



INDIAN INSTITUTE OF TECHNOLOGY MANDI

भारतीय प्रौद्योगिकी संस्थान मंडी

Institute Colloquium

“Application of Artificial Intelligence: Current Trends and Challenges”



07th March, 2025



10:30 to 11:15 AM



Auditorium, North Campus

Prof. Ujjwal Maulik

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Jadavpur University
Kolkata - 700 032 India
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Abstract:

In this lecture first we will focus on the evolution of Artificial Intelligence (AI) in the last century. Subsequently we will discuss the current trends and challenges in AI.

In the second part of the lecture in addition to the fundamentals of AI, we will demonstrate the importance of using Deep Learning (DL), Graph neural network (GNN), and explainable AI. While DL has been used very successfully for image analysis, GNN are being used for unstructured datasets including biological datasets available in the form of graphs containing the interaction between genes, drugs, diseases etc. AI is used in healthcare with the goal for betterment in therapeutic as well as early diagnosis of diseases.

Finally, we will discuss how DL and GNN techniques can be used for developing improved healthcare system. The importance of explainable AI will also be discussed to address the practical challenges in medical expert system.

Brief Bio:

Dr. Ujjwal Maulik is a Professor in the Dept. of Comp. Sc. and Engg., Jadavpur University since 2004. He was also the former Head of the same Department. He also held the position of the Principal in charge and the Head of the Dept. of Comp. Sc. and Engg., Kalayni Govt. Engg. College. Dr. Maulik has worked in many universities and research laboratories around the world as visiting Professor/ Scientist including Los Alamos National Lab., USA in 1997, Univ. of New South Wales, Australia in 1999, Univ. of Texas at Arlington, USA in 2001, Univ. of Maryland at Baltimore County, USA in 2004, Fraunhofer Institute for Autonomie Intelligent Systems, St. Augustin, Germany in 2005, Tsinghua Univ., China in 2007, Sapienza Univ., Rome, Italy in 2008, Univ. of Heidelberg, Germany in 2009, German Cancer Research Center (DKFZ), Germany in 2010, 2011 and 2012, Grenoble INP, France in 2010, 2013 and 2016, University of Warsaw in 2013 and 2019, University of Padova, Italy in 2014 and 2016, Corvinus University, Budapest, Hungary in 2015 and 2016, University of Ljubljana, Slovenia in 2015 and 2017, International Center for Theoretical Physics (ICTP), Trieste, Italy in 2014, 2017 and 2018. He is the recipient of Alexander von Humboldt Fellowship during 2010, 2011 and 2012 and Senior Associate of ICTP, Italy during 2012-2018 and Fulbright Fellowship in 2024-2025. He is the Fellow of Indian National Academy of Engineers (INAE), India, National Academy of Science India (NASI), International Association for Pattern Recognition (IAPR), USA, The Institute of Electrical and Electronics Engineers (IEEE), USA and Asia-Pacific Artificial Intelligence Association (AAIA), Hongkong. He is also the Distinguish Member of the ACM. He is a Distinguish Speaker of IEEE as well as ACM. His research interest include Machine Learning, Pattern Analysis, Data Science, Bioinformatics, Multi-objective Optimization, Social Networking, IoT and Autonomous Car. In these areas he has published ten books, more than four hundred papers, mentoring several start-ups, filed several patents and already guided twenty-five doctoral students. His other interest include mentoring young students, traveling extensively around the globe, outdoor Sports and Music.