NIRAAH – An AI powered Emotional Wellness and Safety Application for Women

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Abstract—**Emotional well-being and personal safety have become increasingly important concerns in modern society, particularly for women who often experience various social, psychological, and safety related challenges. Due to the advancement of AI, it has enabled the development of intelligent systems capable of understanding and reacting to human emotions. This paper presents NIRAAH, an AI driven mobile application designed to help women emotionally while also providing safety. The system has multimodal emotion recognition, which includes facial expression analysis, speech emotion detection, and text-based sentiment analysis, to identify the user's emotional state. Based on the emotional state identified by an AI-powered conversational module, the application offers tailored responses. The system includes a safety module in addition to emotional monitoring, which enables users to send out emergency alerts and communicate their location to reliable contacts in dire circumstances. Sensitive user data is handled safely thanks to the platform's robust privacy and security features. The proposed system seeks to offer a complete digital companion that supports women's emotional well-being and personal security by fusing proactive safety features with emotional support.**

Index Terms—**Artificial Intelligence, Emotion Recognition, Emotional Wellness, Mental Health Support, Women Safety, Conversational AI.**

I. INTRODUCTION

Mental health and emotional well-being have become increasingly important in today's fast-paced and digitally connected world. Many people often face various psychological pressures coming from academics, work, and social environments. Many women encounter additional challenges due to social expectations, there safety and emotional stress, which will lead to negatively influence their overall wellbeing. Even though there is a growing awareness of mental health issues, most of the individuals still hesitate to take professional help due to social stigma, limited accessibility to mental health services, or it may be lack of immediate emotional support systems. Current technology in Artificial Intelligence (AI) and Affective Computing have created new opportunities for developing intelligent systems capable of understanding and responding to human emotions. By using different analyzing forms of human such as text, voice, and facial expressions, AI can infer emotional states and helps in providing context aware responses. This helps the development of digital companions that assist users in monitoring emotional health and offering supportive feedback. Now a days mobile technology has become one of the powerful platforms for personalized healthcare and safety solutions. Everyone has smartphone, it has various sensors such as cameras, microphones, location many more, which makes it suitable for implementing real time emotion recognition and safety features. However, most of the applications that are there in the mobile address either mental health support or personal safety independently. This separation often leads to rely on multiple applications, resulting in fragmented user experiences and reduced effectiveness. To address this gap, this work introduces NIRAAH, an AI based emotional

wellness and safety application specifically designed for women. The system integrates emotion recognition, personalized emotional assistance, and proactive safety mechanisms within a single platform. By using multimodal emotion analysis, which includes text, speech, and facial cues. The application helps to identify user's emotional condition and provide proper responses. Moreover, it also has a safety module that allows the user to trigger emergency alerts and share user location with their trusted contacts during critical situations.

II. LITERATURE SURVEY

The recent advancements in Artificial intelligence have a significant impact on the field of emotional wellness and mental health support systems research. Authors have contributed significantly to research in Artificial Intelligence and Machine Learning, with applications in cyber security, predictive maintenance, augmented reality, and education systems. His work focuses on developing intelligent models for real-world problem solving using advanced machine learning techniques. He has published research papers in reputed international journals and conference proceedings, contributing to interdisciplinary technological advancements. His research also emphasizes AI-driven solutions for smart systems, digital environments, and data-driven decision making [1-8]. One of the initial works in this area was affective computing introduced by Picard that helps the computational system to recognize, analyze and react to human emotions [9]. This concept became the foundation for building intelligent applications that are capable of adapting their behavior based on user's emotional state. Many researchers have utilized machine learning and deep learning for human emotions recognition. According to survey research, the advancement in emotion analysis models, and their increased application to healthcare and human-computer interactions are noted [10, 11]. Emotions can be identified in different ways such as text, speech, facial expression and physiological. Research has shown that good accuracy and reliability of emotion detection systems was achieved while using multiple sources of input rather than single-mode system [12]. Artificial intelligence has been widely use in the mental health domain to improve the accessibility of emotional support services. The chatbots and AI-based conversation agents offer automatic help and support

to emotionally stressed or anxious users [13]. Studies suggest that these systems can be used to improve emotional sensitivity and enable a constant check on the mental health especially in cases where mental health services are not readily available [14]. The global health reports also highlight the need to deal with emotional and psychological issues in women. The World Health Organization notes that females tend to have more emotional stress due to social, cultural, and economic conditions, which makes it mandatory to build gender oriented mental health interventions [15]. Apart from that the research on recognizing emotions through speech suggest that it is possible to identify stress and anxiety at early stages using the voice features like tone, pitch, pattern of speech and so on [16, 17]. Based on the results of the recent study about the use of AI-chatbots in supporting mental health of indicates that emotionally empathetic systems that provide individualized and sensitive interactions could have a positive effect on emotional well-being [18-20]. Nevertheless, we also should consider ethical issues like privacy of data, emotional addiction while creating such systems [21, 22]. Most of the existing applications on emotional wellness and safety mainly concentrate on either emotion detection or matching mental health aid only. Artificial intelligence and machine learning in the fields of education, medical, and smart phones are also developed for women's safety [23]. The combination of emotional recognition, customized emotional support and proactive safety features in a single platform is missing. This inspires the creation of NIRAAH, an artificial intelligence focused emotional wellness and safety app that will offer holistic treatment tailored to the specific needs of women. The recent advancements in Artificial intelligence have a significant impact on the field of emotional wellness and mental health support systems research. One of the initial works in this area was affective computing introduced by Picard that helps computational system to recognize, analyze and react to human emotions [24, 25]. Most of the existing applications on emotional wellness and safety mainly concentrate on either emotion detection or matching mental health aid only. The combination of emotional recognition customized emotional support and proactive safety features in a single platform is missing. This inspires the creation of NIRAAH, an artificial intelligence focused emotional wellness and safety app that will offer

holistic treatment tailored to the specific needs of women.

III. METHODOLOGY

NIRAAH is an intelligent mobile application that combines personal safety support for women with emotional wellness monitoring. In order to identify emotional states and offer suitable support in real time, the system integrates mobile technologies with artificial intelligence techniques. A mobile client application, an AI-based processing module, and a backend server in charge of data management and analysis make up the architecture.

3.1. System Design

NIRAAH system mainly focuses on creating a combine emotional wellness monitoring with safety support. The model is designed to make sure the system has efficient processing, secure handling and reliable communication between the mobile and the backend server. The overall system consists of multiple interconnected modules responsible for emotion recognition, user interaction, data storage, and emergency support.

3.2. System Architecture

System has client server architecture where mobile acts as the front end and the backend server performs data processing and management tasks. The mobile will help to collect the user inputs such as facial expressions, voice recordings and text messages. These inputs are analysed using ML models to determine the user's emotional state. Some are performed directly on the device to reduce latency and enhance the privacy, such as facial emotion detection and the other complex tasks are handled by the backend server, such as speech emotion analysis and AI chatbot interaction, it also manages user authentication, data storage and synchronization between sessions. This will allow the system to respond while ensuring the sensitive information in securely processed and stored.

3.3. System Modules

There are several functional modules that work together to do the task.

3.3.1. User Authentication Module: This manages the user registration and login processes. Secure authentication mechanisms ensure that only authorized users can access the system. User credentials are protected using secure hashing and authentication techniques.

3.3.2. Emotion Recognition Module: It analyses user emotions using multiple input sources. Camera device is used to capture facial expressions, mic for voice to detect emotional tone, and last text input to analysis sentiment. By combining this modality will improve the accuracy of emotional state detection.

3.3.3. AI Support Module: It will interact with users by providing emotional support and guidance. It examines user input and generates empathetic responses that help users to overcome stress, anxiety, or negative emotions.

3.3.4. Safety and Panic Module: It provides emergency support features. When a user activates the panic alert, the system retrieves the user's location and prepares a notification that can be shared with trusted contacts. This ensures quick assistance during potentially unsafe situations.

3.5. Database Design

The database structure is designed to manage user data and emotional records. Key entities in the system include User, Journal Entries, Mood Records, and Emergency Contacts. Each entity contains relevant attributes required for system functionality. The User table stores basic user information and authentication details. The Journal table records user-written entries related to emotional experiences. The Mood table maintains information about detected or manually entered emotional states. The Emergency Contacts table stores trusted contact details used during safety alerts. This structured database design ensures efficient storage, retrieval, and management of user data while maintaining data consistency.

3.6. System Implementation

System is manly focuses on integration AI with mobile technologies to create a responsive and secure emotional wellness application. The NIRAAH platform consists of two major components: an Android-based mobile application and a backend server which is responsible for data processing and management.

3.7. Mobile Application Development

Mobile act as the main interface through which users will interact with the system. It is developed using modern Android development frameworks to provide a responsive and user-friendly interface. The application allows users to log emotions, write journal entries, interact with the AI support module, and access safety features. The application captures multiple types of user input including facial expressions through the camera, voice recordings through the microphone, and text input through chat. These inputs are processed either locally on the device or sent securely to the backend server for further analysis.

V. RESULTS AND DISCUSSION

The proposed NIRAAH system was evaluated to examine its effectiveness in providing emotional wellness support and safety assistance. The evaluation focused on verifying the functionality of the major system components, including emotion recognition, AI-based interaction, and the safety alert mechanism. The testing process involved validating different modules of the application to ensure that they function correctly under various conditions in real time. Several scenarios were tested to evaluate the reliability of user authentication, emotion detection, data synchronization, and emergency alert features.

The user interface is designed to be simple and accessible, allowing users to easily navigate emotional wellness features and emergency safety tools. The Profile Insights module is an essential part of the Niraah platform that provides users with a comprehensive overview of their personal profile information and account-related activities.
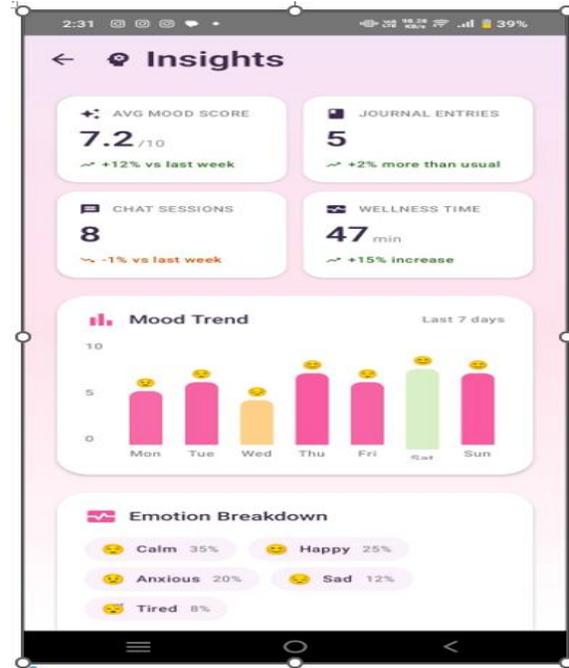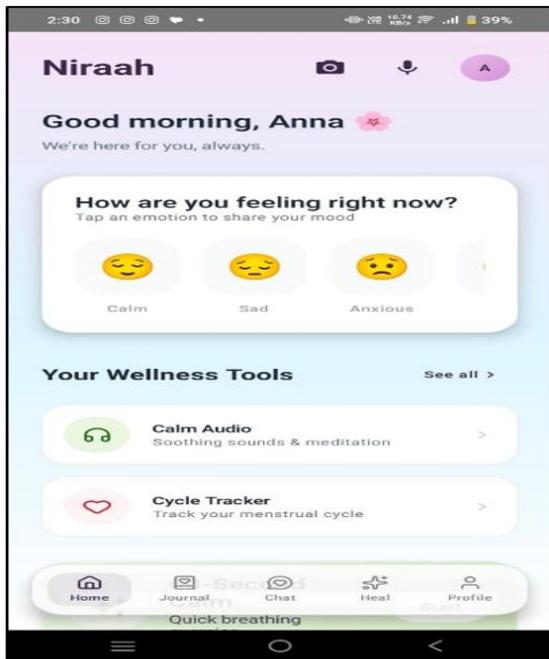

Fig 2: Insight

Fig 1: APP Console

Fig 3: Cycle Tracking

The Insights module in the Niraah platform is designed to provide meaningful analysis and understanding of the user's emotional data.

The Periodic Cycle module is designed to help users track their menstrual health and maintain awareness about their reproductive cycle. Menstrual cycle tracking is an important aspect of women's health, as hormonal changes during the cycle can significantly influence emotional states, mood patterns, and physical well-being.

V. CONCLUSION

This paper presented NIRAAH, an AI based emotional wellness and safety application designed to support women in managing emotional challenges while also providing emergency assistance. The proposed system integrates multiple technologies including emotion recognition, conversational AI, and mobile-based safety features to create a comprehensive digital support platform. The system utilizes a multimodal emotion recognition approach that analyses facial expressions, voice, and textual input to identify the emotional state of the user. Based on this analysis, the application provides personalized responses that aim to offer guidance and emotional support. In addition to emotional wellness monitoring, the platform incorporates a safety module that enables users to trigger emergency alerts and share location information with trusted contacts during critical situations. The experimental evaluation demonstrated that the proposed system successfully integrates emotional analysis and safety mechanisms within a single mobile platform. The application showed reliable performance in detecting emotional cues, handling user interactions, and activating emergency features. By combining emotional support with safety assistance, the system addresses an important gap in existing digital wellness solutions. Overall, the proposed platform contributes to the development of intelligent applications that promote emotional awareness, improve access to mental health support, and enhance personal safety through the use of AI and mobile technologies. The current version of the NIRAAH system provides a foundation for integrating emotional wellness monitoring with safety assistance. In future work, the system can be improved by incorporating more advanced deep learning models with large parameters to enhance the accuracy of emotion recognition from voice, facial expressions, and text inputs in real time with all the subjects. Additional safety features such as real-time location tracking and automatic emergency notifications can also be implemented. Furthermore, expanding the conversational AI module to provide more personalized emotional guidance and supporting multiple languages could improve user accessibility and overall system effectiveness.

REFERENCES

[1] Mogili, U., Ampolu, K. V., Rajasekharam, B., & Timothy, M. J. AI-Driven Interaction in AR Environments, in Journal of Digital Economy, 2024, Volume 3, Issue 1, pp. 228-234.

[2] Timothy, M. J., Rajasekharam, B., Ampolu, K. V., & Mogili, U. Threat Detection Using AI in Cybersecurity Systems, in IJIS, 2023, Volume 7, Issue 1, pp. 1-7.

[3] Ampolu, K.V., Mogili, U., Timothy, M. J., & Rajasekharam, B. Machine Learning Models for Predictive Maintenance, in IJIS, 2022, Volume 6, Issue 4, pp. 1-7.

[4] Rajasekharam, B., Timothy, M. J., Mogili, U., Ampolu, K.V., Machine Learning Models for Predictive Maintenance, in JDE, 2023, Volume 2, Issue 2, pp. 95-101.

[5] Soujania, B., Ampolu, K. V., Timothy, M. J., & Mogili, U. (2025) Classifying Disease Information Forums through Semantic Similarity-Based Machine Learning, Science, Technology and Development Journal, Volume XIV, Issue II, pp 67-75.

[6] B Satish Kumar, Kavitha C., Mogili, U.R., S. Pallam Shetty (2022). "Application of Machine Learning To Enhance the Performance of The Prophet Routing Protocol For Delay Tolerant Networks". Journal for Basic Sciences, Volume 23, Issue 5, 2107-2116, DOI:10.37896/JBSV23.5/2278.

[7] I. Sree Geeta, Umamaheswararao Mogili. (2022), "Use of Several Machine Learning Algorithms for Effective Prediction of Cyberbullying", International Journal of Creative Research Thoughts, Volume 10, Issue 6, pp 17.

[8] Mogili, U., & Mohamed, A. (2023, November). Artificial intelligence and machine learning in the fields of education, medical, and smart

phones. In AIP conference proceedings (Vol. 2917, No. 1, p. 050012). AIP Publishing LLC.

[9] R. W. Picard, Affective Computing, Cambridge, MA, USA: MIT Press, 1997. Available: https://direct.mit.edu/books/book/4296/Affective-Computing

[10] Y. Wang, Z. Pan, and J. Li, "A systematic review on affective computing: Emotion models and advances," arXiv preprint arXiv:2203.06935, 2022. Available: https://arxiv.org/abs/2203.06935.

[11] K. Hegde and H. Jayalath, "Emotions in the loop: A survey of affective computing," arXiv preprint arXiv:2505.01542, 2025. Available: https://arxiv.org/abs/2505.01542.

[12] S. Koelstra et al., "Emotion recognition based on physiological signals," IEEE Transactions on Affective Computing, vol. 3, no. 1, pp. 18-31, 2012. Available: https://ieeexplore.ieee.org/document/5945522.

[13] E. Ankomah and R. E. Turkson, "Emotion-aware artificial intelligence chatbots for mental health support," World Journal of Public Health, vol. 10, no. 3, pp. 45-55, 2025. Available: https://www.sciencepublishinggroup.com/article/10.11648/j.wjph.20251003.17.

[14] A. Abd-Alrazaq et al., "Artificial intelligence applications in mental health: A scoping review," Journal of Medical Internet Research, vol. 21, no. 7, e16006, 2019. Available: https://www.jmir.org/2019/7/e16006/

[15] World Health Organization, Mental Health and Women, Geneva, Switzerland: WHO Press, 2022. Available: https://www.who.int/publications/i/item/WHO-MSD-MER-22.1

[16] S. Alghamdi, M. Alshahrani, and S. Khan, "Emotion recognition using artificial intelligence techniques: A systematic review," AI and Ethics, Springer, 2025. Available: https://link.springer.com/article/10.1007/s43681

[17] S. Cummins, J. Epps, and E. Ambikairajah, "Speech-based emotion recognition for mental health applications," IEEE Journal of Biomedical and Health Informatics, vol. 24, no. 10, pp. 2872-2884, 2020. Available: https://ieeexplore.ieee.org/document/9086810

[18] M. Turchioe et al., "Women's perspectives on artificial intelligence in mental healthcare," JAMIA Open, vol. 6, no. 3, pp. 1-10, 2023.Available: https://academic.oup.com/jamiaopen/article/6/3/ooad048/7221622

[19] A. Miner et al., "Smartphone-based conversational agents and responses to mental health crises," JAMA Internal Medicine, vol. 176, по. 5, pp. 619-625, 2016.Available: https://jamanetwork.com/journals/jamainternalmedicine/fullarticle/2513818

[20] Kim, H. K. (2024, February). The effects of artificial intelligence chatbots on women's health: a systematic review and meta-analysis. In Healthcare (Vol. 12, No. 5, p. 534). MDPI.

[21] J. Lovejoy, R. Patel, and A. Singh, "Ethical challenges of Al-based mental health chatbots," Preprints2025. Available: https://www.preprints.org/manuscript/202509.1893.

[22] The Guardian, "Concerns on the use of AI chatbots in mental health support," 2025. Available:https://www.theguardian.com/society/2025/aug/30/therapists-warn-aichatbots-mental-health.

[23] Mogili, U., & Mohamed, A. (2023, November). Artificial intelligence and machine learning in the fields of education, medical, and smart phones. In AIP conference proceedings (Vol. 2917, No. 1, p. 050012). AIP Publishing LLC.

[24] S.S.D.K. Maha Lakshmi, Umamaheswararao Mogili, Sravya Eluri, Dogga Ramachandra Rao. (2023), "Online Dynamic Out Patient Queue System for Automated Token Generation in Hospitals", Science, Technology and Development Journal, Volume XII, Issue VII, pp 71-78, DOI:23.18001.STD.2023.V12I07.23.37707.

[25] Mogili, U., Ampolu, K. V., Rajasekharam, B., & Timothy, M. J. AI-Driven Interaction in AR Environments, in Journal of Digital Economy, 2024, Volume 3, Issue 1, pp. 228-234.