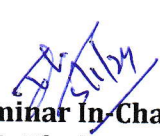Letter No: IMA/42-Seminar/_____29_____/2024   Date: 5·1·2024

SERIES OF TALK BY ALUMNI OF IMA

This is information for all Students, Research Scholars, Faculty members of IMA that, there will be a series of talk by Alumni of IMA on January 6, 2024 in the T. Pati Hall of IMA . The Schedule of the Series of talk is as per the following.

Sl. No.	Name of the Alumni	Topic	Abstract	Time
(1)	i) Dr. Prayagdeep Parija ii) Dr. Pratik Misra	Interactive session on Career opportunities in Mathematics	---------	10:00 am – 12:00 noon
(2)	Shri Kartik Sahoo	Machine Learning and Soft Computing Techniques: Applications to Solve Real-World Problems	Annexure-I	2:00 pm – 2:45 pm
(3)	Shri Niran Meher	A Gentle Introduction to set-valued mapping and its significance		2:55 pm – 3:40 pm
(4)	Dr. Pratik Misra	Introduction to Causal Discovery		3:55 pm – 4:40 pm

All are cordially invited to attend the Series of Talk.

Seminar In-Charge
IMA, Bhubaneswar

Copy forwarded for information and necessary action to:

1. The Alumni concern for information and necessary action.
2. The Mathematical Club, IMA Guard File.
3. The Academic Coordinator, IMA.
4. All Faculty Members of IMA.
5. The In-Charge of Public Address System for arrangement of Public Address System at the venue.
6. The System Analyst, IMA to host the notice in IMA website.
7. All Section, IMA.
8. The Supervisors (Security & Horticulture), IMA for information and needful action.
9. All Notice Boards of IMA, BBSR

(Abstracts)

2. Title: Machine Learning and Soft Computing Techniques: Applications to Solve Real-World Problems

Abstract: In this era of technological advancement, the integration of Machine Learning (ML) and soft computing (SC) techniques has emerged as a transformative force, revolutionizing the way we address
and solve complex real-world problems. This talk delves into the synergy between ML and SC methodologies, exploring their applications across diverse domains and their pivotal role in addressing contemporary challenges.

The presentation will commence with an overview of fundamental ML and SC concepts, providing a comprehensive understanding of the underlying principles. Subsequently, the discussion will pivot towards the practical applications of these techniques, illustrating their efficacy in tackling real-world problems. Case studies and examples will be presented to highlight successful implementations in areas such as healthcare, finance, energy, and more.

The audience will gain insights into the advantages of employing these techniques, including enhanced decision-making, predictive analytics, and automation of complex tasks. This session aims to inspire
curiosity and awareness, encouraging the audience to envision novel applications of ML in their respective domains while emphasizing the ethical imperative of navigating the evolving landscape of artificial intelligence.

3. Title: A Gentle Introduction to set-valued mapping and its significance.

Abstract: Set-valued mapping, a broad mathematical concept extending beyond traditional single-valued mappings, has become increasingly influential in various mathematical disciplines. This talk will focus on a specific class of set-valued mapping, known as maximal monotone operators, and delve into their natural emergence in optimization theory, variational inequality, partial differential equations, game theory, machine learning, and image processing. When the function is not differentiable, the conventional methods for finding extreme values become inapplicable. Maximal monotone operators step in as crucial tools, providing a versatile approach to problem-solving. They play a pivotal role in formulating mathematical problems such as the search for the zero of a maximal monotone operator, making them indispensable in tackling real-world challenges.

4. Title: Introduction to Causal Discovery

Abstract: Causal discovery is the field of study that aims to understand the underlying relationships between different variables in a system from a given set of data. Directed acyclic graphs (DAGs) are used to represent conditional independence and causal relations underlying complex systems of jointly distributed random variables. In this talk, I will give some basic definitions on graphical models like "d-separation" and "Markov equivalence class(MEC)." A central aspect of modern causal discovery methods is the subdivision of the space of DAGs into MECs and then learn the graph representative of the class. To explain this concept, I will present one of the classic causal discovery algorithms called the SGS algorithm, along with some examples.