

Department of Electrical and Computer Engineering

University of Rochester, Rochester, NY

Ph.D. Public Defense

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8:30 AM

Wegmans Hall 2506

Behavioral Prediction using Data-Scientific  
Approaches: A Case Study in Public Speaking

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Machine Learning, as a branch of Artificial Intelligence, covers a large volume of data. In combination with

the recent development of powerful machine learning techniques and the abundance of audio-visual data of human life, it is now becoming possible to detect human behaviors using a complete data-centric approach. In this thesis, we explore this possibility through a number of experiments in the context of public speaking.

This exploration has been conducted from several directions. First, we use machine learning models to analyze the body language of the speakers. We capture the repetitive body movement patterns using an unsupervised technique. We design an interface named “AutoManner” that uses these patterns to help the public speakers become aware of their idiosyncratic body movements. Second, we analyze the effects of “narrative trajectories” on the styles of storytelling on the viewers of public speaking. Third, we predicted the TED talk ratings using a classical machine learning approach and a deep neural network based approach. We show that the neural network based approach can predict human behaviors with better accuracy than the classical machine learning approach. Additionally, the neural networks require comparatively lesser application domain specific knowledge. Consequently, the neural network approach could be utilized not only in the public speaking domain, but also in a wider range of other application areas. Finally, we design a real-time intervention technique to provide live information to the speakers while minimizing distraction.

Reception will follow at 10:30am in Wegmans Hall 2506