karami_2019_twitter_speaks_a_case_of_national_disaster_situational_awareness

Year

2019

Author(s)

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Title

Twitter speaks: A case of national disaster situational awareness

Venue

Journal of Information Science

Topic labeling

Partially automated

Focus

Secondary

Type of contribution

Established approach

Underlying technique

Manual category assignment (choice among 11 categories)

Topic labeling parameters

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Label generation

The last component of TwiSA analyzes extracted topics. This component labels and categorises 25 topics per day.
We manually labelled the negative topics (concerns) for each of the 13 days between 3 October 2015 and 15 October 2015.

It is worth mentioning that the quantity of topics/day was more than 11 topics but we assigned related topics to one category. For example, if some topics represent injured people and victims, we assigned just 'Victims' label to each of those topics.

The analysed topics were categorised into 11 unique ones with different frequencies.

Table 3. Flood topics examples.

Victims	Damage and Costs	Drinking Water	Insurance	Road Damage	Roof Damage
scflood	damage	water	families	road	roof
victims	property	drink	insurance	damage	damage
flooding	loss	boil	homeowners	roadway	repair
disaster	roadway	bottle	destroyed	st	danger
death	construction	clean	support	exit	home
Bridge Damage	**Flood Report**	**Homelessness**	**Power Lost**	**Animal**	
disaster	alert	flood	lost	Animal	
bridge	warning	homeless	flood	Shelter	
flooded	effect	lives	home	dog	
natural	flood	woman	power	poor	
flood	remain	boy	family	find	

Motivation

Helping in: "explaining possible reasons behind the detected topics comparing with official and published reports".

Topic modeling

LDA

Topic modeling parameters

Nr of iterations: 1000
Nr of topics: 325 (25 per day)

Nr. of topics

325 (25 per day)

Label

11 distinct Single or multi word labels

Label selection

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Label quality evaluation

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Assessors

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Domain

Paper: Natural disasters
Dataset: Social media (Twitter)

Problem statement

In recent years, we have been faced with a series of natural disasters causing a tremendous amount of financial, environmental and human losses.
The unpredictable nature of natural disasters behaviour makes it hard to have a comprehensive situational awareness (SA) to support disaster management.
This research emphasises the value of social media analysis and proposes an analytical framework: Twitter Situational Awareness (TwiSA). This framework uses text mining methods including sentiment analysis and topic modelling to create a better SA for disaster preparedness, response and recovery. TwiSA has also effectively deployed on a large number of tweets and tracks the negative concerns of people during the 2015 South Carolina flood.

Corpus

Origin: Twitter
Nr. of documents: 217,074 (negative tweets)

Details:

- One million tweets were filtered based on 13 days in October 2015.

Table 1. Queries for Twitter data collection.

#floodsc **OR** #scflood2015 **OR** #SCFloodRelief **OR** #southcarolinastrong **OR** #prayforsc **OR** #scflood **OR** #scflooding **OR** #FloodGSSCMMwithlove **OR** #floodingsc **OR** #flood **OR** flood

Document

Content a a single tweet

Pre-processing

Stop word removal

```
@article{karami_2019_twitter_speaks_a_case_of_national_disaster_situational_awa
reness,
  author = {Amir Karami and Vishal Shah and Reza Vaezi and Amit Bansal},
  date-added = {2023-04-02 11:59:22 +0200},
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  month = {mar},
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  pages = {313--324},
  publisher = {{SAGE} Publications},
  title = {Twitter speaks: A case of national disaster situational awareness},
  url = {https://doi.org/10.1177%2F0165551519828620},
  volume = {46},
  year = 2019}
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#Thesis/Papers/BS