

ATAL (AICTE Training and Learning) Academy Faculty Development Programme (Online Mode)

on

Predictive Modelling Using Data-Science Techniques

September 6 – 10, 2021

Organized by: Department of Mathematics, IIT Guwahati

About IIT Guwahati

Indian Institute of Technology Guwahati, the sixth member of the IIT fraternity, was established in 1994. The academic programme of IIT Guwahati commenced in 1995. At present, the Institute has eleven departments and five inter-disciplinary academic centres covering all the major engineering, science, and humanities disciplines, offering BTech, BDes, MA, MDes, MTech, MSc and PhD programmes. For details, please visit - <http://www.iitg.ac.in/>

Department of Mathematics

The Department of Mathematics at IIT Guwahati, since its very inception in 1995, has strived to be a centre of excellence in mathematics and computing. The department is actively engaged in research and it has started its PhD programme in 1996. The department offers two academic programmes: a two-year M.Sc. programme in Mathematics and Computing and a unique four-year B.Tech. programme in Mathematics and Computing, the first of its kind in the country. The department also offers an interdisciplinary M.Tech. programme in Data Science jointly with Computer Science & Engineering and Electronics & Electrical Engineering.

Course objective

Predictive modelling refers to the process of using data and models to make prediction. It has a wide domain of application in academic research such as predicting computer network traffic, geographical data, health-analytics, disease-surveillance, self-driving cars, robotics, etc. The current trend in the industry as well as in academia is to use machine learning and deep learning methods to produce actionable intelligence. However, recent studies suggest that classical statistical methods, which are more robust, can outperform machine learning techniques, especially for univariate time-series datasets. Thus there is also a need to understand the classical techniques in addition to modern machine learning and deep learning methods. This short-term course aims to introduce the learners to classical and modern machine learning tools used in predictive analysis. The objectives of the course can be summarized as follows:

- Impart theoretical and hands-on knowledge of predictive modelling techniques
- Understand the application of predictive analytics in various research fields
- Comprehend current industry trends in the field

Day/Session					
Day 1	9:15 – 9:45 am	Session I (9:45 – 11:15 am)	Break (11:15 to 11:30)	Session II (11:30 am – 1:00 pm)	Lunch Break (1:00 pm to 2:00 pm)
	Welcome address				
Day 2	Multiple Linear Regression and Logistic Regression (3)	Statistical Modelling – ETS (1)		Data Analysis using different Regressions (Hands on) (3)	
Day 3	Statistical Modelling – ARIMA (1)	Sequential Neural Model-I (RNN and its variant) (5)		Statistical Modelling Tools (Hands on) (1)	
Day 4	Sequential Neural Model-II (Sequence-to-Sequence model) (5)	Industry talk – From an Intel Perspective (6)		Talk on IKS (4)	
Day 5	Predicting flows in Software-Defined Networks (7)	Machine learning in Distributed Systems (2)	Assessment/Valedictory Ceremony		

Resource Person

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| 1) Dr Ayon Ganguly, Mathematics, IIT Guwahati | 5) Dr Sansam Ranbir Singh, CSE, IIT Guwahati |
| 2) Prof Partha Sarathi Mandal, Mathematics, IIT Guwahati | 6) Mr Manoj Dey, Senior Director of Engineering, Intel Corporation |
| 3) Dr Palash Ghosh, Mathematics, IIT Guwahati | 7) Dr Ashok Singh Sairam, Mathematics, IIT Guwahati |
| 4) Prof Uday Shankar Dixit, Mechanical, IIT Guwahati | 8) Dr V. Vijaya Saradhi, CSE, IIT Guwahati |

Who can apply

- Faculty members of the AICTE approved institutions
- Research scholars, PG Scholars from government institutes
- Government, Industry participants (Bureaucrats/Technicians / Participants from Industry)
- Staff of host institute (maximum 30% of total participants)
- Only Indian Nationals

How to apply

- Signup with ATAL Academy at <https://atalacademy.aicte-india.org/signup>
- Fill in all necessary details and upload documents, if asked.
- Follow all instructions as given.

Coordinators

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