Tweetycs

Understanding Real-Time Discussion of Health Issues on Twitter Through Visual Analytics (Ongoing Project)

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April 10, 2019

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Agenda

1. Introduction
   - Why Social Media?
   - Challenges
   - Opportunities
2. Background
   - Existing Research
   - Analysis
3. Proposed Method
   - Part One: Non Real-Time Analysis
   - Part Two: Real-Time Visual Analytics

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- Social media allows us to explore conversations in a rapid fashion.
- Twitter is one of the largest social media platforms with more than 300 million monthly active users.
- The unrestricted access to opinions and large user base has made Twitter a source for the collection and dissemination of information for various domains including health.

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- Individuals, news organizations, businesses, interest groups, and other groups also discuss health on Twitter.

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- There exist challenges for the public to improve their knowledge on a wide variety of health issues on Twitter.
  - Following a particular health organization may be beneficial for learning about a specific health hazard.
  - Obtaining a high-level understanding of social discourse on a wide variety of health issues, remains a challenge.

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  to assess how health issues are discussed.
- Health professionals and social scientists can use this lens to:
  1. better understand public perception of health issues and
  2. determine how to better utilize Twitter for health promotion

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- But how can we combine machine learning with visualization and interaction?

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Questions We Want to Answer

- Who talks about what?
- Is there a theme for these discussions? How many themes are out there?
- What is purpose of these discussions?
- Is there any relationship between a specific health issue and the sentiments from different sides of the discussions (e.g., media corporations and government officials)?
- ...!?

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- Retrieved data was stored in a MongoDB database.

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        1. Educational
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        5. Unrelated
    - and six user categories:
        1. Businesses
        2. Celebrities
        3. Interest Groups
        4. Media
        5. Official Agencies
        6. General Public

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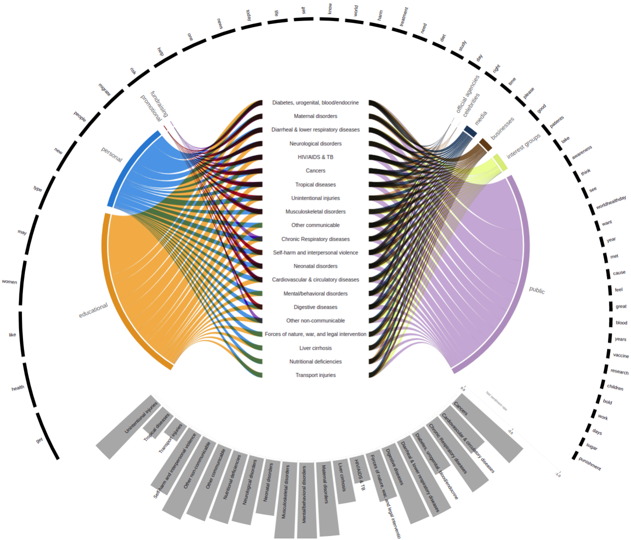
- Removing unrelated tweets → 416,900 tweets remained.

Part One (Cont'd)

Visualization



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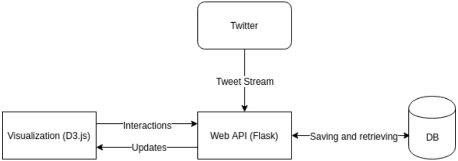
- Online streams of tweets → Need for stream processing and asyncronous programming
- Different possibilities for users → Customized utilities through interaction with ML techniques and visualizations
- Increasing epistemic utility for the user in order to understand the public discourse in the context of his/her interest.

Part Two (Cont'd)

Ongoing Framework

- A Python API is subscribing to streams and saving the tweets in the database.
- The API incorporates several machine learning techniques and these techniques are being executed with respect to the old data and the new incoming chunks of data.
- The user who is interacting with the Visualization will receive the updates on tweets and would be given the option of choosing the result of different ML techniques.



Thank you!

Questions?

Accuracy Rate for User Category Model Construction

Model	Avg. Acc. Rate (%)
A1: description	86.86
B1: description + screen name	79.83
C1: description + name + influence score	79.84
D1: description + name + influence score + verified	79.75

Accuracy Rate for Tweet Theme Model Construction

Model	Avg. Acc. Rate (%)
A2: tweet	80.99
B2: tweet + reserved keywords	81.09
C2: tweet + verified	81.14
D2: tweet + reserved keywords + verified	81.44