Mining Crowdsourced Data for Intelligent Decision Making

Geoffrey Barbier, Huiji Gao, Huan Liu and Xufei Wang
Computer Science and Engineering, Arizona State University, USA
{gbarbier@asu.edu, Huiji.Gao@asu.edu, huan.liu@asu.edu, Xufei.Wang@asu.edu}

Crowdsourcing and Crisis Map

Social media tools make it easy to connect and converse with people. Using social media websites to share information and collect data is part of a broader trend called crowd-sourcing. One of the most recent implementations of a crowd-sourcing application is an event map. It’s a publicly available and accessible application providing information about an event. People provide reports related to the event to the map. Some event maps, known as crisis maps, support emergencies. Crisis-related reports about people, water, food, medical supplies, and other needs can provide decision makers timely information that would otherwise be unavailable. This kind of collective intelligence can help individuals, leaders, and responders make better decisions during an event or crisis.

Ushahidi Crisis Maps

A crisis map framework developed by the Ushahidi organization (http://www.ushahidi.com) has been applied to a variety of situations including: wildlife tracking, crime in Atlanta (Georgia, USA), elections in India, H1N1 flu, medical supplies in Kenya, activities in Afghanistan, and the earthquake in Haiti.

Haiti Earthquake Crisis

- Tuesday, 12 Jan 2010 at 04:53:10 PM (EST)
- 7.0 magnitude
- 212,000 dead reported as of Feb 5, 2010
- 300,000 injured, 1 million homeless (prior), 4.1 million homeless (post)
- Population: 9 million
- A Haiti crisis map was implemented by Ushahidi organization.

Challenges & DMML Approach

- How to clean up and summarize the data on Haiti Crisis Map (Over 3,000 “incident reports” submitted to 6 categories and 25 subcategories) to help first respondents in their coordinated relief efforts.
- How to design a centralized information system to coordinate government and non-government organizations from a variety of nations participating in relief efforts.

ASU Event Map

Data summarization

Contribution Coordination

Future work

- Perform requirement analysis of crowd-sourced data.
- Design a more effective mechanism to coordinate the responses amongst various organizations.
- Design a strategy to get feedback from users whose requests are fully or partially fulfilled.

This work is, in part, supported by ONR