

## Abstract

Terrorism continues to be one the most significant security threats of our time. Recent terrorism events include mass shootings and bombings in the U.S. and worldwide. First responders—law enforcement, emergency medical services, and fire services—are responsible for managing the chaos in the immediate aftermath of a terrorism event. Providing first responders with high quality, detailed information as quickly as possible could greatly enhance their ability to respond effectively. Recently, crowdsourced data available through platforms such as Twitter, Facebook, and other social media outlets, have emerged as a potential source to aid first responders following a terrorism event. The focus of this thesis is to determine if Twitter posts are a useful source of intelligence for first responders. Mining this readily available data could also be useful following a natural disaster.

The utility of twitter data for first responders was explored using a case study of the events following the Boston Marathon bombing in 2013. Twitter data was collected via GNIP, a social media API aggregation company. Through text analysis and interviews with first responders, a list of relevant keywords was developed. Kernel density was used to determine density of tweets in relation to events that took place from April 15th through April 19th, 2013. Spatio-temporal analysis was conducted to show when and from where tweets were being sent on April 15<sup>th</sup>, 2013. Results show that on Monday through Thursday the greatest density of tweets was surrounding the bombsites; when events related to the suspects occurred on Thursday and Friday, the density of tweets around those events increased. The spatio-temporal results show that as the day progressed, the majority of tweets spread throughout the Boston Metropolitan area. The overall finding of this thesis is that crowdsourced data, such as Twitter, can provide potentially useful information to aid first responders following a terrorism event.