Chapter 25
Enhanced Event Detection in Twitter Through Feature Analysis

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ABSTRACT

The Digital era has the benefits in unearthing a large amount of imperative material. One such digital document is social media data, which when processed can give rise to information which can be helpful to our society. One of the many things that we can unearth from social media is events. Twitter is a very popular microblog that encompasses fruitful and rich information on real world events and popular topics. Event detection in view of situational awareness for crisis response is an important need of the current world. The identification of tweets comprising information that may assist in help and rescue operation is crucial. Most pertinent features for this process of identification are studied and the inferences are given in this article. The efficiency and practicality of the features are discussed here. This article also presents the results of experimentation carried out to assess the most relevant combination of features for improved performance in event detection from Twitter.

1. INTRODUCTION

Social media enables people to stay connected. Posting every episode and incident in Social media has become a natural customary behavior among people. These episodes range from day to day activities to critical topics/events. Hence, anything including a new or a trending event/topic will be surely posted on social media. This contributes to a humongous amount of data. Analytics on such data help us in understanding the behavioral patterns, trends, human understanding on a topic, their opinions on the same and much more. Event Detection concentrates on bringing events to light from this large clutter

of raw social media data. The events may be either a physical event or a popular topic being discussed in the media. Events can be small scale or large scale, ranging from localized birthday parties to global election predictions.

1.1. Social Media Text Analytics

Nowadays the use of Social media is widespread, to an extent where people first post it on social media platform and only then start discussing it personally. Situations have changed wherein people will find out about the happenings from news and then post their discussions about it on social media, whereas now happenings are posted first on social media and then broadcasted in news channels. The proficiency in getting information about the world and the ease in sharing the experiences, views, ideas are the predominant merits of social media.

The happenings around the world posted in social media can benefit in revealing countless valuable information if processed properly. Also, the raw data serve as a hub of details of a happening from the user point of view. The main challenge in handling this raw data is that it contains noise and it is unstructured. This warrants new kind of data analysis and mining techniques to uncover extensive information such as Opinions, Sentiments, News, Events, Popular Topics, User groups, Document groups, Trends, Characteristics of Users. In social media, major analytics is performed in the areas of Event Detection, Opinion Mining, Recommendation System, Sentiment Analysis, Trend Analysis, Question Answering System and Community Detection.

1.2. Why Twitter

Twitter is a fast-growing microblogging service that allows users to post messages (Tweets) with the number of characters not exceeding 280. Twitter satisfies the curiosity of people by letting users post "What's happening?" around them and know "What's happening" around the globe. The short text property of Twitter makes it effortless to share information instantly. A "Tweet" in twitter is the message that users post on Twitter with a limit of 280 characters (Twitter Support, 2017). A "Retweet" is a tweet forwarded by a user which he/she got from another user- something that the user likes to share. An '@' symbol represents the Username of the twitter account and it is used to call out the user in tweets. A "#" symbol represents the 'Hashtag' which depicts the topic of the tweet. Users can "Follow" other users and those who do will receive the tweets sent by latter.

The willingness of Twitter to share its publicly available tweets is highly welcomed by the research community. Twitter provides Application Programming Interface (API) to enable an application or website to connect to the worldwide conversation happening on Twitter. Another main reason for opting twitter is the availability of crisp yet rich information from all over the world on Celebrities, News channels, Government agencies, Political parties, Private organizations, individuals and much more.

1.3. Situational Awareness

During disastrous situations involving danger to people or property, Social Media helps in providing an immeasurable amount of relevant information. The situational information is most needed for identifying exactly where help is needed and also what kind of help is needed. Those who are affected or bystanders know this information more clearly. And the fastest way of making this information publicly available

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