



## Faculty Development Program



**VIT**<sup>®</sup>  
Vellore Institute of Technology  
(Deemed to be University under section 3 of UGC Act, 1956)

### Discussion Points

**Title :** Scientific Computing and Machine Learning

**Date :** 2024-08-26 - 2024-08-30

**Time :** 10:00 - 17:30

**Venue :** SJT 620

- Introduction of Optimization and its Significance in AI
- Gradient Descent Algorithms: Strength, Weakness, and Applications
- Regression and Classification Models: Their Optimization Frameworks and Solutions
- Optimization Algorithms for Deep Learning Models
- Meta-heuristic Algorithms: Functionality and Applications
- ANN (Artificial Neural Network) Based Approximations for Option Pricing Models
- Machine Learning for Solving Differential Equations
- Fuzzy Sets, Intuitionistic Fuzzy Sets, and Their Applications
- Information Systems and Decision-Making in a Fuzzy Environment
- Optimization in Support Vector Machine
- Time Series Forecasting
- Comprehensive Understanding of Optimization in AI
- Practical Skills in Applying Optimization Algorithms
- Enhanced Problem-Solving Techniques
- Knowledge of Fuzzy Systems in Decision-Making
- Integration of Advanced Machine Learning Techniques

	<p><b>Resource Person 1 - Details</b>  <b>Name :</b> Jayakrushna Sahoo  <b>Designation :</b> Assistant Professor, CS  <b>University/ Company :</b> IIIT Kottayam, Kottayam  <b>Address :</b> India, 686635.</p>
	<p><b>Resource Person 2 - Details</b>  <b>Name :</b> S Sumitra  <b>Designation :</b> Associate Professor, Mathematics  <b>University/ Company :</b> IIST Thiruvanthapuram, Valiamala  <b>Address :</b> India, 695547.</p>
	<p><b>Resource Person 3 - Details</b>  <b>Name :</b> Saroj Kumar Meher  <b>Designation :</b> Associate Professor, Systems Science and Informatics Unit  <b>University/ Company :</b> Indian Statistical Institute, Bangalore  <b>Address :</b> India, 560059.</p>
	<p><b>Resource Person 4 - Details</b>  <b>Name :</b> M Nabil  <b>Designation :</b> Assistant Professor, CHEMICAL ENGINEERING  <b>University/ Company :</b> Indian Institute of Technology Tirupati, Chindapalle  <b>Address :</b> India, 517619.</p>
	<p><b>Resource Person 5 - Details</b>  <b>Name :</b> M V Judy  <b>Designation :</b> Professor, Computer Applications  <b>University/ Company :</b> Cochin University of Science and Technology, Kochi  <b>Address :</b> India, 682022.</p>
	<p><b>Resource Person 6 - Details</b>  <b>Name :</b> Jagadeeswari M  <b>Designation :</b> Assistant Professor Grade 1, School of Advanced Sciences  <b>University/ Company :</b> VIT, Vellore  <b>Address :</b> India, 632014.</p>
	<p><b>Resource Person 7 - Details</b>  <b>Name :</b> Ragukumar P  <b>Designation :</b> Assistant Professor Sr. Grade 2, School of Advanced Sciences  <b>University/ Company :</b> VIT, Vellore  <b>Address :</b> India, 632014.</p>
	<p><b>Resource Person 8 - Details</b>  <b>Name :</b> S Bose  <b>Designation :</b> Professor, CSE  <b>University/ Company :</b> Anna University, Chennai  <b>Address :</b> India, 600025.</p>



**Resource Person 9 - Details**

**Name :** Madhushree B

**Designation :** AI Lead, Fujitsu Research

**University/ Company :** Fujitsu Research, Bengaluru

**Address :** India, 560037.



**Resource Person 10 - Details**

**Name :** Kamasish Bhattacharjee

**Designation :** Assistant Professor Sr. Grade 1, School of Computer Science and Engineering

**University/ Company :** VIT, Vellore

**Address :** India, 632014.

## **Resource Person's Profile :**

### **1. Profile of Jayakrushna Sahoo**

PhD from IIT Kharagpur

M. Tech from IIIT Bhubaneshwar

M. Sc from Utkal University

He is having 70 publications in reputed International Journals

### **2. Profile of S Sumitra**

Dr. Sumitra is presently working as an Associate Professor in IIST Trivandrum, India. She completed her PhD in Machine Learning. She is Interested in the development of theoretical frame work for Machine Learning algorithms and its application to real world problems.

### **3. Profile of Saroj Kumar Meher**

Saroj K. Meher is an Associate Professor of the Systems Science and Informatics Unit at the Indian Statistical Institute, Bangalore Centre. He received an M.Sc. in Physics with an Electronics Specialization and a Ph.D. in Science from the National Institute of Technology, Rourkela, in 1997 and 2003, respectively.

### **4. Profile of M Nabil**

Dr. Nabil earned Ph.D. from the Indian Institute of Technology Madras, Chennai, India. His research interests include Process Optimization and Control, Machine Learning for Process Systems, Data Reconciliation, Soft Sensors, State Estimation, Model Predictive Control, and Process Data Analytics.

### **5. Profile of M V Judy**

Dr. M. V. Judy is a Professor and Head of the Department of Computer Applications at Cochin University of Science and Technology, Kerala. She received her Ph.D. degree from Sastra Deemed University. She has more than 20 years of teaching experience along with numerous research articles published in peer-reviewed Journals and International Conferences. Dr. Rudy's Research Interests include Machine Learning, Big Data Analytics, Computational Biology, and Affective Computing.

### **6. Profile of Jagadeeswari M**

Dr. Jagadeeswari M earned her Ph. D in 2021 at National Institute of Technology, Tiruchirappalli. Her Fields of research interest: Fuzzy mathematical modelling, fuzzy logic and its applications, techniques, neutrosophic set theory, fuzzy optimization, fuzzy graphs.

### **7. Profile of Ragukumar P**

Dr. Ragukumar completed his PhD at the College of Engineering Guindy, Anna University, Chennai, and conducted postdoctoral research at the Institute of Mathematical Sciences, Theoretical Computer Science Group. Dr. Ragukumar is an active researcher with publications in various esteemed journals, including Discrete Mathematics and Theoretical Computer Science.

### **8. Profile of S Bose**

Dr. S. Bose is a renowned Professor in the Department of Computer Science and Engineering at the College of Engineering, Anna University, Chennai. With a PhD in Information and Network Security from Anna University, he has established himself as a leading expert in his field. His research expertise spans a range of areas, including Information Security, Cloud Computing, Social Networking Analysis, Machine Learning, and Networking Technologies.

### **9. Profile of Madhushree B**

Dr. Madhushree B, Senior Software Engineer at Fujitsu Research, leads AI innovation. Ph.D. in Computer Vision from Nirma University. Ex-AI Lead at Go Digit Insurance and Solution Engineer at NVIDIA. Awarded "Wall of Awesomeness" and ELETS BFSI Gamechanger Award. Showcased Ph.D. research to India's Prime Minister. Expert in Machine Learning, Deep Learning, and NLP.

### **10. Profile of Kamanasish Bhattacharjee**

Dr. Kamanasish Bhattacharjee has completed his Ph.D. from IIT Roorkee. His doctoral work is on Nature-Inspired Optimization for Machine Learning with emphasis on Weakly Supervised Learning. His post-doc is in the Machine Intelligence for Medicine and Imaging (MI2) Lab at Mayo Clinic, Phoenix, Arizona, USA where he worked in the field of AI for Healthcare. He has strong research interests in AI ML for Healthcare, Fairness of AI, Supervised Learning, etc.

FDP is on mathematical computing: optimization, differential equations for artificial neural network (ANN) models, and fuzzy computation. This will be an intensive and educational experience. The goal of this course is to give participants the fundamental knowledge and abilities at the nexus of computing and mathematics. Participants will go on a transformative journey to unlock the power of mathematical principles for modern problem-solving through theoretical insights and hands-on practical activities.

Python and MATLAB

**Coordinator's: Prof. ABHISHEK DAS 17006 - Assistant Professor Sr. Grade 1 - SAS**  
**Prof. SUNANDA SAHA 17010 - Assistant Professor Sr. Grade 2 - CCE**