Identifying First Responder Communities Using Social Network Analysis

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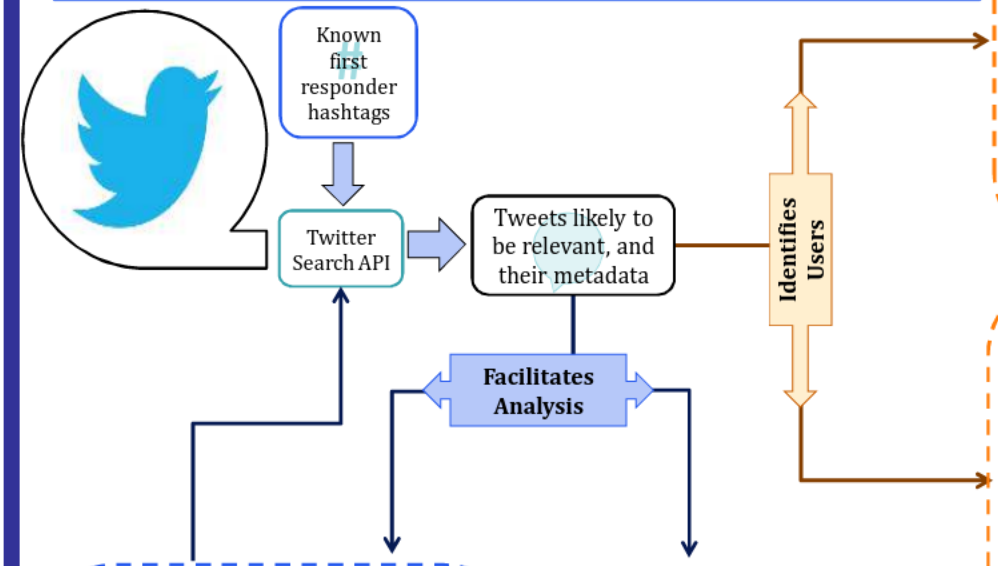
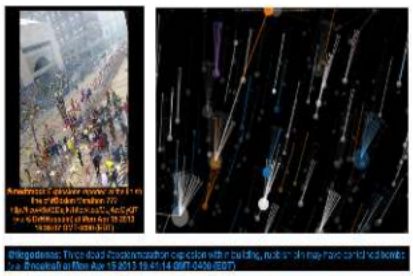
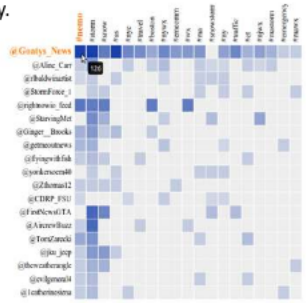
Twitter® and other social networks are valuable resources for studying interactions within communities. When assembling data sets for a particular research objective, it can be difficult to filter activity in order to identify relevant cohorts within the network. We have developed **methodology** to perform smart collection and to seek users invested in the first responder community, and a set of **visualizations** to make the results easier to understand.



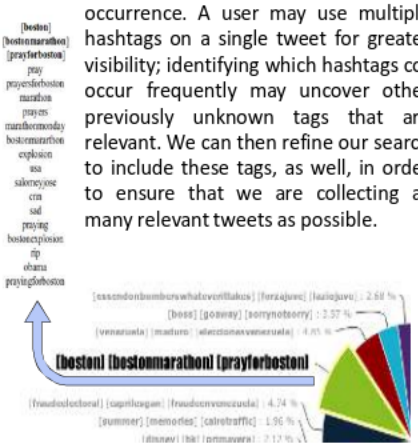
Retweet graphs show how information propagates throughout the social network. A "micro-modal" map of the tweets allows us to identify tweets proliferated throughout the community (and therefore likely deemed important), and then zoom in to the micro level to see what the original tweet actually looks like.



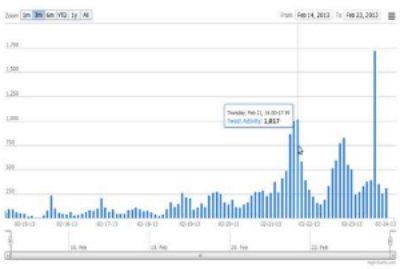
Tags and Users can be represented together in matrix form. The color of square (i, j) indicates the relative frequency that user @i tweeted to hashtag #j, making it easy to tell at a glance who is prolific on one particular hashtag, and who is prolific on many.



Topic Modeling can identify clusters of related hashtags based on co-occurrence. A user may use multiple hashtags on a single tweet for greater visibility; identifying which hashtags co-occur frequently may uncover other previously unknown tags that are relevant. We can then refine our search to include these tags, as well, in order to ensure that we are collecting as many relevant tweets as possible.



Volume Over Time analysis can help pinpoint when users started tweeting prolifically to a particular hashtag. These visualizations can vary between events that are anticipated such as winter storms, and sudden emergencies such as the Boston Marathon bombing.



Ultimately, we want to identify **stakeholders** - people invested in the community - who may become participants for a future participatory design task, or who otherwise have valuable knowledge to contribute.

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Glossary:

RPI – Rensselaer Polytechnic Institute
TWC – Tetherless World Constellation at Rensselaer Polytechnic Institute