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DHS Science and Technology Directorate

SMART: Social Media Analytics and Reporting Toolkit

Social Media as a Data Source

Advances in technology have made it possible for social media platforms to export real-time data feeds. These feeds capture location- and time-stamped information, which can increase situational awareness of local events.

With the massive number of messages generated and diffused through social media platforms, locating meaningful and actionable information in a timely manner is crucial for decision makers. Currently, there is no way to integrate relevant data feeds from multiple social media sources and provide interactive, easily-understood information to first responders through one seamless interface. First responders require new methods for monitoring topics of interest, identifying trends and anomalies and dealing with the data volume and its dynamic nature.

The SMART Project

The Social Media Analytics and Reporting Toolkit (SMART) is an interactive web-accessible system that provides users with aggregated social media data (e.g., Twitter and Instagram) for analysis and visualization. SMART has been deployed to multiple real-time events to augment emergency responder situational awareness, helping scientists, engineers and first responders collaborate directly with each other.

Making Social Media Interactive and Explorable

The SMART system provides real-time monitoring of social media channels, extraction of trending and abnormal topics, topic clustering and message categorization. These components can be displayed in a customizable interface, which provides users with actionable intelligence. Users also have access to web and news sources that are incorporated into the system. Additionally, SMART provides automatic email alert and summary services related to user-defined topics.

SMART's Immediate Impact

SMART has been deployed to public safety and law enforcement agencies, including police departments, U.S. Coast Guard sectors and fusion centers, for real-time monitoring and emergency management. Its effectiveness has been demonstrated through use during multiple real-world events, including: 1) large-scale planned events, such as conventions and festivals; 2) recurring events, such as

football games; and 3) abnormal events, such as mass shootings and natural disasters. Users said SMART provided an immersive exploratory environment during these events that allowed them to customize and supervise the monitoring and analysis in an interactive manner.

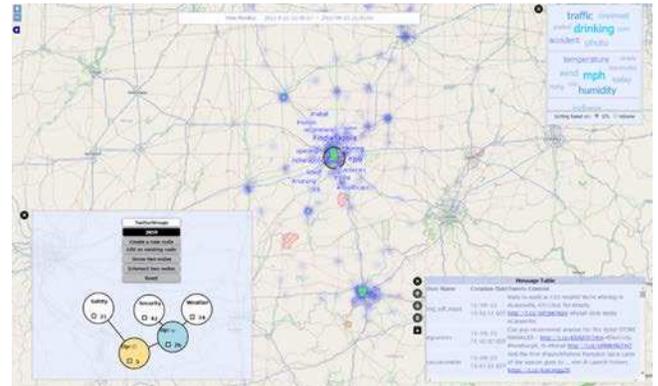


Figure 1. The SMART system presents user-defined classifiers and allows users to modify and filter based on their needs. Users can also use interactive features, such as ContentLens, on the map view to observe prominent keywords extracted from tweets inside the lens and investigate detailed information in the message table.

Recent Accomplishments

In 2017, SMART was deployed to over two dozen new users, including the U.S. Coast Guard for information integration efforts and during the 2017 U.S. Presidential Inauguration, the 2018 State of the Union, as well as during Hurricanes Harvey, Irma and Maria.

Upcoming Milestones

By 2019, the development team and the Department of Homeland Security Science and Technology Directorate plan to deliver a commercial version of SMART for prototype testing by first responder groups.

Performers/Partners

Vendors:

- Purdue University, West Lafayette, Indiana
- Davista Technologies, West Lafayette, Indiana

Current stakeholders:

- U.S. Coast Guard
- Public safety and law enforcement agencies