

Social Media Screening for Supporting Real-Time Decision Making

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Abstract—We describe the design and development of a social media screening tool which harvests and analyzes large amounts of user generated content from social media. It allows for better situational awareness with regard to people’s opinions and emotions by applying tailor-made affect analysis algorithms on the acquired posts.

I. INTRODUCTION AND BACKGROUND

Many recent research articles have confirmed that citizens are increasingly using various social media services during emergency situations in order to communicate, search for information, ask for help, etc. Examples of crises where an extensive use of social media for such purposes have been reported are, e.g., the Fukushima disaster, the terrorist attacks in Norway, and the Sandy hurricane. The developed screening tool is capable of collecting social media posts in real-time from a large number of sources including Twitter, blogs, and YouTube comments.

II. DATA ANALYSIS

Social media posts are continuously acquired and added to the database and tailor-made affect analysis algorithms classify the posts as belonging to various emotions such as fear, anger, or happiness. The algorithms are based on natural language processing and machine learning, as well as various lexical resources. Automatic processing of a large number of social media posts within a limited amount of time is possible. [2]

Once the data has been acquired and classified, the user of the system can analyze the crisis by interacting with visualizations showing how various emotions varies over time. This gives the user an idea of how the citizens in general have reacted to the crisis, or to particular alert messages. It is also possible to drill down into the underlying data set to see what people are afraid of, upset about, etc., on a more detailed level.

When the user has become aware of how people have reacted to a communicated alert message or the crisis itself, a decision of whether to disseminate a new clarifying alert message can be taken. If such a message is sent out, the user can again monitor the social media to get an idea of how the message was received, and so forth until the crisis is over.

III. TOOL DESIGN

To make sure that the included functionalities are both useful and usable in a real crisis situation, input from crisis responders has been an important part in the design of the tool. [1] See Figure 1 for an overview of the system, and Figure 2 for an example from the system showing relative emotional levels during the Fukushima disaster.

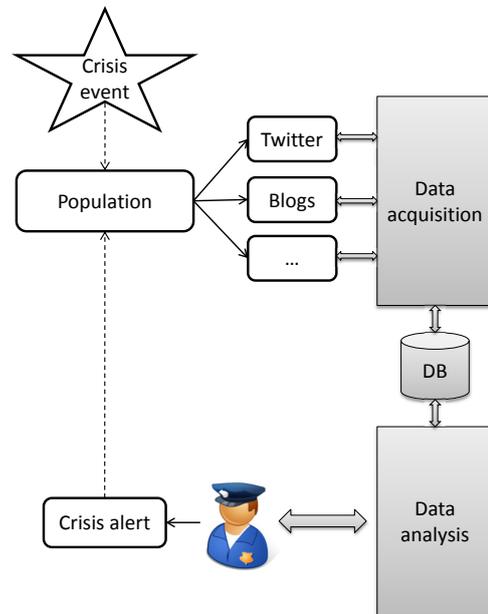


Figure 1. Overview of the screening tool.

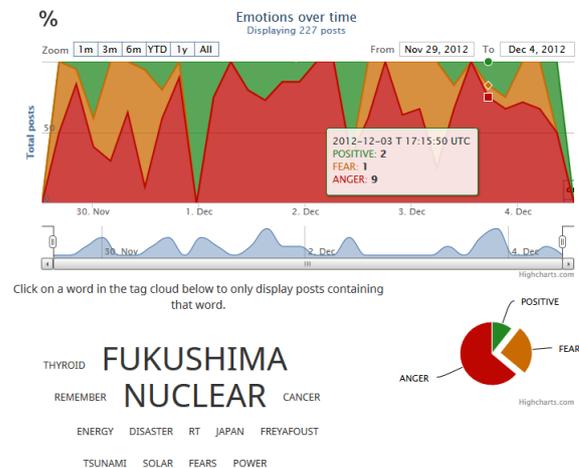


Figure 2. A snippet of the screening tool GUI.

REFERENCES

- [1] Joel Brynielsson, Fredrik Johansson, and Sinna Lindquist. Using video prototyping as a means to involving crisis communication personnel in the design process: Innovating crisis management by creating a social media awareness tool. In Proceedings of the 15th International Conference on Human-Computer Interaction, pages 559–568, Las Vegas, Nevada, July 2013.
- [2] Joel Brynielsson, Fredrik Johansson, and Anders Westling. Learning to classify emotional content in crisis-related tweets. In Proceedings of the 2013 IEEE International Conference on Intelligence and Security Informatics (ISI 2013), pages 33–38, Seattle, Washington, June 2013.