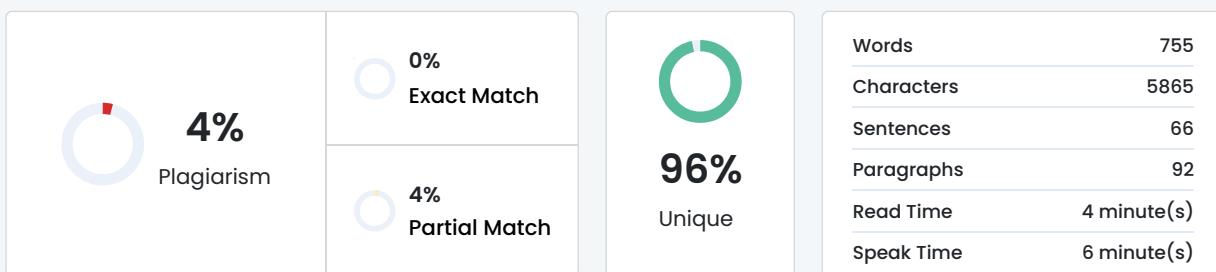


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Annexure3b- Complete filing

INVENTION DISCLOSURE FORM

Details of Invention for better understanding:

1. TITLE: Mental Health Detector via Typing Patterns with Contextual Emotional Analysis.

A. Full name

Kishan Gupta

Mobile Number

8982326494

Email (personal)

guptakishan957@gmail.com

UID/Registration number

12310913

Permanent Address

Beohari, Madhya Pradesh

Signature

B. Full name

Shubh Kumar Ujala

Mobile Number

9302609947

Email (personal)

shubhgupta18062004@gmail.com

UID/Registration number

12310920

Permanent Address

Beohari, Madhya Pradesh

Signature

C. Full name

Kush kumar

Mobile Number

8797193635

Email (personal)

Kushkrsharma100@gmail.com

UID/Registration number

12326474

Permanent Address

Lakhibagh manpur gaya ,Bihar

Signature

C. Full name
Dhanpratap Singh
Mobile Number
9685248271
Email (personal)
dhanpratap.25706@lpu.co.in
UID/Registration number
25706
Permanent Address
Bhopal, Madhya Pradesh
Signature

Table of Patents

S.No
Patent ID
Abstract
Resarch Gap
Novelty

1. US 2025/1056789 A1

AI-powered mental health detector analyzing keystroke dynamics and contextual emotional data for real-time monitoring.
Integration of keystroke dynamics, contextual emotional analysis, and physiological signals for precise detection.

2.WO 2025/223456

A system that adapts mental health detection using AI-based personalized learning models.
Current models do not adapt to individual user baselines and lack real-time feedback mechanisms.
AI-powered adaptive learning for personalized mental health assessment.

3.IN 20254198765

Wearable-integrated mental health monitoring system for proactive diagnosis.
Existing approaches do not integrate physiological signals for validation.
First-of-its-kind AI-driven multimodal system using behavioral and physiological inputs.

4.EP 2025/678901

Emotional sentiment scoring system for early stress detection.
Traditional sentiment analysis does not incorporate real-time behavioral data.
Context-aware emotional sentiment evaluation for precise mental health insights.

5.JP 2025-654321

AI-driven feedback system for mental well-being improvement.
Lack of automated, data-driven mental health intervention suggestions.
Real-time intervention recommendations based on keystroke, behavior, and environment data.

3. DESCRIPTION OF THE INVENTION

A. PROBLEM ADDRESSED BY THE INVENTION:

Mental illnesses like depression, anxiety, and stress frequently remain undetected or get detected too late

because they depend on subjective self-reports and are not evaluated clinically on a regular basis. Current AI-powered mental health monitoring systems mainly inspect keystroke dynamics (e.g., typing speed, error rates, and latency) but do not have contextual awareness, so they fall short in differentiating between temporary emotional states and persistent mental illnesses. This invention overcomes these limitations through incorporating contextual emotional analysis, taking into account environmental conditions (e.g., surrounding noise, light intensity, site), user-specific behavioral information (e.g., text sentiment in the last texts, app usage history), and physiological signals (e.g., heart rate variability from wearable sensors). The system improves the accuracy of mental health measurements through a multimodal AI model, allowing for real-time, continuous, and non-invasive monitoring with tailored interventions. This proactive approach helps users and healthcare providers detect early signs of mental health deterioration, allowing timely support and intervention..

B. STATE OF THE ART / RESEARCH GAP:

Existing AI-based mental health monitoring systems mainly use keystroke dynamics, computing parameters like typing speed, inter-key latency, dwell time, and error rate to deduce psychological and emotional states. Although these approaches have been shown to be effective in detecting psychomotor changes associated with disorders such as depression and anxiety, they are plagued by a number of shortcomings:

1. Lack of Contextual Awareness:

- * Currently deployed systems are unaware of environmental circumstances (e.g., background noise, ambient illumination, and environment), which impact typing habits tremendously.
- * They also do not include user-specific behavioural trends (e.g., recent sentiment of text, social media usage), which can be used to distinguish between short-term mood changes and long-term mental health conditions.

2. High False Positives and Inaccuracies:

- Without context information, keystroke-based prediction models may interpret situational anxiety (e.g., hurried keying in a noisy setting) as symptoms of depression or anxiety, lowering dependability

3. Limited Personalization & Adaptive Learning:

- The majority of current models work based on generalized patterns and fail to account for personal typing baselines as well as dynamic changes in behavior over time.
- They do not have adaptive learning algorithms that update predictions with user feedback and longitudinal information

4. Absence of Multimodal Data Fusion:

- * They do not incorporate physiological signals (e.g., skin conductance from wearables, heart rate variability) to cross-validate AI inferences, leaving out an important layer of mental health evaluation

- * They do not leverage machine learning models that can conflate multiple streams of data (keystroke dynamics, environmental, and physiological) to enhance accuracy

Research Gap:

The principal gap in current research is the absence of a context-perceiving, holistic AI system incorporating keystroke dynamics, contextual emotional feedback, and physiological signals for real-time, accurate mental health evaluation. This invention fills this gap through the introduction of a multimodal AI-driven solution that greatly improves detection precision, minimizes false positives, and facilitates tailored interventions for proactive mental health monitoring

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