



Hazard Reduction & Recovery Center

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“Geographic Situational Awareness: Mining Tweets for Disaster Preparedness, Emergency Response, Impact, & Recovery.”

By Qunying Huang & Yu Xiao, 2015

“Social media messages are rich in content, capturing and reflecting many aspects of individual lives, experiences, behaviors, and reactions to a specific topic or event. Therefore, these messages can be used to monitor and track geopolitical and disaster events, support emergency response and coordination, and serve as a measure of public interest or concern about events.”

Social media data has come to be a new source for identifying and keeping track of disaster events. For decades, disaster researchers and emergency managers have typically understood and managed disasters using a four-phase categorization: mitigation, preparedness, response and recovery. No effort has been made to classify social media data into stages of disaster management, used as a common reference for disaster researchers and emergency managers to organize information and focus priorities and activities during a disaster.

Findings

This paper makes a starting effort in coding social media messages into different themes in different disaster phases during a time-sensitive crisis by manually examining more than 10,000 tweets generated during a natural disaster. The classifier from the study can achieve a precision average of 0.647 for classifying social media messages into the categories. Using social media data has several advantages over traditional means of data collection to understand multiple phases of disaster management. According to the research, it's necessary and useful for emergency managers to identify the transition between phases of disaster management so that they can take action quickly and efficiently in the impacted communities tweet sampling and examination.

Implications

By studying space and time distributions of messages, we can understand citizens' behaviors and reactions towards a disaster event. The paper presents a new coding model for categorizing tweets into different themes for building awareness of geographic situations and a framework that can be applied to separate tweets into those categories. Instead of using social media as a standalone information source, dependable data should be combined to improve the quality of social media message identification. Social media data can provide “real-time” information for the emergency managers to understand changes and make effective decisions in disaster management.