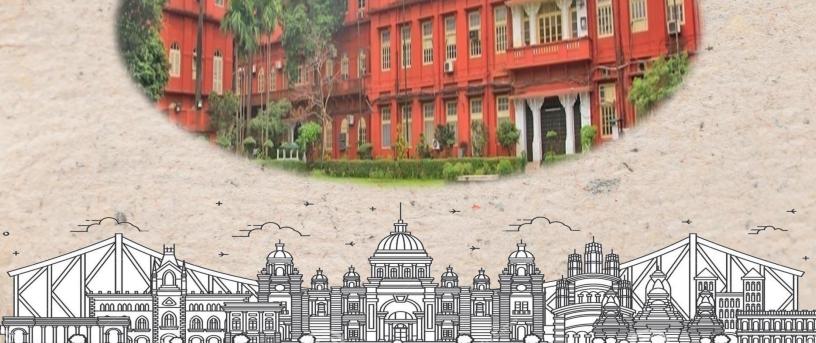
(AN AUTONOMOUS INSTITUTE UNDER DEPARTMENT OF SCIENCE & TECHNOLOGY, GOVT. OF INDIA)

108TH FOUNDATION DAY 85THACHARYA J. C. BOSE MEMORIAL LECTURE

30 November 2024



FTIFFF



KOLKATA

CELEBRATION OF



108TH FOUNDATION DAY

Director and

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

85TH ACHARYA J. C. BOSE MEMORIAL LECTURE

Speaker

Prof. Sankar K. Pal National Science Chair, Gol President, Indian Statistical Institute Distinguished Scientist and Former Director Indian Statistical Institute, Kolkata

titled

Pattern Recognition, Machine Intelligence to Deep Learning and Data Science: Evolution, Challenges and Concerns

on

30 November 2024 at 3.00 pm

Prof. Anuradha Lohia Former Vice Chancellor Presidency University, Kolkata

will preside over the programme.

Venue: Bose Institute Rajabazar 93/1, A.P.C. Road Kolkata - 700 091

RSVP: <u>https://forms.office.com/r/8DSAMLR08J</u> or scan (Please RSVP by 24 November 2024)



Prof. Kaustuv Sanyal Director Bose Institute

"The true laboratory is the mind, where behind illusions we uncover the laws of truth." - Sir J. C. Bose



KOLKATA



CELEBRATION OF 108TH FOUNDATION DAY

and

85THACHARYA J. C. BOSE MEMORIAL LECTURE

PROGRAMME

30 November 2024

12:	00 -	12:30		Homage Floral Offerings at the Samadhi, Bose Institute Rajabazar Garlanding the busts of Acharya J. C. Bose at Unified Academic Campus, Bose Institute Kankurgachi, Bose Institute Madhyamgram, Bose Institute Falta, Bose Institute Shyamnagar and Bose Institute Darjeeling
12:	30 -	14:30	1.2	Lunch
15:	- 00	15:05		Invocation
15:	05 -	15:20		Welcome Address & Director's Report by Prof. Kaustuv Sanyal, Director, Bose Institute
15:	20 -	15:30		Introduction to the Speaker by Prof. Anuradha Lohia Former Vice Chancellor Presidency University, Kolkata
15:	30 -	16:15		85 th Acharya J. C. Bose Memorial Lecture by Prof. Sankar K. Pal
16:	15 -	16:25		Chairman's Address by Prof. Anuradha Lohia Former Vice Chancellor Presidency University, Kolkata
16:	25 -	16:30		Vote of Thanks by the Chairman of the Foundation Day Committee
题```	17-	A designed		NATIONAL ANTHEM
17:	00 -	17:30	····	High Tea
17:	30 -	19:30	····· A	Cultural Programme



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Dr. K. P. Biswas: 1944Prof. R. C. Majumder: 1985Dr. P. Jarija: 1945Prof. C. N. R. Rao: 1986Dr. S. K. Mitra: 1946Prof. C. N. R. Rao: 1987Dr. J. N. Mukherjee: 1947Prof. S. Chandrasekher: 1987Prof. K. N. Bhal: 1948Dr. A. P. Mitra: 1989Dr. K. C. Mehta: 1949Prof. O. Siddiqi: 1989Dr. S. K. Banerji: 1950Prof. P. N. Tandon: 1991Dr. S. K. Banerji: 1950Prof. H. Sarat Chandra: 1992Dr. P. C. Mahalanobis: 1951Dr. U. R. Rao: 1993Prof. R. C. Majumder: 1952Dr. S. Z. Qasim: 1994Dr. N. K. Bose: 1953Dr. P. K. Iyenger: 1995Prof. S. N. Bose: 1954Dr. G. Padmanaban: 1997Dr. A. C. Ukil: 1955Prof. N. K. Ganguly: 1998Dr. D. N. Wadia: 1957Dr. R. A. Mashelkar: 1999Dr. S. Radhakrishnan: 1958Prof. P. Balaram: 2000Sir Jehangir Gandhy: 1960Dr. Pushpa M. Bhargava: 2002Dr. D. N. Ramachandran: 1961Prof. Asok Sen: 2004Dr. D. N. Ramachandran: 1961Prof. Asok Sen: 2005Prof. Asoke Mehta: 1964Prof. N. S. Ramamurthy: 2006
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Dr. Atma Ram : 1966 Prof I N Mohanty · 2009
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Dr. A. Srinivasan : 1973 Prof. Raghavendra Gadagkar : 2016
Dr. A. Ramachandran : 1974 Prof. Ada Yonath : 2017
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Dr. Raja Ramanna : 1977 Prof. Gautam R. Desiraju : 2021
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Prof. S. K. Mukherjee: 1979Prof. Dr. Paolo Giubellino: 2023



KOLKATA



108TH FOUNDATION DAY

and

85TH ACHARYA J. C. BOSE MEMORIAL LECTURE

ABSTRACT

Pattern Recognition, Machine Intelligence to Deep Learning and Data Science: Evolution, Challenges and Concerns

The talk describes the development of a discipline over about 50 years starting from pattern recognition and fuzzy sets in 1975 to image processing, expert system and AI, knowledge-based system, neural networks, soft computing, rough technology, machine intelligence, granular data mining, Big data, and deep learning (DL) with applications and challenges involved. New technologies and terms evolved during the process and their relevance are explained. Characteristics of some of the machine learning (ML) tools developed are stated. Modeling uncertainty and rough granular computing concerning data analytics are emphasized.

The second part deals with some granular mining applications such as video tracking in ambiguous situations in the context of both shallow and deep learning. It is shown how the rough lower-upper approximations in temporal domain provide an estimate of object model in unsupervised tracking, even under complete occlusion. This is followed by the new concept of granulated deep learning (GDL). Merits of a G-RCNN (granulated region proposal network) in enhancing the object detection accuracy are featured with applications to real time traffic scenario.

The talk concludes by mentioning some challenging issues and future directions in DL and data science research including certain concerns for beginners.



KOLKATA



Prof. Sankar K. Pal National Science Chair, Gol President, Indian Statistical Institute Distinguished Scientist and Former Director Indian Statistical Institute, Kolkata

Sankar K. Pal (https://www.isical.ac.in/~sankar) is a Distinguished Scientist and former Director of Indian Statistical Institute (ISI). Currently, he is a National Science Chair, and the President of ISI. He founded the Machine Intelligence Unit and the Center for Soft Computing Research: A National Facility in ISI, Calcutta. He received a Ph.D. in Radio Physics and Electronics from ISI/University of Calcutta in 1979, and another Ph.D. in Electrical Engineering along with DIC from Imperial College, University of London in 1982. He joined ISI where he became a Full Professor in 1987, the Director in 2005, and the President in 2022. He pioneered the development of fuzzy set theory, and neurofuzzy and rough-fuzzy computing, in general, and their applications in pattern recognition, image processing, machine learning, knowledge-based systems, and data science and analytics, in particular. He has received the S.S. Bhatnagar Prize, Padma Shri and many prestigious awards in India and abroad. He is a co-author of twenty-one books, about five hundred research publications and two US patents in the areas of Pattern Recognition and Machine Learning, Image Processing, Data Mining, Soft Computing, Neural Nets, Genetic Algorithms, Fuzzy Sets, Rough Sets, Web Intelligence, Social Networks, Cognitive Machine and Bioinformatics.

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