

2022 IEEE CIS Summer School

on

**Research Trends in Artificial
Intelligence and Machine Learning for
Engineering Challenges**

December 06-10, 2022

**Department of Computer Science Engineering &
Department of Electrical Engineering**



**Malaviya National Institute of Technology Jaipur
Rajasthan, India**

1. Objectives

This IEEE CIS summer school aims to develop understanding of fundamentals along with new **Research trends of Artificial Intelligence and Machine Learning for Engineering Challenges** among the participants. It presents an opportunity for students, budding researchers, faculty and industry professionals to comprehend current state of art in the area and develop skills to apply the same. The summer school facilitates interactive sessions for the participants with the stalwarts of this field for building their confidence and an insight into the industry research as well for the real-world engineering applications. The key feature of this summer school is to disseminate the knowledge by following the recent advancements of Artificial Intelligence and Machine Learning with their applications for

different engineering domains and equip the participants to delve into these computational techniques for developing various solutions. The sessions give insights on the basics of machine learning, deep learning and artificial intelligence. Additionally, the advanced fields of learning and their applications are also included, such as video processing methods, natural language processing, deep learning-based anomaly detection and misinformation detection, video analytics, computer vision, smart city applications using deep learning algorithm, privacy preservation in big data environment, electricity price forecasting etc.

2. Venue and Dates

The basic details, including the venue, dates, and duration are listed as follows:

- **Venue:** Niti Sabhagar, Prabha Bhawan, MNIT Jaipur
Note: The summer school was organized in Hybrid mode (Physical as well as Virtual through Zoom Meetings platform)
- **Dates:** December 06-10, 2022
- **Duration:** 5 Days
- **Organizers:** Department of Computer Science and Engineering & Department of Electrical Engineering
Malaviya National Institute of Technology, Jaipur
- **Sponsors:**
 - IEEE Computational Intelligence Society



3. Lectures:

Keynote: Prof. N. P. Padhy

Affiliation: Director, MNIT Jaipur, India (Professor of Electrical Engineering at IIT Roorkee, India)

Topic: Research Trends in Artificial Intelligence and Machine Learning

Lecture 1: Prof. Chetan Arora

Affiliation: Department of Computer Science and Engineering, Indian Institute of Technology Delhi, India

Topic: Basic of Artificial Intelligence and Machine Learning for Engineering Challenges.

Lecture 2: Dr. Appina Balasubramanyam

Affiliation: Department of Electrical Engineering, Indian Institute of Technology Indore, India
Topic: Psychovisual Methods and Mathematical Analysis for Video Processing

Lecture 3: Dr. Santosh Kumar Vipparthi

Affiliation: Department of Electrical Engineering, Indian Institute of Technology Ropar, India
Topic: Basics of Deep Learning, Design and Implementation of Deep Learning Algorithm for Smart City Applications

Lecture 4: Dr. Hossein Shirazi

Affiliation: Management Information Systems (MIS), Fowler College of Business, San Diego State University.
Topic: Using Deep Learning Techniques in Detecting Misinformation on Twitter Network

Lecture 5: Dr. Debasis Das

Affiliation: Department of Computer Science and Engineering, Indian Institute of Technology Jodhpur, India
Topic: Deep Learning based Urban Anomaly Analytics, Implementation of Machine Learning Model for Real Life Applications

Lecture 6: Prof. Ritwik Banerjee

Affiliation: Department of Computer Science, Stoney Brook University, USA
Topic: Natural Language Processing

Lecture 7: Dr. Tripti Kalra

Affiliation: IBM India
Topic: AI at Edge, Video Analytics and Computer Vision

Lecture 8: Prof. Jaideep Vaidya

Affiliation: Department of Management System and Information Systems, Rutgers University, USA
Topic: Privacy Preserving Analytics in Big Data Environment

Lecture 9: Dr. Richa Singh

Affiliation: Department of Computer Science and Engineering, Indian Institute of Technology Jodhpur, India

Topic: Bias in Face Recognition

Lecture 10: Prof. Alessandro Brighente

Affiliation: Department of Mathematics, University of Padova, Padova (IT)

Topic: Good Machines and Bad Machines: On the use of Machine and Deep Learning for Security and Privacy Purposes

Lecture 11: Prof. Rafal Weron

Affiliation: Department of Operation Research and Business Intelligence, Wroclaw University of Science and Technology, Poland

Topic: Electricity Price Forecasting: The Dawn of Machine Learning

4. Program

IEEE CIS Summer School on Research Trends in Artificial Intelligence and Machine Learning for Engineering Challenges

December 6-10, 2022 Schedule

Time / Date	9.00-10.30	10.30-11.00	11.00-12.30	12.30-1.30	1.30-3.00	3.00-3.30	3.30-5.00
Day 1 6/12/2022	Registration/Inauguration (9.00-10.00) Keynote by N. P. Padhy	Break	Lecture 1: Basics of Artificial Intelligence and Machine Learning (Chetan Arora, IIT Delhi)	Lunch	Lecture 2: Psychovisual Methods and mathematical analysis for video processing (Appina Balasubramanyamfrom, IIT Indore)	Break	Lecture 3: Basics of Deep learning (Santosh Vipparthi, IIT Ropar)
Day 2 7/12/2022	Lecture 4: Using Deep Learning Techniques in Detecting Misinformation on Twitter Network (Hossein Shirazi, University of San Diego, USA)		Lecture 5: Deep Learning based Urban Anomaly Analytics (Debasis Das, IIT Jodhpur)		Hands-On Implementation of Machine learning model for real-life applications (using python programming and DGX/Server/google colab etc) (Debasis Das, IIT Jodhpur)		Hands-on Design and Implementation of Deep Learning Algorithm for Smart City Applications (using python programming and DGX/Server/google colab etc) (Dr. Debasis Das, IIT Jodhpur)
Day 3 8/12/2022	Lecture 6: Natural Language Processing (Ritwik Banerjee, Stoney Brook University, USA)		Lecture 7: AI at Edge, Video Analytics and Computer Vision (Trapti Kalra, IBM India, Gurgaon)		Hands-On (Deep learning) (Santosh Vipparthi, IIT Ropar)		Hands-On (Deep Learning) (Santosh Vipparthi, IIT Ropar)
Day 4 9/12/2022	Lecture 8: Privacy-preserving Analytics in the Big Data Environment (Jaideep Vaidya, Rutgers University, USA)		Lecture 9: Bias in Face recognition (Richa Singh, IIT Jodhpur)		Lecture 10: Good machines and bad machines: on the use of machine and deep learning for security and privacy purposes (Alessandro Brighente, University of Padova, Italy)		Lecture 11: Electricity price forecasting: The dawn of machine learning (Rafal Weron, Wroclaw University of Science and Technology, Poland)
Day 5 10/12/2022	Panel Discussion		Social Event/ City Tour/Industry visit				Closing Ceremony and Dinner with Cultural Program

5. Organizers:

- **Chief Patron:**

Name:

Dr. R. K. Tyagi

Chairman, Board of Governors, MNIT Jaipur

- **Patron:**

Name: Prof. N. P. Padhy
Director, MNIT Jaipur

- **General Chairs:**

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6. Poster:

Research Trends in Artificial Intelligence and Machine Learning for Engineering Challenges

International /National
Speakers

Hands-on Practices

Real-life Engineering
Solutions

Research Discussions



Duration:
December 06-10, 2022

Mode of Course
Hybrid



Scan QR to Register

Organized by
Department of Computer Science Engineering & Department of Electrical
Engineering
Malaviya National Institute of Technology Jaipur
Rajasthan - 302017, India
Contact for more details- ieeecis.mnit22@gmail.com

7. Lecture Material:

Lecture recordings can be downloaded from the following Google Drive link:

https://drive.google.com/drive/folders/1UB7k_UiX7UWkzRTXGTHQq8gGmd5dXTbe?usp=sharing

8. Activity Photos:



9. Participants Information:

Total number of people who registered for 2022 IEEE CIS Summer School is 148 and total certificates given are 78 out of which 49 were given to online participants and 29 were given to offline participants.

10. Acknowledgement:

We would like to thank IEEE Computational Intelligence Society and IEEE Delhi Section for their full support in organizing this summer school.