"An Early Warning Detection System of Terrorism Using Machine Learning"

¹Mansi Mengnar, ²Vaishnavi Deore, ³Tejaswini Dinde, ⁴Vaishnavi Badgujar, ⁵Prof. Amol Gosavi

Department of computer Science &engineering
MET Institute of Engineering
Nasik.

Abstract- **In the recent times, terrorism has grown. In an exponential manner in certain parts of the world. This enormous growth in terrorist activities has made it important to stop terrorism and prevent its spread before it causes damage to human life or property. With development in technology, internet has become a medium of spreading terrorism through speeches and videos. Terrorist organizations use the medium of the internet to harm and defame individuals and also promote terrorist activities through web pages that force people to join terrorist organizations and commit crimes on the behalf of those organizations. Web mining and data mining are used simultaneously for the purpose of efficient system development. Web mining even consists of many different text mining methods that can be helpful to scan and extract relevant data from unstructured data. Text mining is very helpful in detecting various patterns, keywords, and significant information in unstructured texts. Data mining and web mining systems are used for mining from text widely. Data mining algorithms are used to manage organized data sets and web mining algorithms can be helpful in mining and extracting from unstructured web pages and text data that is available across the web. Websites built in different plat- forms have varying data structures and that makes it quite difficult to read for a single algorithm.**

Key Words: **Terrorism, Machine Learning, Encryption, Detection, SVM.**

INTRODUCTION

Terrorist organizations are using the internet to spread their propaganda and radicalize youth online and encourage them to commit terrorist activities. In order to minimize the online presence of such harmful websites we need to devise a system which detects specific keywords in a particular website. The website should be flagged inappropriate if the keywords are found for efficient system development. Data mining consists of text mining methods that help us to scan and extract useful content from unstructured data. Text mining helps us to detect keywords, patterns and important information from un- structured texts. Hence, here we plan to implement an efficient web data mining system to detect such web properties and flag them for further human review. Data mining is a technique used to extract patterns of relevant data from large data sets and gain maximum insights to the obtained results. Web mining as well as data mining are used simultaneously for efficient system development. The literature survey shows the previous work that has been carried out on this subject. The existing systems have been explained in detail in the paper. The system that we propose to implement significantly improves the current system and eliminates the flaws that exist in the existing system. The method- ology and results that we achieved after the implementation of the proposed system have also been explained in brief further. This system should be helpful in anti-terrorism and cyber security response departments. The system should help the cops to track communication held between terrorists and should detect web pages developed in different platform.

LITURATURE SURVEY:

"Meta-Terrorism: Identifying Linguistic Patterns in Public Discourse After an Attack", Panos Kostakos; Markus Nykanen etal.,This pa- per explained that, When a terror-related event occurs, there is a surge of traffic on social media comprising of informative messages, emotional outbursts, helpful safety tips, and rumors. It is important to understand the behavior manifested on social media sites to gain a better understanding of how to govern and manage in a time of crisis. We under- took a detailed study of Twitter during two recent terror-related events: the Manchester attacks and the Las Vegas shooting. We analyze the tweets during these periods using (a) sentiment analysis, (b) topic analysis, and (c) fake news detection. Our analysis demon- strates the spectrum of emotions evinced in reaction and the way those reactions spread over the event timeline. Also, with respect to topic analysis, we find "echochambers", groups of people interested in similar aspects of the event. Encouraged by our results 4An Early Warning Detection System of Terrorism in India on these two event datasets, the paper seeks to enable a holistic analysis of social media messages in a time of crisis.[1]

"Detecting Hidden Friendship in Online Social Network", Guido Barbian etal., This paper presents, For many intelligence and security applications it is important to know how close people in a network are. In online social networks (OSN) friendship links are a frequently chosen basis for the analysis. In this paper we show that friendship links can be misleading, if we want to know to what extent people in a network trust into each other. We also show how to unveil hidden friendship relations based on an analysis of exceptions in the privacy settings. We furthermore discuss resulting options for defeating crime and terrorism as well as associated privacy, security and civil liberty issues.[2]

"Detection of Cyberbullying in Social Networks Using Ma- chine Learning Methods" , Elif Varol Altay etal., this paper studied that , Increasing Internet use and facilitating access to online communities such as social media have led to the emergence of cybercrime. Cyber bullying, a new form of bullying that emerged recently with the development of social networks, means sending messages that include slanderous statements, or verbally bullying other people or persons in front of the rest of the online community. The characteristics of online social networks enable cyber- bullies to access places and countries that were previously unattainable. In this study; the use of natural language processing techniques and machine learning methods namely, Bayesian logistic regression, random forest algorithm, multilayer sensor, J48 algorithm and support vector machines have been used to determine cyber bullying. To the best of our knowledge, the successes of these algorithms with different metrics within different experiments have been compared for the first time to the real data.3

"An Early Warning Detection System of Terrorism in In- donesia from Twitter Contents using Na¨ıve Bayes Algorithm", Mediana Aryuni, etal., This paper presents, Aware on the benefits of social media as the networking platform, the extremist organization is utilized social media to spread the ideology, recruit new member and guided a suicide bomber alike. There are opportunities to analyze the content of document texts in social media including the terrorism detection and intention by extracting the content evident in their post, comment etc. The objective of this research is to analyze content posted in Twitter and to review whether post and conversation on Twitter will be highly related to terrorism intention or another way around. This study deployed Na¨ıve Bayes classification technique which identified Twitter contents in Indonesian national language. The method has been processed text pre-processing, and dataset divided with hold out technique. Result of F-measure value indicates that 76 and 77 of texts are associated with the accuracy level of terrorism based on macro-averaging and micro-averaging indicators. The finding is contributed to the scanty literature on the early warning detection method in Indonesian language and assist the government to target the extremists' organizations..[4]

"Online Extremism Detection in Textual Content: A Systematic Literature Review", Saja Aldera, etal., In this paper, Social media networks such as Twitter, Facebook, YouTube, blogs, and discussion forums are be- coming powerful tools that extremist groups use to disseminate radical ideologies and propaganda, and to recruit people to their cause. Identifying extremist social media con- tent and profiles is a top priority for counter-terrorist agencies, technology companies, and governments. The main objective of this paper is to provide a better understanding of the definition of extremism, and a detailed review of the current research regarding online extremism in text. To identify gaps in the literature, a systematic literature review (SLR) of 45 studies published between 2015 and 2020 was undertaken, which revealed challenges, technical pitfalls in previous studies, and opportunities for extending and improving prior results in

meaningful ways. The systematic review indicates the need for better understanding of the landscape and directions of the online extremism. This study offers a critical analysis of the new area of research..[5]

AIM & OBJECTIVES:

- An innovative knowledge-based methodology for terrorist detection by using Web traffic content as the audit information is presented.
- The proposed system learns the typical behavior ('profile') of terrorists by applying a data mining algorithm to the textual content of terror-related activities on Web.

MOTIVATION:

Terrorist organizations use internet to brain wash individuals and also promote terrorist activities through provocative web pages that inspire helpless people to join terrorist organizations. So here we propose an efficient system using data mining and machine learning to detect such web properties and flag them automatically for human review.
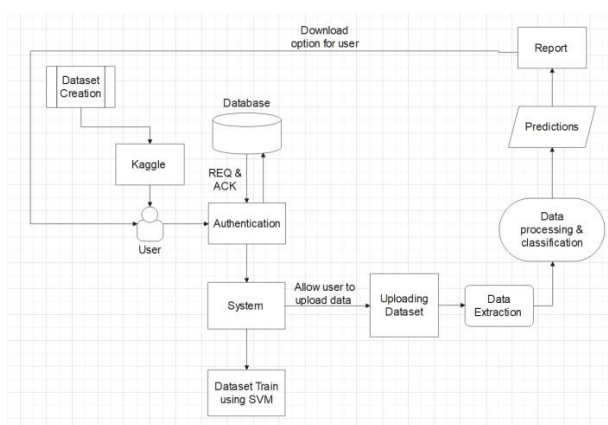
SYSTEM ARCHITECTURE:

Fig -1: System Architecture Diagram

APPLICATION:

- In defense
- In some rural areas
- Research

FUNCTIONAL & NON-FUNCTIONAL REQUIREMENTS:

Functional requirements: may involve calculations, technical details, data manipulation and processing and other specific functionality that define what a system is supposed to accomplish. Behavioral requirements describe all the cases where the system uses the functional requirements; these are captured in use cases.

Nonfunctional Requirements: (NFRs) define system attributes such as security, reliability, performance, maintainability, scalability, and usability. They serve as constraints or restrictions on the design of the system across the different backlogs.

Functional requirements:

- Registration
- User Login
- Creation of database: Users Mandatory Information

Design Constraints:

1. Database
2. Operating System
3. Web-Based Non-functional

Requirements Security:

1. User Identification

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2. Login ID
3. Modification

Performance Requirement:
1. Response Time
2. Capacity
3. User Interface
4. Maintainability
5. Availability

SYSTEM REQUIREMENTS
Hardware Requirements
- AMD/Intel i3 Processor or aboveProcessor
- 4GB RAM for application development • 80 GB or above HardDisk

Software Requirements
- Windows 7 or above
- Vscode, Xamp • Python

CONCLUSION

To curb the menace of terrorism and to destroy the online presence of dangerous terrorist organizations like ISIS and other radicalization websites. We need a proper system to detect and terminate websites which are spreading harmful content used to radicalizing youth and helpless people. We analysedthe usage of Online Social Networks (OSNs) in the event of a terrorist attack. We used different metrics like number of tweets, whether users in developing countries tended to tweet, re-tweet or reply, demographics, geo-location and we defined new metrics (reach and impression of the tweet) and pre- sented their models. Hence, we can conclude that there is need of our system in current scenario as the large number of user percentage uses web is increasing day by day so it is important to keep trackon their activity.

REFERENCES:
1. Aakash Negandhi, Soham Gawas, Prem Bhatt, Priya Porwal "Detect Online Spread of Terrorism Using Data Mining".IOSR Journal of Engineering Volume 13,17 April 2019. So here they propose an efficient web data mining system to detect such webproperties and flag them automatically for human review. Keywords: Anti-Terrorism, Data Mining,Online, Terrorism,World
2. Avishag Gordon "The spread of terrorism publications: A database analy- sis",Terrorism and Political Violence journal publishedin Dec 2007.This research note focuses on the spread of terrorism publications from 1988 to 1995 compared to their frequency of appearance from 1996 to 1998. It also identifies the core journals of this research field.
3. A.Sai Hanuman, G.Charles Babu , P.Vara Prasad Rao, P.S.V.Srinivasa Rao ,B.Sankara Babu "A Schematic Approach on Web Data Mining In Online Spread Detection of Terrorism",International Journal of Recent Technology and Engineering Volume-8, Issue-1, May 2019.So here they have propose a compelling web data mining structure to recognize such web properties and standard them thusly for human re- view. Index Terms: web data mining, terrorism, web structure mining, dread mongeraffiliations.
4. Counter Terrorism on Online Social Networks Using Web Mining Techniques Fawad Ali, Farhan Hassan Khan, Saba Bashir, and Uzair Ahmad, Department of Computer Science, Federal Urdu University of Arts, Science and Technology (FUUAST), Islam- abad, Pakistan.In this paper somemajor web mining techniques have been discussed which can be helpful to identify such people and terrorism may be countered from OSN. Each technique is discussed thoroughly, and effectivenessalong with its pros and cons are also presented.
5. Chen, H." Sentiment Analysis in Multiple Languages: Feature Selection for Opinion Classification in Web Forums." ACM Transactions on Information Systems, forthcom- ing,June 2008.Inthis study the use of sentiment analysis methodologies is proposed for classification of Web forum opinions in multiple languages.