IMPLEMENTATION OF EFFECTIVE FRAMEWORK FOR IDENTIFICATION OF SUICIDAL CONTENT IN TWITTER DATA

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ABSTRACT

Suicidal ideation detection in online social networks is an emerging research area with major challenges. Recent research has shown that the publicly available information, spread across social media platforms, holds valuable indicators for effectively detecting individuals with suicidal intentions. The key challenge of suicide prevention is understanding and detecting the complex risk factors and warning signs that may precipitate the event. In this paper, we present a new approach that uses the social media platform Twitter to quantify suicide warning signs for individuals and to detect posts containing suicide-related content. The main originality of this approach is the automatic identification of sudden changes in a user's online behaviour.

To detect such changes, we combine natural language processing techniques to aggregate behavioural and textual features and pass these features through a martingale framework, which is widely used for change detection in data streams. Experiments show that our text-scoring approach effectively captures warning signs in text compared to traditional machine learning classifies. Additionally, the application of the martingale framework highlights changes in online behaviour and shows promise for detecting behavioural changes in at-risk individuals.

Individuals who suffer from suicidal ideation frequently express their views and ideas on social media However, finding and comprehending patterns of suicidal ideation Sudden behavioural change warning reported by the AFSP, a person's suicide risk is greater if a behaviour is new or has increased, especially a painful event, loss, or change. Considering this in conjunction with social media, where users constantly publish messages and deliberately express their feelings, we address suicide warning sign detection as data stream mining problem. Given a series of observations over time (tweets, messages, blog posts), an detect an abrupt change in a user behaviour that may be considered as a suicide warning sign. In the fill stream mining, this can be specifically seen as change point detection problems as per. However, unlike retrospective detection settings, which focus on batch processing, here we are interested in the real-time.

Keywords: **Cloud and Big Data, Signature Key Controls**

INTRODUCTION

According to the World Health Organization (WHO), it is estimated that 800,000 people worldwide die by suicide each year with at least as many suicide attempts [1]. The grief felt in the aftermath of such an event is compounded by the fact that a suicide may be prevented. This reality of suicide has motivated WHO member states to commit themselves to reducing the rate of suicide by a significant percent by 2020.

In an effort to educate the public, the American Foundation for Suicide Prevention (AFSP) [3] has identified characteristics or conditions that may increase an individual's risk. The three major risk factors are: 1) health factors (e.g., mental health, chronic pain), 2) environmental factors (e.g., harassment, and stressful life events), and 3) historical factors (e.g., previous suicide attempts and family history). Additionally, the time period preceding a suicide can hold clues to an individual's struggle. The AFSP categorizes these warning signs as follows: 1) talk (e.g., mentioning being a burden or having no reason to live), 2) behaviour (e.g., withdrawing from activities or sleeping too much or too little), and 3) mood (e.g., depression or rage). Identifying these risk factors is the first step in suicide prevention. However, the social stigma surrounding mental illnesses means that at- risk individuals may avoid professional assistance [4]. In fact, they may be more willing to turn to less formal resources for support [5]. Recently, online social media networks have become one such informal resource. Research has shown that at-risk individuals are turning to contemporary technologies (forums or micro-blogs) to express their deepest struggles without having to face someone directly as a result, suicide risk factors and warning signs have been seen in a new arena. There are even instances of suicide victims writing their final thoughts on Twitter, Facebook, and other online communities.

We believe that this large amount of data on people's feelings and behaviours can be used successfully for early detection of behavioural changes in at-risk individuals and may deaths. Social computing research has focused on this topic in recent years [6, 9, 10]. However, few initiatives have been concerned with the real time detection of suicidal ideation on Twitter. Previously, proposed detection methods rely heavily on manually annotated speech, which can limit their effectiveness due in part to the varying forms of suicide warning signs in at-risk individuals. And also, many of these methods also focus on the messages published by individuals at a specific time, independent of the whole context, which may be represented by the sequence of publications over time. we address the challenge of real-time analysis of Twitter posts and the detection of suicide related and to process the stream of an individual's online content we implement a martingale framework, which is widely used for the detection of changes in data stream settings. The input into this framework is a series of behavioural features computed from each individual Twitter post (tweet). These features are compared to previously seen behaviour in order to detect a sudden change in emotion that may indicate an elevated risk of suicide. The main contributions of this article are twofold. First, using research from the field of psychology, we design and develop behavioural features to quantify the level of risk for an individual according to his online behaviour on Twitter (speech, diurnal activities, size of social network, etc.). In particular, we create a feature for text analysis called the Suicide Prevention Assistant (SPA) text score. Secondly, we monitor the stream of an individual Twitter user and his behavioural features using an innovative application of a martingale framework to detect sudden behavioural changes.

These works have shown that individuals disclose their depression and other struggles to online common, which indicates that social media networks can be used as a new arena for studying mental health. Despite the solid foundation, the current literature is missing potential key factors in the effort to detect depression and predict suicide. Currently, few works analyse the evolution of an individual's online behaviour.

LITERATURE SURVEY

Suicidal ideation detection in online social networks is an emerging research area with major challenges. Recent research has shown that the publicly available information, spread across social media platforms, holds valuable indicators for effectively detecting individuals with suicidal intentions. The key challenge of suicide prevention is understanding and detecting the complex risk factors and warning signs that may precipitate the event. In this paper, we present a new approach that uses the social media platform Twitter to quantify suicide warning signs for individuals and to detect posts containing suicide-related content. The main originality of this approach is the automatic identification of sudden changes in a user's online behaviour. To detect such changes, we combine natural language processing techniques to aggregate behavioural and textual features and pass these features through a martingale framework, which is widely used for change detection in data streams. Experiments show that our text-scoring approach effectively captures warning signs in text compared to traditional machine learning classifiers. Additionally, the application of the martingale framework highlights changes in online behaviour and shows promise for detecting behavioural changes in at-risk individuals.

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SYSTEM ANALYSIS

EXISTING SYSTEM:

In the existing system, the system implemented to understand the connectivity and communication characteristics of Twitter users who post content subsequently classified by human annotators as containing possible suicidal intent or thinking, commonly referred to as suicidal ideation.

The system achieves this understanding by analysing the characteristics of their social networks. Starting from a set of human annotated Tweets we retrieved the authors followers and friends lists, and identified users who retweeted the suicidal content. We subsequently built the social network graphs.

An existing system results show a high degree of reciprocal connectivity between the authors of suicidal content when compared to other studies of Twitter users, suggesting a tightly-coupled virtual community. In addition, an analysis of the retweet graph has identified bridge nodes and hub nodes connecting users posting suicidal ideation with users who were not, thus suggesting a potential for information cascade and risk of a possible contagion effect. This is particularly emphasized by considering the combined graph merging friendship and retweeting links.

DISADVANTAGES

• It is not based on a natural language processing (NLP) based approach.

• There is no technique for emotion change detection.

PROPOSED SYSTEM:

In the proposed system, the system addresses the challenge of real-time analysis of Twitter posts and the detection of suicide-related behaviour. To process the stream of an individual's online content, we implement a martingale framework, which is widely used for the detection of changes in data stream settings.

The input into this framework is a series of behavioural features computed from each individual Twitter post (tweet). These features are compared to previously seen behaviour, in order to detect a sudden change in emotion that may indicate an elevated risk of suicide.

We present a new approach that uses the social media platform Twitter to quantify suicide warning signs for individuals and to detect posts containing suicide-related content.

ADVANTAGES

• Very fast Suicide warning signs in online behaviour.

• The system is effective due to a general framework for detecting suicide related posts in social networks.
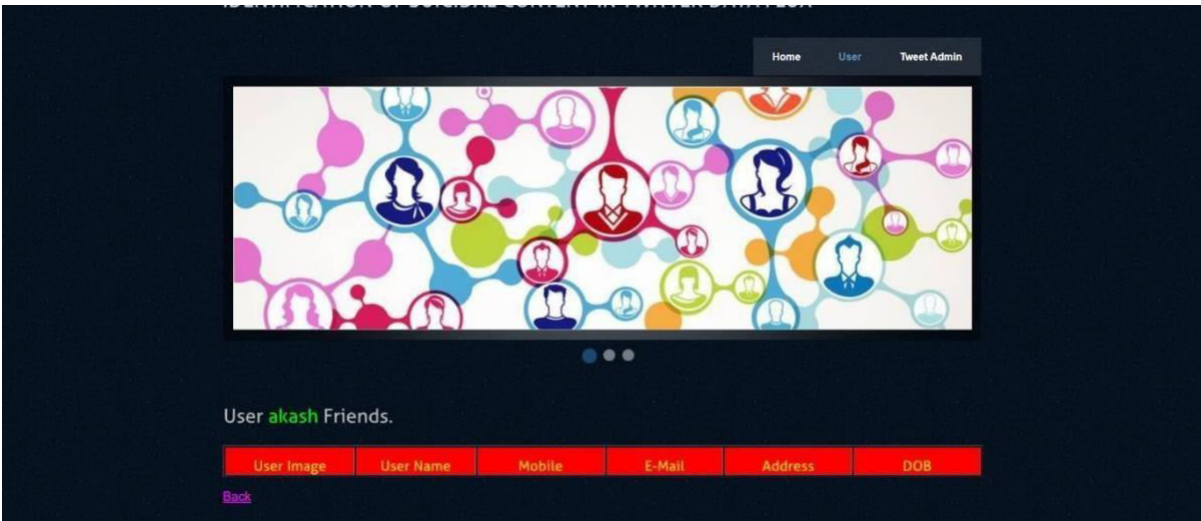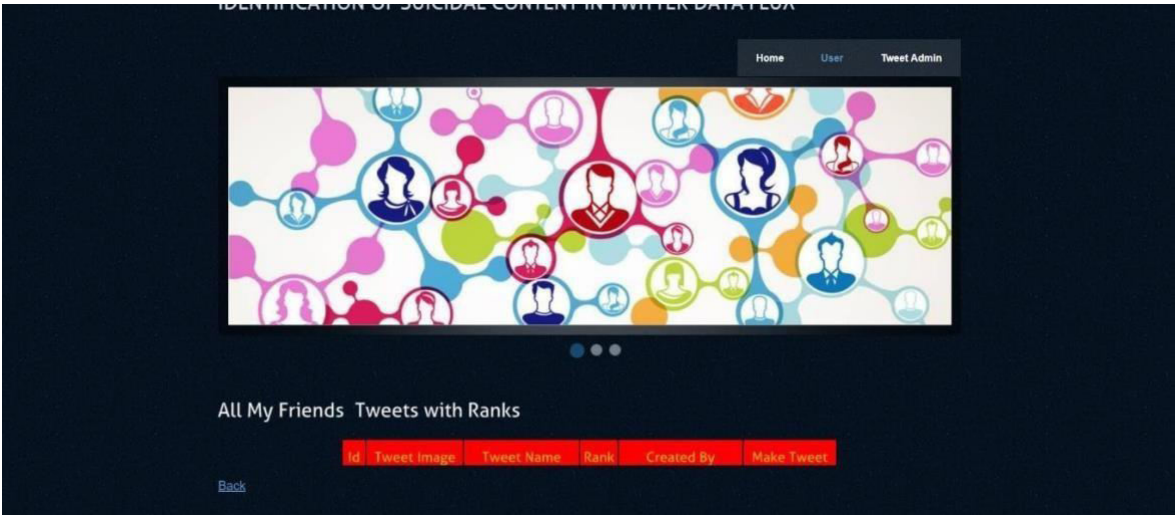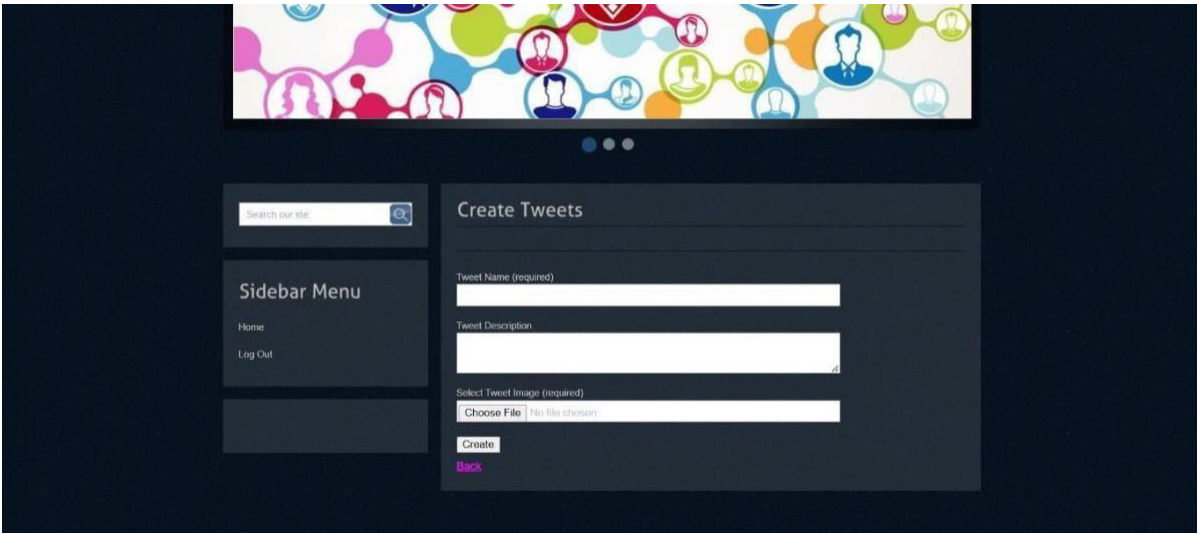
IMPLEMENTATION

MODULE DESCRIPTION

The major modules of the project are

1.Admin

2.User

3.Owner

MODULES DESCRIPTION

1.Admin: -We can access and view the Users and owners who are registering in our applications

2.User: - we can view posts and we can view the profiles in the application

3.Owner: - We can post Adds and view the Adds posted by Owner

RESULTS

CONCLUSION

In this project, we designed and evaluated a novel approach to monitor the mental health of a user on Twitter. Building off existing research, we worked to translate and quantify suicide warning signs in an online context (user-centric and post-centric behavioural features). In particular, we focused on detecting distress-related and suicide-related content and developed two approaches to score a tweet: an NLP-based approach and a more traditional machine learning text classifier. To detect changes in emotional well-being, we considered a Twitter user's activity as a stream of observations and applied a martingale framework to detect change points within that stream. Our experiments show that our NLP text-scoring approach successfully separates out tweets exhibiting distress-related content and acts as a powerful input into the martingale framework. While the martingale values "react" to changes in online speech, the change point detection method needs improvement. We were able to detect the true change point for one validation case, but the approach needs to be more robust with respect to parameter setting and positive changes in speech.

For future research, we plan to further explore the impact of martingale parameters on the change detection effectiveness. We also hope to expand the approach to include image processing and other social media outlets in order to assess the effectiveness in other settings. Another interesting perspective is to consider more fine-grained emotion classes such as anger, sadness, fear, etc., instead of considering four levels of distress. However, overall, we believe our initial work presents an innovative approach to detecting suicide-related content in a text stream setting.

1.Data Encryption and Access Control:

Implement strong encryption techniques to protect user data both in transit and at rest. Utilize robust access control mechanisms to limit access to sensitive information, ensuring that only authorized individuals can view or manipulate the data.

2.Privacy by Design:

Integrate privacy considerations into the design and development of the platform. This includes minimizing the collection of personal data, providing users with clear and transparent privacy policies.

3.Anonymization and Pseudonymization:

Apply anonymization and pseudonymization techniques to dissociate personal information from specific individuals, reducing the risk of data breaches and unauthorized access while still allowing for valuable analytics and insights.

4.Regular Security Audits and Penetration Testing:

Conduct regular security audits and penetration testing to identify vulnerabilities and weaknesses in the system. Address any identified issues promptly to maintain a secure environment for user data.

5.User Education and Awareness:

Educate users about best practices for safeguarding their own information, such as setting strong passwords, being cautious about sharing personal data, and understanding the platform's privacy features. Encourage users to report any suspicious activities promptly.

6.Compliance with Regulations:

Adhere to relevant data protection and privacy regulations, such as GDPR, CCPA, or other regional laws. Ensure the platform's policies and practices align with the legal requirements to protect user rights and privacy.

7.Regular Data Purging and Retention Policies:

Enforce data retention policies to delete unnecessary user data after a specified period. This helps reduce the potential harm in case of a security breach and ensures that data is only stored for as long as necessary.

8.Continuous Monitoring and Alerts:

Implement continuous monitoring of the network and user data, utilizing intrusion detection systems and automated alerts to detect and respond to any unusual activities or potential security

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