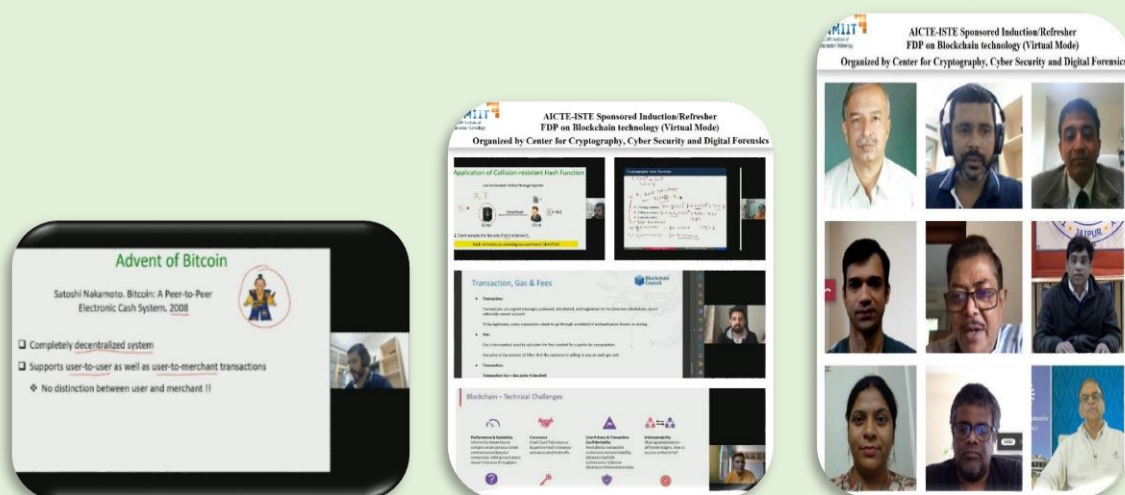
**Date:** 17.12.2020



## Organized Faculty Development Programme

- **Title:** AICTE-ISTE sponsored Faculty Development Programme on “*Blockchain Technology*”, organized by Centre for Cryptography, Cyber Security and Digital Forensics, during 7<sup>th</sup> - 12<sup>th</sup> December 2020 in Virtual mode. Main organizers were Dr. Jayaprakash Kar and Dr. Shweta Bhandari.
  - **Level:** National | **Duration:** 6 days
  - **Speakers:**
    - Prof. Ashish Choudhary, *IIITB*
    - Dr. Meenakshi Kansal, *IITM*
    - Prof. Somanath Tripathy, *IIT Patna*
    - Dr.Kannan Srinathan, *IIIT Hyderabad*
    - Mr. Krishnasuri Narayanam, *IBM India Research Lab*
    - Mr. Abhishek Singh, *IBM Research*
    - Dr. Rajan MA, *TCS Research*
    - Dr. Hemant Rath, *TCS Research & Innovation*
    - Mr. Pranav Bhardwaj, certified *Blockchain Developer and Redhat Certified Engineer*
    - Dr. Pradeep Kumar Mishra, *Certified Information Systems Security Professional*
    - Mr. Jaspreet Batra, formerly ML and Search Engineer, *Yahoo*
    - Dr. Prem Masand from *Brahma Kumaris*

## Highlights from the FDP on Blockchain Technology





## Engagements/Collaborations

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- **Research**

- Dr. Jayaprakash Kar, Associate Professor in the department, is collaborating with the Department of Electrical and Computer Engineering, University of Waterloo, Canada as a Visiting Researcher/Scientist. The focus of research is to develop and design provably secure cryptographic protocols and primitives for low processing devices and provable data possession. The collaboration has resulted in fruitful research work with four qualitative journal papers and one conference paper with premier publication houses.

- **MoU**

- A MoU was signed between LNMIIT, Jaipur and AI Institute of University of South Carolina, USA for carrying out the joint research. An M. Tech. student is currently pursuing thesis work under this collaboration.

## Student Achievements/Awards/Recognitions

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- Advik Singhania (20UCS011) won the “Best Hardware Hack presented by Digi-Key” during “Who Wants to be a Hackionaire” hackathon, virtually organized by “Major League Hacking (MLH)”, 27-29 November 2020.
- Deepa Tilwani (19MCS002) won 2<sup>nd</sup> position in the category of data analysis for her work entitled “Analyzing an ECoG dataset having the data of rock paper scissor hand movements or hand poses from an epileptic person in order to optimize pre-processing, feature extraction, and classification algorithms”, during the virtual BR41N.IO hackathon, virtually organized at Ars Electronica Festival, Linz and sponsored by IEEE Brain, 12-13 September 2020 (Prize - 300 USD).
- Vibhor Agarwal, Tirth Shah, Swarnim (Y16 Batch) received Best BTP Award in the graduating batch of 2020, under the supervision of Dr. Preety Singh for the project entitled “Proactive Video Surveillance System for Female Security in Isolated Corridors”.

## Featured Alumni

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**Distinguished Alumni and Entrepreneur:** Mr. Karmesh Gupta

**Profession:** Co-founder and CEO - “WiJungle”

**Featured in:** Forbes 30 under 30



**In his own words:** “LNMIIT is the best thing that could have happened in my journey. Thanks for making me what I am today. An ignite is what one needs & I got it on the 2nd day. All credits to the amazing seniors! A pursuit is what one needs time for & I did it for the entire 4 years. All indebted to the incredible teachers! An achievement is what makes one proud of & I promise to keep making you throughout my life.”

### Editors

Dr. Saurabh Kumar & Dr. Preety Singh

Department of Computer Science & Engineering

The LNM Institute of Information Technology, Jaipur