IJARSCT
ISSN (Online) 2581-9429
International Journal of Advanced Research in Science, Communication and Technology (IJARSCT)
International Open-Access, Double-Blind, Peer-Reviewed, Refereed, Multidisciplinary Online Journal
Impact Factor: 7.301
Volume 3, Issue 16, May 2023

Twitter Based Terrorist Abnormal Activity Detection

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Abstract: *Perhaps the richest source of human generated text input is social media. Internet users' opinions, feedback, and criticisms represent their attitudes and feelings towards specific topics and concerns. The sheer volume of such information makes reading it difficult for any group of people. As a result, social media has become a major instrument for propagating their views and influencing or enticing people to join their terrorist actions in general. Twitter is the most frequent and straightforward approach to contact a large number of individuals in a short period of time. This research focuses on the construction of a system that can detect terrorism-supporting tweets automatically through real-time analytics using the Apache Spark machine learning framework. The proposed approach is completely reliant on training data and attempts to enhance accuracy.*

Keywords: Machine Learning, Data Analysis, Abnormal Detection, Social Media

I. INTRODUCTION

In today's world, social media is arguably a very important factor in both an individual's life and the operation of a government. According to statistics, there are roughly 7.72 billion people on the planet, and there are undoubtedly billions of them who use the internet. There are 5.54 social media accounts per person and approximately 3.397 billion active social media accounts worldwide. It has been discussed how social media affects society, its citizens, and the data it produces as a result. Without a hint of social media's role in it, the development of the 21st century is hardly predictable. Saying that social media is omnipresent in all areas of life—including education, health care, business, disaster management, politics, and the travel and tourism sector—wouldn't be overstating the case. Of course, the use of social media for entertainment and media sharing goes without saying. Despite all the ease that social media has to offer, it also has a negative side. The flip side, improper usage of social media, also needs to be taken into consideration. On the one hand, this may appear to be bridging a communication gap and accelerating the dissemination of news among people; on the other hand, many people are abusing it severely. Misuse on a par with acts of genocide, homicides, bombings, conspiracies, etc.

While 76% of UK terrorists use the internet to study and plan their attacks. ASG, a Salafi Jihadist terrorist organization, kidnapped Australian Warren Rodwell in 2013 and held him captive for 472 days. The group used YouTube and Facebook to post ransom movies and show evidence of life. A thorough literature review indicated that the Islamic State (ISIS) made considerable use of social media to promote their ideology and recruit members and followers. It has been looked into how three extremist-affiliated organizations operating in the Asia Pacific region—Abu Sayyaf in the Philippines, Jamaat-e-Islami in Bangladesh, and the Uyghurs in China—use proactive social media tactics. This paper illustrates how these groups provide multiple options to maximize their reach, influence, and effect through the use of social media. Another example of social media misappropriation has been the examination of who displays the social media activity and online presence of media mujahedeen who are thought to be followers of jihadist groups and spread propaganda content online.

II. LITERATURE SURVEY

A model to predict information flow size and survival was developed by [1], with the help of data fetched from one of the popular social networking website Twitter. Zero truncated negative binomial (ZTNB) regression and the Cox regression approach, respectively, were used to model the size of the information flow and survival. They published a

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novel result using a sample of 427,330 tweets from Twitter, which assessed the attitude expressed in the tweet and was discovered to be statistically predictive of both size as well as survival of information flows of such nature. Also significant were URL co-occurrences and the timing differences between retweets and hashtags.

An analysis of open source communications data amassed through social media platforms was shown to be able to shed light on the dynamics of intra- and intercommunity conflict that emerge in the wake of such sad events in a related study. They asserted that the Twitter data collected in the wake of Fusilier Lee Rigby's murder provides strong evidence in favor of Collins' three phases of conflict dynamics. They also examined two major claims: the first was that the fight was interactive, and the second was that the detail provided by the digital data offered persuading insights into the intricate web of links that emerged and formed throughout such a dispute.

Another interesting study of this event was reported by [3], who worked this case study as a part of computational criminology. They demonstrated how the escalation and de-escalation of crime, as well as the dissemination and duration of crime, are all concepts that are related to the temporal variation in cyber-hatred.

Analysis of social reactions to the murder of Lee Rigby, was studied by [4] using data collected by systematic monitoring of twitter. They demonstrated how the escalation and de-escalation of crime, as well as the dissemination and duration of crime, are all concepts that are related to the temporal variation in cyber-hatred.

In the annual Boston Marathon on April 15, 2013, two homemade pressure cooker bombs detonated in the vicinity of the finish line of the race. This killed three people and several hundred others were injured. About sixteen people lost limbs. The social media posts uploaded instantly after the bombings were examined by [5]. They found specific keywords to appear regularly before the official public safety and media reports. Within minutes after the explosions, those nearby sent messages on Twitter. This aided in locating the events and determining their specifics. This serves as an example of how social media may be utilized to predict and represent emergencies

Study of this event was also undertaken by [6]. They looked at how two types of messages—those connected to the Boston Marathon disaster that were factual and those that were rumor—were distributed in relation to the attributes of tweets.. Negative binomial analysis showed that tweet features like usage of hashtag, number of followers and reaction time have an impact on tweet message diffusion during the bombing. The number of followers illustrated a positive relationship with message dispersion. However, the relationship between reaction time of tweet and message dispersion was, however, negative. Interestingly, messages that without hashtags were spread more than those with hashtags.

[7] Reported on a similar analysis of this incident, including more than 18 million tweets from 15,509 users in Paris on November 13, 2015.. They measured the level of their anxiety, anger, and sadness post-attacks. The authors proposed the use of computational focus groups and a completely novel investigation framework to evaluate a social media stream which archives user location and history. The study resulted in outcomes that would be unlikely to manifest through other media or methods.

This study[8] identified the Helpers to be the Convergence Behavior Archetypes who were the most to retweet all over the crisis. The Mourners, on the other hand, had the most influence due to their high retweet rate. This demonstrated that those who post emotionally charged information receive the most retweets. Additionally, the Detectives disseminated information into other communities the most. The authors not only extended the knowledge on how users converge on social media in crisis situations, but also help the crisis managers to get more insight in user's behavior. Knowing which type of behavior on social network has a effective impact, might help in controlling the amount of data that is generated during a crisis situation.

Twitter became a crucial means of communication between the public, government, and emergency services. A comprehensive analysis of understanding crisis communication trends mediated by social media was studied by [9]. TwitterMate was used to collect the data generated during tweets and also to analyze itAdditionally, it lists the primary hashtags that the public used as well as particular Twitter handles belonging to people, NGOs, and emergency personnel. 67,849 tweets in all were collected and looked at. There were four main categories of hashtags found: social support, terror attack, localities, and organizations.

This terror attack has been also examined by [10]. They investigated the number of tweets, geographical location of tweets and users demographics. They also evaluated if users in developing countries are inclined to tweet, retweet or reply during the event of a terrorist attack. They Define new metrics which about reach and impression of the tweet. They reported that, users from developing countries are inclined to tweet more initially and at critical period of the

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terrorist occurrence. Furthermore, hefty number of tweets originated from the Kenya with 23% from women and 73% from men. Also, original posts had a highest number of tweets followed by replies and retweets.

III. PROPOSED METHODOLOGY

The system attempted to associate some semantics with all of the real-time data obtained from Twitter. The system intended to examine the data to see if there were any patterns. We wanted to know which terms and hashtags were trending the most, as well as who was at the center of the network graphs. The system sought to know how many unique users the data had and how popular various metrics were for different crises. Another goal of our suggested approach is to determine the crisis orientation of Twitter users. To determine who focuses on which behavior. The system will examine the key parameters like as anxiety, rage, and despair over post attacks. Because a large amount of data is created every day, a system that can generate daily analysis is required. The system desired to be able to view tweets about terrorist acts as they occurred. There was a need to maintain track of tweets relating to terrorist attacks.

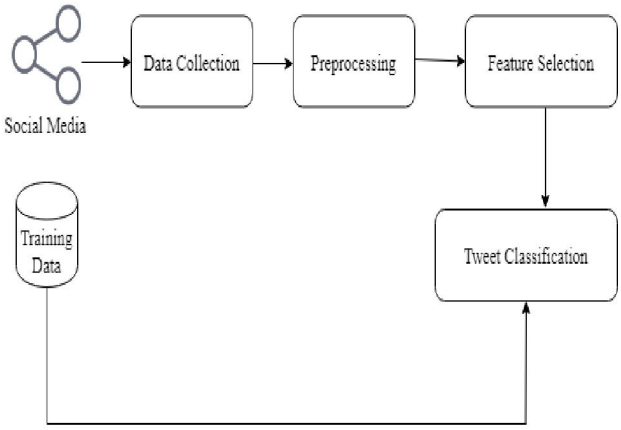

Figure 1: Block Diagram

IV. RESULTS AND DISCUSSION

To assess the performance, an experimental assessment is used to compare the proposed system with the current system. The simulation platform used is built using Java framework (version jdk 8) on Windows platform. The system does not require any specific hardware to run; any standard machine is capable of running the application.

The application is web application utilized instrument for configuration code in Eclipse and execute on Tomcat server. A few capacities utilized in the calculation are given by rundown of containers like Twitter-center and Twitter-stream containers and so forth.

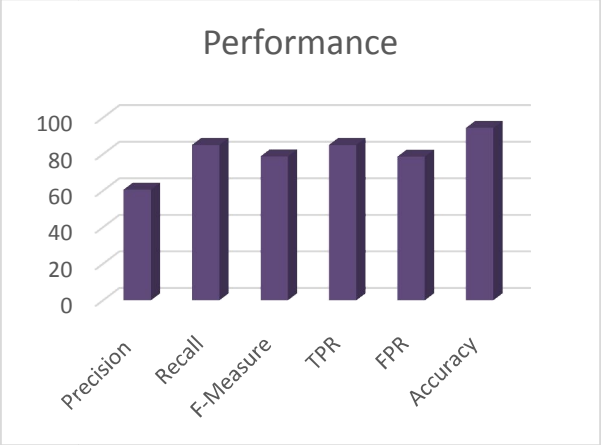

Fig. 2. Performance

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Table 1: Performance table

Parameters	Percentage
TPR	85.1
FPR	78.7
Precision	60.6
Recall	85.1
F-Measure	78.8
Accuracy	94.4

V. CONCLUSION

The present research primarily focuses on the use of social media as a weapon for terrorism due to the rising use of social media. India which is known to be one of the wide countries in the world with having more than 65% of its youth below age-group of 35;Social media plays vital role in the life of this young youth. The proposed systems will try to analyze a common platform to manifest the progress of counter-terrorism strategies in this digital world; There is scope for verifying the changed sentiments of the user before and after an attack. Considering the studies reported and analysis performed hitherto, it to be the need of the hour to increase the magnitude of data analysis on a much larger scale and more so on a regular basis. This should be done not only to identify the acts of terrorism on social media but also as a safety tool, preventive measures and post-attack examination. The study can also include a machine learning approach to train a system to automatically classify the tweets and do a sentiment analysis of the tweets/comments.

ACKNOWLEDGEMENTS

First and foremost, we would like to thank our guide, Prof. Archana Dirgule for their invaluable guidance, insightful feedback, and constant encouragement throughout the course of this study. Their expertise and mentorship played a crucial role in shaping our research and improving the quality of our findings.

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