



USC Viterbi School of Engineering

Seminar

Ming Hsieh Department of Electrical and Computer Engineering



What Do Pre-Trained Speech Representation Models Know?

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Professor TTI-Chicago

Tuesday, May 28, 2024 | 3:00-5:00pm PST | EEB 248

Zoom Link:

<https://usc.zoom.us/j/98343896109?pwd=VWxRVtJvc3NLMjZGcEVVNGw1a1J0dz09>

Abstract: Pre-trained speech representation models have become ubiquitous in speech processing over the past few years. They have both improved the state of the art and made it feasible to learn task-specific models with very little labeled data. However, it is not well understood what linguistic information is encoded in pre-trained models, where in the models it is encoded, and how best to apply this information to downstream tasks. In this talk I will describe recent work that begins to build an understanding of pre-trained speech models, through both layer-wise analysis and benchmarking on tasks. We consider a number of popular pre-trained models and investigate the extent to which they encode spectral, phonetic, and word-level information. The results of these analyses also suggest some ways to improve or simplify the application of pre-trained models for downstream tasks. Finally, I will describe our efforts to benchmark model performance on a variety of spoken language understanding tasks, in order to broaden our understanding of the semantic capabilities of speech models.



Bio: Karen Livescu is a Professor at TTI-Chicago. This year she is on sabbatical, splitting her time between the Stanford NLP group and the CMU Language Technologies Institute. She completed her PhD at MIT in 2005. She is an ISCA Fellow and a recent IEEE Distinguished Lecturer. She has served as a program chair/co-chair for ICLR, Interspeech, and ASRU, and is an Associate Editor for TACL and IEEE T-PAMI. Her group's work spans a variety of topics in spoken, written, and signed language processing, with a particular interest in representation learning, cross-modality learning, and low-resource

settings.

Host: Shrikanth Narayanan