



75
Azadi Ka
Amrit Mahotsav



सत्यमेव जयते
Ministry of External Affairs
Ministry of Science & Technology

One Week Training Program on

State of the Art in Artificial Intelligence and Machine Learning

16th December to 22nd December, 2022

Under

Synergistic Training program Utilizing the Scientific and Technological Infrastructure (STUTI)

An initiative of Department of Science and Technology (DST), Govt. of India

Sponsored by

**Project Management Unit, DST-STUTI
Department of Mathematics
NIT Agartala**

Organised by

**Department of Computer Science & Engineering
Tripura University
Suryamaninagar, Tripura(W), 799 022.**

About The Program

The Department of Science and Technology (DST) intended to build human resources and knowledge capacity by arranging training programs thorough open access science and technology infrastructure across the country under the banner of 'Synergistic Training Program Utilizing the Scientific & Technological Infrastructure (STUTI)'. Each training session will be for seven (7) days and the participants from outside the host institute will be accommodated. All the training expenditures (travel by train, food and accommodation, training materials) will be borne by Project Management Unit NIT Agartala (PMU-NITA). The present program will be organized by the Department of Computer Science & Engineering, Tripura University. Participants will go through hands-on training followed by the practical implementation of the proposed topics of 7 days training program on "State of the Art in Artificial Intelligence and Machine Learning ". The training program will be arranged from 16th December to 22nd December 2022.

Eligibility Criteria

Faculty members/Scientist/Post-Doc Fellows/ Ph.D. Fellows/Industry who are actively involved in Research and Development (R&D), Post Graduate (Science/Engineering/Management) or B. Tech, can apply.

About Department of Computer Science and Engineering

The state of Tripura is geographically isolated from the rest of India. Due to lack of infrastructure earlier it was difficult for the students of Tripura to pursue higher studies in engineering field (M.E/M.Tech) within the state. The long standing dream of establishing Post graduate Engineering departments in Tripura University has become reality with the financial assistance received from H.R.D Ministry, New Delhi. The Department of Computer Science & Engineering has been started on 19th August, 2005. The state of Tripura is geographically isolated from the rest of India. Due to lack of infrastructure earlier it was difficult for the students of Tripura to pursue higher studies in engineering field (M.E/M.Tech) within the state. The long standing dream of establishing Post graduate Engineering departments in Tripura University has become reality with the financial assistance received from H.R.D Ministry, New Delhi. The Department of Computer Science & Engineering has been started on 19th August, 2005.

About Tripura University

From a humble beginning as the Post-Graduate Wing of Calcutta University, in 1976, to a state University in 1987 and eventually a Central University in 2007, Tripura University has traversed a long way in its pursuit of excellence as a Higher Education Institution in this tiny landlocked state of Tripura. The University is dedicated to the cause of developing and empowering the people of this state and the region by imparting quality education and technological innovations in the field of academic and research activities. The picturesque beauty in an idyllic surrounding of the campus situated in a zero pollution zone provides the right academic ambience for nurturing young and potential minds. As a conventional University, Tripura University has taken upon itself the responsibility to preserve and promote the enviable heritage of the state's indigenous art forms, folk, oral and multi-dimensional cultural traditions. At present there are two faculties, forty four Departments and four Centres of Study in the University along with four departments under the Directorate of Distance Education. The Directorate of Distance Education extends educational support to the employed and socio-economically deprived sections -located in the far flung hilly areas of this state.



75
Azadi Ka
Amrit Mahotsav



संघर्षे जयते
Ministry of External Affairs
Department of Science & Technology

One Week Training Program on

State of the Art in Artificial Intelligence and Machine Learning

Objective

The training program consists of both Lectures and Practical related with the application of Artificial Intelligence and Machine Learning. The lectures include Artificial Intelligence and Machine Learning using latest compatible programming languages, optimization techniques, statistical analysis required for every Artificial Intelligence and Machine Learning methodologies and predictive model building along with illustrations on the utility of the models and a few open problems.

Tentative topics to be covered within this module are as follows:

TOPICS

Introduction to
AI/DL/ML in
Python

AI/DL/ML using
MATLAB

Data Analysis
using R
Programming

Octave An
open source
alternative of
Matlab

CONTENTS

Introduction to Artificial Intelligence, Machine Learning and Deep Learning, Supervised, Unsupervised and Reinforcement Learning. Basics of Python Programming, Exception Handling, I/O Handling, working with Class; Basics of NumPy, Array Operations, I/O with NumPy, Indexing, ndArrays; Data Structures of Pandas, Working with Series and DataFrame; Introduction to TensorFlow; Introduction to Keras; Introduction to SciPy, NumPy vs SciPy, I/O Packages, SciPy functions, Linear Algebra; Data Visualization and Graphical Plotting in Python using Matplotlib, Introduction to recommendation systems.

McCulloch-Pitts Neuron, Perceptron, Boolean expressions with Neurons. MLP, BPNN, Supervised, Unsupervised and Reinforcement Learning. Realization of the above in MATLAB and popular application of kNN, VGG, CNN, SVM, Random Forest, etc. for images and data. Usage of latest toolboxes and how to call python codes in MATLAB and vice versa for these applications.

Exploratory Data Analysis in R; Data Manipulation in R; Predictive Modeling using Machine Learning in R- Simple Linear Regression, Multivariate Linear Regression, Canonical Correlation Analysis, Time Series Analysis, Panel Data Regression Analysis; Operations Research using R- Application of TSP in Tourism.

Basic coding in Octave, different logical operations, graph plotting in Octave, matrix manipulations techniques in octave, OOK Modulation format generation and analysis of it with different types of noises, introduction of Machine learning using Octave, noise analysis communication channels using Machine Learning in Octave.



75
Azadi Ka
Amrit Mahotsav



संस्थाने ज्ञाने
Ministry of External Affairs
Department of Science & Technology

TOPICS

Model building and testing using SPSS content

CONTENTS

Model building: Understanding research model, designing a model, research gap identification, literature review to prepare the model (theory)

Model testing: Measurement model testing (reliability, convergent and discriminant validity), Structured model (direct effect, moderation effect, mediation effect, moderated mediation effect using SPSS AMOS hands on.)

Organizing Committee

Patron

PROF. GANGA PRASAD PRASAIN
Vice Chancellor, Tripura University.

Advisor

PROF. BADAL KUMAR DATTA
Dean, Faculty of Science, Tripura University.

PROF. SWANIRBHAR MAJUMDER
Professor, Department of Information
Technology, Tripura University.

DR. UTTAM KUMAR BERA
Associate Professor, Department of Mathematics,
National Institute of Technology Agartala.

Coordinator

DR. ABHISHEK MAJUMDER
Assistant Professor,
Department of Computer Science &
Engineering, Tripura University

Address for Correspondence

DR. ABHISHEK MAJUMDER
Assistant Professor & Head I/C
Department of Computer Science & Engineering
Tripura University
, Suryamaninagar, Tripura(W),799 022.
labmobilecomputing@gmail.com | Mob:
9436768582

Speaker

- Faculty Members of Tripura University.
- Experts from other Reputed Institutes.

Venue

Computer Center, Academic building 10
&
Department of Computer Science & Engineering
Tripura University

Registration

Click the following link:
<https://forms.gle/8f28EF2H5k7NWbjS8>

Or

Scan the following QR code



- Fill up on or before 2nd December 2022.
- Registration shall be on first come first serve basis.
- All rules will be followed as per DST, STUTI guidelines.