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Android-Based Social Media Application with Depression Detection

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ABSTRACT: Mental Health Monitoring through Social Media using Android Application. The proposed Android-based social media application provides a platform for users to share thoughts and images with captions while integrating a "real-time depression detection system". This system uses Natural Language Processing (NLP) to analyze text content for signs of depression by identifying linguistic patterns such as negative sentiment and emotional distress. When a user's depression score exceeds a predefined threshold, an automated alert is triggered and sent to their registered guardian via SMS or email, including the user's current GPS location. This feature ensures timely support and intervention in critical situations. The application also features a dedicated chat module for private communication, which remains separate from the analysis process to preserve user privacy. Security and confidentiality are prioritized through advanced encryption and local data processing without third-party involvement. This dual-purpose platform not only fosters social interaction but also acts as a proactive tool for mental health monitoring and emergency response. It is designed to be scalable for future enhancements such as multilingual support and integration with mental health professionals.

KEYWORDS: Mental Health Awareness, Emotional Distress Detection, Natural Language Processing (NLP), Mental Health Monitoring, Depression Detection

I. INTRODUCTION

The Android-Based Social Media Application with Depression Detection aim to the increasing use of social media has amplified the need for addressing mental health issues like depression, often reflected unconsciously in users' posts and captions. This project proposes an Android-based social media application integrated with a real-time depression detection system using Natural Language Processing (NLP). The system analyzes user-generated content to identify emotional distress and calculates a depression score. If the score exceeds a set threshold, an alert with the user's GPS location is sent to a registered guardian for timely intervention.

The app also includes a private chat module, separated from the detection system, to ensure user privacy. With strong data security measures and a focus on ethical data handling, the application offers both a platform for self-expression and a proactive tool for mental health support, blending technology with social responsibility to promote well-being and safety.

II. LITERATURE SURVEY

Current research in mental health technology focuses on analyzing social media content to detect emotional distress using techniques like sentiment analysis and emotion detection. These systems leverage linguistic cues such as tone and word choice to identify signs of depression. However, most existing solutions are limited to static, non-contextual analysis and lack real-time intervention capabilities, reducing their practical impact.

Many models overlook user-specific language patterns, cultural context, and the evolving nature of emotional

expression. Furthermore, they often fail to provide timely alerts or support mechanisms, making them passive rather than proactive tools. Privacy, accessibility, and data security are also major concerns, with some systems using intrusive methods without sufficient user consent or safeguards.

To overcome these limitations, the proposed system introduces a real-time depression detection solution that includes guardian alert mechanisms, prioritizes user privacy, and offers actionable outcomes to support mental well-being effectively.

III. OBJECTIVE

- To Provide a Platform for Self-Expression:**
Enable users to share thoughts and images with captions in a secure and engaging social media environment.
- To Detect Signs of Depression in Real Time:**
Use Natural Language Processing (NLP) to analyze user-generated content for linguistic indicators of depression, such as negative sentiment and emotional distress.
- To Calculate and Monitor Depression Scores:**
Assess each post using a scoring system to determine the likelihood of a user experiencing emotional challenges.
- To Enable Timely Guardian Notifications:**
Trigger automated alerts via SMS or email to registered guardians when a user's depression score exceeds a predefined threshold.
- To Provide Location-Based Emergency Support:**
Include the user's real-time GPS location in alerts to assist guardians in responding quickly during emergencies.

IV. PROPOSED METHODOLOGY

The development of the Android-based social media application with integrated depression detection will follow a modular and systematic methodology, incorporating both software engineering practices and machine learning techniques to ensure effective functionality, user privacy, and mental health support.

1. System Architecture Design

- Design a modular architecture separating social media features, depression detection, and alert mechanisms.
- Define clear data flow between modules: User Input → Depression Analysis → Score Evaluation → Guardian Notification (if needed).

2. User Registration and Profile Management

- Implement a secure user registration system using Firebase Authentication or a custom backend.
- Allow users to register guardians during account setup for alert notifications.
- Store user profiles and guardian details in an encrypted cloud database.

3. Content Sharing Module

- Enable users to:
 - Post text-based thoughts.
 - Upload images with optional captions.
- Posts are stored securely and queued for analysis by the depression detection module.

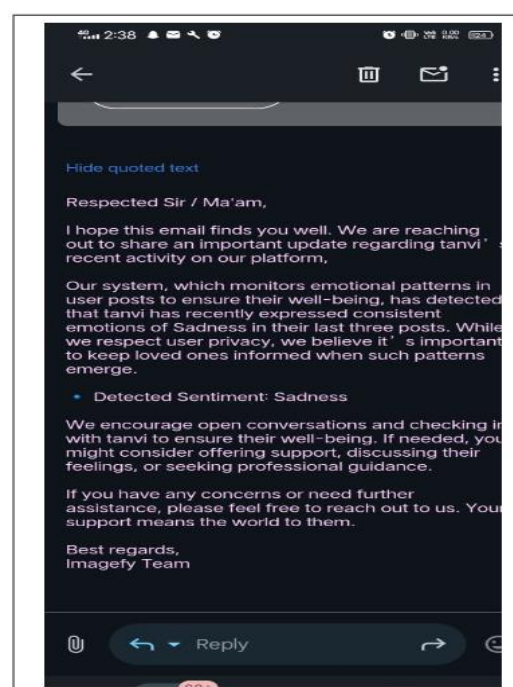
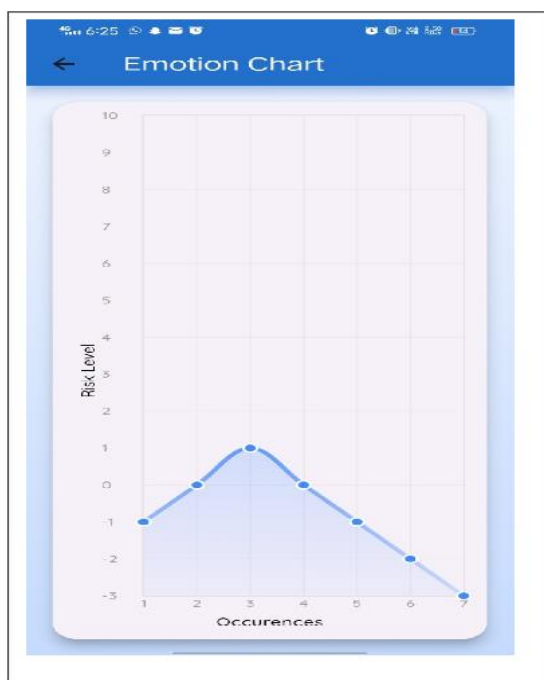
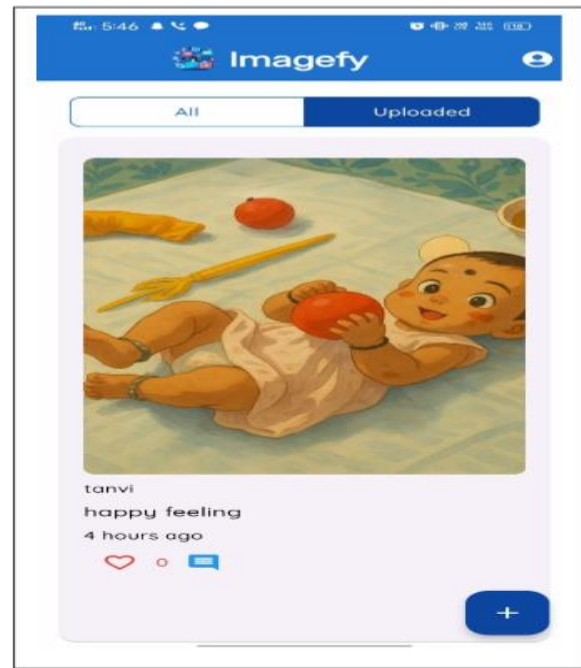
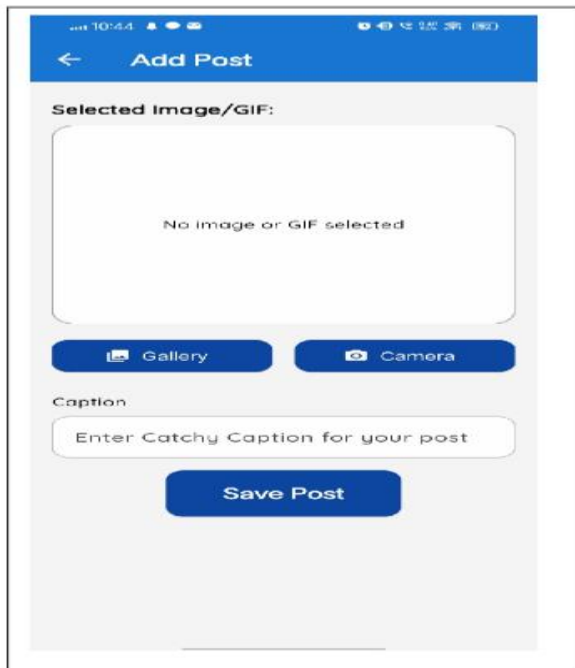
4. Depression Detection System

- Text Preprocessing:
 - Tokenization, stop-word removal, lemmatization.
- NLP Analysis:
 - Use NLP libraries (e.g., NLTK, spaCy, or Hugging Face Transformers) to analyze sentiment and extract emotional markers.
 - Detect indicators like hopelessness, sadness, or self-isolation.
- Depression Score Calculation:
 - Assign a weighted score based on the presence and intensity of depressive indicators.
 - Compare the score against a predefined threshold.

5. Alert Mechanism

- If the depression score exceeds the threshold:
 - Retrieve the user's real-time geolocation via GPS.
 - Send an automated alert via SMS or email to the registered guardian.
 - Include post content (summary), timestamp, and user location for context.

V. WORKING MODEL



Volume 14, Issue 4, April 2025**|DOI: 10.15680/IJRSET.2025.1404603|****VI. ADVANTAGES AND APPLICATIONS****6.1 ADVANTAGES**

- Real-time depression detection – Enables timely mental health assessment.
- Automated guardian alerts – Notifies guardians with GPS location for quick support.
- Ensures user privacy – Secure chat and encrypted data handling.
- Dual functionality – Combines social interaction with mental health monitoring.
- Scalable & future-ready – Supports NLP/AI enhancements and integrations.

6.2 APPLICATION

- Mental health monitoring – Tracks emotional well-being through user posts.
- Educational institutions – Helps schools/colleges support student mental health.
- Healthcare support – Assists therapists and mental health professionals.

VII. CONCLUSION AND FUTURE SCOPE

The proposed Android-based social media application successfully combines real-time mental health monitoring with a secure, interactive platform for self-expression. By leveraging Natural Language Processing (NLP), it detects signs of depression through user-generated content and triggers timely alerts to registered guardians, including the user's GPS location. The integration of a private chat module and strong data security measures ensures both privacy and user trust, making the application an effective tool for promoting mental well-being and proactive intervention. Looking ahead, the system holds vast potential for enhancement. Future developments may include support for multiple languages, integration with AI-based image sentiment analysis, and direct connectivity to professional mental health services. Additional features like behavioral analytics, wearable device integration, and community support forums could further expand its impact. With these advancements, the platform can evolve into a comprehensive mental health ecosystem, fostering awareness, connection, and timely care.

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