

Reputation Propagation in Twitter

Scientific Report

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1 Purpose of the STSM

Recent years have seen the rapid growth of social media platforms that enable people to express and share their thoughts and perceptions on the web. Many people write their opinion about products, movies, people or events on microblogs, blogs, forums or review sites. One of the most popular microblogs is Twitter that, according to recent approximations made in 2016, attracts 310 million active users per month. Detecting the reputation polarity of a tweet and determining if the tweet has negative or positive implications for the company's reputation is very important for the reputation of an entity.

The purpose of this visit was to explore and discuss ideas on addressing reputation polarity. One of the challenges in reputation polarity detection is the polar facts, that refers to tweets that have an implication for the reputation of an entity but express a neutral sentiment and do not contain sentiment bearing words. To make this more clear we can consider the tweet "#Apple stock is down 7%. First revenue drop in 13 years.". This tweet is a factual statement and thus expressing a neutral sentiment but probably has a negative impact on the reputation of Apple. To this end, we were interested to examine if sentiment propagation based on the topics of the tweets can be helpful to detect the polar facts and in this way effectively address the reputation polarity problem.

2 Description of the work carried out during the STSM

During the visit there was a series of discussions with Prof. Julio Gonzalo and his colleagues where, we analysed different aspects of the reputation polarity problem, and with this analysis we managed to have a better understanding of how this problem can be addressed.

During the visit I have started working on the collection (RepLab 2013 collection) to get a better understanding of the data. Also, we have performed an initial analysis of the data in order to examine if our claims are valid and understand if propagation can be helpful in predicting the reputation polarity of tweets. With this initial analysis we wanted to see how well a state-of-art sentiment analysis method performed on reputation polarity, how many polar facts are in the collection and if the sentiment is correlated with the topic.

3 Description of the main results obtained

During the STSM we have started analysing the data and we managed to get a better understanding of the collection. Some results of this initial analysis were the following:

- There are 59% of true positive tweets and 56% of true negative tweets that are polar facts (they do not have any sentiment bearing word). This finding proves that state-of-art sentiment analysis methods are not appropriate for reputation polarity.
- In a great majority of the topics, the reputation polarity is correlated with topic.
- For around half of the topics there is an agreement between the prevalent sentiment class (gold standard) and the prevalent predicted class (state-of-art method). This finding implies that sentiment propagation will probably be useful in addressing the reputation polarity problem.

4 Future collaboration with the host institution

The STSM has established a collaboration between the two institutions that will be continued.

5 Foreseen publications/articles resulting from the STSM

As a result of this visit, we expect to write and submit a paper to a relevant conference that will summarise our findings.