RESEARCH AND TRAINING UNIT FOR NAVIGATIONAL ELECTRONICS
OSMANIA UNIVERSITY, HYDERABAD

5-Day School on

MACHINE LEARNING, DEEP NEURAL NETWORKS AND ASR (ASR-19)

(Course Code: NERTU/SC/73)

(FRI-TUE, 08-12, MARCH 2019)

Location : NERTU Auditorium, OU

Time : 09.00AM – 06.30PM

Faculty: Scientists, Engineers and Acdemicians working in the area of Machine Learning and DNNs in the Industry, R&D Labs and Academic Institutes.

Registration Fee (INR) : 18%GST will be extra.

Full Time Students	5,000
Teachers	7,500
Scientists Engineers from R&D, Industry & Commercial Organizations	10,000

DD/Cheque should be drawn in favor of

The Director, NERTU, OU

Or online payment through NEFT to

The Director, Eqpt. Maint., NERTU, OU

A/C No. : 52198270713

IFSC Code: SBIN0020071

Osmania University Branch, State Bank of India

Interested candidates can visit www.osmania.ac.in or http://www.uceou.edu for more details like faculty, schedule and registration form. Register for the course by sending the filled registration form along with receipt of online payment **to**
nertu.courses@osmania.ac.in and copied to
sreenu471.ece@gmail.com and
laxminarayana@osmania.ac.in or
hard copy with DD/Cheque to
"The **Coordinator, ASR-19, Research and Training Unit for Navigational Electronics (NERTU), Osmania University, Hyderabad 500007".**

Release of Second Version of Poster with Detailed Lectures and Schedule: 11th January 2019.

Registration Starts from : 1st February 2019

Last Date for Registration : 15th February 2019

Preparation for Workshop in Basics and Programming : 16-28 , February 2019

For Schedule and other Details please contact

COORDINATORs:

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About Workshop : Machine Learning and Deep Neural Networks

All of a sudden, **Artificial Intelligence (AI)** is on a rage!, and everyone, whether understands or not, is talking about it. Understanding the latest developments in the AI, can seen overwhelming, but it really boils down to concepts of Machine Learning. **Machine Learning (ML)** has become necessary in every sector as a way of making machines intelligent. In a simpler way, ML is set of algorithms that parse data, learn from them, and then apply what they've learned to make intelligent decisions.

In recent days, **Deep Learning (DL)** is gaining much popularity due to it's supremacy in terms of accuracy, when trained with huge amount of data. Deep Learning systems. **Deep Neural Networks (DNN)**, are increasingly taking over all AI tasks, ranging from language understanding, speech and image recognition, machine translation, medical diagnostics, planning, and even game playing and autonomous driving. So DL will become an essential skill for academicians and researchers, and it will be an added advantage for working software engineers.

Practically, **Deep Learning** is a subset of **Machine Learning** that achieves great power and flexibility by learning to represent the world as nested hierarchy of concepts, with each concept defined in relation to simpler concepts, and more abstract representations computed in terms of less abstract ones. **Traditional Machine Learning** algorithms are complex ans also they they're still machine like. They need lot of domain expertise, human intervention only capable of what they're designed for; nothing more, nothing less. For AI designers and the rest of the world, that's where deep learning holds a bit more promise. Now-a-days, software industry moving towards AI. As Bharat is well known in the world for software services, it is necessary for Indian graduates to have familiarity and expertise on the topic. Nowadays DNNs are in use in almost all Automatic Speech Recognition (ASR) systems.

Though outstanding work in ASR and TTS has produced the commercial speech recognition systems for voice-driven computing and word-processing systems in English and European Languages, ASR systems are not yet launched into the market at full level. Therefore it expected to have lot of demand for development of ASR and TTS systems for all Indian Languages and their applications.

The main objective of the course is to give the basic concepts and Hands on Practice and confidence to build or develop applications of Deep Neural Networks (DNNs) for ASR. **The course is designed with Lectures and intensive hands on practice. Engineers, scientists, academicians, and research scholars, already working or decided to work for development of applications of Machine Learning using DNNs, are encouraged to register for the school.** Participants are expected to have the UG level knowledge in Probability Theory, Linear Algebra and programming language like Python. The participants have to bring their own laptop for participating in the school.

The topics to be covered in the Lectures are: Introduction to Pattern Recognition and Machine Learning, Bayesian decision theory, Nearest Neighbor Classifiers, Linear Regression, Decision Trees, SVMs; **Introduction to Deep Neural Networks:** Multilayer Perceptron and Neural Networks, Backpropagation Algorithm, Learning in Deep Neural Networks, Feed Forward and Convolutional Neural Networks, Recurrent Neural Networks and Restricted Boltzman Machines, fundamentals of ASR, HMMs, SGMMs and DNNs for ASR.

The Hands on Practice include: Installation of required tools for Automatic Speech Recognition (ASR) using DNNs. Collection and Data preparation for building ASR using DNNs. Building and testing the ASR system using Open Surce tools for DNNs. A demo on DNNs for other applications like Face Recognition will shon

ABOUT NERTU: The Research and Training Unit for Navigational Electronics (NERTU) is established in 1982. It is the focal point for research and training in the areas of Electronic Navigation in India. It is the first University centre to work in the area of Global Positioning System (GPS) and GPS Aided Geo Augmented Navigation (GAGAN) System. Since its inception, NERTU has been conducting almost one or two short term courses per year in the area of GNSS, since 1992. Scientists, engineers, academicians and research scholars from many organisations have participated and benefited from these courses NERTU has successfully **executed 61 sponsored and consultancy projects** funded by DRDO, ISRO, DST, MIT, ECIL, HAL, BEL, AICTE and ASL. It has also conducted **66 short term courses/workshops/conferences** on various topics of signal processing, communications and navigation.