



**A Semester Course on
SPEECH AND LANGUAGE TECHNOLOGIES USING
ARTIFICIAL INTELLIGENCE AND DEEP LEARNING (SLT-20)**

(Course Code: NERTU/SC/78)

(MON-SAT, 21ST SEPTEMBER 2020 – 07TH NOVEMBER 2020) **Online Mode**

07.30AM – 09.00AM (Regular Lectures) & 6.00PM-8.00PM (Expert Guest Lectures and Tutorials on Selected Dates)

ABOUT SPEECH AND LANGUAGE TECHNOLOGIES FOR MAN-MACHINE COMMUNICATION:

Communication through Speech is unique and the primary communication mode for human beings. Communication with Machines through Speech was a dream for long time to the scientists and engineers. The techniques and algorithms of Speech Signal Processing, Natural Language Processing using stochastic models like HMMs, GMMs and Deep Learning have made us this dream a reality. Development of Speech-To-Speech interface (S2S) for Man-Machine communication requires the basics of Speech Signal Processing, Natural Language Processing, Deep Learning and Technologies like Automatic Speech Recognition (ASR), Speaker Identification (SI), Language Identification (LI), Chatbot, Text-To-Speech Synthesis (TTS) and processing signals at Real time. 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, Speech Technologies are in the introductory stage in the market. Therefore, it is expected to have lot of demand for development of ASR, TTS, SI, and Chatbot systems for all Indian Languages and their applications. Of course, all these technologies are very much useful for machine translation systems where many languages are spoken in India.

ABOUT NERTU: The Research and Training Unit for Navigational Electronics (NERTU) is established in 1982 to do research and develop manpower in the areas of signal processing, communication and navigation, since its inception. It is the focal point for research and training in the areas of Electronic Navigation in India. Since its inception, NERTU has been conducting almost three to four short term courses per year in the areas of signal processing, communication and navigation. It has conducted 77 short term courses / workshops / conferences on various topics of signal processing, communications, and navigation. NERTU has conducted exclusively courses on ASR and TTS for almost every year since 2008. 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. At NERTU, we have developed an ASR system for transcribing Telugu broadcast news in real time, and further it will monitor the appearance of given keywords in the speech or news in real time. At present, we are developing Speech-To-Speech Interface for Humanoid for Gaganyaan Programme for Hindi and Indian Accent English.

ABOUT COURSE: The main objective of the course is to give the basic concepts and hands on practice to get the confidence to build or develop the speech technologies required for Speech-To-Speech Interface for Man-Machine Communication. The course is designed with a Lecture, daily in the morning and intensive hands on practice at home by giving assignments to participants. Similarly, the course is also planned to have few Expert Guest Lectures in the evenings on the topics related trends in the development of Speech Technologies, Natural Language Processing, and Machine Learning Techniques. Engineers, scientists, academicians, and research scholars, already working or deciding to work for development of applications of Machine Learning using stochastic techniques and 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 should have their own laptop or desktop PC for participating in the school to practice and solve the programming assignments. The broad area of topics to be covered in the Lectures are: Basics of Speech Signal Processing, Natural Language Processing, Deep Learning, Automatic Speech Recognition, Speaker Recognition, Language Identification, Chatbot and Text-To-Speech Synthesis (which are required for Man-Machine communication) using open source tools. More details of topics, faculty and speakers are given separately in the schedule.

For queries or details contact Co-Coordinators

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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 Co-Coordinators.

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

(Includes Lectures, Lab and Course Material)

Full Time Students	: Rs. 8,000/-
Faculty from Private Academic Institutions	: Rs. 8,000/-
Faculty from Government Funded Institutions	: Rs. 12,000/-
Scientists/Engineers from R&D, Industry & Commercial Organizations	: Rs. 20,000/-

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

Last Date for Registration : 15th September 2020
Preparation in Basics and Programming : 16th - 20th, September 2020