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Cultural Norms, Gender Roles and their Implications for Achieving Sdgs in Developing Societies 1

Adediran, Yinka O, Edewor, Kehinde Omolara, Otubanjo, Taofeek Taiyeola

Talent Management and Employee Retention: Evidence from Academic and Non-teaching Staff of The University 11

Aliyu Mustapha Olanrewaju, Ijaiya Tahir Adeniyi

The Role Of Religious Leaders In Curbing Cybercrime Among Youths In Odogbolu Local Government Area, Ogun State, Nigeria 25

Yinka Oluranti ADEDIRAN, David Benjamin FATAI, Olatunde Oluwafemi AJAYI

Machine Learning and Iot Integration for Intelligent and Autonomous System Operations 38

Krishna Kumar Sharma, Amar Singh Verma, Sangeeta Kumari, Dr. Hemant Mathur

Artificial Intelligence in Suicidal Behavior Detection: Algorithms & Insights into Behavioral Patterns 46

Sangeeta Kumari, Krishna Kumar Sharma, Amar Singh Verma

Predictive Analytics and Structural Scarcity: A Multi-model Data Mining Approach to Deciphering The 2020–2025 Silver Price Super-cycle 50

Dr. Mamta Rathore, Dr. Harshwardhan Singh Krishnawat

Changing Dimensions of Social Infrastructure Development in India: A Statistical Perspective 56

Dr. Sandeep Kumar, Dr. B. R. Thakur

A Study on Bank Micorfinance for Small Enterprises: Evidence from Mumbai 66

Dr. Sheela Dashora, Hiral Desai

ARTIFICIAL INTELLIGENCE IN SUICIDAL BEHAVIOR DETECTION: ALGORITHMS & INSIGHTS INTO BEHAVIORAL PATTERNS

Abstract

Suicide is a leading cause of death worldwide, particularly among young adults, and remains a major challenge to global prevention efforts. Currently, there are no clinically available imaging, laboratory, or biomarker-based methods to aid in diagnosis or identify individuals at risk of suicide. As a result, suicide detection is increasingly relying on artificial intelligence (AI) platforms that can analyze large datasets to develop risk algorithms capable of predicting suicide trends and identifying at-risk individuals or groups. By analyzing social media posts, medical records, and data from mobile devices, multidisciplinary approaches that integrate diverse data sources and AI techniques can help identify individuals at risk, enabling timely interventions.

Keywords : Suicide Prevention, Young Adults, Artificial Intelligence, Machine Learning, Neural Network, Suicide Prediction, Mental Health, NLP

Introduction

Globally, suicide represents a substantial health burden. According to WHO estimates, there were 10.6 suicides for every 100,000 people in 2016, with low- and middle-income nations accounting for 80%. Biological, social, psychological, and environmental factors all play a part in suicidal behavior. Mental health issues play a major role since they can cause extreme dejection and emotional suffering, which can make people consider suicide. Suicidal thoughts may also be triggered by traumatic events, such as cruelty or the death of a loved one. These depressing emotions are frequently made worse by feelings of loneliness and social isolation. In addition, people may feel helpless and stuck due to marital problems, financial hardships, and persistent physical pain. Shame or feelings of inadequacy can be exacerbated by cultural or societal influences (Fazel et al., 2020).

Traditionally, doctors and therapists used to predict suicide by giving patients written questionnaires. Scales designed to represent the risk of suicide were created from the responses. The Suicide Intent Scale, the Scale for Suicidal Ideation, and the Beck Hopelessness Scale are common examples. Their forecasting skills, however, are lacking: According to recent

meta-analyses of hundreds of research conducted over the previous 50 years, the capacity to forecast future suicide attempts has consistently been close to chance. One important study found that "all of the scales and tools reviewed here had poor predictive value" (Chan, 2016).

AI might improve forecast accuracy and get beyond a lot of the drawbacks of conventional suicide screening methods. There are two main categories into

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which AI-based suicide prediction technologies fall: In the first category, medical records of patients are analyzed. It is carried out by medical professionals, public health researchers, hospitals, government organizations, and healthcare systems. The second category focuses on analyzing social interaction and consumer behavior from social media, Smartphone apps, retail purchases, and other non-healthcare-related activities (Marks, 2019).

Using Algorithms For Suicide Prevention

AI's capacity to analyze vast amounts of data makes it advantageous for identifying individuals who are either at danger of developing suicidal thoughts or who are already exhibiting them. To demonstrate the many AI strategies for suicide prevention in the social media setting, here are two examples. Developed by a separate research team, the Suicide Artificial Intelligence Prediction Heuristic (SAIPH) can be used on publicly accessible Twitter messages. Facebook's suicide prevention algorithms, which are now being utilized by the corporation to filter members within its own social network, serve as the second example.

A. Bored To Death: Artificial Intelligence Research Reveals The Role Of Boredom In Suicide Behavior

- 1) **Facial Expression Recognition (FER):** AI can use a convolution neural network (CNN) to examine a person's facial expressions and identify whether they show signs of boredom (Yao et al., 2020). Based on characteristics including eye activity, eyebrow placements, and lip movements, a deep learning model (such as AffectNet) trained on a sizable dataset of facial expressions may categorize emotions or boredom.

How it operates: The person's facial emotions are captured on camera. After processing the frames, a trained AI model identifies facial expressions associated with boredom. The system may categorize the user's state (e.g., bored, happy, focused) based on the analysis.

- 2) **Speech Emotion Recognition (SER):** Speech

patterns, tone, pitch, and pace can all be used to identify boredom. Slower speech rate, a monotone voice, or hesitancy when speaking are all indicators of boredom.

AI models such as recurrent neural networks (RNN) or long short-term memory (LSTM) networks may process audio input to identify emotions based on acoustic parameters like pitch, tone, and rhythm by using natural language processing (NLP) and audio analysis.

How it operates: The AI hears the person's voice or speech. To identify important characteristics (such as pitch, loudness, and speed), it examines the audio signal. It determines if a person is engaged or bored based on these characteristics.

B. Link Between Food Habits and Suicidal Tendencies

Although the relationship between eating patterns and suicidal thoughts is delicate and complicated, new fields of study in mental health are investigating how AI algorithms can examine dietary and mental health trends, including suicidal thoughts. By analyzing eating behaviors and other data, artificial intelligence (AI) may be able to assist in identifying behavioral, emotional, and physiological patterns that are associated with suicidal ideation.

How it operates: AI natural language processing (NLP) models, such as BERT or GPT, are taught to interpret the tone of forum postings, social media posts, and other publicly accessible content.

These models may recognize negative emotional expressions (e.g., "hopeless," "worthless," "numb") as well as key words or phrases related to food (e.g., "I feel like eating a whole pizza," "I haven't eaten all day," and "I'm constantly eating junk food"). After that, the AI can mark posts that might be problematic for additional research or mental health treatment.

C. AI Techniques to Spot Suicidal Trends Caused by Financial Stress

Artificial intelligence (AI) systems can be developed to track and evaluate a variety of data points that show elevated stress levels associated with financial problems and spot warning

indications of suicidal thoughts.

A lot of people share their money difficulties on blogs, forums, and social media sites. AI can identify suicidal ideas, financial concern, and unpleasant emotions through sentiment analysis utilizing Natural Language Processing (NLP) approaches.

D. Sentiment analysis and natural language processing (NLP)

AI-driven sentiment analysis systems can search for terms like "debt," "bills," "job loss," "hopeless," "stressed," "no way out," and so on. People exhibiting symptoms of financial stress can be identified by using these terms in conjunction with negative sentiment (sadness, despair, hopelessness). Then, AI can compare these terms to other emotional indicators, including heightened loneliness, despair, or mentions of suicide or self-harm (Berrouguet et al., 2018).

E. AI Can Detect Emotional Distress from Heartbreak Leading to Suicide

Heartbreak is an intense emotional experience that can have serious psychological repercussions, such as despair and suicide thoughts. It is frequently associated with the termination of romantic relationships.

AI Algorithm: Wearable technology, like the Apple Watch or Fitbit, gathers physiological data that AI algorithms can use to identify symptoms of depression, anxiety, or stress. Activity levels, sleep disorders, and heart rate variability are important markers. AI systems are able to monitor these trends over time and identify behavioral anomalies that may point to the psychological effects of heartbreak.

F. AI Algorithms and Abusive Relationships: Detection and Intervention AI Algorithm

Sentiment analysis and Natural Language Processing (NLP) algorithms can be used to detect abusive language, including threats, insults, and domineering conduct. AI can identify harmful trends that can point to abusive interactions by examining talks in real time.

For instance, AI-powered systems can identify and

notify the user or a support system if a person is consistently receiving messages that contain threats, insults, or derogatory language.

G. AI and Games to Reduce Suicidal Tendencies: Innovative Approaches to Mental Health Support

AI-powered games can be especially useful in lowering suicide thoughts since they provide personalized, engaging experiences that assist people in managing difficult emotions and mental health issues.

These games use AI to provide real-time feedback and interventions by adjusting to the player's emotional and psychological condition.

AI in Game Design: By modifying the game's story and challenges in response to a player's answers, AI can incorporate CBT approaches into gaming mechanics. For instance, a game can offer in-game activities that help players recognize and reframe negative ideas, progressively increasing their ability to withstand stress and depressing emotions.

AI-powered virtual assistants, like Woebot or Wysa, lead users through activities meant to help them deal with stress. Although they are not games, these AI technologies address depressing thoughts and emotions of hopelessness through game-like interactions and mental health support (Abd-alrezaq et al., 2021). Within a gaming environment, AI can offer and oversee relaxation techniques including progressive muscle relaxation, deep breathing exercises, and meditation. AI can monitor the player's physiological reactions, like their pulse rate and facial expressions, and use real-time data to recommend relaxation methods.

Conclusion

In summary, artificial intelligence (AI) is a potent weapon in the continuous battle against suicide, providing both proactive and reactive ways to assist those who are at danger. AI has the potential to play a significant role in lowering suicide rates and enhancing general mental health outcomes with careful development, ethical standards, and appropriate integration with conventional mental

health institutions. AI has the ability to save lives, lessen suffering, and give hope to those who need it most if it is developed responsibly and used consistently.

Nothing is more valuable than life, regardless of the situation. Never hesitate to ask for assistance, whether it be from a human or an AI. It is a show of strength to take that step, and there is always assistance available.

References

- Fazel, S., Runeson B., & Roppu A.H. (2020). Suicide, *The New England journal of Medicine*, 380 (3), 2066-274.
- Chan M.K.Y. (2026). Predicting Suicide following self-harm: systematic review of risk factors and risk scales. *The British journal of psychiatry*, 201(4), 277-283.
- Marks, M. (2019), Artificial intelligence based suicide prediction. *Journal of law and technology*, 21, 98-151.
- Yao, H., Chen J.H. & XU, Y.f. (2020). Patients with mental health disorders in the Covid-19 epidemic. *The Lancet Psychiatry*, 7(4), e21.
- Bevilacqua, S., Coutel, P., Larsen, M.E., Walter, M. & Vaiva, G. (2018). Suicide prevention - towards integrative, innovative and individualized brief contact interventions. *European Psychiatry*, 47, 25-26.
- Abd-alrazaq, A., Alsaad, R., Alhuwail, D., Ahmed, A., Mealy P.M., Latifi, S., Aziz, S., Damesh, R., Alabed Alrazak, M., Sheikh, J. & Househ, M. (2021). Artificial intelligence for mental healthcare : clinical applications, barriers, facilitators, and artificial wisdom. *Biological Psychiatry : cognitive Neuro Science and Neuro imaging*, 6(9), 856-864.