

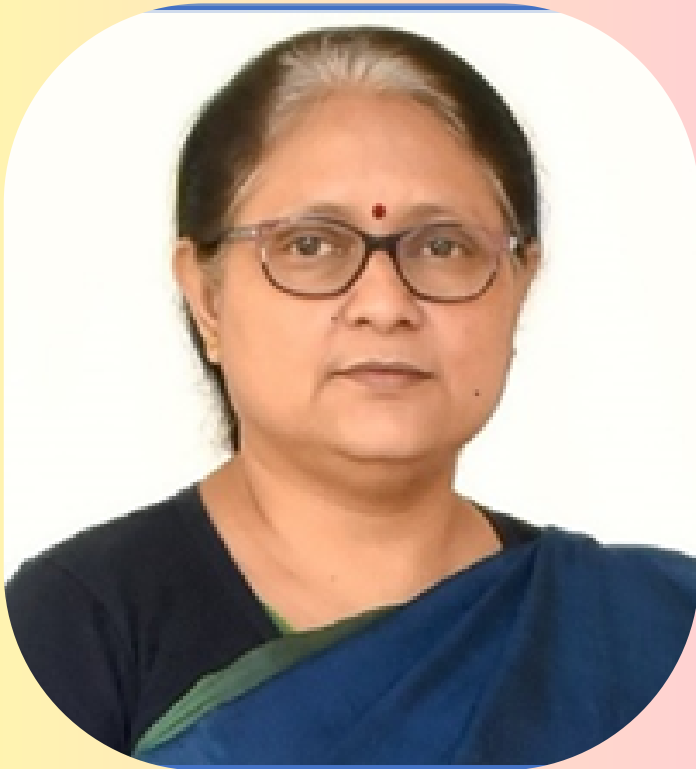


INDIAN INSTITUTE OF TECHNOLOGY MANDI

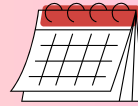
भारतीय प्रौद्योगिकी संस्थान मंडी

Institute Colloquium

“Machine Learning Applications in Biology”



**Prof. Sanghamitra
Bandyopadhyay**



07th March, 2025



11:45 AM



**Auditorium, North
Campus**

FNA, FIEEE, FTWAS, FNAE, FNASc, FIAPR

Professor, Machine Intelligence Unit

**Director, Indian Statistical Institute Kolkata,
India**

Abstract:

Machine Learning (ML) algorithms are finding extensive applications in all domains of scientific research, in particular in diverse areas of biology for making novel discoveries and for gaining deeper insights into various processes of life. In this talk we will first present brief overviews of artificial intelligence, machine learning and molecular biology. In particular, a quick introduction to the central dogma of molecular biology will be provided, which is fundamental to the understanding of a large class of machine learning applications in biology. Various kinds of data sets emerging in different areas of healthcare research will be mentioned. We will then discuss some case studies in a few areas of biology, namely, molecular target prediction, a graph theoretic method for biomarker identification and graph-based approaches in drug interaction studies. The talk will conclude with a mention of some issues and challenges in this area.

Biosketch:



Prof. Sanghamitra Bandyopadhyay did her B Tech, M Tech and Ph. D. in Computer Science from Calcutta University, IIT Kharagpur and Indian Statistical Institute respectively. She then joined the Indian Statistical Institute as a faculty member, and became the Director in 2015. Since 2020 she is continuing in her second tenure as the Director of the Institute. Her research interests include computational biology, soft and evolutionary computation, artificial intelligence and machine learning. She has authored/co-authored several books and numerous articles in journals, book chapters, and conference proceedings and has a citation h-index of 62. Prof. Bandyopadhyay has worked in many Institutes and Universities worldwide. She is the recipient of several awards including the Shanti Swarup Bhatnagar Prize in Engineering Science, TWAS Prize, Infosys Prize, JC Bose Fellowship, Swarnajayanti fellowship, INAE Silver Jubilee award, INAE Woman Engineer of the Year award (academia), IIT Kharagpur Distinguished Alumni Award, Humboldt Fellowship from Germany, Senior Associateship of ICTP, Italy, young engineer/scientist awards from INSA, INAE and ISCA, and Dr. Shanker Dayal Sharma Gold Medal and Institute Silver from IIT, Kharagpur, India. She is a Fellow of all the Science Academies and the Engineering Academy of India, IEEE, The World Academy of Sciences (TWAS), and International Association for Pattern Recognition (IAPR). She serves as a member of the Science, Technology and Innovation Advisory Council of the Prime Minister of India (PM-STIAC). In 2022, she was conferred the Padma Shri award of the Government of India.