



BOSE INSTITUTE

(AN AUTONOMOUS INSTITUTE UNDER
DEPARTMENT OF SCIENCE & TECHNOLOGY, GOVT. OF INDIA)



D. M. BOSE MEMORIAL LECTURE-2024
140TH BIRTHDAY OF PROFESSOR DEBENDRA MOHAN BOSE

26 NOVEMBER 2024



BOSE INSTITUTE
KOLKATA

CELEBRATION OF

140TH BIRTHDAY OF PROFESSOR DEBENDRA MOHAN BOSE

Director
and
Staff Members of Bose Institute
request the pleasure of your company at the

D. M. BOSE MEMORIAL LECTURE-2024

Speaker
Prof. Sanghamitra Bandyopadhyay
Director
Indian Statistical Institute
Kolkata

Titled
**Artificial Intelligence and Life Sciences:
A Synergistic Relationship**

On
26 November 2024 at 3.00 pm

Prof. Indrani Bose
Former Professor Department of Physics
Bose Institute, Kolkata
will preside over the programme.

Venue:
Unified Academic Campus
Block EN, Plot No. - 80, Sector-V
Salt Lake City
Kolkata - 700 091

Prof. Kaustuv Sanyal
Director
Bose Institute



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Prof. Sanghamitra Bandyopadhyay
Director
Indian Statistical Institute
Kolkata

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 and Engineering Academies of India, the Institute of Electrical and Electronic Engineers (IEEE), The World Academy of Sciences (TWAS), 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.



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ABSTRACT

**Artificial Intelligence and Life Sciences:
A Synergistic Relationship**

In recent times, Artificial intelligence (AI) is finding extensive applications in all domains of scientific research. In particular, AI is being applied to all areas of life sciences 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. We will then discuss how AI and life sciences have enriched each other in a variety of ways. We will then touch upon some case studies of applications of AI in a few areas of biology, including single cell RNA-seq data analytics, multiobjective optimization in drug design and graph based approaches in drug interaction studies.