

The University of Texas at Dallas
Erik Jonsson School of Engineering and Computer Science
Distinguished Lecture

presents

Dr. Mari Ostendorf



Representing Human Language: A Continuous Space Approach

Electrical Engineering
University of Washington

November 12, 2012

11:30 a.m. - 12:30 p.m.

Refreshments will be served
at 11:15 a.m.

ECSS 2.412

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Abstract:

Traditionally, most work in statistical language processing has treated words as categorical variables and represented probabilities of words in context with non-parametric distributions. For applications where a relatively large amount of transcribed text is available, non-parametric models with backoff smoothing techniques can be very effective. However, a high-dimensional non-parametric model is not well suited to leveraging regularities in language in limited training conditions, such as for domain adaptation or low resource languages. Highly inflective languages, which have fast vocabulary growth with data set size, tend to be especially sensitive to this problem. Parametric continuous-space models are better suited to such challenges, which motivates the problem of finding mappings of words to a continuous space. Latent semantic analysis is an early example of a method for mapping words to a continuous topic space. Neural network language models provide a mapping that considers sequential context. In this talk, we consider another approach for learning continuous space mappings in the context of maximum likelihood rather than minimum error, and treat smoothing as a regularization problem. We learn separate mappings for the context and observation spaces. Neighbors in the continuous space for a sequence model correspond roughly to syntactic/semantic categories. Key to the effectiveness of this approach, however, is combining the smooth distribution with a sparse discrete model of exceptions.

Bio:

Mari Ostendorf is an Endowed Professor of System Design Methodologies in Electrical Engineering at the University of Washington, and an Adjunct Professor in Computer Science and Engineering and in Linguistics. She received her PhD in electrical engineering from Stanford University in 1985. From 2010-2012, she served as the Associate Dean for Research and Graduate Studies in the College of Engineering. In 2012-2013, she will be serving as a Scottish Informatics and Computer Science Alliance Distinguished Visiting Fellow and an Australia-America Fulbright Scholar.

Prof. Ostendorf's research interests are in dynamic and linguistically-motivated statistical models for speech and language processing. Her work has resulted in over 200 publications and 2 paper awards. Prof. Ostendorf has served as co-Editor of Computer Speech and Language, as the Editor-in-Chief of the IEEE Transactions on Audio, Speech and Language Processing, and she is currently the VP Publications for the IEEE Signal Processing Society. She is also a member of the ISCA Advisory Council. She is a Fellow of IEEE and ISCA, and a recipient of the 2010 IEEE HP Harriett B. Rigas Award.