Computational Prediction for Timing of Terrorist Attacks

Weiyi Meng, David Liu, Lei Yu, Seden Akcinaroglu, Elizabeth Radziszewski

**Long-Term Goal:** Develop technology for predicting the timing of terrorist attacks.

**Research Directions:**
Identify and analyze *triggering factors* – dynamic events that create more immediate vulnerabilities to terrorist attacks. It is critical to distinguish *triggering factors* from *underlying (background) factors* that may predispose certain states to terrorist attacks. Integrating the two types of factors is imperative in better identifying the tipping point or timing of potential terrorist attacks.

Collect data and extract features for triggering factors. While there are existing datasets in social sciences about the underlying factors, data for the triggering factors must be collected on a continuous basis from diverse online sources. Furthermore, specific features related each factor must be extracted and computed from the collected time-stamped data.

Develop a novel model to predict the tipping points and windows of opportunity for potential terrorist attacks. The model needs to incorporate both underlying and triggering factors. State-of-the-art of machine learning techniques will be adapted and extended to tackle the large, diverse, temporal, and causal nature of the collected data in predictive model building.

Develop an easy-to-use specification language that serves as a communication tool between computer scientists and political scientists. The tool unifies the cross-domain development into one automated, evolving and consistent process.