Vijay Ravi

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Education

University of California, Los Angeles GPA: 3.74/4.0
Ph.D. in Electrical and Computer Engineering 2019–Current

- Research area: Speech science and technology
- Thesis: Leveraging the power of Machine Learning for Modeling Major Depressive Disorder from Human Speech Patterns
- Advisor: Prof. Abeer Alwan

University of California, Los Angeles GPA: 3.76/4.0
M.S. in Electrical and Computer Engineering 2017–2019

- Track: Signal and systems
- Capstone Project: Voice Quality features for para-linguistic applications
- Advisor: Prof. Abeer Alwan

Visvesvaraya Technological University, India GPA: 9.18/10.0
B.E. in Electronics and Communication Engineering 2011–2015

- Capstone Project: Traffic rule violation detection using vehicle to infrastructure communication
- Advisor: Prof. N. Shankaraiah

Research Experience

Graduate Student Researcher January, 2018 - Present
Speech Processing and Auditory Perception Laboratory UCLA, Los Angeles

- Advisor: Prof. Abeer Alwan
- Research: Speech and speaker recognition for children's speech, emotion recognition
- Publications: [5], [4], [2], [1]

Graduate Student Researcher September-December, 2018
Visual Machines Group UCLA, Los Angeles

- Advisor: Prof. Achuta Kadambi
- Research: Computational imaging, Light transport models, thermal imaging
- Publications: [1]

Research Intern June-August, 2014
Department of Electrical Engineering, IIT Chennai Chennai, India

- Advisor: Prof. Mohanasankar Sivaprakasam
- Research: Biomedical signal processing, healthcare technology
- Publications: [6]

Work Experience

Applied Scientist Intern, Alexa Speech June-September, 2020
Amazon.com Services, Inc., Seattle, WA

- Summary: Shallow fusion for improving long-tail performance of End-to-End ASR. [3]
- Manager: Dr. Yile Gu

Applied Scientist Intern, Alexa Speech July-September, 2019
Amazon.com Services, Inc., Pittsburgh, PA

- Summary: Lightweight acoustic modelling of on-device End-to-End speech recognition
- Manager: Dr. Athanasios Mouchtaris

Research Intern June-September, 2018
Oben, Inc. Pasadena, CA

- Summary: End-to-End text to speech synthesis using Tactotron.
- Manager: Dr. Pierre Lanchantin

Software Engineer August, 2015 - August, 2017
ShoreTel Communications Bangalore, India

- Summary: Cross platform applications development for VoIP Communications system.

Journal Publications

[1] K. Tanaka, N. Ikeya, T. Takatani, H. Kubo, T. Funatomi, **V. Ravi**, A. Kadambi, and Y. Mukaigawa, "Time-resolved far infrared light transport decomposition for thermal photometric stereo", *IEEE Transactions on Pattern Analysis and Machine Intelligence*, pp. 1–1, 2019.

Conference Publications

[1] A. Afshan, J. Guo*, S. J. Park*, **V. Ravi***, A. McCree, and A. Alwan, "Variable frame rate-based data augmentation to handle speaking-style variability for automatic speaker verification", in *INTERSPEECH*, 2020.

[2] **V. Ravi**, R. Fan, A. Afshan, H. Lu, and A. Alwan, "Exploring the use of an unsupervised autoregressive model as a shared encoder for text-dependent speaker verification", in *INTERSPEECH*, 2020.

[3] **V. Ravi***, Y. Gu*, A. Gandhe, A. Rastrow, L. Liu, D. Filimonov, S. Novotney, and I. Bulyko, "Improving accuracy of rare words for rnn-transducer through unigram shallow fusion", in *arXiv preprint arXiv:2012.00133*, 2020.

[4] **V. Ravi**, S. J. Park, A. Afshan, and A. Alwan, "Voice quality and between-frame entropy for sleepiness estimation.", in *INTERSPEECH*, 2019, pp. 2408–2412.

[5] A. Afshan, J. Guo, S. J. Park, **V. Ravi**, J. Flint, and A. Alwan, "Effectiveness of voice quality features in detecting depression.", in *INTERSPEECH*, 2018, pp. 1676–1680.

[6] A. K. Sahani, **V. Ravi**, and M. Sivaprakasam, "Automatic estimation of carotid arterial pressure in artsens", in *INDICON*, IEEE, 2014, pp. 1–6.

Teaching Experience

Graduate Teaching Assistant at University of California, Los Angeles

- Graduate Courses:
  - MS Online - Digital Speech Processing (Prof. Abeer Alwan) Winter 2020
  - ECE - Digital Speech Processing (Prof. Abeer Alwan) Winter, 2019
  - ECE - Computational Imaging (Prof. Achuta Kadambi) Fall, 2018
- Undergraduate Courses:
  - LS - Mathematics for Life Scientists (Prof. Sharmila Venugopal) Spring, 2020
  - LS - Quantitative Concepts for Life Sciences (Prof. Jane Shevtsov) Fall, 2019
  - Statistics - Computation and Optimization for Statistics (Prof. Miles Chen) Spring, 2019
  - Statistics - Introduction to Probability Modeling (Prof. Michael Tsiang) Spring, 2018
  - CS - Computer Architecture (Prof. Tony Nowatzki) Winter, 2018

Relevant Coursework

- **Machine learning courses**
  Neural Networks and Deep Learning, Big Data Modeling and Mining, Large Scale Social and Complex Networks: Design and Algorithms, Statistics Programming
- **Signal processing courses**
  Advanced Speech Processing, Digital Speech Processing
- **Mathematics courses**
  Convex Optimization, Linear Programming, Applied Probability, Matrix Algebra and Optimization, Matrix Analysis, Stochastic Processes

Skills

Python, Kaldi, Pytorch, MATLAB, R, HTK, TensorFlow

Awards

- Interspeech student travel grant October, 2020
- Irma Polaski Fellowship March, 2020
- Henry Samueli Excellence in Teaching Awards: *Finalist* June, 2019
- Samueli Fellowship March, 2019