

## School on Automatic Speech Recognition

**May 16:28, 2017, CLST, IITG**

**Venue:** Seminar Hall, 2nd Floor, EEE Extension building, Core II (till 21 May)  
Conference complex, Hall no. 1 (22 May onwards)

### Technical Programme

Date	Lectures (09:00 - 12:30)	Practicals (14:00 - 18:00)
15 Mon	Take help from volunteers to (i) validate installation of HTK, Kaldi and other necessary software, and (ii) linguistic resources	
16 Tue	9:30 - 9:45: Registration	Shell commands/scripting Linux exercises Record speech data (wavesurfer).
	9:45 - 10:00: Welcome/Introduction	
	10:00 onwards: Acoustic-phonetics.	
17 Wed	Acoustic-phonetics Speech signal processing	Feature extraction (HTK: Marathi sentence data)
18 Thu	Acoustic-phonetics Static pattern (vowel) recognition Sequential pattern recognition: DTW Motivation for using HMM Elements of HMMs	Spectrum, spectrogram, formants. Scatter plot F1, F2 of vowels. Create MLF files (HTK, Kaldi; Marathi sentence data) VAD; (HCopy: <lang> sentence data)
19 Fri	HMM: 3 problems and solutions. Transcription. Pronunciation dictionary. Training phoneme HMMs: embedded re-estimation.	Creation of Transcriptions (transliteration: utf8_to_roman) and pronunciation dictionary: <lang>. Train monophone HMMs: Marathi
20 Sat	Training of GMMs. Context dependent HMMs. State tying. Language model(LM).	GMM. Preparation of LM: Marathi. Pronunciation dictionary: <lang>.
21 Sun		
22 Mon	Artificial Neural Networks. Multi-layer perceptron. Back propagation algorithm and variants	Train triphone HMMs: Marathi. State tying Linguistic resources: <lang>
23 Tue	Evaluation; k-fold validation; MLLR, VTLN Windows; ILSL; Speaker Reco and TTS	Linguistic resources: <lang> . .
24 Wed	Deep Neural networks. Parameter estimation.	HTK decoding: Marathi. Introduction to Kaldi toolkit
25 Thu	Kaldi practicals: Data preparation; Feature extraction; language models	Kaldi practicals: Training and decoding mono GMM-HMM: Marathi
26 Fri	Network architectures: FF, autoencoder, bottleneck, RBM, CNN, RNN, LSTM	Kaldi practicals: triphone+DNN training and decoding: Marathi.
27 Sat	HTK: Train and decode monophone, triphone HMMs: <lang>	4PM: Certificate Distribution. Panel discussion.
28 Sun	Refinement of language resources and systems.	

Tea breaks: 10:30 - 11:00 and 16:00 - 16:30

Lunch break: 12:30 - 14:00

### Talks by Experts

Date	Time	Speaker
22 Mon	6.00 - 6.30 PM	Prof. Priyankoo Sarmah
24 Wed	5.30 - 6.30 PM	Prof. S.R.M. Prasanna
26 Thu	5.30 - 6.30 PM	Dr. Syed S.

### Demonstrations

Date	Time	Systems
22 Mon	6.45 -7.15PM	Demo of Mizo Agri ASR
23 Tue	6.45 - 7.30PM	(i) Assamese ASR (ii) Speaker Verification (iii) TTS