ISSN: 2456-1134 www.isjcresm.com

Vol-10 Issue-01 Mar 2025

DETECTION OF CYBERBULLYING ON SOCIAL MEDIA USING MACHINE LEARNING

Dr.SASI KUMAR[1], R. RAJU SAI KEERTHI[2], SAMA ANITH REDDY[3], SHIVARLA LAASHYA[4], YADAMA DEEPAK REDDY[5]

[1]Professor, Dept of CSE, MALLA REDDY INSTITUTE OF ENGINEERING AND TECHNOLOGY(AUTONOMOUS),Dhulapally,Secundrabad, Hyderabad, Telangana, India.

[2,3,4,5] UG Students, Dept of CSE, MALLA REDDY INSTITUTE OF ENGINEERING AND TECHNOLOGY(AUTONOMOUS),Dhulapally,Secundrabad, Hyderabad, Telangana, India.

ABSTRACT

Suicide is a critical issue in modern society. Early detection and prevention of suicide attempts should be addressed to save people's life. Current suicidal ideation detection (SID) methods include clinical methods based on the interaction between social workers or experts and the targeted individuals and machine learning techniques with feature engineering or deep learning for automatic detection based on online social contents. This article is the first survey that comprehensively introduces and discusses the methods from these categories. Domain-specific applications of SID are reviewed according to their data sources, i.e., questionnaires, electronic health records, suicide notes, and online user content. Several specific tasks and data sets are introduced and summarized to facilitate further research. Finally, we summarize the limitations of current work and provide an outlook of further research directions.

INTRODUCTION

MENTAL health issues, such as anxiety and depression, are becoming increasingly concerned in modern society, as they turn out to be especially severe in developed countries and emerging markets. Severe mental disorders without effective treatment can turn to suicidal ideation or even suicide attempts. Some online posts contain much negative information and generate problematic phenomena, such as cybers talking and cyber bullying.

Consequences can be severe and risky since such lousy information is often engaged in some form of social cruelty, leading to rumors or even mental damage. Research shows that

there is a link between cyber bullying and suicide [1]. Victims overexposed to too many negative messages or events may become depressed and desperate; even worse, some may commit suicide The reasons that people commit suicide are complicated. People with depression are highly likely to commit suicide, but many without depression can also have suicidal thoughts [2]. According to the American Foundation for Suicide Prevention (AFSP), suicide factors fall under three categories: health factors, environmental factors, and historical factors [3]. Ferrari et al. [4] found that mental health issues and substance use disorders are attributed to the factors of suicide.

O'Connor and Nock [5] conducted a thorough review of the psychology of suicide and summarized psychological risks as personality and individual differences, cognitive factors, social factors, and negative life events. Suicidal ideation detection (SID) determines whether the person has suicidal ideation or thoughts by given tabular data of a person or textual content written by a person. Due to the advances in social media and online anonymity, an increasing number of individuals turn to interact with others on the Internet. Online communication channels are becoming a new way for people to express their feelings, suffering, and suicidal tendencies. Hence, online channels have naturally started to act as a surveillance tool for suicidal ideation, and mining social content can improve suicide prevention [6].

Strange social phenomena are emerging, e.g., online communities reaching an agreement on self-mutilation and copycat suicide. For example, a social network phenomenon called the "Blue Whale Game"1 in 2016 uses many tasks (such as self-harming) and leads game members to commit suicide in the end. Suicide is a critical social issue and takes thousands of lives every year. Thus, it is necessary to detect suicidality and prevent suicide before victims end their life. Early detection and treatment are regarded as the most effective ways to prevent potential suicide attempts. Potential victims with suicidal ideation may express their thoughts of committing suicide in fleeting thoughts, suicide plans, and role-playing. SID is to find out these

risks of intentions or behaviors before tragedy strikes.

A meta-analysis conducted by McHugh et al. [7] shown statistical limitations of ideation as a screening tool but also pointed out that people's expression of suicidal ideation represents their psychological distress. Effective detection of early signals of suicidal ideation can identify people with suicidal thoughts and open a communication portal to let social workers mitigate their mental issues. The reasons for suicide are complicated and attributed to a complex interaction of many factors [5], [8]. To detect suicidal ideation, many researchers conducted psychological and clinical studies [9] and classified responses of questionnaires [10]. Based on their social media data, artificial intelligence (AI) and machine learning techniques can predict people's likelihood of suicide [11], which can better understand people's intentions and pave the way for early intervention. Detection on social content focuses on feature engineering [12], [13], sentiment analysis [14], [15], and deep learning [16]–[18]. Those methods generally require heuristics to select features or design artificial neural network (ANN) architectures for learning rich representation.

The research trend focuses on selecting more useful features from people's health records and developing neural architectures to understand the language with suicidal ideation better. Mobile technologies have been studied and applied to suicide prevention, for example, the mobile suicide intervention application I Bobbly [19] developed by the Black Dog Institute.2 Many other suicide prevention tools integrated with social networking services have also been developed, including Samaritans Radar3 and Woebot.4 The former was a Twitter plug in that was later discontinued because of privacy issues. For monitoring alarming posts, the latter is a Face book chat bot based on cognitive behavioral therapy and natural language processing (NLP) techniques for relieving people's depression and anxiety.

EXISTING SYSTEM

Traditional suicide detection relies on clinical methods, including self-reports and face-to-face interviews. Venek *et al.* [9] designed a five-item ubiquitous questionnaire for

the assessment of suicidal risks and applied a hierarchical classifier on the patients' response to determine their suicidal intentions. Through face-to-face interaction, verbal and acoustic information can be utilized. Scherer [23] investigated the prosodic speech characteristics and voice quality in a dyadic interview to identify suicidal and non suicidal juveniles. Other clinical methods examine the resting state heart rate from converted sensing signals [24] and classify the functional magnetic resonance imaging-based neural representations of death- and life-related words [25] and event-related instigators converted from EEG signals [26]. Another aspect of clinical treatment is the understanding of the psychology behind suicidal behavior [5], which, however, relies heavily on the clinician's knowledge and face-to-face interaction. Suicide risk assessment scales with clinical interview can reveal informative cues for predicting suicide [27]. Tan *et al.* [28] conducted an interview and survey study in Weibo, a Twitter-like service in China, to explore the engagement of suicide attempters with intervention by direct messages.

Suicide-related keyword dictionary and lexicon are manually built to enable keyword filtering [29], [30] and phrases filtering [31]. Suicide-related keywords and phrases include "kill," "suicide," "feel alone," "depressed," and "cutting myself." Vioulès *et al.* [3] built a pointwise mutual information symptom lexicon using an annotated Twitter data set. Gunn and Lester [32] analyzed posts from Twitter in the 24 h before the death of a suicide attempter. Coppersmith *et al.* [33] analyzed the language usage of data from the same platform. Suicidal thoughts may involve strong negative feelings, anxiety, hopelessness, or other social factors, such as family and friends. Ji *et al.* [17] performed word cloud visualization and topics modeling over suicide-related content and found that suicide-related discussion covers personal and social issues.

Colombo *et al.* [34] analyzed the graphical characteristics of connectivity and communication in the Twitter social network. Coppersmith *et al.* [35] provided an exploratory analysis of language patterns and emotions on Twitter. Other methods and techniques include Google Trends

analysis for suicide risk monitoring [36], the reply bias assessment through linguistic clues [37], human–machine hybrid method for analysis of the language effect of social support on suicidal ideation risk [38], social media content detection, and speech patterns analysis [39].

Disadvantages

- In the existing work, the system is Traditional suicide detection which relies on clinical methods, including self-reports and face-to-face interviews.
- This system is analyzed word frequencies in suicide notes using a fuzzy cognitive map to discern causality which is less effective.

PROPOSED SYSTEM

1) To the best of our knowledge, this is the first survey that conducts a comprehensive review of SID, its methods, and its applications from a machine learning perspective.

2) The proposed system introduces and discusses the classical content analysis and modern machine learning techniques, plus their application to questionnaires, EHR data, suicide notes, and online social content.

3) The proposed system enumerates existing and less explored tasks and discusses their limitations. We also summarize existing data sets and provide an outlook of future research directions in this field.

Advantages

1) The popularization of machine learning has facilitated research on SID from multimodal data and provided a promising way for effective early warning.

2) Massive data mining and machine learning algorithms have achieved remarkable outcomes by using DNNs.

Modules

Service Provider

In this module, the Service Provider has to login by using valid user name and password. After login successful he can do some operations such as Browse Data Sets and Train & Test,View Trained and Tested Accuracy in Bar Chart, View Trained and Tested Accuracy Results, View Prediction Of Message Text Type, View Message Text Type Ratio, Download Trained Data Sets, View Message Text Ratio Results, View All Remote Users.

View and Authorize Users

ISSN: 2456-1134 www.isjcresm.com

Vol-10 Issue-01 Mar 2025

In this module, the admin can view the list of users who all registered. In this, the admin can view the user's details such as, user name, email, address and admin authorizes the users.

Remote User

In this module, there are n numbers of users are present. User should register before doing any operations. Once user registers, their details will be stored to the database. After registration successful, he has to login by using authorized user name and password. Once Login is successful user will do some operations like REGISTER AND LOGIN, PREDICT MESSAGE TEXT TYPE, and VIEW YOUR PROFILE.

Fig.1. Home page.

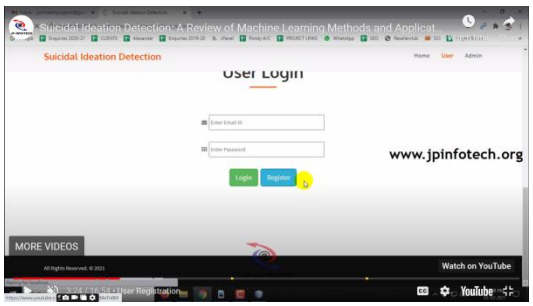

Fig.2. User login page.

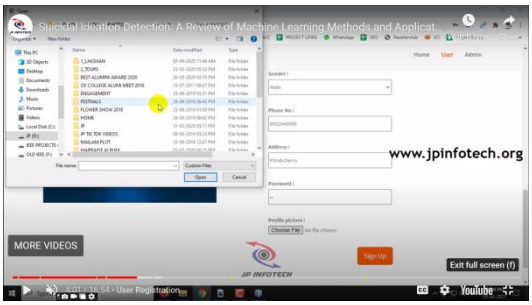

Fig.3 Upload the details.

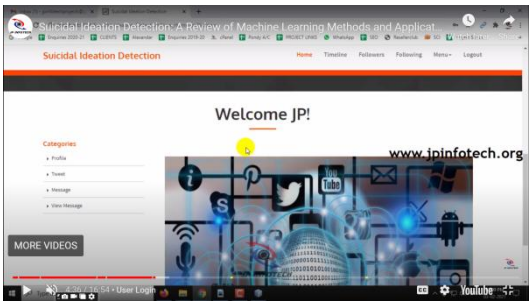

Fig.4. Welcome page.

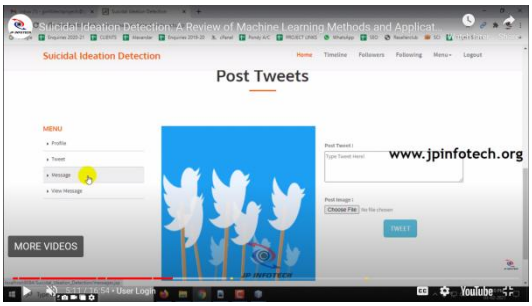

Fig.5. Post tweets page.

CONCLUSIONS

Suicide prevention remains an essential task in our modern society. Early detection of suicidal ideation is an important and effective way to prevent suicide. This survey investigates existing methods for SID from a broad perspective that covers clinical methods, such as patient–clinician interaction and medical signal sensing; textual content analysis, such

as lexicon-based filtering and word cloud visualization; feature engineering, including tabular, textual, and affective features; and deep learning-based representation learning, such as CNN and LSTM-based text encoders. Four main domain-specific applications on questionnaires, EHRs, suicide notes, and online user content are introduced. Psychological experts have conducted most work in this field with statistical analysis and computer scientists with feature engineering-based machine learning and deep learning-based representation learning. Based on current research, we summarized existing tasks and further proposed new possible tasks. Last but not least, we discuss some limitations of current research and propose a series of future directions, including utilizing emerging learning techniques, interpretable intention understanding, temporal detection, and proactive conversational intervention. Online social content is very likely to be the main channel for SID in the future. Therefore, it is essential to develop new methods, which can heal the schism between clinical mental health detection and automatic machine detection, to detect online textscontaining suicidal ideation in the hope that suicide can be prevented.

REFERANCES

[1] S. Hinduja and J. W. Patchin, "Bullying, cyberbullying, and suicide," Arch. Suicide Res., vol. 14, no. 3, pp. 206–221, Jul. 2010.

[2] J. Joo, S. Hwang, and J. J. Gallo, "Death ideation and suicidal ideation in a community sample who do not meet criteria for major depression," Crisis, vol. 37, no. 2, pp. 161–165, Mar. 2016.

[3] M. J. Vioules, B. Moulahi, J. Aze, and S. Bringay, "Detection of suicide-related posts in Twitter data streams," IBM J. Res. Develop., vol. 62, no. 1, pp. 7:1–7:12, Jan. 2018.

[4] A. J. Ferrari et al., "The burden attributable to mental and substance use disorders as risk factors for suicide: Findings from the global burden of disease study 2010," PLoS ONE, vol. 9, no. 4, Apr. 2014, Art. no. e91936.

[5] R. C. O'Connor and M. K. Nock, "The psychology of suicidal behaviour," Lancet Psychiatry, vol. 1, no. 1, pp. 73–85, 2014.

[6] J. Lopez-Castroman et al., "Mining social networks to improve suicide prevention: A scoping review," J.

Neurosci. Res., vol. 98, no. 4, pp. 616–625, Apr. 2020.

[7] C. M. McHugh, A. Corderoy, C. J. Ryan, I. B. Hickie, and M. M. Large, "Association between suicidal ideation and suicide: Metaanalyses of odds ratios, sensitivity, specificity and positive predictive value," BJPsych Open, vol. 5, no. 2, Mar. 2019.

[8] G. Kassen, A. Kudaibergenova, A. Mukasheva, D. Yertargynkyzy, and K. Moldassan, "Behavioral risk factors for suicide among adolescent schoolchildren," Elementary Educ. Online, vol. 19, pp. 66–77, Jan. 2020.

[9] V. Venek, S. Scherer, L.-P. Morency, A. S. Rizzo, and J. Pestian, "Adolescent suicidal risk assessment in clinician-patient interaction," IEEE Trans. Affect. Comput., vol. 8, no. 2, pp. 204–215, Apr. 2017.

[10] D. Delgado-Gomez, H. Blasco-Fontecilla, A. A. Alegria, T. Legido-Gil, A. Artes-Rodriguez, and E. Baca-Garcia, "Improving the accuracy of suicide attempter classification," Artif. Intell. Med., vol. 52, no. 3, pp. 165–168, Jul. 2011.