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METADATA-BASED IDENTIFYING SPAMMERS ON SOCIAL NETWORKS

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Abstract: Social networking sites engage millions of users around the world. The users' interactions with these social sites, such as Twitter and Facebook have a tremendous impact and occasionally undesirable repercussions for daily life. The prominent social networking sites have turned into a target platform for the spammers to disperse a huge amount of irrelevant and deleterious information. Twitter, for example, has become one of the most extravagantly used platforms of all times and therefore allows an unreasonable amount of spam. Fake users send undesired tweets to users to promote services or websites that not only affect legitimate users but also disrupt resource consumption. Moreover, the possibility of expanding invalid information to users through fake identities has increased those results in the unrolling of harmful content. Recently, the detection of spammers and identification of fake users on Twitter has become a common area of research in contemporary online social Networks (OSNs). In this paper, we perform a review of techniques used for detecting spammers on Twitter. Moreover, a taxonomy of the Twitter spam detection approaches is presented that classifies the techniques based on their ability to detect: (i) fake content, (ii) spam based on URL, (iii) spam in trending topics, and (iv) fake users. The presented techniques are also compared based on various features, such as user features, content features, graph features, structure features, and time features.We are hopeful that the presented study will be a useful resource for researchers tofind the highlights of recent developments in Twitter spam detection on a single platform.

Keywords: Classification, fake user detection, online social network, spammer's identification

I.INTRODUCTION

It has become quite unpretentious to obtain any kind of information from any source across the world by using the Internet. The increased demand of social sites permits users to collect abundant amount of information and data about users. Huge volumes of data available on these sites also draw the attention of fake users [1]. Twitter has rapidly become an online source for acquiring real-time information about users. Twitter is an Online Social Network (OSN) where users can share anything and everything, such as news, opinions, The associate editor coordinating the review of this manuscript and approving it for publication was Tomohiko Taniguchi. and even their moods. Several arguments can be held over different topics, such as politics, current affairs, and important events. When a user tweets something, it is instantly conveyed to his/her followers, allowing them to outspread the received information at a much broader level [2]. With the evolution of OSNs, the need to study and analyze users' behaviors in online social platforms has intensi_ed. Many people who do not have much information regarding the OSNs can easily be tricked by the fraudsters.

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There is also a demand to combat and place a control on the people who use OSNs only for advertisements and thus spam other people's accounts. Recently, the detection of spam in social networking sites attracted the attention of researchers. Spam detection I a difficult task in maintaining the security of social networks. It is essential to recognize spams in the OSN sites to save users from various kinds of malicious attacks and to preserve their security and privacy. These hazardous maneuvers adopted by spammers cause massive destruction of the community in the real world. Twitter spammers have various objectives, such as spreading invalid information, fake news, rumors, and spontaneous messages. Spammers achieve their malicious objectives through advertisements and several other means where they support different mailing lists and subsequently dispatch spam messages randofilteringy to broadcast their interests. These activities cause disturbance to the original users who are known as non-spammers. In addition,it also decreases the repute of the OSN platforms. Therefore, it is essential to design a scheme to spot spammers so that corrective efforts can be taken to counter their malicious activities [3].

II. LITERATURE SURVEY

[1] B. Erçahin, Ö. Akta³, D. Kilinç, and C. Akyol, ``Twitter fake account detection,'' in Proc. Int. Conf. Comput. Sci. Eng. (UBMK), Oct. 2017, pp. 388_392. Social networking sites such as Twitter and Facebook attracts millions of users across the world and their interaction with social networking has affected their life. This popularity in social networking has led to different problems including the possibility of exposing incorrect information to their users through fake accounts which results to the spread of malicious content. This situation can result to a huge damage in the real world to the society. In our study, we present a classification method for detecting the fake accounts on Twitter. We have preprocessed our dataset using a supervised discretization technique named Entropy Minimization Discretization (EMD) on numerical features and analyzed the results of the Naïve Bayes algorithm [3] S. Gharge, and M. Chavan, ``An integrated approach for malicious tweets detection using NLP,'' in Proc. Int. Conf. Inventive Commun. Comput. Technol. (ICICCT), Mar. 2017, pp. 435_438. Many previous works have focused on detection of malicious user accounts. Detecting spams or spammers on twitter has become a recent area of research in social network. However, we present a method based on two new aspects: the identification of spam-tweets without knowing previous background of the user; and the other based on analysis of language for detecting spam on twitter in such topics that are in trending at that time. Trending topics are the topics of discussion that are popular at that time. This growing micro blogging phenomenon therefore benefits spammers. Our work tries to detect spam tweets in based on language tools. We first collected the tweets related to many trending topics, labelling them on the basis of their content which is either malicious or safe. After a labelling process we extracted a many features based on the language models using language as a tool. We also evaluate the performance and classify tweets as spam or not spam. Thus our system can be applied for detecting spam on Twitter, focusing mainly on analysing of tweets instead of the user accounts [4] T. Wu, S. Wen, Y. Xiang, and W. Zhou, ``Twitter spam detection: Survey of new approaches and comparative study,'' Comput. Secur., vol. 76, pp. 265_284, Jul. 2018. ] T. Wu, S. Wen, Y. Xiang, and W. Zhou, ``Twitter spam detection: Survey of new approaches and comparative study,'' Comput.

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Secur., vol. 76, pp. 265_284, Jul. 2018. Millions of users are engaged with social networking sites around the world. Social sites like twitter, Facebook have a large impact on rare unwanted consequences caused in our regular life in user's interactions. In order to disperse a large amount of inappropriate and harmful data protruding social networking sites are made as a target platform for the spammers. Twitter is main example that has become one of the important platforms for unreasonable amount of spam in all the tomes for fake users to tweet and promote websites or services that crates a major effect for legitimate users and also it disturbs resource consumption. By resulting the opening for unusual and harmful information there is an increase of fake identities that expands invalid data. Research on current online social networks (OSN) is quit natural for identifying of spammers and also detection of fake users on twitter. This paper is a review paper that tells about detecting spammer techniques on twitter. Depending on the ability detection taxonomy of twitter spam identification methods are classified and presented as 1.fake content 2. URL based on spam 3. trending topics in spam 4.fake users The present methods are similar which are built on user, content, graph, structure and time features. The present study is very beneficial resource study for the researchers for developing the recent features in twitter spam identification in one single platform

[5] S. J. Soman, ``A survey on behaviors exhibited by spammers in popular social media networks," in Proc. Int. Conf. Circuit, Power Comput. Tech- nol. (ICCPCT), Mar. 2016, pp. 1_6 Malicious social bots generate fake tweets and automate their social relationships either by pretending like a follower or by creating multiple fake accounts with malicious activities. Moreover, malicious social bots post shortened malicious URLs in the tweet in order to redirect the requests of online social networking participants to some malicious servers. Hence, distinguishing malicious social bots from legitimate users is one of the most important tasks in the Twitter network. To detect malicious social bots, extracting URL-based features (such as URL redirection, frequency of shared URLs, and spam content in URL) consumes less amount of time in comparison with social graph-based features (which rely on the social interactions of users). Furthermore, malicious social bots cannot easily manipulate URL redirection chains. In this article, a learning automata-based malicious social bot detection (LA-MSBD) algorithm is proposed by integrating a trust computation model with URL-based features for identifying trustworthy participants (users) in the Twitter network..

[6] A. Gupta, H. Lamba, and P. Kumaraguru, ``1.00 per RT #BostonMarathon # prayforboston: Analyzing fake content on Twitter," in Proc. eCrime Researchers Summit (eCRS), 2013, pp. 1_12. In today's world, online social media plays a vital role during real world events, especially crisis events. Malicious content is posted online during these events, which can result in damage, chaos and monetary loss in the offline world. In our paper, we highlight the role of Twitter in two major crisis events: Hurricane Sandy and Boston Marathon Bombings in spreading fake content about the events. We performed a characterization analysis, to understand the temporal, social reputation and influence patterns for the spread of such fake information. Our results indicate that automated techniques can be used to identify characteristics of fake information on Twitter [7] F. Concone, A. De Paola, G. Lo Re, and M. Morana, ``Twitter analysis for real-time malware discovery," in Proc. AEIT Int. Annu. Conf., Sep. 2017, pp. 1_6. Abstract—In recent

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years, the increasing number of cyberattacks has gained the development of innovative tools to quickly detect new threats. A recent approach to this problem is to analyze the content of Social Networks to discover the rising of new malicious software. Twitter is a popular social network which allows millions of users to share their opinions on what happens all over the world. The subscribers can insert messages, called tweet, that are usually related to international news. In this work, we present a system for real-time malware alerting using a set of tweets captured through the Twitter API's, and analyzed by means of a Bayes Na¨ıve classifier. Then, groups of tweets discussing the same topic, e.g, a new malware infection, are summarized in order to produce an alert. Tests have been performed to evaluate the performance of the system and results show the effectiveness of our implementation.

III. METHODOLOGY

In the proposed system, the system elaborates a classification of spammer detection techniques. The system shows the proposed taxonomy for identification of spammers on Twitter. The proposed taxonomy is categorized into four main classes, namely, (i) fake content, (ii) URL based spam detection, (iii) detecting spam in trending topics, and (iv) fake user identification. Each category of identification methods relies on a specific model, technique, and detection algorithm.
The first category (fake content) includes various techniques, such as regression prediction model, malware alerting system, and Lfun scheme approach. In the second category (URL based spam detection), the spammer is identified in URL through different machine learning algorithms. The third category (spam in trending topics) is identified through Naïve Bayes classifier and language model divergence. The last category (fake user identification) is based on detecting fake users through hybrid techniques.

Algorithm:
A. Dataset Extraction First data is collected from the dataset, in our case which is Twitter messages. After collecting the data, it is cleansed by getting rid of extra spaces, removing duplicates and many more.
B. Collecting Metadata The RB features are implemented with the cleaned dataset. First, the time frame of the message is identified. After identifying the time frame, it is compared with the threshold rating deviation where the diversity and variance of the spammer is checked. Hence, the metadata is collected about the spam message and spammer.
C. Generalize Messages All twitter messages are collected and generalized regardless of whether they are spam or not. By generalizing the messages a lot of time can be saved.
D. Implementing filtering algorithms The FILTERING algorithms are implemented in this stage by segregating the messages into spam content and original content.
E. Generating Spam Text Data and information about the Spammer After the FILTERING algorithms have been implemented the spam messages are identified and obtained, and the information about the spammer who has written the spam message will be collected. With the help of this information, the spammer's entire history can be accessed and all his messages can be analyzed.
Fig. 1.Flow Diagram The flow diagram shows the entire flow and steps of the framework.

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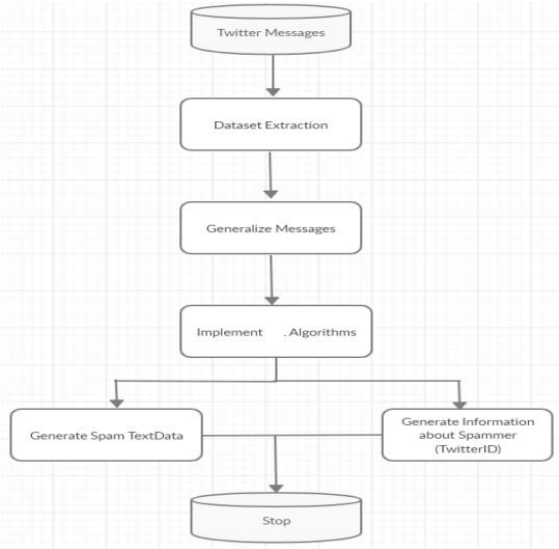

IV. CONCLUSION

for detecting spammers on Twitter. In addition, we also presented a taxonomy of Twitter spam detection approaches and categorized them as fake content detection, URL based spam detection, spam detection in trending topics, and fake user detection techniques. We also compared the presented techniques based on several features, such as user features, content features, graph features, structure features, and time features. Moreover, the techniques were also compared in terms of their specied goals and datasets used. It is anticipated that the presented review will help researchers _nd the information on state-of-the-art Twitter spam detection techniques in a consolidated form. Despite the development of efficient and effective approaches for the spam detection and fake user identication on Twitter [34], there are still certain open areas that require considerable attention by the researchers. The issues are briey highlighted as under: False news identi_cation on social media networks is an issue that needs to be explored because of the serious repercussions of such news at individual as well as collective level [25]. Another associated topic that is worth investigating is the identication of rumor sources on social media. Although a few studies based on statistical methods have already been conducted to detect the sources of rumors, more sophisticated approaches, e.g., social network based approaches, can be applied because of their proven effectiveness

REFERENCES

1. B. Erçahin, Ö. Akta³, D. Kilinç, and C. Akyol, ``Twitter fake account detection," in *Proc. Int. Conf. Comput. Sci. Eng. (UBMK)*, Oct. 2017, pp. 388_392.
2. F. Benevenuto, G. Magno, T. Rodrigues, and V. Almeida, ``Detecting spammers on Twitter," in *Proc. Collaboration, Electron. Messaging, Anti- Abuse Spam Conf. (CEAS)*, vol. 6, Jul. 2010, p. 12.
3. S. Gharge, and M. Chavan, ``An integrated approach for malicious tweets detection using NLP," in *Proc. Int. Conf. Inventive Commun. Comput. Technol. (ICICCT)*, Mar. 2017, pp. 435_438.
4. T. Wu, S. Wen, Y. Xiang, and W. Zhou, ``Twitter spam detection: Survey of new approaches and comparative study," *Comput. Secur.*, vol. 76, pp. 265_284, Jul. 2018.
5. [5] S. J. Soman, ``A survey on behaviors exhibited by spammers in popular social media networks," in *Proc. Int. Conf. Circuit, Power Comput. Tech- nol. (ICCPCT)*, Mar. 2016, pp. 1_6.
6. Gupta, H. Lamba, and P. Kumaraguru, ``1.00 per RT #BostonMarathon # prayforboston: Analyzing fake content on Twitter," in *Proc. eCrime Researchers Summit (eCRS)*, 2013, pp. 1_12.
7. F. Concone, A. De Paola, G. Lo Re, and M. Morana, ``Twitter analysis for real-time malware discovery," in *Proc. AEIT Int. Annu. Conf.*, Sep. 2017, pp. 1_6.

ISSN: 2057-5688

8. N. Eshraqi, M. Jalali, and M. H. Moattar, ``Detecting spam tweets in Twitter using a data stream clustering algorithm," in *Proc. Int. Congr. Technol., Commun. Knowl. (ICTCK)*, Nov. 2015, pp. 347_351.
9. C. Chen, Y. Wang, J. Zhang, Y. Xiang, W. Zhou, and G. Min, ``Statistical features-based real-time detection of drifted Twitter spam," *IEEE Trans. Inf. Forensics Security*, vol. 12, no. 4, pp. 914_925, Apr. 2017.
10. C. Buntain and J. Golbeck, ``Automatically identifying fake news in popular Twitter threads," in *Proc. IEEE Int. Conf. Smart Cloud (SmartCloud)*, Nov. 2017, pp. 208_215.
11. C. Chen, J. Zhang, Y. Xie, Y. Xiang,W. Zhou, M. M. Hassan, A. AlElaiwi, and M. Alrubaian, ``A performance evaluation of machine learning-based streaming spam tweets detection," *IEEE Trans. Comput. Social Syst.*, vol. 2, no. 3, pp. 65_76, Sep. 2015.
12. G. Stafford and L. L. Yu, ``An evaluation of the effect of spam on Twitter trending topics," in *Proc. Int. Conf. Social Comput.*, Sep. 2013, pp. 373_378.
13. [M. Mateen, M. A. Iqbal, M. Aleem, and M. A. Islam, ``A hybrid approach for spam detection for Twitter," in *Proc. 14th Int. Bhurban Conf. Appl. Sci. Technol. (IBCAST)*, Jan. 2017, pp. 466_471.