Wise Care: A Comprehensive Mobile Application with Conversational Chatbot and Medical Assistance

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Abstract*—In a rapidly changing society, seniors often face loneliness and health concerns as younger generations seek opportunities elsewhere. To address these challenges, our app introduces a unique chatbot feature that interacts with users through chat, providing a personalized and compassionate companion. The chatbot not only addresses loneliness through engaging conversations but also delivers intelligent medical assistance by offering personalized advice and remedies based on userexpressed symptoms.In addition to this, our app also provides a range of other functionalities such as booking medical consultations, accessing counseling services, and ordering prescriptions to offer comprehensive support.With its user-friendly design and cutting-edge technology, our app sets a new standard for scalable solutions that cater to the unique needs of aging populations, fostering healthier and more connected lives for seniors globally.

I. INTRODUCTION

In this fast-paced world of ours, where younger generations frequently seek opportunities far from home, our aging population faces many difficulties, particularly with regard to loneliness and health concerns. We have created a specific smartphone application just for senior citizens in order to address these urgent issues. This application adds a novel feature—an AI-powered chatbot, while also streamlining necessary tasks like ordering prescription drugs. With pleasant conversations, this chatbot serves as an amiable companion for senior citizens, reducing their feelings of isolation.By utilizing cuttingedge technologies like ChatGPT and LangChain, the chatbot guarantees human-like and sympathetic interactions.With the aid of these intelligent tools, the chatbot is able to discern the emotions of users and provide beneficial health advice when they discuss common issues. The development process of our innovative app is examined in this research paper, with a particular emphasis on designing an interface that is easy to use for senior citizens. We also look at the combination of LangChain and ChatGPT, highlighting the critical role these technologies play in facilitating compassionate communication and providing proactive senior healthcare assistance. Our ultimate objective is to improve the lives of the elderly while setting the standard for technologically advanced solutions in our globalized society.

II. LITERATURE SURVEY

In [1] our system, Charlie, is a comprehensive and interactive platform that is intended to meet the various needs of its users, with an emphasis on the engagement and well-being of the elderly. With the help of engaging quizzes, curated news updates, and personalized engagement through discussions on a range of topics, this multifunctional system hopes to encourage healthier lifestyles through useful health advice and rewards. Charlie also provides emotional support by sharing interesting anecdotes and helps people with cognitive challenges manage their schedules. The system is designed to provide users with a comprehensive and captivating experience by effortlessly attending to their preferences, entertainment, health, memory support, and emotional needs.The elderly-friendly chatbot offers a comprehensive solution; it is a useful ally that provides essential assistance with managing tasks, recommends activities that are health-related, and addresses the serious problem of loneliness. But even with its excellent features, the research looking into how the chatbot interacted with senior users had some drawbacks. Significant challenges are presented by these limitations, which include a small participant pool, no statistical validation, oversight in dialogue design, and no direct user involvement during implementation. It is necessary to address these issues in order to improve interaction design techniques and guarantee the best possible usability for senior citizens. The improvements in techniques

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and active user participation are intended to encourage a broader uptake of chatbot technology, indicating continued progress in enhancing the welfare of the elderly.

A mind monitoring service, together with physical, mental, and social questionnaires, are integrated into a mobile chat application using the rule-based virtual caregiver system is described in [2]. In order to fulfill each senior's unique needs, enhance their quality of life, and encourage continued service use, the system strives to deliver context-aware, tailored care.The senior receives one inquiry every day from the mobile chatbot as part of the system's operation. The old person must press the optional button (for example, "Have you slept well over the last week?"). either in response to the query or not. In order to improve the monitoring service and deliver more insightful feedback messages, the system gathers user reactions and feedback messages. The proposed system differs from current methods for providing the mind monitoring service, which frequently rely on generic computers that are difficult to maintain and end at short-term experimentation and technical advancement. The suggested approach makes use of mobile chatbot technology, which is more accessible, convenient, and easy for senior citizens to incorporate into their daily lives. By providing individualized treatment and lowering the number of medical appointments, the suggested approach enhances the quality of life for senior citizens by monitoring their health using an easy-to-use mobile chat app. In addition to collecting insightful customer input for efficacy, it guarantees service continuity. However, for a thorough assessment, larger, lengthier investigations are required due to the limited evaluation with a small sample size. System improvement recognizes problems provided by various network conditions and prioritizes improvements in tailored questioning and network maintenance.

The Personal Healthcare Chatbot for Medical Suggestions system in [3] uses machine learning and artificial intelligence (AI). When users engage with the chatbot, it proceeds in a straight line from extracting symptoms to identifying diseases. With the aid of Artificial Intelligence (AI) Natural Language Processing (NLP) algorithms, the chatbot interprets user inputs, correctly diagnoses illnesses, and categorizes them as minor or serious. When the accuracy of the symptom is more than 80%, the chatbot will show the associated disease and provide medical advice for minor ailments and a doctor's consultation for more serious cases.The system gives priority to natural language processing (NLP) for user-friendly communication, guaranteeing a secure user experience with access authorized by login and registration. Information gathering, symptom extraction, diagnosis, and medical advice are the phases of the chatbot's operation. The principal benefits include precision, ease of use, temporal economy, safety, round-the-clock accessibility, prompt responses, minimized wait times, and appointment scheduling capabilities.The system's natural language communication between users and the intelligent system is made possible by NLP, which is essential to it. AI-driven chatbots use natural language processing (NLP) to improve user experiences. They handle lengthy chats safely by requiring user logins.Additionally, the system uses a retrieval-based algorithm that uses user input to choose relevant responses from a predefined set. The block diagram presents the relationships and functions of the system's various components—user input, natural language processing (NLP), disease classification, and output display—visually.

This study looks at the use of a Natural Language Processing (NLP) algorithm to develop a chatbot that can converse naturally in English. The chatbot is an AI-powered healthcare chatbot system that focuses on disease identification and information provision. When comparing its performance to that of current systems, it highlights benefits like accurate diagnosis, a user-friendly interface, round-theclock accessibility, time efficiency, shorter wait times, and appointment scheduling. Nevertheless, there are drawbacks. These include the chatbot's inability to diagnose uncommon or complicated illnesses that call for specialized knowledge, its reliance on user-reported symptoms for accuracy, and its lack of human empathy—a critical component in medical consultations. Concerns about potentially inaccurate advice or misdiagnoses also surface, emphasizing the value of human expertise in specific medical situations. This thorough investigation highlights the system's strengths and weaknesses, highlighting its potential and highlighting the indispensable role that human insight plays in healthcare settings.

The system suggested in [4] is a chatbot application for health assistants that is intended to assist with basic smallscale disease diagnosis and provide answers to individual healthcare questions. There are two levels in the MR.Dr. system architecture. The user interface, or front end of the application that interacts with the user, is part of the system architecture at the first level. The back-end, which is in charge of processing user input and producing the proper response, is a component of the system architecture's second level. It interprets user input using natural language processing (NLP) techniques and provides the relevant response. But language itself has a very nebulous structure when it comes to syntax, lexis, and other speech-related elements like similes and metaphors. A word can be interpreted as either a noun or a verb; a sentence can be passed through in a variety of ways; additionally, an input can have more than one meaning, etc. Using a questionnaire section, the respondents assessed the usefulness of the proposed system on four different items, ranging from item 1 to item 4, which dealt with the application's usefulness.

The system health-assistant chatbot has an amazing 87.6% usability rating, over 95% accuracy in detecting Alzheimer's, and allows users to conveniently seek medical advice from anywhere at any time. It also offers remarkable accessibility,

cost-effectiveness, and time-saving benefits. Its Rapid Application Development methodology promises to improve healthcare accessibility, lower costs, and save time for those seeking medical advice by ensuring quick development and adaptability to user needs. Its incapacity to understand some languages and dialects, such as slang or regional variations, or to diagnose complicated conditions requiring physical examinations are among its limitations, which may limit its efficacy. It is crucial to strike a balance between the use of chatbots and traditional healthcare services because the absence of the human touch, empathy, and emotional support that are present in face-to-face interactions may also be a drawback for users who are looking for those aspects in healthcare interactions.

A number of crucial elements are included in the chatbot system [5] to facilitate effective user interaction and problem-solving. The Environment, which houses the Natural Language Processing (NLP) Engine in charge of deciphering user input, determining intent, and extracting pertinent data, is at the center of the system. By integrating plugins for feedback and policy learning, the Agent for Dialogue Management guarantees context continuity in discussions. A key component is the Question and Answer System, which uses both automated training utilizing corporate documents and manual training by subject matter experts to respond to commonly asked questions.Moreover, Plugins/Components provide customized APIs and automation parts for particular business applications. The Node Server/Traffic Server controls user requests, forwarding them to the relevant parts and taking care of the replies. User interfaces for smooth communication are provided by front-end systems, which are integrated with well-known platforms like Facebook and Microsoft Teams. Effective dialogue management, natural language understanding, and responsive interactions across a range of user interfaces are guaranteed by this all-encompassing architecture.

There are many possible health benefits associated with the architecture as it is described. First off, it promises better patient care by providing quick access to information and personalized recommendations that are adapted to each patient's needs. Second, by automating routine processes like prescription refills and scheduling, it can increase productivity and free up healthcare professionals to concentrate on more difficult jobs. Thirdly, its scalability can handle large patient volumes, making it perfect for busy healthcare environments where staffing and resource costs may be reduced. Notwithstanding these benefits, there are still difficulties in creating chatbots.Creating a conversational interface that is genuinely natural and handling mistakes or misunderstandings in user inquiries are still challenging tasks. These obstacles highlight how difficult it is to create chatbots that can successfully handle linguistic nuances. It's critical to understand these difficulties as innate to the creation of chatbots rather than as particular flaws in the architecture that is suggested and described in the document.

The exceptional [6] adaptability of the chatbot is attributed to its skill at managing user inquiries, customized timebased welcomes, and precise predictions for a variety of question kinds. Users can interact with it in both text and voice modes, making it a versatile and flexible tool. A machine learning-driven training model that uses TensorFlow, NLP, and voice recognition integration to comprehend user inputs and smoothly deliver responses in text and voice formats is at the heart of its functionality. The basis of this model is an organized JSON file with tags, question patterns, and answers. It makes accurate predictions by applying sophisticated methods like lemmatization and neural networks.The architecture of the system illustrates the flow from file creation to model training and further user interactions through a block diagram. Constructed with the Tkinter library, the chatbot's interface emphasizes user preference and system sophistication with its user-friendly design that facilitates text and voice interactions. In addition, a flowchart emphasizes the importance of the training procedure, guaranteeing precise forecasts and enabling users to select their favored mode of interaction.

AI-driven chatbots have the potential to revolutionize the healthcare industry by providing 24/7 accessibility and personalized experiences that increase patient satisfaction and engagement. They free up medical professionals to handle more complicated cases by streamlining regular tasks like scheduling and responding to frequently asked questions. These bots increase productivity while lowering healthcare expenses and patient wait times.There are drawbacks, though: complicated medical problems or crises call for expert advice; these services lack the human warmth and understanding that can be crucial in certain situations, especially when it comes to mental health. Data collection raises privacy concerns, and technical issues could result in inaccurate advice. Language and cultural differences can also make communication difficult. These restrictions highlight the significance of carefully integrating chatbots with conventional medical services, even in spite of their benefits in enhancing accessibility and healthcare delivery.

The paper [7] begins by highlighting the growing acceptance of Voice-Activated Personal Assistants (VAPAs) and the critical need to comprehend adoption factors such as privacy, security, and trust. It presents a thorough theoretical framework with emotion and cognition serving as the two main pillars of trust. The study develops hypotheses within this framework and identifies trust antecedents through a thorough review of the literature. Methodologically, a survey measuring participants' views of intrusiveness, trust, and VAPA adoption is used to collect data. The survey results are analyzed using structural equation modeling, which produces important findings that are

discussed in the discussion section. The study's conclusion highlights the importance of trust and intrusiveness in enhancing adoption and provides important implications for VAPA developers and marketers. It also highlights limitations and future research directions.
For developers and marketers looking for guidance, this study offers insightful information about the adoption of Voice-Activated Personal Assistants (VAPAs). Its emphasis on intrusiveness and trust presents a thorough theoretical framework that helps with user concerns and product design alignment. The study intends to improve user experience and raise VAPA adoption rates by addressing these insights. On the other hand, using data from surveys could introduce biases that affect the accuracy and dependability of the results. The study's narrow focus on home usage may make it less applicable to a wider range of situations, such as public or workplace settings. Furthermore, the study's immediate practical applicability for industry professionals is limited because it offers no specific solutions for developers and marketers to address trust and intrusiveness issues.Notwithstanding these limitations, this research provides guidance for customized VAPA products and advertising strategies that address user issues and promote uptake in the ever-evolving personal assistant technology space.

The paper [8] begins by highlighting the growing acceptance of Voice-Activated Personal Assistants (VAPAs) and the critical need to comprehend adoption factors such as trust, security, and privacy. It presents a thorough theoretical framework with emotion and cognition serving as the two main pillars of trust. The study develops hypotheses within this framework and identifies trust antecedents through a thorough review of the literature. Methodologically, a survey measuring participants' views of intrusiveness, trust, and VAPA adoption is used to collect data. The survey results are analyzed using structural equation modeling, which produces important findings that are discussed in the discussion section. The study's conclusion highlights the importance of trust and intrusiveness in enhancing adoption and provides important implications for VAPA developers and marketers. It also highlights limitations and future research directions. This study provides valuable insights into Voice-Activated Personal Assistants (VAPA) adoption, offering guidance for developers and marketers. Its focus on trust and intrusiveness introduces a comprehensive theoretical model, aiding in product design alignment and user concerns. By addressing these insights, the study aims to enhance user experience and increase VAPA adoption rates. However, relying on survey-based data may introduce biases, potentially impacting outcome accuracy and reliability. The study's limited focus on home usage might hinder its applicability to diverse scenarios like workplaces or public settings. Moreover, the study lacks concrete solutions for developers and marketers to address trust and intrusiveness issues, reducing its immediate practical applicability for industry professionals. Notwithstanding these limitations, this research provides guidance for customized VAPA products and advertising strategies that address user issues and promote uptake in the ever-evolving personal assistant technology space.

This [9] proposes a multifaceted approach to develop an effective chatbot for mental health care. To train and evaluate the chatbots, extensive healthcare conversation data is first painstakingly gathered and analyzed using Deep Learning and Machine Learning techniques. Evaluation metrics include user satisfaction, accuracy, and response time with the goal of building chatbots that can offer customized treatments, improve accessibility, and lessen the stigma attached to asking for assistance. One novel approach is to personalize the chatbot interactions by changing the operator questions and incorporating them in a smooth way, with the goal of enhancing the chatbots' ability to communicate with humans. Additionally, the system hopes to greatly increase access and provide more individualized mental health therapies by utilizing developments in digital technology, such as telepsychiatry, online counseling, and chatbots specifically designed for mental health.
The suggested system uses machine learning and deep learning to build intelligent chatbots for individualized treatment, with the goal of revolutionizing the mental health care industry. This development could significantly increase accessibility and lessen stigma by offering confidential, private help. By asking different operator questions, chatbots can be made to communicate more like humans. Thinking about cutting-edge treatments such as online counseling and telepsychiatry suggests a revolutionary future for mental health therapies. However, the study's focus on particular healthcare conversations and dependence on a small dataset are limitations that may reduce generalizability and reliability. Although briefly discussed, the ethical issues surrounding the use of chatbots in mental health care need more investigation. A more thorough understanding of chatbots' roles and ethical implications in mental health care is necessary, as evidenced by the neglect of societal impacts like the reinforcement of biases.

In the paper [10], a novel conversational AI Chatbot that uses machine learning and natural language processing is carefully designed for use in healthcare applications. Its main goal is to analyze user inputs and provide tailored recommendations for medical care, greatly assisting patients in recognizing possible health problems and directing them toward appropriate medical care. The system architecture is shown in Fig. 2 of the paper and consists of the following crucial elements: a knowledge base, response generation module, user interface, and natural

language processing module. Utilizing advanced methods such as N-gram, TFIDF, and cosine similarity measures, the chatbot evaluates keyword relevance and sentence similarities. It was trained on a dataset that contained intent tags for particular illnesses and inquiry types. These approaches, when combined with a generation-based polisher and prototype selector, improve responses for more efficient user communication when they are seeking medical advice. This Chatbot can be used in a variety of industries, including education, healthcare, and navigation, rather than just the healthcare industry. Its extensive architecture highlights its potential as a flexible and potent tool by utilizing cutting-edge machine learning algorithms and natural language processing techniques. By using this system, healthcare organizations can improve the quality of care they offer to patients and create more efficient routes for them to receive medical assistance. The described chatbot is revolutionizing healthcare accessibility by providing round-the-clock availability, prompt assistance, and tailored medical advice. It reduces wait times quickly and offers affordable options without sacrificing recommendation relevance or accuracy. However, compared to traditional services, its narrow scope might make it difficult to resolve complex medical issues. People who are looking to have a personal conversation with healthcare professionals may be discouraged by the lack of face-to-face interaction. Its efficacy may be hampered by language barriers, technological issues, and privacy concerns; this highlights the need for extensive research and development in healthcare chatbots to ensure safe and effective service delivery. The chatbot has the potential to be revolutionary, but it still has limitations when it comes to handling complicated medical conditions and accommodating personal communication preferences. As a result, healthcare chatbot technology needs to be continuously improved.

for a variety of services, such as online consultations, online counselling and prescription drug orders, using the chatbot. The mobile application streamlines the whole service booking process. The goal of this all-encompassing strategy is to give senior users a seamless and practical experience on a single platform.

The main components of the proposed system are:

- Chatbot
- Mobile Application

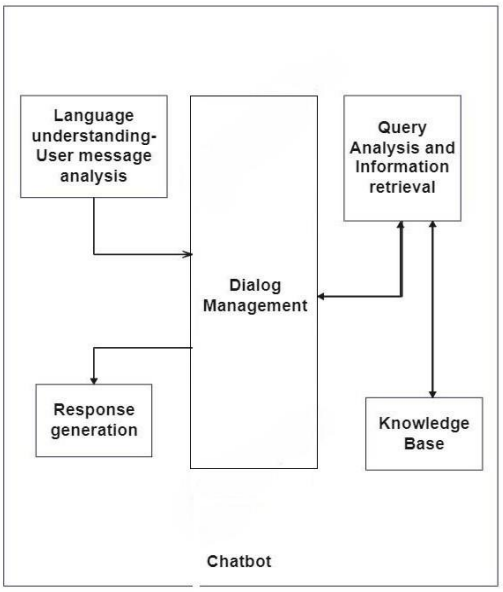

Fig. 1. Chatbot Architecture

III. METHODOLOGY

A. Proposed method

The suggested approach entails creating a personalized chatbot specifically designed for senior citizens, with an emphasis on medical diagnosis. By utilizing Langchain's capabilities, the chatbot leads users through a series of queries and responses while providing a thorough diagnosis tree. This complex system covers nearly ten prevalent diseases of the elderly. After the diagnostic procedure is finished, the chatbot suggests medications based on discussions with medical specialists. Users are advised, nevertheless, to speak with a doctor before taking any prescribed medication. The chatbot prioritizes users' safety by prompting them to seek immediate medical attention in critical situations. Our approach incorporates the chatbot into a specific mobile application, going beyond it. Users can effortlessly access a variety of services thanks to this integration. Users can make reservations

1) Chatbot:

Language understanding - User message analysis Langchain's NLP is the core of understanding user input. It captures specific information, and maintains conversation flow. Machine learning refines its understanding over time. It includes a fallback for handling queries it can't match and ensures accurate responses, simplifying bot development for seamless user interactions

Query Analysis and Information retrieval

A user is asked to enter their symptoms when interacting with the chatbot. The chatbot asks more questions to learn more about the user's medical condition based on these symptoms. This aids the chatbot in focusing on the few potential health issues the user might be having.After determining the user's health issue, the chatbot suggests getting medical help or offers

a remedy for the specific illness.Voice input functionality is incorporated into the chatbot to help elderly users communicate. By integrating a Speech Recognizer library, this feature enables voice commands for communication between users.This improves communication and accessibility for senior users, particularly for those who might have trouble typing.

Knowledge Base

The chatbot makes use of a PDF file that functions as a knowledge base for disease diagnosis and it was created under the guidance of a medical expert.This method guarantees the accuracy and dependability of the data our chatbot provides.

Response generation

Our chatbot makes use of GPT-3.5 model from OpenAI and the data from our knowledge base to generate the responses.The chatbot can also respond to user inquiries that are not covered in the knowledge base by incorporating OpenAI's model.This feature keeps the user's conversation interesting.The history of the chat messages is stored in memory by the chatbot.Because of this, it is able to preserve context and offer more customized responses.

2) Mobile application: We prioritized a user-centered design approach when designing our mobile application, which aims to provide critical services to the older community. This strategy ensures accessibility and simplicity of use, especially for users who may not be technologically savvy. Large letters, distinct iconography, and simple language are all included in our app design to make it easy for senior customers to book. Real-time availability checking of service providers is incorporated to promote correct reservations, with APIs or database queries used to retrieve current information. Push notifications keep consumers updated on the progress of their reservations and impending appointments.Remote guardian access allows children or caretakers to order services on their elderly parents' behalf from anywhere in the world, while providing safe authentication processes. A live health tracker function analyzes the health state of elderly parents in real time, including vital sign monitoring, medication reminders, and emergency notifications. Feedback systems enable people to assess the services they get and provide ideas for continuous improvement. Regular testing with older users influences iterative design changes, with the goal of creating a mobile app experience that is intuitive and user-friendly for the elderly community and their caregivers.

IV. Results And Discussion

Our project concentrated on the creation and deployment of a chatbot designed to help senior citizens with health-related questions and offer streamlined diagnosis for common illnesses. Our chatbot, which incorporated OpenAI and LangChain technology, performed admirably when it came to interacting with senior citizens, answering their questions, and providing pertinent information. When we assessed the chatbot's ability to diagnose diseases, we found that it was reasonably accurate at recognizing less complex medical conditions based on the symptoms that the user submitted, and it was also able to recommend suitable treatments. User feedback, especially from seniors, emphasized the chatbot's easy-to-use design, helpfulness in addressing health problems, and ease of engagement, all of which contributed to an overall favorable experience.The chatbot's accessibility and usefulness were further increased when it was integrated into a mobile app created with Flutter, offering users more capabilities including medication delivery services. Notwithstanding these successes, our research also revealed several shortcomings, such as the requirement for additional improvement of the chatbot's natural language processing capabilities and enlargement of the disease database to cover a wider variety of medical ailments.Looking ahead, future efforts will focus on addressing these challenges, refining the chatbot's functionality, and exploring opportunities for continued enhancement to better serve the needs of older individuals seeking accessible and reliable health assistance.

V. Conclusion

The potential of medical chatbots in addressing elderly people's health issues and feelings of loneliness has been examined in our literature analysis. As we begin to build a mobile application with a built-in chatbot, it is evident that chat companionship has potential to reduce social isolation. The literature does, however, emphasise the necessity of more investigation to improve medical advice capabilities. While taking cues from applications that have achieved success, our initiative also acknowledges the subtle difficulties in answering health-related questions from the elderly. The literature study emphasises the significance of ethical considerations, user-centric design, and teamwork with medical professionals.

The chatbot's incorporation of medical advice provides a way to treat common illnesses at home. The project intends to provide seniors with comprehensive care by integrating companionship, health guidance, and accessibility in addition to meeting their technical needs.

In conclusion, our assessment of the literature confirms that our effort is relevant and can improve the lives of older adults. Our goal is to improve the well-being of senior citizens by combining technical innovation and compassionate design to provide a valuable solution to loneliness and vital health assistance.

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