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THROUGH THE ALGORITHMIC LOOKING GLASS: MENTAL HEALTH REFLECTIONS ON SOCIAL MEDIA

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ABSTRACT

There is a major issue facing the world: a large number of young people are killing themselves. Understanding this tendency's upward direction is another difficulty. Investigating the causes of suicidal thoughts in individuals of all ages and devising strategies to persuade them to choose life instead are crucial. Social media serves as an essential medium for individuals to express their ideas, manners, and emotional states in the present period. This has prompted the question of whether social media post analysis may be used to determine if people are happy or unhappy, especially to identify moods that would point to suicide ideation. This study uses artificial intelligence and machine learning techniques to examine people's social media postings in order to assess their mental health, with a focus on indicators that might point to a suicide risk. According to the research, those who seem sad on social media have a high prevalence of suicide ideation. This study looked at the possibilities of using an individual's online behaviour to determine the risk that they are considering suicide. This study shows how social media analysis may be used to find and help people who are suicidal, offering fresh perspectives on identifying and evaluating suicidal thoughts and marking a major breakthrough in suicide prevention initiatives.

I. INTRODUCTION

Suicide and depression are closely related, and the alarming rates in nations like the USA and India underscore how urgent it is to address this worldwide mental health issue [1]–[3]. According to recent data, 46,000 people in

the USA committed suicide in 2020, and more than 17 million people received a diagnosis of a major depressive disorder—a rise partially ascribed to the COVID-19 pandemic [4], [5]. Because many people are reluctant to publicly express their emotional suffering, traditional clinical approaches for assessing the severity of depression, which mostly rely on patient-psychologist interviews, have limitations [7]–[9]. Social standards, religious convictions, and familial dynamics all influence how depression symptoms are expressed and interpreted, which makes this problem even more difficult. Because social networking sites like Facebook, Twitter, and Reddit are so popular, they provide a platform for individuals to express their feelings, particularly for those who are suicidal or depressed. Social media is a useful tool for examining suicidal and depressed behaviours because of its anonymous nature, which promotes transparency [10]–[13]. This study helps close the gap between the psychological effects of depression and suicide as they appear on social media and clinical findings. In order to improve preventative techniques and add to the larger conversation about mental health, we analyse text comments and postings in an effort to clarify the intricate connection between depression and suicide thoughts. The study specifically aims to:

- Examine knowledge gaps in the current understanding of depression and suicide, as well as their complex relationships;
- Use innovative methodologies to analyse the dynamics of depression and suicidal behaviour on social media; and

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- Provide insights that guide mental health care interventions and policymaking.

A. RESEARCH OVERVIEW AND CONTRIBUTIONS

With the use of Reddit datasets, this study does a comprehensive analysis to find suicidal inclinations in posts made by depressed people. The LDA topic modelling technique is used for an unsupervised analysis after supervised categorisation of suicidal severity in depression. The promise of machine learning models for mental health crisis response is shown by the exploration and visualisation of key variables that uncover underlying suicidal intentions and patterns. This study's main contributions are as follows: 1) A thorough evaluation of the literature has been done in order to forecast and prevent mental health crises as well as to look into creative ways to treat depression and suicidal thoughts. 2) The use of graphic data representation to clarify the intricate relationship between suicidal social media expressions and depressed moods. 3) A thorough analysis of social media postings to spot suicidal inclinations, using cutting-edge analytical methods to get a better understanding. 4) A number of machine learning classifiers were evaluated in order to identify which was the most accurate; ideal and effective hyper-parameter values were established, assessing the role of depression as a contributing factor to different levels of suicidality.

B. CONTRIBUTION OF TOPIC MODELING TECHNIQUES

This study uses topic modelling tools to investigate the complex connection between suicidal thoughts and depression. Deeper understanding of the range of suicidal behaviour intensities is possible via the use of exploratory analysis and visualisation. The unique approach this research takes to comprehending suicidal tendencies—especially in connection to depression—is what makes it noteworthy. Through the identification of fundamental

themes and trends present in the data, the writers illuminated subtle facets of suicidal conduct, promoting a more thorough comprehension of its intricacies.

This research study provides important insights into the cognitive, behavioural, and ideational components of suicide via the visualisation and analysis of key traits linked with several types of suicidal behaviour. Interestingly, important characteristics were found in a number of areas, including:

- Low-Risk Ideation: How much does depression influence suicide thoughts?
- Moderate Risk Indicator: How does depression draw attention to early warning signals and indications of suicidal thoughts?
- High-Risk Behaviour: What effects does depression have on observable behaviours linked to suicide thoughts and actions?

Suicide Attempt (Extreme Risk): How does depression relate to real suicide attempts and the techniques employed?

The results of examining the aforementioned issues give a foundation for comprehending the fundamental processes that underlie suicidal inclinations, as well as fresh viewpoints on the intricate relationship between depression and suicide behaviour. In the end, this study improves knowledge of focused suicide prevention treatments, strengthens the connection between depression and suicide, and offers useful information to researchers, legislators, and mental health practitioners.

II. LITERATURE SURVEY

"World Health Organisation: Suicide data and prevention strategies," WHO Report, 2023, W. H. Organisation.

An estimated 264 million individuals worldwide experience depression each year, and in many instances, depression is the primary cause of suicide, according to a research from [14]. This concerning figure emphasises how important it is to identify depression early on, as this may open doors for individuals who are

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impacted to get prompt treatment and assistance. However, since depression is so complicated and diverse, it is difficult to identify suicidality as a result of it. A new study path for understanding people's mental health is provided by their high level of participation in social media, where individuals regularly communicate their ideas and feelings. Examining social media connections offers a potential opportunity to spot suicide thoughts and symptoms of despair early on. Researchers might create models that could identify depressed symptoms and suicide thoughts by using cutting-edge artificial intelligence and machine learning methods to examine social media data. This would help with preventive mental health care and intervention measures.

"Knowledge-aware assessment of severity of suicide risk for early intervention," by M. Gaur, A. Alambo, J. P. Sain, U. Kursuncu, K. Thirunarayan, R. Kavuluru, A. Sheth, R. Welton, and J. Pathak, in The World Wide Web Conference, 2019, pp. 514-525.

Depression and other mental health conditions are major risk factors for suicidal thoughts, actions, and attempts. According to a research by the Substance Abuse and Mental Health Services Administration (SAMHSA), 5-10% of people with Borderline Personality Disorder (BPD) commit suicide, and 80% of these patients exhibit suicidal behaviour. Although several programs have been created and put into action to prevent suicide, one major obstacle has been the societal stigma attached to mental illnesses, which discourages people from getting treatment or talking openly about their experiences with others, including medical professionals. This is especially true for young people and teens, for whom suicide is the second leading cause of mortality in the United States. Previous studies that used surveys and questionnaires (such the PHQ-9) to predict suicide risk were unable to provide a quantitative risk assessment that aided in prompt

clinical intervention decision-making. The utilisation of Reddit as an inconspicuous data source to extract information regarding suicide thoughts and other associated mental health issues that affect depressed individuals is the focus of our multidisciplinary research. We provide an overview of our learning system, which uses domain-specific information to estimate an individual's level of suicide risk. To identify signals associated with suicidal thoughts and behaviours, our method entails creating a suicide risk severity lexicon combining medical knowledge bases and suicide ontology. To generate a dataset of 2181 redditors who have mentioned or suggested suicide thoughts, behaviour, or attempt, we additionally use language modelling, medical entity identification and normalisation, and negation detection. Given the significance of clinical knowledge, four practicing psychiatrists created our gold standard dataset of 500 redditors (out of 2181) using the Columbia Suicide Severity Rating Scale (C-SSRS) guidelines. The dataset had a pairwise annotator agreement of 0.79 and a group-wise agreement of 0.73. Our suggested C-SSRS-based 5-label categorisation method separates supportive individuals from those exhibiting varying degrees of suicidal propensity, in contrast to the current four-label classification scheme (no risk, low risk, moderate risk, and high risk). Our 5-label categorisation strategy reduces the perceived risk measure by 12.5% and improves the graded recall by 4.2%, outperforming the state-of-the-art approaches. In contrast to SVM-L, which has been used in state-of-the-art techniques across comparable datasets, convolutional neural networks (CNNs) performed the best in our scheme because of their discriminative features and utilisation of domain-specific knowledge resources.

"Differences in perception between depressed and non-depressed Twitter users," by M. Park, D. McDonald, and M. Cha, Proceedings of the

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International AAAI Conference on Web and Social Media, vol. 7, no. 1, 2013, pp. 476–485.

A person's mental condition will affect how she sees the world and the people in it. Depending on whether a person is depressed or not, we examine attitudes and behaviours towards online social media in this article. 14 active Twitter users, half of whom were depressed and the other half not, participated in semi-structured in-person interviews. Our findings point to significant differences between the two groups' attitudes regarding online social media and their actions inside these platforms. While depressed people saw Twitter as a tool for emotional connection and social awareness, non-depressed people saw it as a way to share and consume information. We go over a number of design implications for upcoming social networks that could better serve depressed individuals and provide guidance on how to support them in meeting their requirements on online social media.

"Detection of depression related posts in Reddit social media forums," IEEE Access, vol. 7, pp. 44883–44893, 2019, M. M. Tadesse, H. Lin, B. Xu, and L. Yang.

Depression is thought to be the leading cause of disability worldwide and a leading cause of suicide. It affects the printed text's representation of language use. Our study's main goal is to analyse posts made by Reddit users in order to identify any elements that can indicate the attitudes of relevant internet users towards depression. To do this, we train the data and assess the effectiveness of our suggested strategy using machine learning and Natural Language Processing (NLP) methods. We find a vocabulary of words that are more prevalent in narratives of depression. The results demonstrate how much performance accuracy may be increased using our suggested approach. Bigram, when combined with the Support Vector Machine (SVM) classifier, is the best single feature for detecting depression with an

accuracy of 80% and an F1 score of 0.80. The Multilayer Perceptron (MLP) classifier best demonstrates the power and efficacy of the combined features (LIWC+LDA+bigram), with the best performance for depression identification achieving 91% accuracy and 0.93 F1 score. Our research indicates that appropriate feature choices and their various feature combinations may lead to improved performance improvement.

III. SYSTEM ANALYSIS AND DESIGN EXISTING SYSTEM

A comprehensive examination of a large dataset from many subreddits pertaining to mental health was carried out by Gaur et al. (2019) [15], who looked at 270,000 members with 8 million posts. In addition to offering insightful information on online manifestations of grief, their research sought to determine the extent of suicide risk. Garcia-Martinez et al. (2022) [16] investigated the connection between suicide risk and emotional content in Spanish tweets. Their results demonstrated that feelings like innate melancholy, failure, and social neglect are important risk factors for suicide. They also found that the degree of suicide risk is correlated with emotions of powerlessness and a desire to flee from circumstances. Furthermore, a reduction in death phobia may raise the chance of suicide.

Shen et al. (2020) [17], using technology into this field of study, evaluated 4,882 WeChat users to gauge the likelihood and severity of suicide. Although their research yielded important insights, it also demonstrates that the most significant predictors of suicide attempts among female college students are suicidal "ideation" and suicide "behaviour." Along with social and family ties, anxiety and sadness also play important roles.

Other behavioural characteristics that have a modest impact include drinking, smoking, and socioeconomic circumstances.

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Additionally, it pointed out that the tests were limited to female medical students, emphasising the need for a wider range of data sources to improve the results' generalisability. Weller et al. (2021) [18] examined the combination of risk variables among 179,000 high school students in Utah, broadening the focus of study to younger groups. They found that suicide thoughts and behaviours were significantly predicted by online harassment, in-person bullying, and dysfunctional family dynamics. This highlights the intricate relationship between social and environmental variables in adolescent mental health.

When taken as a whole, these research highlight how complex depression and suicide risk are, underscoring the need of examining a range of social and emotional variables across many platforms and demographics. This work advances knowledge of the fundamental dynamics of depression-driven suicide risk and emphasises the possibility of using cutting-edge analytical methods to identify and reduce related risks early.

In keeping with this line of inquiry, Zogan et al. (2021) showed how feature-rich dictionaries and ensemble classifiers may effectively identify sadness on Twitter. They underlined how crucial thorough feature engineering is to enhancing model performance [22]. In the same year, Ye et al. emphasised the benefits of estimating the degree of depression and tracking real-time emotional changes utilising multi-modal data sources, including Instagram photos and medical health records. This method showed promise for leveraging social media data for real-time mental health monitoring [23].

Recently, Zhang et al. (2022) and Malhotra et al. (2022) have offered comprehensive evaluations of machine learning

algorithms for detecting mental health issues on social media. Their reviews emphasised new developments in the area and summarised existing approaches [24] [25]. Furthermore, Aldhyani et al. (2022) demonstrated the effectiveness of machine learning models for assessing Reddit posts, supporting the conclusions of previous research [26]. Lastly, Heckler et al. (2022) offered taxonomies for machine learning methods in mental health research after doing a meta-analysis of 54 publications. In order to standardise and enhance the dependability of machine learning applications in mental health, they highlighted the need of thorough benchmarking of various models and clinical datasets, highlighting significant trends and difficulties in the area [27]. In their unsupervised study of mental health, Joshi and Patwardhan (2020) [29] used unsupervised fuzzy C-mean clustering to achieve 76.12% accuracy, indicating behavioural changes for psychological analysis. To increase accuracy, they did, however, draw attention to the need of bigger datasets and the use of supervised techniques.

Disadvantages

These deficiencies were not filled by an existing system that assessed the generalisability and efficacy of machine learning models in identifying suicidal inclinations on social media using two different datasets, C-SSRS and SDCNL.

PROPOSED SYSTEM

With the use of Reddit datasets, this study does a comprehensive analysis to find suicidal inclinations in posts made by depressed people. The LDA topic modelling technique is used for an unsupervised analysis after supervised categorisation of suicidal severity in depression. The promise of machine learning models for mental health crisis response is shown by the exploration and visualisation of key variables

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that uncover underlying suicidal intentions and patterns. This study's main contributions are as follows:

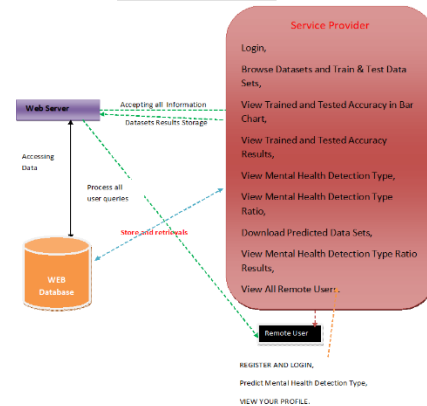
- 1) A thorough evaluation of the literature has been done in order to forecast and prevent mental health crises as well as to look into creative ways to treat depression and suicidal thoughts.
- 2) The use of graphic data representation to clarify the intricate relationship between suicidal social media expressions and depressed moods.
- 3) A thorough analysis of social media postings to spot suicidal inclinations, using cutting-edge analytical methods to get a better understanding.
- 4) The most accurate machine learning classifier was estimated by comparing many of them; ideal and effective hyper-parameter values were identified, assessing the role of depression as a contributing factor to different levels of suicidal thoughts.

Advantages

- The suggested method for comprehending the connection between sadness and the severity of suicidal thoughts. Our goal is to enhance early identification and intervention options for those at risk of suicide by examining the expression of key phrases that signify different levels of depression and suicide and their interconnection. This improved knowledge may result in more focused and efficient mental health care, which would eventually help to reduce suicide.
- Our goal was to examine the severity of suicidal ideation in relation to different depression degrees. However, to the best of our knowledge, no dataset exists that combines the categories for suicidal severity and depression.
- To enable the model to understand intricate patterns and correlations unique to varying degrees of suicide risk, the C-SSRS dataset was used for training.

SYSTEM ARCHITECTURE

Architecture Diagram



IV. IMPLEMENTATION

Modules

Service Provide

The Service Provider must use a working user name and password to log in to this module. He can do many tasks after successfully logging in, including browsing datasets and training and testing datasets. View All Remote Users, Download Predicted Data Sets, View Mental Health Detection Type Ratio, View Trained and Tested Accuracy in Bar Chart, View Trained and Tested Accuracy Results, and View Mental Health Detection Type.

View and Authorize Users

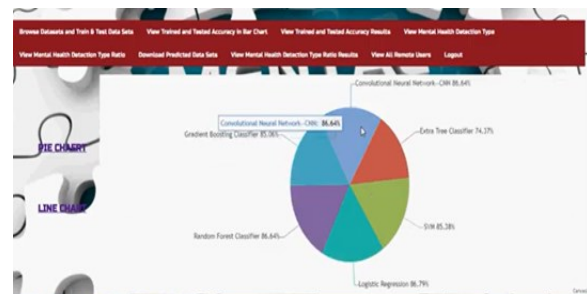
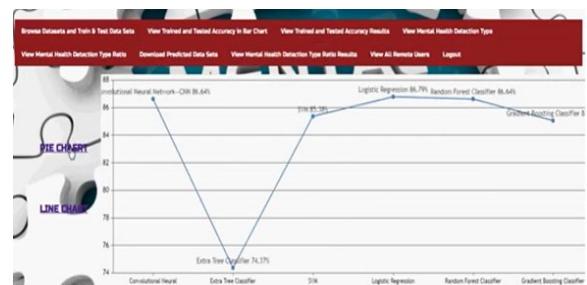
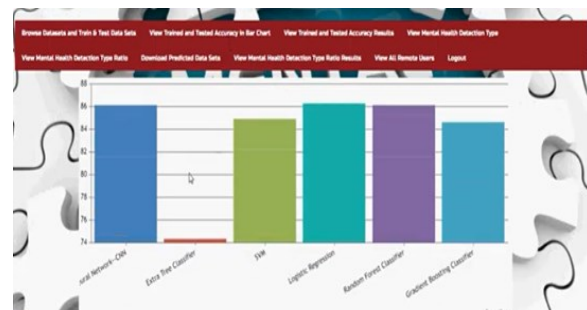
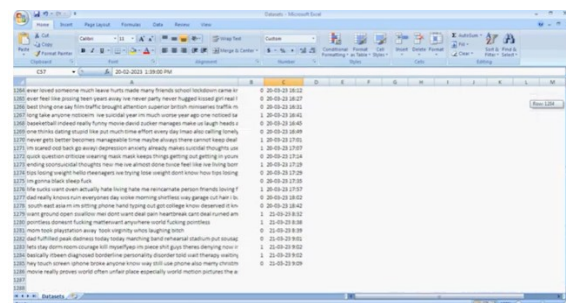
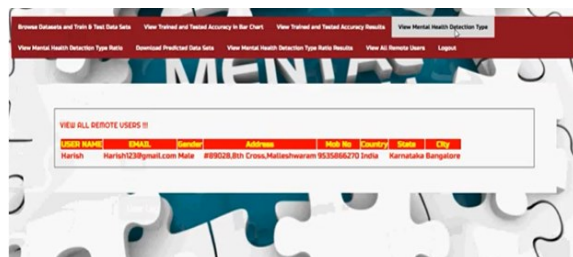
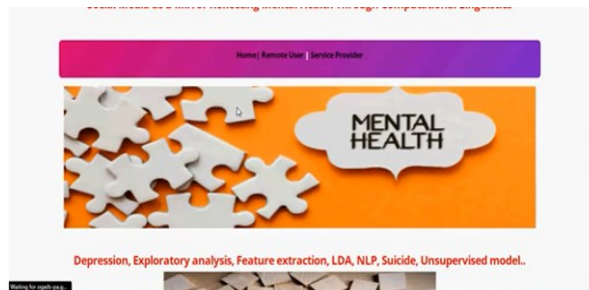
The administrator may see a list of all registered users in this module. Here, the administrator may see the user's information, like name, email, and address, and they can also grant the user permissions.

Remote User

The administrator may see a list of all registered users in this module. Here, the administrator may see the user's information, like name, email, and address, and they can also grant the user permissions.

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V. SCREEN SHOTS



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View Mental Health Detection Type Details !!

Post	Post Date	Prediction
depression should die right now would care real friends always start conversations get dry responses I feel comfortable around females emotional abuse men put left out never find love I keep getting reabused everyday failure disappointment parents compared siblings first suicidal thought about grades good enough parents this probably end soon	19-02-23 17:48	Depression
depressive motivated and cant wait get shape know gonna overright too heavy right now	20-02-23 8:28	No Depression
think it nearly unbelievable this could make death possibly one worlds most controversial topics affects neither against testament the nobles extraordinary intelligence sensitivity traits seem acting roles well	20-02-23 8:47	No Depression
shameless endometriosis jacobus bodder for this this text hints subtle compromise for against campus public cant put words subtle point vanishing yet one gets sense watching picture expressive possible sensitive worked back deeply enough	20-02-23 10:39	No Depression

VIEW ALL DEPOSITE USERS !!

USER NAME	EMAIL	Gender	Address	Mobile	Country	State	City
Harith	Harish123@gmail.com	Male	#99028,8th Cross,Mallashwaram	9535866270	India	Karnataka	Bangalore
Maqsumath	tsmkumarq14@gmail.com	Male	#99028,8th Cross,Mallashwaram	9535866270	India	Karnataka	Bangalore



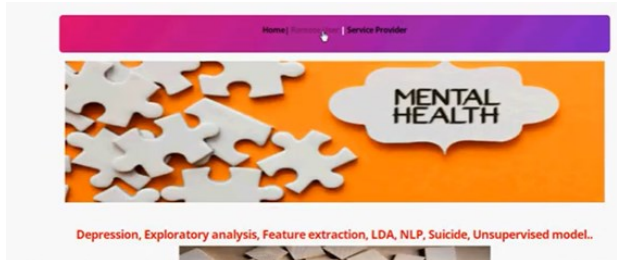
PREDICTION OF MENTAL HEALTH TYPE!!

ENTER DATASET DETAILS HERE !!

Enter Post Message: talking random people i've never met probably overreact one them depending there's looks age gender depends im extraverted introverted talking friends think two friends talk without introverted pretty decent amount friends too weird

Enter Post Date and Time: 21-02-23 9:32

Predict



Depression, Exploratory analysis, Feature extraction, LDA, NLP, Suicide, Unsupervised model...

REGISTER NOW!

REGISTER YOUR DETAILS HERE !!

Enter Username	Enter Password	Enter Address
Enter Email Id	Enter Address	Enter Mobile Number
Enter Gender	Enter Mobile Number	Enter State Name
Enter Country Name	Enter State Name	Enter City Name
Enter City Name	Enter City Name	REGISTER

VI. CONCLUSION

This study investigates an issue that has not received much attention in prior research: the degree to which depression levels represent a risk for suicide. We have learnt important things about the connection between depression and suicide behaviour by examining different levels of suicidality in Reddit's depression postings. According to our research, suicidal thoughts and actions are much more common in the suicide group than in the depression category. In particular, the study showed that postings about sadness and those about suicide have almost 60% of the same characteristics. This resemblance is especially noticeable in the ideation and indication categories, where suicidal ideas and signs are often present in the remarks of depressed people. Both Word2Vec

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and TFIDF vector embeddings were used in the research to analyse the data. In the Ideation, Indicator, and Supportive categories, the Word2Vec analysis revealed a significant degree of similarity between depression and suicide. The TFIDF study, on the other hand, revealed more noticeable variations, suggesting a better sensitivity in identifying serious suicidal behaviours and indications. Particularly when examined with TFIDF, the overall severity of suicidal behaviours and attempts is much greater in the suicide group. This implies that while suicidal thoughts are often indicated in depression postings, the number and severity of suicidal behaviours and attempts are more prominent in the suicide category. These findings support our experimental findings and highlight the intricate and interconnected psychological elements that go into estimating suicide risk. Future study must carefully choose and use these tools since the results are sensitive to the classifier, dataset, pre-trained model vectors, and embeddings given to the classifier.

REFERENCES

- [1] World Health Organization, "Suicide: facts and figures globally," <https://www.who.int/news-room/fact-sheets/detail/suicide>, 2022, [Online; accessed 29-Jan-2024].
- [2] World Bank, "Suicide rates overview 1985 to 2016 [dataset]," <http://databank.worldbank.org/data/source/world-development-indicators#>, 2018, [Online; accessed 29-Jan-2024].
- [3] J. M. Havigerová, J. Haviger, D. Kučera, and P. Hoffmannová, "Text-based detection of the risk of depression," *Frontiers in psychology*, vol. 10, p. 513, 2019.
- [4] O. P. Singh, "Startling suicide statistics in india: Time for urgent action," pp. 431–432, 2022.
- [5] Healthline, "Suicidal depression: Understanding it and finding help," 2022, [Online; accessed 29-Jan-2024]. [Online].

Available: <https://www.healthline.com/health/depression/suicidal-depression>

- [6] L. Morgan, "[R] Suicide Rates (in-depth)-Stats & Insights," <https://www.kaggle.com/code/lmorgan95/r-suicide-rates-in-depth-stats-insights#>, 2019, [Online; accessed 29-Jan-2024].

[7] J. D. Henry and J. R. Crawford, "The short-form version of the depression anxiety stress scales (dass-21): Construct validity and normative data in a large non-clinical sample," *British journal of clinical psychology*, vol. 44, no. 2, pp. 227–239, 2005.

[8] A. T. Beck, C. H. Ward, M. Mendelson, J. Mock, and J. Erbaugh, "An inventory for measuring depression," *Archives of general psychiatry*, vol. 4, no. 6, pp. 561–571, 1961.

[9] A. Beck and M. Kovacs, "weisman a," *Handbook of psychiatric measures: Beck Scale for Suicide Ideation*. American Psychiatric Association, 2000.

[10] M. M. Tadesse, H. Lin, B. Xu, and L. Yang, "Detection of depression related posts in reddit social media forum," *IEEE Access*, vol. 7, pp. 44883–44893, 2019.

[11] M. Park, D. McDonald, and M. Cha, "Perception differences between the depressed and non-depressed users in twitter," in *Proceedings of the international AAAI conference on web and social media*, vol. 7, no. 1, 2013, pp. 476–485.

[12] P. Burnap, W. Colombo, and J. Scourfield, "Machine classification and analysis of suicide-related communication on twitter," in *Proceedings of the 26th ACM conference on hypertext & social media*, 2015, pp. 75–84.

[13] X. Chen, M. D. Sykora, T. W. Jackson, and S. Elayan, "What about mood swings: Identifying depression on twitter with temporal measures of emotions," in *Companion proceedings of the the web conference 2018*, 2018, pp. 1653–1660.

<https://doi.org/10.62643/ijerst.2025.v21.i2.pp932-941>

- [14] W. H. Organization, "World health organization: Suicide data and prevention strategies," WHO Report, 2023.
- [15] M. Gaur, A. Alambo, J. P. Sain, U. Kursuncu, K. Thirunarayan, R. Kavuluru, A. Sheth, R. Welton, and J. Pathak, "Knowledge-aware assessment of severity of suicide risk for early intervention," in The world wide web conference, 2019, pp. 514–525.
- [16] C. García-Martínez, B. Oliván-Blázquez, J. Fabra, A. B. Martínez Martínez, M. C. Pérez-Yus, and Y. López-Del-Hoyo, "Exploring the risk of suicide in real time on Spanish Twitter: observational study," JMIR public health and surveillance, vol. 8, no. 5, p. e31800, 2022.
- [17] Y. Shen, W. Zhang, B. S. M. Chan, Y. Zhang, F. Meng, E. A. Kennon, H. E. Wu, X. Luo, and X. Zhang, "Detecting risk of suicide attempts among Chinese medical college students using a machine learning algorithm," Journal of affective disorders, vol. 273, pp. 18–23, 2020.
- [18] S. Twinandilla, S. Adhy, B. Surarso, and R. Kusumaningrum, "Multi document summarization using k-means and latent Dirichlet allocation (LDA)-significance sentences," Procedia Computer Science, vol. 135, pp. 663–670, 2018.
- [19] G. Shen, J. Jia, L. Nie, F. Feng, C. Zhang, T. Hu, T.-S. Chua, W. Zhu et al., "Depression detection via harvesting social media: A multimodal dictionary learning solution." in IJCAI, 2017, pp. 3838–3844.
- [20] S. Chancellor and M. De Choudhury, "Methods in predictive techniques for mental health status on social media: a critical review," NPJ digital medicine, vol. 3, no. 1, p. 43, 2020.
- [21] G. Castillo-Sánchez, G. Marques, E. Dorrónzoro, O. Rivera-Romero, M. Franco-Martín, and I. De la Torre-Díez, "Suicide risk assessment using machine learning and social networks: a scoping review," Journal of medical systems, vol. 44, no. 12, p. 205, 2020.
- [22] H. Zogan, I. Razzak, S. Jameel, and G. Xu, "DepressionNet: learning multi modalities with user post summarization for depression detection on social media," in proceedings of the 44th international ACM SIGIR conference on research and development in information retrieval, 2021, pp. 133–142.
- [23] J. Ye, Y. Yu, Q. Wang, W. Li, H. Liang, Y. Zheng, and G. Fu, "Multi modal depression detection based on emotional audio and evaluation text," Journal of Affective Disorders, vol. 295, pp. 904–913, 2021.
- [24] T. Zhang, A. M. Schoene, S. Ji, and S. Ananiadou, "Natural language processing applied to mental illness detection: a narrative review," NPJ digital medicine, vol. 5, no. 1, p. 46, 2022.
- [25] A. Malhotra and R. Jindal, "Deep learning techniques for suicide and depression detection from online social media: A scoping review," Applied Soft Computing, p. 109713, 2022.