Computer Science Department
PhD Proposal Defense

Emotion Classification in Social Text Streams

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Time: 10am – 11am
Location: Mid-Century conference room/ Campus Center

Committee members:
Prof. Elke A. Rundensteiner, WPI, Computer Science. Advisor
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Detecting human emotion patterns plays an essential role in various application contexts from public health to marketing. In this proposal, the problem of online emotion classification in a stream of text messages is targeted. In particular, I address core research challenges related to emotion classification given a stream of text messages from Twitter.

First, as foundation, I design a supervised machine learning approach called Emotex that classifies emotion expressed in text messages using an offline training process. I engineer a set of features based on state-of-the-art emotion lexicons. The resulting emotion classifier Emotex is then plugged into a full-stack framework called EmotexStream to perform online emotion classification in a text stream. For this, EmotexStream exploits a binary classifier to separate messages with explicit emotion from messages without emotion. Then it utilizes Emotex's emotion classification models for a fine-grained emotion classification of messages with explicit emotion. EmotexStream is deployed to measure public emotion and detect emotion-intensive moments during real-life events in live streams of Twitter messages.

Second, I research two challenges critical for transforming the Emotex classifier into an online deep learning approach. One, I propose to design and evaluate dynamic feature learning methods using deep convolutional neural network technologies to create emotion-specific word embeddings. Two, I will further extend Emotex into an online emotion classification system that dynamically selects a set of features during the prediction process.

Overall, I will conduct extensive experimental studies to evaluate the effectiveness, efficiency and practicality of the proposed methods on real-life social text streams such as Twitter messages, in particular, considering heavily debated themes on Twitter.