कार्यशाला (KARYASHALA)
HIGH END WORKSHOP

on

Cultural Heritage Preservation using Machine Learning

organized by

NATIONAL INSTITUTE OF TECHNOLOGY MEGHALAYA

(An Institute of National Importance)

EVENT ORGANISER

Dr. B. K. Balabantaray, Dept. of CSE, NIT Meghalaya

Email: bunil@nitm.ac.in

REGISTRATION LINK:

https://forms.gle/m9xfBa6a6ps3Jtqt9

ABOUT NIT MEGHALAYA

National Institute of Technology (NIT) Meghalaya is one among the thirty-one NITs in India established under the NIT Act 2007 (Amended 2012) of the Parliament of India as Institutes of National Importance with full funding support from the Ministry of Education, Government of India. NIT Meghalaya was established in 2010 and started functioning from its temporary campus in Shillong in 2012. Its permanent campus is currently under development at Cherrapunjee. Presently the institute has nine (9) Departments and eight (8) Centres with a combined strength of 68 regular faculty members. All the departmental laboratories are well equipped with advance equipment/ instruments and experimental set-up.

ABOUT CVML RESEARCH GROUP

The Computer Vision and Machine Learning (CVML) Research Group at National Institute of Technology Meghalaya brings together like minded professors, associate members, undergraduate, postgraduate and research scholars interested in areas of computer vision, machine learning, natural language processing, planning, control and robotics. The goal of the CVML Research Group is to explore, learn and advance in cutting-edge research in the fields of Artificial Intelligence (AI) and Machine Learning (ML). The group also envisions to explore and provide solutions to problems in the fields of Biomedical Image Analysis, Industry 4.0, Cybersecurity, Synthetic Data Generation among others.

PROGRAM OBJECTIVE

'KARYASHALA' is aimed to provide hands on experience to the students primarily from universities, colleges, private academic institutions, and newly established institutes in handling/troubleshooting of high-end scientific instruments and such skill development on themes required for research work.

HOW TO REGISTER

- Register using the link: https://forms.gle/m9xfBa6a6ps3Jtqt9
- **NO REGISTRATION FEES**
- Participants are shortlisted among the all the registered candidates
- Last date for registration: 9 June 2022, 5 PM.

MODE OF WORKSHOP

- This is a fully offline workshop.
- Participants are to be physically present for the workshop from 13th to 26th June 2022.
- Participants will be given TO and FRO travel expenses, along with FREE food and accommodation.

HOW TO REACH

The nearest railway station is Guwahati. From the railway station, one can travel by bus or shared taxi to Shillong. It takes about 3 hours to reach Shillong. After reaching Shillong, one can hire local taxi to reach the campus at Bijni Complex, Laitumkhrah.

PROGRAM OUTCOME

The program is meant to support motivated PG and Ph.D. level students, who have a strong willingness to get excellence in their scientific and engineering research pursuits.

CONTENTS

- Image Segmentation
- Image Restoration
- Image Reconstruction
- Image Compression
- Neural Networks
- Convolutional Neural Networks
- Deep Learning
- Recurrent Neural Networks
- Generative Adversarial Networks
- LSTM, GRUs and Attention Models and many more.

KEY SPEAKERS

1. Prof. Sukumar Nandi, IIT Guwahati
2. Prof. Ram Bilas Pachori, IIT Indore
3. Dr. Deepak Puthal, Newcastle University
4. Dr. Rajashree Nayak, JIS IASR
5. Prof. Dipti Patra, NIT Rourkela
6. Dr. Pallab Maji, NVIDIA
7. Mr. Biplab Raut, AMD
8. Prof. Satish Kumar Singh, IIIT Allahabad
9. Dr. Deepak Ranjan Nayak, MNIT Jaipur
10. Dr. P. Rangababu, NIT Meghalaya
11. Dr. Salam Shuleenda Devi, NIT Meghalaya
12. Dr. B. Pushpa Devi, NIT Meghalaya
13. Dr. Bunil K. Balabantaray, NIT Meghalaya

PROGRAM SCHEDULE
High-End Workshop on "Cultural Heritage Preservation using Machine Learning"
Sponsored By: SERB, Govt. of India

Dates	9:30 AM to 11:00 AM	11:30 AM to 1:00 PM	1:00 PM to 2:00 PM	2:00 PM to 4:00 PM
	Morning Session with a break of 30 mins. 11:00 AM to 11:30 AM			Afternoon Session
13.06.2022	Registration and Inauguration	Introduction to AI and ML	Lunch	Fundamentals of Image Processing and its application
14.06.2022	Image Segmentation and Filtering, Morphological Processing		Lunch	Hands-On Session: Image Segmentation, Morphology Processing
15.06.2022	Image Restoration, Image Reconstruction		Lunch	Hands-On Session: Image Restoration and Reconstruction
16.06.2022	Colour Models and Colour Image Analysis		Lunch	Discussion on Sculptures throughout the history of India
17.06.2022	Paintings from Ancient to Modern India		Lunch	Hands-on Session: Digitalization of Paintings
18.06.2022	Cinema as our cultural diary and Cinema Restoration		Lunch	Hands-On Session: Using OpenCV and Scikit Learn
19.06.2022	Introduction to Machine Learning and AIin Computer Vision		Lunch	Hands-On Session: Dataset pre-processing using Python
20.06.2022	AI: Problem Formulation and Dataset Preparation		Lunch	Case Study on a dataset
21.06.2022	Conventional machine learning algorithms and its applications		Lunch	Hands-On Session: Perceptron Model from scratch in python
22.06.2022	Fundamentals of Artificial Neural Network		Lunch	Hands-On Session: Image Segmentation using TensorFlow
23.06.2022	Introduction to Deep Learning and different models		Lunch	Hands-On Session: Image Captioning using TensorFlow
24.06.2022	Recurrent Neural Network, LSTM, and Attention-based models		Lunch	Hands-On Session: Image Generation using GAN
25.06.2022	Generative Adversarial Learning, Image to Image Translation		Lunch	Hands-On Session: Image manipulation using GAN in TensorFlow
26.06.2022	Image Super-ResolutionReconstruction and denoising using GAN		Lunch	Test and Valedictory Session