REPORT

Seminar on "Advances in Speech Technology"
A Way towards Intelligent Human Computer Interaction

The department of Computer Science & Engineering, Maharaja Surajmal Institute of Technology, New Delhi, organized a two day national seminar on "**Advances in Speech Technology - A Way Towards Intelligent Human Computer Interaction"** on 27th and 28th November 2017, sponsored by AICTE. The seminar was conducted with an aim to explore the potential of state of art speech technologies in reference to human computer interaction worldwide in research labs and industries. The two day seminar has provided a platform for academicians/researchers to discuss and exchange views on the technological advancements made in the field of speech technology as well as the future prospects of research in the above said domain.

The contents covered by the seminar are as follows:

- Familiarizing with emerging areas of speech technology in research.
- Advances in deep learning: Transfer learning using tenser flow and keras
- Visual representation of data networks: Theory and implementation
- An IBM Watson speech interface
- Hands on practice session in machine learning

The two day seminar had a total of 10 sessions with a lecture delivered by expert followed by a discussion at the end of each session. There were a total of 78 participants who registered for the seminar. The participants included faculties, Post Graduate students and research scholars from Delhi and outside region.

The esteemed speakers invited for the lectures were eminent researchers and academicians in the field of Speech Technology from reputed institutes/organizations. The session speakers were Prof. Amita Dev, Director BPIBS; Dr. P. Banerjee, former chief scientist and acting

Director NPL; Mr. Bharat Agarwal, IOTinterCON; Mr. Anuvrat Parashar; Mr. Janu Verma, T J Watson Research Center, IBM, USA; Mr. Vartul Mittal, Technology and Automation Consultant; Prof. Poonam Bansal, Dy. Director MSIT; Prof. S.S. Agrawal, Emeritus scientist CSIR, advisor CDAC Noida; Prof. Archana Balyan, MSIT; Dr. H.K. Sardana, Chief scientist, CSIO CSIR, Chandigarh.

On 27th November, 2017 the inauguration started with the lighting of lamp, as a tribute to goddess Saraswati by all dignitaries in the presence of participants. The lighting ceremony was followed by a briefing about the seminar and welcome address by Prof. Poonam Bansal. She extended a warm welcome to the speakers and participants.

The inaugural ceremony was followed by first session by Prof. Amita Dev (Director BPIBS) on the topic '**Latest trends in Speech Processing**'. Prof. Dev highlighted the basics of speech processing and its diverse applications. She elaborated the concept of Human Speech Communication and illustrated the concepts of phonology and phonetics. She elaborated various concepts of speech technology. The session ended with queries and discussions. The session was very informative and interactive.

The second session was on the topic 'A Novel De-noising Filter applicable for processing of various type of signals including speech' delivered by Dr. P. Banerjee, Former Chief Scientist and Acting Director, NPL. Dr. Banerjee threw light on a novel de-noising filter for processing various types of signals including speech. He introduced various techniques for developing de-noising filter; first technique makes use of fuzzy logic while the second technique is based on the concept of dynamic weighted mean. The lecture covered comparative study of the methods for different noises like Gaussian, Lognormal, Rayleigh, Speckle etc. The session ended with queries and discussion. The session was very informative and useful. The second session was followed by a tea break of short duration.

The third session was conducted by Mr. Bharat Agarwal, IOTinterCON, Designer and developer of IOT Devices on the topic 'Scope of IoT, Machine learning and voice assistance powered by python'. Mr. Bharat enlightened the participants about IoT and its applications in diverse domains. He discussed the architecture of Konnect kit followed by basics of Arduino and Rspberry Pi. He demonstrated the application of embedded system and IoT in day to day activities. He briefed about various kinds of sensors and concluded by stating IoT approaches for machine learning. The session ended with queries and discussion. The session was informative and thought provoking. The session was followed by lunch to all experts and participants.

The fourth session was on 'Hands on Experience (Machine Learning using Python)' by Mr. Anuvrat Parashar. The participants were given practical demonstration on how to make use of Python for various Machine Learning applications. The basic concepts related to Machine Learning and Python were practically illustrated. The session was very useful and informative. With this the sessions of first day came to an end.

With this the sessions of first day came to an end. This was followed by a group photography session of participants.

On 28th November 2017, the fifth session was conducted by Mr. Janu Verma, T J Watson Research Center, IBM, USA on the topic 'Network Visualization and Analysis'. The lecture enlightened all with the basics of nodes, graphs and its properties. He explained the concept of network visualization keeping in view data of various domains like speech, image, social media, medical science etc. The session was lively and informative with numerous real life examples. The session ended with queries and discussion. The session was very useful and informative.

The sixth session was on the topic 'A Face to Face for Human v/s Robots – RPA & AI' by Mr. Vartul Mittal, Technology and Automation Consultant, Formerly in IBM, Delhi. The speaker explained the concept of robotic process automation. He illustrated the RPA assessment method and explained COE design. The concept was further extended by including the evolution of RPA in business world and its futuristic trends. The session ended with queries and discussion. The session was very interactive and informative. The session was followed by a tea break of short duration.
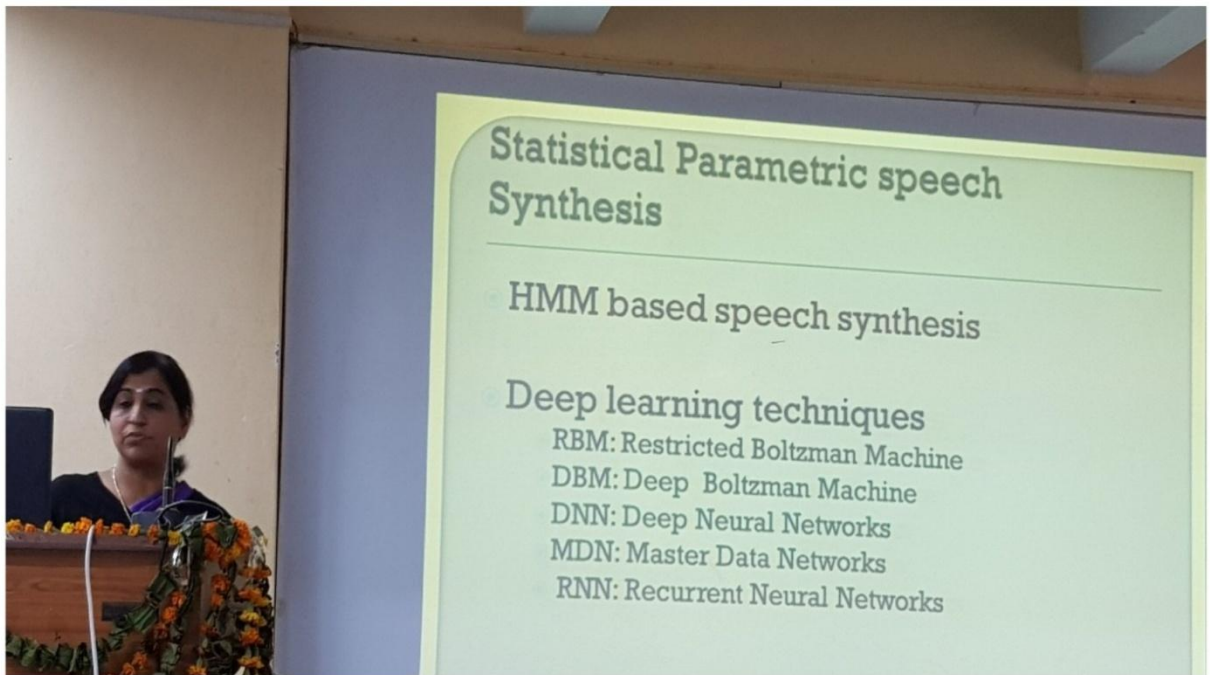
The seventh session was conducted by Prof. Poonam Bansal, Dy. Director MSIT on the topic 'VOICE – The Future Interface'. The lecture focused on history of human computer interaction, intelligent assistants & cognitive computing. She elaborated rapid advancements and challenges which are faced by Automatic Speech Recognition Systems used in modern Intelligent Assistants like Alexa (Amazon) and siri. She focused on the level of growth of voice enabled devices which are getting used since last few years. The session ended with queries and discussion. The session was very interactive and useful.

The eighth session, on the topic 'Intelligent Human -Computer Interaction Speech Technology' was delivered by Prof. S.S. Agrawal, Emeritus scientist CSIR, advisor CDAC Noida. The speaker emphasized on the preferred modes of communication between human and machine. He elaborated the concept of speech/language processing technology and discussed the various problems encountered in speech processing. Lastly, the speaker demonstrated speech synthesis using HMM. The session ended with queries and discussion. The session was very interactive, useful and thought provoking.The session was followed by lunch to all experts and participants.

The ninth session was conducted by Prof. Archana Balyan, MSIT on the topic 'Techniques for building Speech Synthesis Systems'. The speaker discussed basics of text to speech synthesis, speech synthesis techniques, segmentation in speech systems, HMM based speech synthesis. The session ended with queries and discussion. The session was very interactive and useful.

The tenth session was on the topic 'HCI for Visually Impaired People' by Dr. H.K. Sardana, Chief scientist, CSIO. He discussed the working, implementation and usefulness of a device 'Divyanayan' (text to speech analyser and synthesizer) for visually impaired people. He shared challenges for design of devices for visually impaired in terms of size, cost and efficiency. The session ended with queries and discussion. The session was very interactive and useful.

All esteemed speakers were presented with mementoes and plants as a token of gratitude. Thereafter the valedictory session was conducted along with distribution of certificates to participants. The two day seminar ended with vote of thanks by Prof. Poonam Bansal.

The seminar was concluded by the feedback session. The participants found the seminar very useful for their academic and research growth. Participants thanked the AICTE, the college management and organizers for providing them this opportunity to attend the seminar. They appreciated the hospitality extended by the institute.

Prof. Poonam Bansal   Prof. K.P. Chaudhary
Convener   Director, MSIT

AICTE SPONSORED
TWO DAYS NATIONAL SEMINAR

On

Advances in Speech Technology
A Way Towards Intelligent Human Computer Interaction

27th - 28th November 2017

Organized By

MAHARAJA SURAJMAL INSTITUTE
OF TECHNOLOGY
C-4, Janakpuri-110058

Affiliated to GGSIPU | Approved by AICTE
Accredited by NBA (CSE and IT)
NAAC Accredited 'A' Grade | ISO 9001:2008 Certified

Phone :011-25552667
Website: www.msit.in
Fax: 011-25528116