

**Department of Electrical and Computer Engineering**

**University of Rochester, Rochester, NY**

**Ph.D. Public Defense**

**Monday, October 22, 2018**

**8:30 AM**

**Wegmans Hall 2506**

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

Md Iftekhar Tanveer

Supervised by  
Professor Mohammed Ehsan Hoque

Machine Learning, as a branch of Artificial Intelligence, is now starting to contribute towards every aspects of human life. It provides a powerful set of mathematical tools to facilitate the scientific explorations over 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 the 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” or the styles of story telling 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