

Chapter 45

Modeling Rumors in Twitter: An Overview

Rhythm Walia

Netaji Subhash Institute of Technology, India

M.P.S. Bhatia

Netaji Subhash Institute of Technology, India

ABSTRACT

With the advent of web 2.0 and anonymous free Internet services available to almost everyone, social media has gained immense popularity in disseminating information. It has become an effective channel for advertising and viral marketing. People rely on social networks for news, communication and it has become an integral part of our daily lives. But due to the limited accountability of users, it is often misused for the spread of rumors. Such rumor diffusion hampers the credibility of social media and may spread social panic. Analyzing rumors in social media has gained immense attention from the researchers in the past decade. In this paper the authors provide a survey of work in rumor analysis, which will serve as a stepping-stone for new researchers. They organized the study of rumors into four categories and discussed state of the art papers in each with an in-depth analysis of results of different models used and a comparative analysis between approaches used by different authors.

1. INTRODUCTION

Social networks are very powerful means of communication where information can flow fast and has deep penetration. Any user can both generate and consume content which is provided to wider audience when compared to conventional media. Social media has power to affect user behavior and emotions as shown by Robert M. Bond et al. (2012) in an experiment conducted over 61 million subjects, where they found that 2% more users have voted when associated with friends who have voted and shared on Facebook. Facebook Scientist Adam Kramer et al. (2014) has shown direct impact of a Facebook post on the emotion of a user. It also showed flow of an emotion over the social networks. Engaging topics like politics, religion, race and etc. have even higher effect on the users. Egyptian revolution is one such

DOI: 10.4018/978-1-7998-0417-8.ch045

case, which distinctly depicts the impact of Facebook (Bradly, 2008). Video of Khaled Said an Egyptian businessman who was beaten to death by police in June 2010 was leaked on YouTube and a page named '*We are all Khaled Said*' was created on Facebook to protest. The page was joined by hundred thousand citizens and played prominent role in spreading the discontent among public. The page called for protest on 25th January, which witnessed 400,000 participants. The revolution ended with resignation of the president. Trends on social networks are extracted using Data Mining algorithms. The study, which extracts meaningful content from large datasets, is called data mining. Data mining has its roots penetrated to different segregated sectors like data mining is used with Rough Set Theory to extract meaningful knowledge from large databases (Rana & Lal, 2016), data mining is used to mine medical data (Banu et al., 2015; Dey et al., 2014), it can be used with steganography techniques (Bhattacharya et al., 2012) and it is also used in systems proposing frameworks for firms dealing customer management relationship (Ranjan & Bhatnagar, 2009).

Cross border operation and granularity of Internet makes it impossible to monitor the content on social networking sites. Since its inception, social networking sites have been used by antisocial elements for illegal activities. Due to scale and feasibility social networking sites doesn't provide verification of the accounts, so it is hard to link a user profile with a person in society especially when user chooses to hide his personal details. Many countries have outdated laws where there is no provision to accept content on Internet as an evidence. This battle against miscreants is thereby need to be carried online by identifying such rumormongers and associated patterns. Most of the work on rumors in social media is carried on Twitter which is another popular social networking site. Twitter has second biggest user base next to Facebook (Curtis, 2013) but every post (tweet) on twitter is public. This gives twitter even bigger width and spread. The impact of twitter is well understood by public relation agencies, which spread all sorts of propaganda against their competitors. David M. Cook et al. (2014) showed the use of bots by the two leading parties in the Australian Elections, 2013 to affect the voters through twitter. Apart from propaganda, Twitter has been extensively used by antisocial elements to propagate false information. The Guardian newspaper (Procter, 2011) showed multiple rumors being tweeted during UK riots which include fake news of police brutality to the burning of London eye. These rumors were diffused into twitter to fuel the discontent among public. Boston marathon bombing case presents a perfect case study to analyze the impact of rumors spread on society. Boston marathon met with twin bombings on April 15, 2013 killing 2 civilians and injuring 200 more. Soon after the bombings a post on Reddit, claims to identify the culprit and shared the pictures. This post went viral and it was soon picked pace on twitter. The culprit, identified as Sunil Tripathi was soon met with abuses, hate everywhere until his name was cleared by police three days later. But the damage was done, Sunil Tripathi was found dead on 23th April, 2013(Alexander, 2013). Gupta et al., (2013) showed that 29% of the tweets regarding the bombings were spreading rumors. The authors identified that 32,000 accounts were created within three days of the bombings out of which 20% of the accounts were suspended by twitter later. These accounts shared status regarding the bombings, most of which were rumors. Timely detection of such rumors and a counter strategy could have saved the life of an innocent student.

In this paper we have structured the study of rumors on Twitter into following four different classes - (1) Classification of statement as fact or rumor (2) Diffusion patterns of rumors (3) Limiting the spread of rumors (4) Finding the source of rumors. Each study has its relevance and output from one study could bootstrap the study for other classes. Figure 1 shows the relationship between the class of problems and their significance.

22 more pages are available in the full version of this document, which may be purchased using the "Add to Cart" button on the publisher's webpage:

www.igi-global.com/chapter/modeling-rumors-in-twitter/242170

Related Content

Suspicious Behavior Detection in Debit Card Transactions using Data Mining: A Comparative Study using Hybrid Models

Ehsan Sagheheiand Azizollah Memariani (2015). *Information Resources Management Journal* (pp. 1-14).

www.irma-international.org/article/suspicious-behavior-detection-in-debit-card-transactions-using-data-mining/128972

Linkages Between the CEO and the IS Environment: An Empirical Assessment

Mary C. Jonesand Kirk P. Arnett (1994). *Information Resources Management Journal* (pp. 20-33).

www.irma-international.org/article/linkages-between-ceo-environment/50988

An Empirical Investigation on Internet Privacy on Social Network Sites among Malaysian Youths

Norsaremah Salleh, Ramlah Husseinand Norshidah Mohamed (2012). *Journal of Information Technology Research* (pp. 85-97).

www.irma-international.org/article/empirical-investigation-internet-privacy-social/72716

Mobile Agent Authentication and Authorization in E-Commerce

Sheng-Wei Guan (2005). *Encyclopedia of Information Science and Technology, First Edition* (pp. 1960-1966).

www.irma-international.org/chapter/mobile-agent-authentication-authorization-commerce/14545

Modelling Fault Detection Using SRGM in Agile Environment and Ranking of Models

Abhishek Srivastava, P. K. Kapur, Deepti Mehrotraand Rana Majumdar (2019). *Journal of Cases on Information Technology* (pp. 1-20).

www.irma-international.org/article/modelling-fault-detection-using-srgm-in-agile-environment-and-ranking-of-models/223172