DETECTING PSYCHOLOGICAL INSTABILITY

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Abstract:

This study investigates the detection of psychological instability, particularly stress and bipolar disorder, among working individuals using machine learning techniques. A survey-based dataset comprising 1000 data points with 27 columns was analysed using various algorithms. The Random Forest algorithm demonstrated the highest accuracy at 87.02% for identifying mental health issues. The research aims to address the growing concern of mental health problems in the workforce and their impact on overall well-being.

I. Introduction:

Mental health issues significantly impact individuals, relationships, and overall well-being. Factors such as stress, depression, and anxiety can disrupt daily routines and quality of life. Approximately 25% of elderly individuals experience mental disorders, with 6% facing severe disabilities. Mental health conditions are often associated with chronic physical illnesses and increase the risk of accidents, violence, and suicide. In 2019, suicide was the tenth leading cause of death in the U.S., accounting for 35,345 deaths. This study focuses on detecting psychological instability using machine learning techniques, particularly among working individuals

II. Existing System:

Previous approaches to mental health detection primarily focused on analyzing social media content using Convolutional Neural Networks (CNN) and speech signal analysis employing Support Vector Machines (SVM). These methods aimed to identify depression and other mental health issues through digital footprints and vocal patterns.

Existing System Disadvantages:

1. Limited scope, concentrating on social media content rather than assessing stress levels in working individuals

2. Lower accuracy in detecting psychological instability

3. Vulnerability to misleading results due to the nature of social media data

III. Proposed System:

The proposed system utilizes a survey-based dataset to detect stress among tech workers. It employs machine learning algorithms, particularly Random Forest, implemented in Python.

Proposed System Advantages:

1. Improved accuracy in detecting psychological instability

2. Specific focus on stress detection among working individuals

3. Utilization of a comprehensive dataset considering various stress-related factors

IV. Related Work:

Recent studies have explored diverse approaches to mental health detection, including:

1. Machine learning techniques for screening Bipolar Disorder using the Mood Disorder Questionnaire (MDQ)

2. Development of a semi-automated system for preliminary diagnosis of psychological disorders based on DSM-IV-TR criteria

3. Analysis of online communities to classify mental health-related co-occurring conditions using topic modeling and psycholinguistic features

V. Methodologies:

The project consists of five main modules:

1. Data Collection: Gathering survey data from working individuals

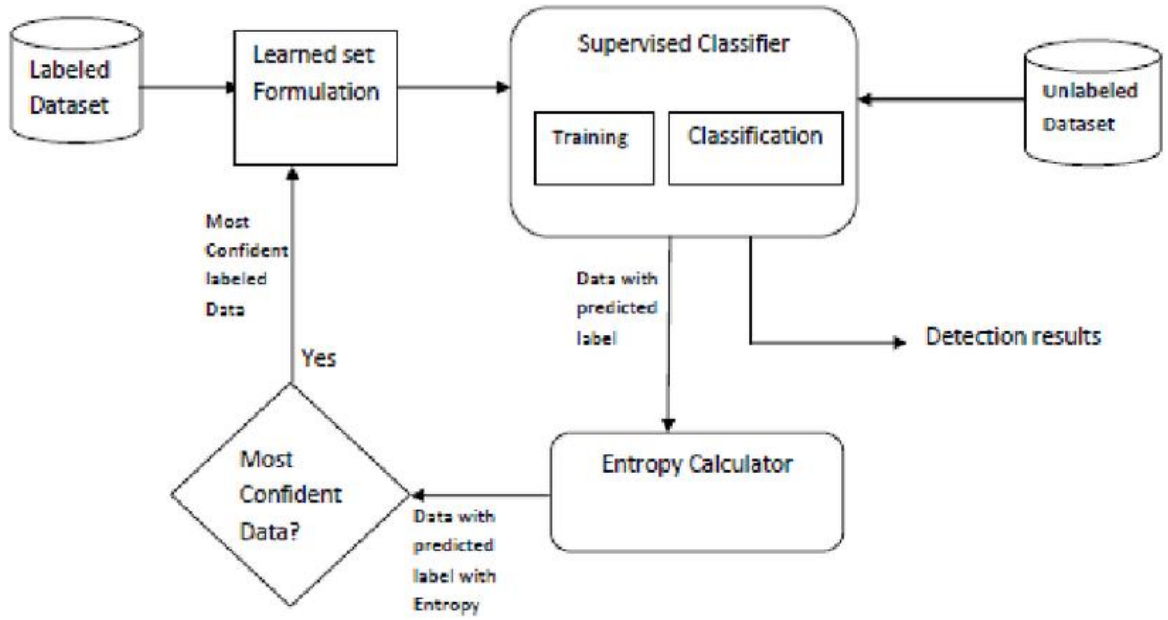
2. Dataset: Utilizing a dataset with 1000 individual data points and 27 columns

3. Data Preparation: Transforming data by removing missing values and irrelevant columns

4. Model Selection: Employing Random Forest algorithm for classification

5. Analysis and Prediction: Evaluating model performance and saving the trained model

VI. System Architecture



VII. Conclusion:

This study explored various methods for detecting mental illness among individuals of different age groups using questionnaires and machine learning algorithms. The dataset comprised 1200 samples, and the study utilized SVM, Decision Tree, and Random Forest for learning and detection. Experimental results demonstrated that the Random Forest algorithm achieved the highest accuracy of approximately 87% in detecting psychological instability. This research contributes to the growing field of mental health detection using machine learning techniques and provides a foundation for future studies in this area.

VIII. References:

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