

Automated Identification of Psychological Instability using AI

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Abstract—The issue of psychological instability has become a significant factor on a global scale, which has a significant impact on the mental state of a person. Early signs of psychological instability need to be addressed to avoid the development of severe mental health issues, including depression, anxiety disorders, and suicidal tendencies. The traditional methods of identifying psychological instability rely on questionnaires or interviews by mental health professionals. Even though these methods are effective, they are considered to be time-consuming. Therefore, to overcome these issues, a research study has been proposed to identify psychological instability using an automated system based on Artificial Intelligence techniques.

The proposed model is based on Machine Learning techniques, which process text data collected from user inputs or social media sites. The text data is analyzed based on various linguistic, emotional, and behavioral features available in the text to classify a person based on psychological stability. The experimental results of the proposed model indicate that psychological instability can be effectively identified using an automated system based on Artificial Intelligence techniques.

Keywords—Mental Health, Health Monitoring, Machine Learning, Behavioral Patterns, Early Detection, Artificial Intelligence

I. INTRODUCTION

Mental well-being is an integral component of health. It has a direct impact on how we feel, how we handle day-to-day activities, and how we interact with other people.

Psychological instability is characterized by unsettled changes in moods, behaviors, or emotions. In other cases, it may be an indicator of underlying mental health problems. If the warning signs of psychological instability are ignored at the onset, they may eventually develop into more complicated mental health problems like depression, anxiety, or even stress. Thus, it is important to recognize the warning signs of psychological instability to ensure the overall well-being of the mind.

Traditionally, the assessment of mental wellness is done through hands-on processes. This includes the use of structured interviews, questionnaires, and observations by trained professionals. While the traditional approach is effective, it may take a long time to arrive at a conclusion. Besides, the results may vary since different professionals may interpret the results of the assessment of mental wellness in different ways.

The development of Artificial Intelligence and Machine Learning has opened the door to the use of automated tools to assist with the assessment of mental wellness. By using structured behavioral cues and psychological traits, machine learning algorithms may uncover underlying patterns in the data.

without introducing artificial artifacts. In this project, a guided Multi exposure fusion approach is proposed to enhance night-time roadside images while preserving structural details, edges, and natural color information.

The objective of this work is to generate a single high-quality enhanced image from multiple low-quality night images, enabling improved visibility for downstream tasks such as traffic analysis, obstacle detection, and automated surveillance

II. LITERATURE REVIEW

A. Psychological Instability Techniques:

Machine learning has been gaining popularity in the field of mental health research. Decision Tree, Random Forest, Support Vector Machine, K-Nearest Neighbors, etc., are the most frequently used algorithms to measure the level of mental stability. Removing unwanted data from the dataset increases the accuracy of the model.

B. Data and inputs:

To analyze the data, structured data related to behavior, such as stress, mood, sleep, and lifestyle, is the backbone of the research. Accurate data can be collected through questionnaires, surveys, and sensors. For classification problems, supervised learning is the preferred choice, where the model learns from the data to identify the patterns related to mental instability.

C. Strategic approach:

The general procedure includes collecting relevant data, fixing the errors in the data, selecting the appropriate features, and training the model to classify the data based on the mental health of the individual. Hybrid approaches are gaining popularity to make the predictions more reliable. Developing an early warning system can help mental health experts make decisions more efficiently.

III. PROBLEM STATEMENT

Psychological instability is an emerging concern in the current world, driven by the increasing levels of stress, heavy workloads, and lifestyle. There are many cases of psychological ups and downs, anxiety, and mental fatigue, but the affected persons often miss the signs of the problem. If the problem is not identified at an early stage, it may take a serious turn, affecting the personal life, work, and relationship of the affected persons.

Currently, the identification of psychological instability is possible through an assessment by trained professionals. The process usually involves questionnaires, counseling, and interviews. The process is effective but requires a lot of time and expertise. The process is also dependent on the responses of the affected persons, which may not always be accurate.

The problem is also attributed to the fact that there is a shortage of trained professionals, which makes it difficult to monitor large populations. The problem has left many persons undetected at an early stage, leading to the worsening of the problem.

The problem has identified the need to develop an automated system capable of analyzing the psychological instability of the affected persons. The system has the potential to provide timely results using machine learning technology.

IV. EXISTING SYSTEM

A. Identification Techniques

Currently, psychological instability is detected based on human judgment or semi-automated techniques. Mental health experts use interviews, tests, and observations to draw a mental map of an individual. This involves assessing an individual's mental well-being by observing how they respond to situations or challenges. The focus is on determining how well an individual copes with situations or challenges.

B. Methods

Traditionally, data is collected using questionnaires, observations, or specially designed tests. Once collected, data is analyzed using basic statistical techniques to identify signs of anxiety, depression, or stress. The focus is on identifying patterns of behavior or emotional reactions that indicate possible instability.

C. Limitations

The traditional methods are long-winded and heavily rely on expert opinion. The results are also likely to be skewed by human psychology or inconsistencies in how an individual answers questions about themselves. The process is also long-winded because of the need to physically analyze data. This has created a compelling need for an automated solution powered by artificial intelligence to speed up the process..

V. PROPOSED SYSTEM

The system described here in has the capability to identify signs of psychological instability through the application of machine learning. It does this by analyzing structured data collected through surveys, questionnaires, or existing data on mental health to measure signs such as stress levels, emotional stability, sleeping habits, and lifestyle. Before the data is fed into the system, it is cleaned and normalized, followed by the selection of the features to enable the highlighting of the most important attributes.

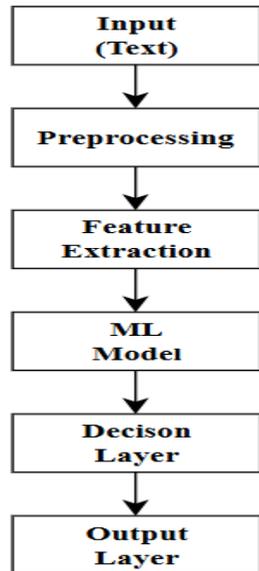
After the data has been cleaned, the Decision Tree, Random Forest, and Support Vector Machine algorithms are applied to measure the level of psychological stability in a given individual.

Key Features of the Proposed System

- Automatic detection of psychological instability without the need to input data
- Real-time analysis with feedback

- Combination of various machine learning algorithms to provide accurate results
- Early detection of potential mental health problems
- Assists psychologists in decision-making
- Scalable to analyze data from large groups

VI. SYSTEM ARCHITECTURE



VII. PROPOSED METHOD IMPLEMENTATION AND ALGORITHMS

A. Data Input

Structured text regarding the psychological factors is collected from surveys and user inputs. This is the raw data we work on.

B. Preprocessing

The raw data is refined to eliminate noise and inconsistencies and remove any irrelevant data points. This improves the quality and consistency of the data.

C. Feature Extraction

From the refined data, important features related to the mental health of an individual are extracted, such as stress levels, mood signals, and sleep patterns. These are the extracted features used to train the model.

D. Machine Learning Modeling

The extracted features are used to train the model to differentiate between a stable and an unstable psychological state.

E. Decision and Output

The model is used to classify a given state as stable or unstable and display the output on a dashboard for mental health professionals to view and act accordingly.

Algorithms

- Random Forest-
An ensemble algorithm that uses multiple decision trees to improve the accuracy and robustness of the classification model.
- Decision Tree-
A classification tree that uses a tree structure to classify data points using thresholds on feature values.
- Support Vector Machine (SVM)-
A classification algorithm that uses a separating hyperplane to classify data points and maximize the margin between classes.

VIII. RESULT ANALYSIS

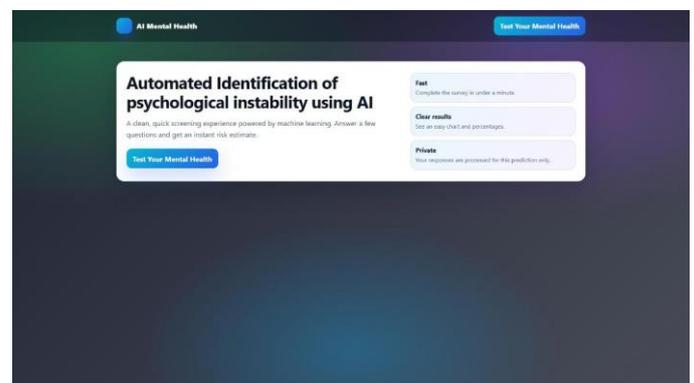


Fig 1: Home Interface

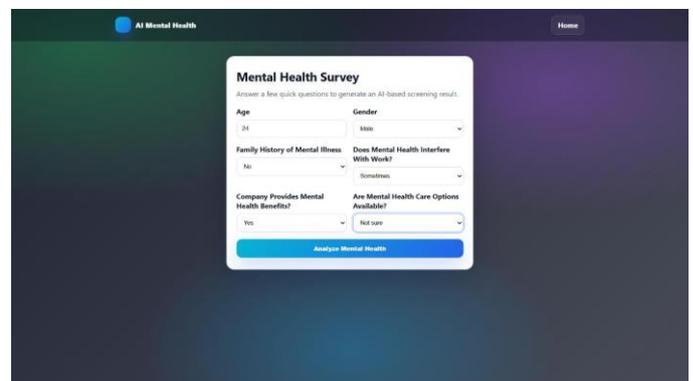


Fig 2: Survey Input Form

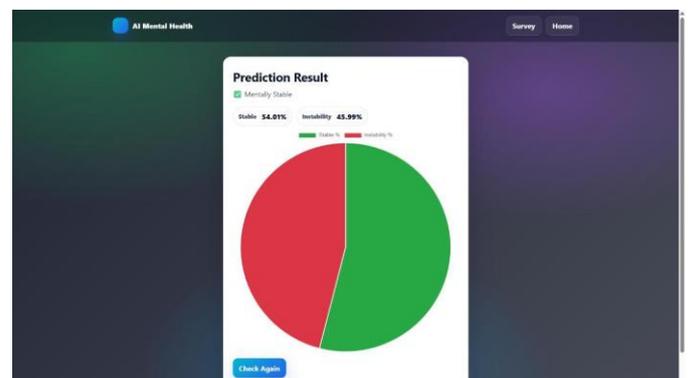


Fig 3: Prediction Result

IX. CONCLUSION

The paper presents an automated system that utilizes machine learning to identify signs of psychological instability. If a person is psychologically unstable, it has a significant impact on his or her mood, work, or relationship. Thus, it is crucial to identify psychological instability to prevent more serious psychological issues.

The automated system utilizes behavioral data to measure how unstable a person is. The machine learning algorithm utilizes various models, including Decision Tree, Random Forest, and Support Vector Machine, to identify patterns in data to classify a person based on his or her psychological state.

The experiments indicate that utilizing machine learning to identify psychological instability is an efficient and reliable way to predict psychological state. Among the models used, the Random Forest classifier proved to be efficient and consistent. The automated process of identifying psychological instability saves a significant amount of time and effort required to identify a person's psychological state.

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