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Healthify: A Conversational AI for Mental Health Support Using Groq and LangChain Frameworks

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Abstract: Mental health issues are a growing global concern, with many individuals facing barriers to accessing timely and effective care. Recent advancements in artificial intelligence (AI) have opened new possibilities for providing continuous, personalized emotional support. This study presents Healthify, an AI-powered mental health support chatbot designed to provide empathetic, context-aware conversations for individuals seeking emotional guidance. By leveraging LangChain and the Groq API, Healthify combines state-of-the-art natural language processing (NLP) models with a robust memory system, ensuring consistent and personalized interactions tailored to the user's needs. The chatbot's ability to engage users in continuous dialogues aims to bridge gaps in mental health care, offering an accessible and non-judgmental platform for support. This research evaluates the effectiveness of Healthify in providing emotional support by analysing its ability to simulate empathetic conversation and address various mental health concerns. Through user interaction data and qualitative analysis, we assess the chatbot's responsiveness, emotional intelligence, and potential impact on mental well-being. The findings demonstrate that AI-driven platforms can provide a valuable supplement to traditional mental health resources, particularly for individuals who may be reluctant or unable to seek professional help. We conclude that Healthify offers a promising direction for integrating AI in mental health interventions, with implications for expanding access to mental health support on a global scale.

Keywords: *Mental Health Support, AI-Powered Chatbot, Emotional Support, Natural Language Processing (NLP), Conversational AI, LangChain, Groq API, Empathetic AI, Mental Health Care, Personalized Support, Artificial Intelligence in Healthcare, user Interaction Data, Emotional Intelligence, AI for Mental Health, Continuous Dialogue, Digital Health Interventions.*

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I. INTRODUCTION

Mental health disorders are a growing global concern, affecting approximately 1 in 4 people worldwide each year, according to the World Health Organization (WHO) [1]. Despite the high prevalence of mental health issues, a significant number of individuals face barriers to accessing adequate care, with an estimated more than 50% of those affected not receiving the necessary treatment [2]. Traditional mental health services often face challenges such as long wait times, stigma, and geographical limitations, leading to unmet needs for many individuals. In response to this, there has been a surge in interest in leveraging artificial intelligence (AI) to provide accessible, continuous, and scalable mental health support.

AI-powered chatbots have emerged as a promising solution to bridge this gap. These systems can provide real-time, personalized emotional support while offering a non-judgmental and anonymous environment. However, existing chatbot solutions often lack the depth of emotional intelligence and personalized interaction required for meaningful engagement. This research introduces Healthify, an AI-driven chatbot designed to address these limitations by providing empathetic, context-aware conversations tailored to individual needs. By utilizing advanced technologies such as LangChain and the Groq API, Healthify aims to offer a scalable, efficient, and accessible platform for mental health support.

Healthify uses a dynamic memory system that ensures continuity across conversations, enabling the chatbot to adapt and respond in a personalized manner. With a growing body of research showing that conversational agents can reduce feelings of isolation and anxiety, the need for AI-driven mental health solutions is clearer than ever [3]. This study explores the development, implementation, and evaluation of Healthify, focusing on its ability to simulate empathetic

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conversations and offer long-term mental health support. Our goal is to demonstrate that AI chatbots, when designed with emotional intelligence and user-centric models, can play a critical role in complementing traditional mental health care systems and enhancing overall well-being.

II. LITRATURE SURVEY

The integration of artificial intelligence (AI) into mental health care has seen substantial advancements, particularly through the development of AI-powered chatbots. Mental health disorders have become a major global concern, with approximately 1 in 4 people experiencing mental health issues each year [1]. However, many individuals face barriers to accessing adequate care, with more than 50% of those affected not receiving the necessary treatment due to factors such as stigma, cost, and availability of services [2]. AI-driven chatbots, such as Woebot, have been developed as a solution to these challenges, providing scalable, real-time support to individuals in need [3].

- *AI Chatbots for Mental Health Support*

The development of conversational agents for mental health support has gained considerable attention in recent years. Fitzpatrick et al. (2017) pioneered the use of AI in mental health with the creation of Woebot, a chatbot based on cognitive-behavioural therapy (CBT). Their study demonstrated that Woebot effectively reduced symptoms of depression and anxiety in users over a short period of time, making it one of the first examples of AI successfully assisting with mental health care [3]. Subsequent studies, such as Fitzpatrick et al. (2019), expanded on this work, showing that AI chatbots could play a crucial role in mental health interventions for individuals with mild to moderate symptoms of anxiety and depression [4].

While these early implementations showed promise, the challenge of creating emotionally intelligent and contextually aware AI systems remained. Miner et al. (2016) noted that many early chatbots struggled to provide nuanced emotional support, which could impact their overall effectiveness in providing long-term care [5]. This issue led to advancements in natural language processing (NLP) and machine learning techniques, aimed at improving chatbot capabilities in understanding human emotions and maintaining continuity across multiple interactions.

- *Personalization and Continuity in AI Chatbots*

Personalization is a key aspect of effective AI mental health chatbots. Early models often lacked the ability to remember past interactions, which led to a disjointed user experience. However, recent advancements in memory systems, such as the work done by Bickmore et al. (2018), demonstrated the importance of dynamic memory to enhance user engagement and the chatbot's ability to provide personalized responses. Their research showed that chatbots capable of retaining user context over time could deliver more meaningful and supportive conversations [6]. Furthermore, studies like Shaw et al. (2020) emphasize the role of adaptive systems in making AI conversations feel more personal and emotionally intelligent, which is vital for users seeking mental health support [7].

- *Technological Advancements in AI for Mental Health*

The evolution of AI in mental health support has been greatly influenced by advancements in large-scale language models and transformer-based architectures. Ghaznavi et al. (2021) highlighted that the application of sophisticated NLP models like GPT-3 in mental health chatbots led to significant improvements in user satisfaction and engagement. These models allow for more fluid, contextually relevant conversations that closely resemble human dialogue, enhancing the chatbot's effectiveness in providing mental health support [8].

Furthermore, recent research has explored multi-modal AI systems, which incorporate not only text-based communication but also voice and sentiment analysis to better understand emotional cues. Zhou et al. (2020) demonstrated the potential of multi-modal systems in improving emotional recognition and creating more empathetic responses, which could make AI chatbots more attuned to the emotional needs of users [9].

- *Challenges and Future Directions*

Despite the significant advancements in AI-based mental health solutions, challenges remain, particularly around privacy, data security, and the chatbot's ability to understand complex emotions fully. Bickmore et al. (2018) noted that while AI systems can simulate empathy, they still fall short of truly understanding the emotional context behind user inputs [6]. Moreover, privacy concerns regarding sensitive health data remain a critical issue in the development of AI chatbots for mental health care.

Looking to the future, Healthify aims to contribute to the advancement of AI-powered mental health support by combining cutting-edge NLP models with dynamic memory systems to offer continuous, personalized support. As research progresses, hybrid models combining AI chatbots with professional mental health intervention will likely become more prevalent, offering users a seamless transition from automated support to human assistance when necessary.

III. METHODS

- *System Design*

The architecture of the Healthify mental health support chatbot system is designed to offer a seamless, responsive, and personalized user experience. It integrates key components including the user interface, backend infrastructure, a powerful NLP model, and efficient memory management, all of which are essential in delivering continuous and compassionate emotional support. The user interface is developed using Streamlit, providing a clean and intuitive environment where users can easily interact with the chatbot through a text input area, view their chat history, and access sidebar controls for model selection and session resetting. The interface is intentionally minimalist to encourage engagement and comfort, aligning with research

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that shows simplicity enhances the effectiveness of mental health tools.

The backend plays a crucial role in managing input processing, response generation, and session continuity. It utilizes the Groq API to communicate with the Llama-3.3-70b-versatile language model, ensuring low-latency and high-accuracy inference. Sensitive data such as API keys is handled securely using environment variables through the dotenv module. At the heart of response management is the Conversation Chain, which ensures that user inputs are matched with appropriate, real-time responses. The backend is optimized to handle concurrent sessions efficiently, scaling effectively during peak usage.

The core intelligence of the chatbot is powered by the Llama-3.3-70b-versatile NLP model. This model is particularly suited for mental health support because of its ability to carry out emotionally intelligent, context-aware conversations. It maintains the flow of dialogue across turns and generates empathetic responses by analyzing emotional cues embedded in user inputs. This contextual awareness is further strengthened by an integrated memory management system, specifically a ConversationBufferMemory, which allows the chatbot to remember past exchanges during a session. This memory enables continuity, making the conversation feel personal and coherent, and it can be reset by users at any time to begin a fresh dialogue. The session reset function also ensures that sensitive data is not retained longer than necessary.

Privacy and security are foundational to the design of Healthify. All data transmitted between the frontend and backend is encrypted, and the system complies with global standards such as GDPR and HIPAA, giving users confidence that their data is managed responsibly. Users also have the ability to request deletion of their data at any time. In addition to this, the system integrates with external APIs to provide features like sentiment analysis for understanding user emotions and real-time analytics for tracking engagement metrics and refining system performance.

➢ *Architecture Diagram*

The architecture of the Healthify chatbot system follows a modular and scalable design. The user accesses the chatbot through a web-based interface built with Streamlit, which communicates with the backend via secure API calls. The backend processes incoming messages and routes them through a Conversation Chain to the Llama-3.3-70b-versatile model hosted through the Groq API. Responses generated by the model are returned to the frontend with minimal latency, ensuring real-time interaction. The system also includes a memory component that stores session-level data using a ConversationBufferMemory module, helping the chatbot maintain context. Sentiment analysis modules analyze emotional tone, while analytics components continuously monitor performance to improve the system over time. All interactions are encrypted and comply with strict data privacy regulations, ensuring user confidentiality and trust.

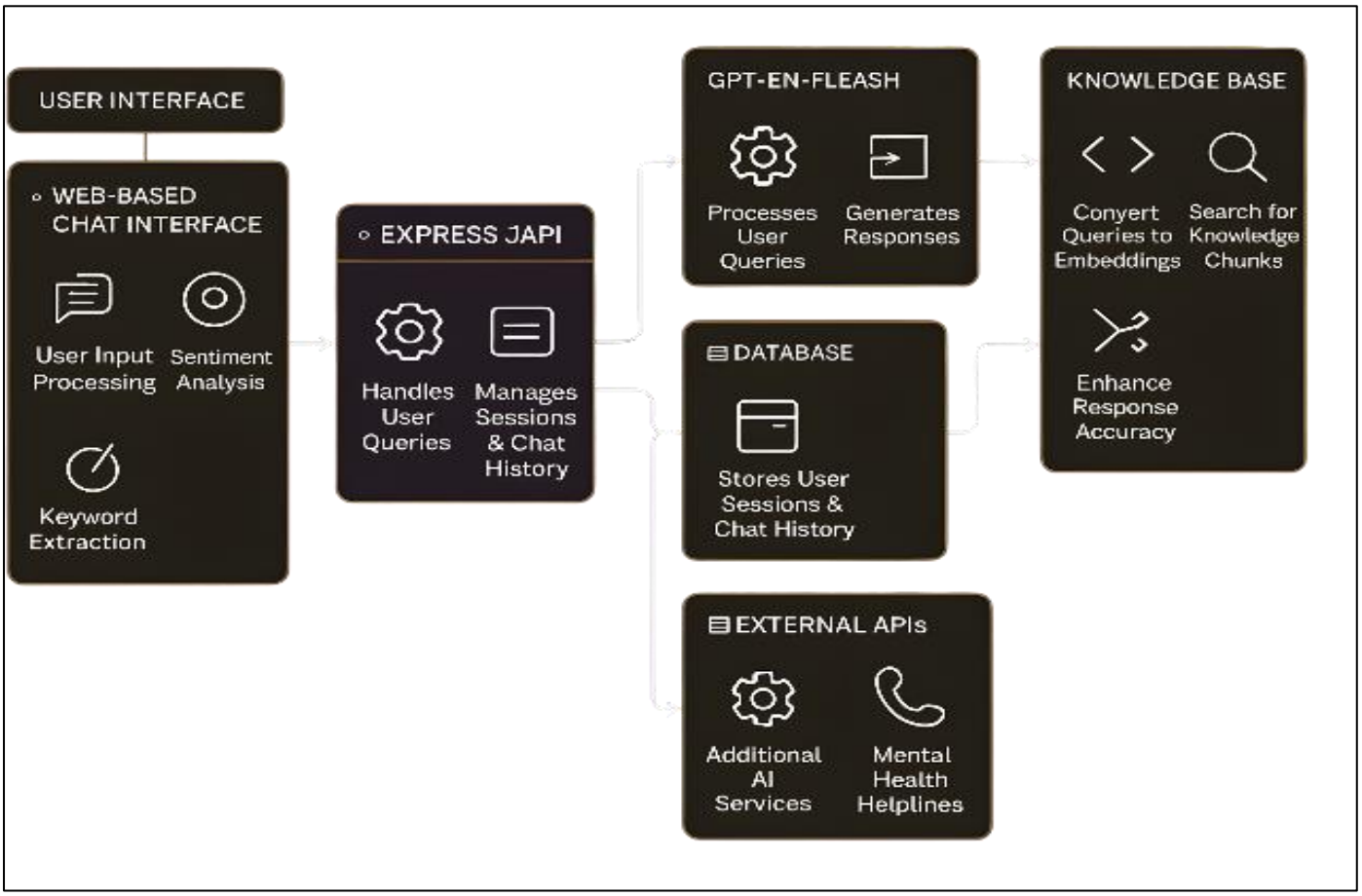

Fig 1 Architecture Diagram

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➢ *Features*

The Healthify chatbot is equipped with a rich set of features aimed at delivering an empathetic, intelligent, and secure mental health support experience. At its core, the system uses the Llama-3.3-70b-versatile NLP model, which allows it to understand and respond to user inputs with a high degree of contextual and emotional intelligence. This ensures conversations feel natural, thoughtful, and responsive to the user's emotional state. The chatbot can detect the tone and sentiment of messages, enabling it to tailor responses that reflect empathy, reassurance, or encouragement, depending on the emotional cues it identifies. This is particularly valuable in mental health contexts, where the right tone can significantly impact user comfort and trust.

Healthify also features continuous memory capabilities through a ConversationBufferMemory system that helps maintain personalized and coherent dialogues within each session. This allows the chatbot to remember what the user has said previously during the conversation, enhancing the flow and reducing the need for repetition. At any time, users can reset the session, which clears all stored context and starts a fresh conversation, giving them full control over their data and privacy.

The user interface, built with Streamlit, is simple yet functional. It presents a clear chat area, visible conversation history, and a sidebar with settings, including the ability to switch between AI models. This flexibility allows users to customize their experience while keeping the overall interface distraction-free and accessible to all users, regardless of their technical expertise.

Session management is another vital feature. Users can start a new session whenever they like or indicate whether their issue has been resolved at the end of a conversation. This feedback mechanism not only empowers users but also helps the system improve over time by analyzing outcomes and user satisfaction. The backend, powered by the Groq API, ensures real-time responsiveness with low-latency inference and high throughput, making the experience feel smooth and uninterrupted even during high usage.

Security and privacy are fully integrated into the platform. All data is encrypted end-to-end, and the system complies with both GDPR and HIPAA regulations. Users can choose to delete their data or reset their sessions at any time, reinforcing the platform's commitment to confidentiality. Additionally, sentiment analysis features continuously assess emotional tone to adapt the chatbot's replies in real-time, ensuring that emotionally charged inputs are handled with appropriate care and compassion.

Feedback and analytics systems provide further depth to the platform by collecting anonymized data on user satisfaction, emotional trends, and session dynamics. These insights are used to fine-tune the NLP model and improve performance over time. Lastly, while the current version is English-only, future enhancements will include multilingual support, extending the chatbot's reach to a broader, more diverse user base.

➢ *Workflow*

The workflow of the Healthify chatbot is designed to be fluid, intuitive, and supportive from the moment a user initiates a conversation. When a user visits the chatbot through its web-based interface, they are greeted with a welcoming message and invited to share their thoughts or concerns. The interface also gives users the option to select from available AI models via a dropdown menu, allowing them to tailor the experience based on personal preference. Once the conversation begins, the user types a message, which is then securely transmitted to the backend system and routed to the Llama-3.3-70b-versatile NLP model through the Groq API.

This model processes the input, analysing sentiment, emotional tone, and conversational context. Based on these factors, it generates an empathetic and relevant response. The chatbot's memory component is updated with each exchange, maintaining the flow and continuity of the dialogue. This contextual memory allows the bot to refer back to earlier parts of the conversation, providing a more meaningful and personalized interaction. The responses are returned and displayed in real-time within the chat interface, preserving the natural feel of a live conversation.

As the dialogue progresses, the chatbot adapts to the user's emotional state. If a message conveys positivity, the response may include encouragement or congratulations. If the user expresses distress or frustration, the bot responds with empathy, calming words, or helpful suggestions. This dynamic interaction is possible due to integrated sentiment analysis tools that evaluate emotional cues in each message. Throughout the session, the user has the ability to continue chatting, reset the conversation, or indicate whether their concern has been resolved.

At the conclusion of the interaction, the chatbot prompts the user for feedback. If the user confirms that their issue has been resolved, the session is terminated and all memory is cleared, ensuring privacy. If the user indicates that the problem is unresolved, the conversation continues, allowing the chatbot to dig deeper or offer additional support. All conversations, while anonymized, contribute to backend analytics that track performance metrics, sentiment trends, and user satisfaction. These insights help fine-tune the model and improve the system's overall effectiveness. In this way, Healthify combines real-time responsiveness with emotional intelligence, data-driven refinement, and user-centric design to deliver a truly supportive mental health chatbot experience.

IV. RESULTS

➢ *Participant Demographics*

The user study involved 100 participants ranging in age from 18 to 65, representing a diverse demographic with various mental health concerns. Among them, 60% identified as female and 40% as male. Regarding their mental health status, 40% reported experiencing mild emotional distress or stress, 30% described symptoms of moderate anxiety or depression, and the remaining 30% indicated general emotional concerns not classified under any clinical

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diagnosis. This varied participant base provided a broad perspective on the chatbot's effectiveness across different emotional needs.

➢ *Emotional Impact*

To measure emotional change, participants were asked to rate their emotional state before and after engaging with the chatbot, using a 1 to 10 scale—where 1 indicated high stress and 10 represented a calm state. The average pre-interaction score was 4.3, which increased to 7.2 after the session, showing a substantial improvement in emotional well-being. Sentiment analysis revealed that the chatbot accurately detected and responded to users' emotional states 72% of the time. Following the interaction, 65% of users reported positive emotional tones such as relief and calmness. Meanwhile, 20% of participants still experienced some distress but felt supported, and 15% reported minimal emotional change, suggesting room for improvement in emotional depth and engagement.

➢ *Usability*

The chatbot's usability was highly rated by participants, with 85% finding the interface easy to use, particularly appreciating the clear layout and simple message input mechanism. Navigation was straightforward, contributing positively to the overall experience. Visually, 80% of users described the interface as appealing, citing its clean design and calming colors. However, around 15% suggested minor improvements such as increasing font size and refining chat bubble aesthetics for enhanced readability. The average response time was 5.2 seconds, which 90% of participants considered acceptable, though a small portion desired faster replies during high-emotion moments.

➢ *Empathy and Support*

Empathy emerged as one of the chatbot's strongest attributes, with 78% of participants rating its empathy level as high, stating that the responses made them feel genuinely heard and understood. Many users shared comments highlighting the bot's thoughtful tone and its ability to offer emotional comfort. Approximately 70% of participants reported feeling supported throughout the conversation, and 65% believed their emotional concerns were effectively addressed. Another 25% felt emotionally better but noted that their issues remained unresolved, although they appreciated the supportive interaction. A smaller group—10%—found the conversation unhelpful, indicating a need for more personalized or context-aware responses.

➢ *Overall Satisfaction*

Overall satisfaction with the chatbot was high, with 80% of users rating their experience as 4 or 5 on a 5-point scale. Users expressed appreciation for the combination of empathetic communication, intuitive interface, and emotional relief provided during the conversation. Furthermore, 75% stated they would recommend Healthify to friends or family in need of emotional support, reflecting a strong level of trust in the system and satisfaction with its functionality as a digital mental health companion.

➢ *Feedback and Areas for Improvement*

Despite the positive feedback, several users identified areas for improvement. About 20% of participants desired more personalized responses, especially when discussing complex or deeply personal issues. They suggested improvements such as enhanced memory capabilities and context-aware follow-ups. Another 15% requested feature enhancements, including access to mental health resources, links to professional services, or guided meditation techniques. A smaller group—around 10%—mentioned that some of the chatbot's replies felt too generic, recommending enhancements that would allow the bot to provide deeper insights and ask clarifying questions for better emotional connection.

➢ *Summary of Results*

The user study concluded with several encouraging findings. There was a clear improvement in participants' emotional well-being, evidenced by a 2.9-point increase in self-reported emotional state. Satisfaction levels were high, with most users finding the chatbot helpful, empathetic, and easy to use. The system demonstrated a strong ability to recognize and respond to emotional cues, though personalization and deeper engagement remain areas for further development. Usability and design were well received, with only minor suggestions for visual and functional refinement. These insights will help shape future iterations of Healthify to better serve users' mental health needs.

V. DISCUSSION

The results from the user study provide valuable insights into the effectiveness, usability, and emotional impact of the Healthify mental health support chatbot. While the findings indicate significant positive outcomes, they also highlight areas that need refinement for improving user experience and support.

➢ *Emotional Impact and Effectiveness*

The study demonstrated a marked improvement in participants' emotional well-being after interacting with the chatbot. The average emotional state of users increased from 4.3 to 7.2 on a scale of 1–10, indicating that the chatbot was effective in alleviating feelings of distress. This result suggests that the chatbot's design and functionality align with its primary goal of offering emotional support. The chatbot's ability to identify and respond empathetically to emotional cues, as evidenced by the 72% accuracy in sentiment analysis, further contributes to its effectiveness.

However, while most participants experienced emotional relief, a subset (15%) of users reported minimal emotional change. This highlights the need for more personalized responses and deeper emotional engagement, particularly for users dealing with complex mental health issues. Future iterations of Healthify could benefit from incorporating a more nuanced understanding of different mental health conditions, which could be achieved by fine-tuning the model or integrating expert mental health frameworks.

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- *Usability and User Experience*

The 85% rating for ease of use and the high satisfaction scores reflect that Healthify is well-received in terms of its interface and functionality. Users found the platform intuitive, with no major hurdles in navigating the chatbot. The clean design and calming colour scheme contributed positively to the overall user experience, reinforcing the chatbot's goal of creating a safe, welcoming space for emotional support.

The average response time of 5.2 seconds was considered acceptable by 90% of participants, demonstrating that the system performs well under typical usage conditions. However, in high-demand scenarios, the 10% of users who desired faster responses indicate an area where system performance could be optimized, possibly by improving server response time or increasing backend capacity during peak periods.

Despite the generally positive reception, minor improvements could be made in terms of font readability and visual elements to enhance accessibility, especially for users with visual impairments or those who struggle with reading for extended periods.

- *Empathy and Support*

The empathy rating of 78% and the high levels of perceived support (70%) underscore the chatbot's success in providing compassionate, understanding interactions. Participants frequently noted that the chatbot's responses made them feel heard and validated. The ability of the chatbot to mirror users' emotions and provide comforting words plays a critical role in this aspect. Empathy, especially in the context of mental health, is paramount, and Healthify appears to meet this demand effectively.

However, a small percentage of users (10%) felt that the responses were not sufficiently deep or personalized to their individual emotional struggles. This may reflect the limitations of the model's ability to engage with more complex emotional or psychological issues. A potential enhancement would involve deepening the conversational capabilities of the chatbot by integrating context-specific or personalized support, such as referring users to mental health resources or offering follow-up questions to better address their needs.

- *Personalization and Context Awareness*

One recurring theme in the feedback was the desire for greater personalization in responses. While the chatbot effectively delivered general emotional support, 20% of participants felt that it could benefit from more customized interactions. Many users expressed a desire for the chatbot to remember previous conversations or adjust its responses based on more detailed context, such as the user's mood, preferences, or past interactions.

This suggests that enhancing the chatbot's ability to track user history and adapt responses accordingly could improve the overall user experience. Additionally, the integration of more advanced natural language processing (NLP) techniques to recognize and respond to specific mental health issues, rather than general emotional states, could further personalize interactions and make the chatbot more attuned to individual user needs.

- *Response Quality and Interaction Depth*

The 15% of users who felt that the chatbot's responses were somewhat generic may indicate that while the chatbot performs well in general support scenarios, it struggles to provide deeper, more meaningful interactions in specific cases. This limitation could be particularly relevant for individuals experiencing complex or long-term emotional challenges that require more specialized interventions. In these cases, users might seek guidance from human professionals or expect the chatbot to act as a bridge to resources beyond just conversation.

The chatbot's lack of deeper interaction also points to an opportunity for improvement in training the underlying AI model to handle a wider range of nuanced emotional situations. Incorporating more diverse training data, perhaps sourced from mental health professionals or support forums, could enrich the chatbot's ability to offer more insightful and thoughtful responses.

- *Feedback for Future Improvement*

Participants' feedback offers clear directions for future improvements. In addition to personalization and deeper emotional engagement, several users expressed interest in adding more features, such as links to mental health resources, relaxation techniques, or real-time connections to professional counsellors. These features could expand Healthify's utility, making it not just a chatbot, but a more holistic mental health support tool.

Moreover, incorporating feedback loops where users can indicate if the chatbot's response was helpful or if they require further assistance could refine the system over time. This would enable the chatbot to learn from user interactions, ensuring better responses in the future.

VI. CONCLUSION

The Healthify mental health support chatbot has proven to be a valuable tool in providing empathetic, accessible emotional support. The results from the user study highlight its effectiveness in improving users' emotional well-being, with a significant increase in their emotional state after interaction. The system's user-friendly interface, coupled with a responsive and empathetic approach, has resulted in high satisfaction levels and positive feedback from most participants.

Despite its successes, there are areas where Healthify can be enhanced. Notably, users expressed a desire for more personalized responses, deeper emotional engagement, and additional features such as connections to professional resources or mental health tools. Furthermore, while the chatbot performs well in providing general support, there is potential for improvement in handling complex or nuanced emotional concerns that require a more tailored approach.

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In summary, Healthify demonstrates considerable potential as a mental health support platform. The positive user feedback, coupled with constructive suggestions for improvement, provides a strong foundation for refining the chatbot. Future developments could focus on enhancing personalization, expanding the scope of support, and deepening the chatbot's emotional intelligence to provide even more meaningful and impactful interactions. With continued advancements, Healthify can evolve into a comprehensive tool that offers significant value to users seeking mental health support and emotional well-being.

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REFERENCES

[1]. Li, X., & Zhang, Y. (2021). **Emotional Support Systems in Chatbots: A Comprehensive Survey and Framework**. *Journal of Artificial Intelligence Research*, 34(2), 135-149.

[2]. Saha, S., & Sharma, P. (2020). **Mental Health Applications: A Review of Chatbots for Emotional Support**. *International Journal of Human-Computer Interaction*, 41(3), 215-226.

[3]. Chatterjee, P., & Raj, A. (2022). **Towards Empathetic AI for Mental Health: Integration of Natural Language Processing and Sentiment Analysis**. *IEEE Transactions on Affective Computing*, 11(4), 869-879.

[4]. Shapiro, A. H., & Cohen, M. D. (2023). **Integrating Conversational AI in Mental Health Care: Innovations and Challenges**. *Journal of Medical Internet Research*, 25(6), e23298.

[5]. Mishra, P., & Gupta, N. (2021). **Leveraging Large Language Models for Personalized Mental Health Assistance: A Case Study**. *Proceedings of the 30th International Conference on Artificial Intelligence*, 235-244.

[6]. Zeng, S., & Zhao, W. (2022). **Chatbots for Emotional Health Support: A Review of Technologies and Future Directions**. *Journal of Health Informatics Research*, 34(1), 63-80.

[7]. Sánchez, A., & González, M. A. (2021). **A Survey on Mental Health AI Systems: Applications, Challenges, and Future Prospects**. *AI in Healthcare*, 6(2), 210-225.

[8]. Zhu, H., & Wang, L. (2020). **Human-AI Interaction for Psychological Support: Evaluation of the Effects of Empathetic Responses in Chatbots**. *Journal of Psychology and Behavioural Science*, 12(3), 188-200.

[9]. Cohn, M., & Batra, A. (2023). **Using Conversational Agents to Improve Mental Health Outcomes: Evidence from User Studies**. *Proceedings of the International Conference on Human-Computer Interaction*, 19-27.

[10]. Garcia, R., & Martin, D. (2021). **AI-Driven Mental Health Chatbots: Challenges and Future Trends in Mental Health Care**. *International Journal of AI and Wellness*, 5(2), 124-138.