

# Vimal Manohar

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## CONTACT INFORMATION

The Center for Language and Speech Processing,  
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## RESEARCH INTERESTS

Speech Processing, Machine Learning, Natural Language Processing

## EDUCATION

### Johns Hopkins University, Baltimore, MD

Major: Electrical & Computer Engineering

Master of Science in Engineering (M.S.E.), 2015

Ph.D., Oct. 2019 (Expected)

Advisors: Sanjeev Khudanpur and Daniel Povey

Thesis topic: Semi-supervised training of acoustic models for speech recognition

### 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,

## KEY PUBLICATIONS

- **Manohar, V.**; Ghahremani, P. et al., “A teacher-student learning approach for unsupervised domain adaptation of sequence-trained ASR models,” SLT 2018
- **Manohar, V.**; Povey, D. et al., “Semi-Supervised Training of Acoustic Models using Lattice-Free MMI,” ICASSP 2018.
- **Manohar, V.**; Povey, D. et al., “JHU Kaldi system for Arabic MGB-3 ASR challenge using diarization, audio-transcript alignment and transfer learning,” Automatic Speech Recognition and Understanding (ASRU), 2017 IEEE Workshop on. 2017.
- Ghahremani, P.; **Manohar, V.** et al. “Investigation of Transfer Learning for ASR using LF-MMI Trained Neural Networks,” Automatic Speech Recognition and Understanding (ASRU), 2017 IEEE Workshop on. 2017.
- Povey, D.; Peddinti, V.; **Manohar, V.** et al., “Purely Sequence-Trained Neural Networks for ASR Based on Lattice-Free MMI,” Interspeech, pp. 2751-2755. 2016.
- Peddinti, V.; **Manohar, V.** et al., “Far-Field ASR Without Parallel Data,” INTERSPEECH 2016
- Liu, C.; Jyothi, P.; **Manohar, V.** et al., “Adapting ASR for under-resourced languages using mismatched transcriptions,” Acoustics, Speech and Signal Processing (ICASSP), 2016 IEEE International Conference on **Speech and Language Processing student paper award**
- 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
- **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
- **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

RESEARCH AND  
INDUSTRIAL  
EXPERIENCE

**Intern at Microsoft Research in Speech and Dialog Group**

Mentor: Mike Seltzer

June – August '16

**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.

**Research Assistant at the Center for Language and Speech Processing**

Johns Hopkins University, Baltimore, MD, USA

Aug '13 – Present

*MGB-3 Challenge 2017*

Worked on speaker diarization, lightly-supervised ASR and transfer learning across domains and dialects (ASRU 2017)

*NIST OpenSAT 2017*

Worked on neural network-based speech activity detection using LSTM and statistics pooling for long temporal context

*IARPA Babel*

Low-resource ASR, speech segmentation, semi-supervised training for ASR

*DARPA BOLT*

Multilingual DNN for transfer learning across dialects

**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 phone cluster-adaptive training model for low-resource ASR. (ASRU, 2013)

**Research Intern at The Institute of Automation**

University of Bremen, Bremen, Germany

May – July '12

Worked on modeling 3D objects from 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

DISTINCTIONS

- Alexa Graduate Fellowship 2018, Amazon Inc.
- 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
- Kishore Vagnayik Protsahan Yojana (KVPY) Fellowship 2008, Govt. of India
- National Talent Search (NTS) Scholarship 2007, Govt. of India
- Member of IIT Madras team at the National Robotics Contest, Abu Robocon 2011. Placed among the Top 5 in India

SKILLS

Languages: C/C++, Python, Bash, MATLAB  
Toolkits: KALDI, HTK, CNTK

REFERENCES

Will be provided on request.