

# Artificial Intelligence Techniques for Reliability and Security Analysis of Software Systems

Under the Karyashala Scheme - A SERB Initiative  
27<sup>th</sup> February – 5<sup>th</sup> March 2023

Funded By

Science and Engineering Research Board, Department of Science & Technology, Government of India under Accelerate Vigyan Scheme

Organized By

Atal Bihari Vajpayee-Indian Institute of Information Technology and Management (ABV-IIITM), Gwalior

## **ABOUT ABV-IIITM GWALIOR**

Atal Bihari Vajpayee - Indian Institute of Information Technology & Management Gwalior (ABV-IIITM Gwalior) is India's premier Institute incepted by Ministry of Education (MOE), Government of India in the year 1997 as a center of excellence in the field of Information Technology and Management. It is foremost Institute providing superior quality higher education in the designated areas and is located at Gwalior, Madhya Pradesh, India. The Institute activities are aimed at developing culture of inquiry and research through highly competitive academic environment, and close interaction between Institute and corporate world. Institute has many laurels to its credit at national and international arena.

## **ABOUT KARYASHALA**

'KARYASHALA' scheme by SERB is meant for skill development training on topics required for scientific research work. It is an effort to improve research productivity of promising PG and PhD students from universities and colleges through high-end workshops on specific themes. This program aims to provide opportunities to acquire specialized research skills.

## **BRIEF DESCRIPTION ABOUT THE WORKSHOP**

In this growing number of software applications, one vital challenge is to ensure the reliability and security of the software. Defective software components cause software failure, decrease reliability, and compromise the software's overall quality. Effective prediction models based on artificial intelligence (AI) techniques can help in the quick identification of failure and thus improve the overall reliability and quality of the software system. The ubiquitous nature of ML and AI algorithms opened many doors for developing improved prediction models for reliability and security analysis. This workshop will help the participants to understand the key concepts of reliability and security analysis of software systems. Furthermore, the development of models capable of understanding and predicting software failure and vulnerability cases will be discussed. The objective of this workshop is to provide a deeper insight into tools and techniques of reliability and security analysis of the software and a platform for training/learning/skill development in the following thrust areas of the workshop through well designed technical sessions.

### **List of sessions (tentative):**

- Machine learning driven software vulnerability prediction
- Software aging problems and possible solutions using AI techniques
- Needs of software reliability analysis and techniques
- Deep learning framework for predictive modeling
- AI techniques for software quality prediction
- Why and How? Regression Testing and modeling
- Application of machine learning and blockchain in Audio
- Understanding various tools such as Python libraries, Weka tool and R language
- Biometric recognition and security aspects
- Casual inference and analysis for the IDS systems

### **Tentative Speaker List (tentative):**

Dr. Lalit Singh (Scientist, NPCIL-BARC, Department of Atomic Energy, Govt. of India)  
Prof. Abhishek Srivastava (IIT Indore)  
Dr. Satyendra Chouhan (MNIT Jaipur)  
Dr. Saurabh Tiwari (DAICT Gandhinagar)  
Dr. K V Arya (ABV-IIITM Gwalior)  
Dr. Debanjan Sadhya (ABV-IIITM Gwalior)  
Dr. Vinal Patel (ABV-IIITM Gwalior)  
Other speakers from IITs/IIITs/NITs.

### **Important Dates:**

Registration Opens: January 1, 2023  
Last Date of Application: January 25, 2023  
Display of Shortlisted Candidates: February 5, 2023  
**Workshop Dates: 27<sup>th</sup> February - 5<sup>th</sup> March, 2023**

### **General Information**

- **Registration Fee:** NIL
- **Eligibility:** M. Tech & PhD students of Computer Science and Engineering/Information Technology or any other relevant specializations.
- **Accommodation:** For participants may be provided at ABV-IIITM Gwalior.
- Participants who successfully complete the workshop a certificate from SERB will be awarded.
- Students selected for this workshop are eligible for **Travel allowance (TA) reimbursement** for their journey to and from IIITM Gwalior as per SERB norms.
- Daily necessary expenses such as stationery, accommodation, food etc. For participants **will be covered under the funds approved by SERB** as per norms.
- **To register**, please link on the following link:  
<https://forms.gle/TnEGvxdZEzW5TBg9>

### **Event Organizer:**

Dr. Santosh Singh Rathore (ABV-IIITM Gwalior, 7409850327, 9407203020, santoshs@iiitm.ac.in)  
Dr. Vinal Patel (ABV-IIITM Gwalior, vp@iiitm.ac.in, 9586288218)  
Dr. Debanjan Sadhya (ABV-IIITM Gwalior, debanjan@iiitm.ac.in)