INVISIBLE DISABILITY AND ROUTINE WELLNESS TRACKER

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ABSTRACT

Invisible mental health conditions such as Attention Deficit Hyperactivity Disorder (ADHD) and depression often remain unnoticed because their symptoms are not physically visible and are frequently misunderstood or ignored. The absence of early identification and consistent monitoring can negatively affect an individual's productivity, emotional stability, social interactions, and overall quality of life. Many people struggle with these challenges without realizing the underlying causes, which can delay appropriate support and intervention. The Invisible Disability and Routine Wellness Tracker is designed as an intelligent web-based platform that promotes early awareness, routine management, and access to professional consultation for individuals experiencing such conditions.

The system enables users to securely register and record important lifestyle and behavioral information, including daily habits, mood variations, attention span, sleep cycle, productivity levels, and other physical or emotional indicators. This information helps create a continuous record of user behavior and wellness patterns. Using the collected data, the platform performs pattern analysis to generate an ADHD likelihood score and determine a depression severity level, which is categorized as low, medium, or high. Based on these results, the system offers personalized habit tracking, routine reminders, and productivity suggestions to help users improve concentration, manage daily tasks effectively, and maintain a healthier routine.

In addition to self-monitoring features, the platform integrates a consultation module that allows users to schedule appointments with medical professionals for expert guidance and support. The system also includes an administrative module responsible for managing user data, updating questionnaires, ensuring privacy and data security, and monitoring the accuracy and performance of predictive models. By combining behavioral tracking, predictive analysis, and healthcare assistance in a single platform, the proposed system supports early recognition of potential mental health concerns and encourages individuals to adopt healthier routines for improved long-term well-being.

Keywords: *Invisible Disability, ADHD Prediction, Depression Prediction, Mental Health Monitoring, Habit Tracking, Routine Wellness, Predictive Analytics, Doctor Consultation System.*

1. INTRODUCTION

Mental health issues such as Attention Deficit Hyperactivity Disorder (ADHD), depression, and chronic stress often remain unnoticed because their symptoms are not always visible to others. These conditions are commonly referred to as invisible disabilities since they affect a person's daily functioning without obvious physical signs.

Due to lack of awareness, social stigma, or limited access to professional support, many individuals do not receive early diagnosis or proper guidance.

In recent years, digital technologies have opened new possibilities for monitoring mental well-being. Applications that analyze behavioral patterns, lifestyle habits, and emotional responses can help individuals understand their mental health status more effectively. By collecting user inputs such as mood patterns, attention levels, sleep cycles, and daily activities, technology-based systems can provide valuable insights about personal well-being.

The Invisible Disability and Routine Wellness Tracker is designed to support individuals in monitoring their mental health and daily routines in a structured way. The system combines habit tracking with predictive analysis to estimate the likelihood of conditions such as ADHD and depression. By providing personalized feedback, reminders, and wellness suggestions, the platform encourages users to maintain healthier routines and become more aware of their emotional and behavioral patterns.

Overall, the aim of this system is not only to identify potential mental health concerns but also to promote self-awareness, improve productivity, and support better lifestyle management.

2. INFORMATION

Depression Analysis and Detection Using Machine Learning: Incorporating Gender Differences in a Comparative Study [1]: Marina Galanina, Agnieszka Rekiel, Anna Baczyk, Bozena Kostek - This research applies machine learning techniques to speech signals while considering gender differences to enhance depression detection accuracy.

Construction of a Social-Media Based Clinical Database—Roadmap, Challenges, and Feasibility for ADHD Recognition [2]: Anton Gelashvili, Yair S Resheff, Guy Blumrosen - This paper describes the development of a social-media-based clinical dataset to support ADHD detection research.

A Deep Quantum Convolutional Neural Network Based Facial Expression Recognition for Mental Health Analysis [3]: Sanoar Hossain, Saeed Umer, Rajeev Kumar Rout, Hussein Al Marzouqi - The study introduces a quantum CNN model to improve facial expression recognition for mental health monitoring.

Probability-Based Multi-Label Classification Considering Correlation Between Labels Focusing on DSM-5 Depressive Disorder Diagnostic Criteria [4]: Dabin Park et al.- The paper proposes a probability-based multi-label classification approach that incorporates DSM-5 criteria to improve the accuracy of depressive disorder diagnosis.

A Hybrid Transformer Architecture for Multiclass Mental Illness Prediction Using Social Media Text [5]: Adnan Karamat et al. - The study uses a hybrid transformer-based deep learning model to analyze social media text and classify multiple mental health disorders.

Dialogue System for Early Mental Illness Detection: Toward a Digital Twin Solution [6]: Akbobek Abilkaiyrkyzy, Fouad Laamarti, Mohamed Hamdi, Abdulmotaleb El Saddik - This research proposes a dialogue-based AI system using digital twin technology for early mental illness detection.

A Hybrid Learning Architecture for Mental Disorder Detection Using Emotion Recognition [7]: Joseph Aina et al.- The paper proposes a hybrid deep learning architecture combining CNNs and transformers to detect mental disorders using emotion recognition.

Advancing Emotional Health Assessments: A Hybrid Deep Learning Approach Using Physiological Signals [8]: Amna Waheed Awan, Tariq Imran, Sajid Khalid, Syed Muhammad Usman, Abdul Samad Imran, Muhammad Usman Akram - This study uses a hybrid deep learning approach to analyze physiological signals for emotional health assessment.

ViTFER: Facial Emotion Recognition with Vision Transformers [9]: Aayushi Chaudhari, Chirag Bhatt, Anurag Krishna, Pier Luigi Mazzeo - The research uses Vision Transformer models to improve facial emotion recognition performance.

Harnessing the Power of Hugging Face Transformers for Predicting Mental Health Disorders in Social Networks [10]: Alireza Pourkeyvan, Reza Safa, Ali Sorourkhah - This paper uses transformer-based language models to detect mental health disorders from social media posts.

A Comprehensive Face Parsing Framework for Anxiety Detection Using Deep Learning [11]: Suja Sreejith Panickar - The study proposes a face-parsing deep learning framework to detect anxiety using facial image analysis.

Facial Emotion Recognition Using Convolutional Neural Networks (FERC) [12]: Ninad Mehendale - This research introduces a CNN-based system for detecting facial emotions by extracting important facial features.

Emotion Recognition Through Facial Expressions: A Machine Learning Perspective in Mobile Multimedia [13]: Akram Ahmad, Vivek Singh, Kunal Upreti - The paper presents a machine learning model that performs facial emotion recognition in real-time mobile multimedia environments.
Neural Network-Based Face Detection for Emotion Recognition in Mental Health Monitoring [14]: Rhoda Ajayi, Babatunde S Adedaji - The study uses neural network-based face detection and emotion recognition to support mental health monitoring systems.
A Hybrid Deep Learning Model to Predict the Impact of COVID-19 on Mental Health from Social Media Big Data [15]: M H Al Banna, Tanjina Ghosh, M J Al Nahian, M S Kaiser, M Mahmud, K A Taher, M S Hossain, Karl Andersson - This study analyzes social media data using deep learning to understand the mental health impact of the COVID-19 pandemic.
A Deep Learning Model for Psychological Support in Student Entrepreneurship [16]: Tao Yang, Wei Xu, Liang Wang, Maria O Petrovna - This paper proposes a deep learning model that evaluates psychological conditions of student entrepreneurs.
Four-Layer ConvNet to Facial Emotion Recognition with Minimal Epochs and the Significance of Data Diversity [17]: Tanoy Debnath, Md Mehedi Reza, Aminur Rahman, Amir Beheshti, Seyedali Mirjalili Band, Hamid Alinejad Rokny - The study presents a four-layer convolutional neural network for efficient facial emotion recognition with fewer training epochs.
Predicting and Understanding College Student Mental Health with Interpretable Machine Learning [18]: Meghna Roy Chowdhury, Wen Xuan, Sayan Sen, Yifan Zhao, Yue Ding - This paper introduces an interpretable machine learning model to predict mental health conditions among college students.
Human Emotion Recognition with Electroencephalographic Multidimensional Features by Hybrid Deep Neural Networks [19]: Youjun Li, Jian Huang, Hui Zhou, Ning Zhong - The study uses EEG signals and hybrid deep neural networks to recognize human emotional states.
Mental Health State Classification Using Facial Emotion Recognition and Detection [20]: Adel Aref Ali Al-zaman, Omar H A E H Alhomery, Chin Poo Tan - This research classifies mental health states by analyzing facial emotion patterns over several days.
Machine Learning-Based ADHD Detection from fNIRs Signal During Reverse Stroop Tasks [21]: Md Maniruzzaman et al. - The paper applies machine learning algorithms to fNIRs brain signals to detect ADHD during cognitive tasks.
EmoCaps: Emotion Capsule Based Model for Conversational Emotion Recognition [22]: Zaijing Li, Feng Tang, Min Zhao, Yue Zhu - The paper introduces an emotion capsule model that analyzes text, audio, and visual signals to recognize emotions in conversations.
PredictEYE: Personalized Time Series Model for Mental State Prediction Using Eye Tracking [23]: C Jyotsna, J Amudha, A Ram, Daniel Fruet, Giovanni Nollo - This study predicts mental states using eye-tracking data combined with time-series machine learning models.
Extracting Mental Health Indicators from English and Spanish Social Media [24]: Elizabeth Miryam Villa-Pérez, Luis Alberto Trejo, Mohammad B Moin, Elena Stroulia - The paper extracts linguistic features from multilingual social media posts to identify mental health indicators.
Contextual Emotional Transformer-Based Model for Comment Analysis in Mental Health Case Prediction [25]: Ayodeji O J Ibitoye, Oluwaseun O Oladimeji, Oluwafemi W Onifade - This research introduces a transformer-based model that analyzes emotional context in comments to predict mental health conditions.

3. CONCLUSION

Mental health disorders such as depression, anxiety, and ADHD are becoming major global concerns, especially among students and young adults. The reviewed research papers highlight the growing role of advanced technologies such as machine learning, deep learning, transformer models, and physiological signal analysis in identifying mental health conditions. These studies demonstrate that data collected from various sources including social media text, facial expressions, speech signals, physiological sensors, and eye-tracking can be effectively analyzed to detect early signs of mental health problems.
Many of the proposed systems show promising results in improving the accuracy and efficiency of mental health prediction and monitoring. Techniques such as hybrid deep learning architectures, convolutional neural networks, and transformer-based models enable automated analysis of complex behavioral and emotional patterns. In addition, the use of interpretable machine learning approaches helps professionals understand the reasoning behind model predictions, which increases trust in AI-based mental health support systems.

Overall, the reviewed works emphasize that integrating artificial intelligence with mental health analysis can support early detection, continuous monitoring, and better decision-making for healthcare professionals. However, challenges such as data privacy, model reliability, and ethical considerations must still be addressed. Future

research should focus on developing more accurate, secure, and user-friendly systems that can assist clinicians and individuals in managing mental health more effectively.

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