

Vimal Manohar

CONTACT INFORMATION

The Center for Language and Speech Processing,
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RESEARCH INTERESTS

Automatic Speech Recognition, Machine Learning, Speech Signal Processing, Natural Language Processing

EDUCATION

Johns Hopkins University, Baltimore, MD

Major: Electrical & Computer Engineering
Master of Science in Engineering (M.S.E.), 2015
Ph.D., 2018 (Expected)
Advisors: Sanjeev Khudanpur and Daniel Povey

Indian Institute of Technology Madras, Chennai, India

Major: Electrical Engineering, Minor: Operations Research
Bachelor of Technology (B.Tech), 2013 (CGPA: 9.6/10)
Advisor: S Umesh,

PUBLICATIONS

- Liu, C.; Jyothi, P.; **Manohar, V.** et al., “*Adapting ASR for under-resourced languages using mismatched transcriptions*,” IEEE International Conference on Acoustics, Speech and Signal Processing (ICASSP 2016).
- Peddinti, V.; Chen, G.; **Manohar, V.** et al., “*JHU ASPIRE system: Robust LVCSR with TDNNs, iVector adaptation and RNN-LMs*,” Automatic Speech Recognition and Understanding (ASRU), 2015 IEEE Workshop on , 13-17 Dec. 2013
- **Manohar, V.**; Povey, D.; Khudanpur, S., “*Semi-supervised Maximum Mutual Information Training of Deep Neural Network Acoustic Model*,” INTERSPEECH 2015. **Nominated for best students’ paper award.**
- Trmal, J.; **Manohar, V.** et al., “*A keyword search system using open source software*,” Spoken Language Technology Workshop (SLT), 2014 IEEE, pp.530,535, 7-10 Dec. 2014 doi: 10.1109/SLT.2014.7078630
- **Manohar, V.**; Srinivas, C.B.; Umesh, S., “*Acoustic modeling using transform-based phone-cluster adaptive training*,” Automatic Speech Recognition and Understanding (ASRU), 2013 IEEE Workshop on , pp.49,54, 8-12 Dec. 2013 doi: 10.1109/ASRU.2013.6707704

RESEARCH AND INDUSTRIAL EXPERIENCE

Jelinek Summer Workshop on Speech and Language Technology (JSALT) 2015

University of Washington Seattle, Seattle, WAS, USA July – August ’15
Member of the research group working on “Probabilistic Transcription of Languages with no native-language transcribers”. We showed the utility of mismatched transcriptions from non-native crowdworkers for ASR. (submitted to ICASSP, 2016)

Research Assistant at The Center for Language and Speech Processing

Johns Hopkins University, Baltimore, MD, USA Aug ’13 – Present

IARPA Babel

Developed acoustic models for languages in low-resource setting, HMM-GMM based automatic speech segmentation for ASR, semi-supervised training approaches for hybrid HMM-DNNs and bottleneck feature NNs (published in SLT, 2014).

DARPA BOLT

Developed multilingual-architecture DNN systems for transfer learning from standard Arabic to Egyptian Arabic

	Intern at Analog Devices Inc. Cambridge, MA, USA May – Aug '14 Worked on time-frequency masks with multichannel audio for robust speech recognition	
	Bachelor's Thesis Project Indian Institute of Technology Madras, Chennai, India Sept '12 – May '13 Proposed a modification to the HMM-GMM acoustic modeling technique to deal with low-resource settings. We constrained the subspace containing HMM-GMM mean vectors to be defined by piecewise linear transformations of canonical GMM means. (published in ASRU, 2013)	
	Time-scaling and Pitch-scaling of synthesized speech Indian Institute of Technology Madras, Chennai, India March – May '12 Investigated algorithms for robust VAD, robust pitch estimation, pitch-mark extraction, pitch synchronous overlap-add method of speech synthesis to change the duration and pitch of speech signals	
	Research Intern at The Institute of Automation University of Bremen, Bremen, Germany May – July '12 Implemented a method for estimation of size, position and orientation of isolated 3D objects using a single pair of stereo images	
	Texas Instruments Analog Design Contest 2011 Indian Institute of Technology Madras, Chennai, India Sept '11 – Feb '12 Designed and constructed a pulse oximeter on an embedded system for real-time estimation of respiratory rate. Among the top 25 entries to the TI India Analog Design Contest 2011.	
TEACHING EXPERIENCE	Fall 2015	Teaching Assistant, Random Signal Analysis
COURSEWORK	<div> <input type="checkbox"/> Representation learning <input type="checkbox"/> Speech and audio processing by humans and machines <input type="checkbox"/> Information Extraction <input type="checkbox"/> Matrix Analysis <input type="checkbox"/> Random Signal Analysis </div> <div> <input type="checkbox"/> Speech Technology <input type="checkbox"/> Compressed Sensing and Sparse Recovery <input type="checkbox"/> Information Theory <input type="checkbox"/> Graph Theory <input type="checkbox"/> Advanced Operations Research </div>	
DISTINCTIONS	<ul style="list-style-type: none"> • ECE Graduate Fellowship 2013, Johns Hopkins University • Hamburger Fellowship 2013, Johns Hopkins University • WISE Scholarship 2012, DAAD, Germany • All India Rank 191 in IIT-Joint Entrance Examination (IIT-JEE) 2009 (among over 400,000 students) • Awarded Kishore Vaidya Protsahan Yojana (KVPY) Fellowship 2008 by Dept. of Science and Technology, Govt. of India • Awarded National Talent Search (NTS) Scholarship 2007 by National Council of Education, Research and Training, Govt. of India • Member of IIT Madras team at the National Robotics Contest, Abu Robocon 2011. Placed among the Top 5 in India • Winner of GE Industrial Defined Problem at Shaastra 2012, IIT Madras, India for design of accelerometer-gyroscope-magnetometer-based 3D-mouse 	
SKILLS	Languages: Toolkits:	C/C++, Python, Bash, MATLAB KALDI, HTK
REFERENCES	Will be provided on request.	