AI-Driven Chatbot for Virtual Health Assistance and Symptom Analysis for Common Illnesses

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ABSTRACT

Artificial intelligence (AI) has evolved from a technology to a field within the healthcare industry. enabling early symptom analysis using creative tools to promote easy access to medical information. This study proposes an AI-Driven health assistance chatbot that is built with React Native to provide interactive medical advice and information using mobile devices. The chatbot utilizes Natural Language Processing (NLP) to understand user symptoms, with machine learning to give a preliminary assessment using pre-trained medical data from API. The chatbot does not replace professional medical advice. The chatbot utilizes Firebase Database to guarantee reliability and data security. The study was conducted at different hospitals in Makati, Manila, and Davao to reduce bias and ensure that data came from a variety of locations and medical institutions. The evaluation findings showed a great amount of user satisfaction, showing an overall score of 4.65 out of 5 in different categories. Categories include accuracy, functionality, and compatibility. Respondents consist of healthcare professionals, medical staff, and individuals. Participants complimented the chatbot's accuracy and design of being a user-friendly. Overall, the chatbot shows positive results for its short response time and portability of it. Although improvements are still needed for future studies.

Keywords: Artificial Intelligence, Natural Language Processing, Machine Learning, Healthcare Chatbot, React Native, Firebase, Symptom Analysis, Mobile Health

INTRODUCTION

Nowadays in the field of technology, artificial intelligence (AI) is the process of making machines capable of learning, reason, and solving problems. Unlike human beings, computers can gain knowledge from data using machine learning (ML), another form of artificial intelligence (AI), which allows them to identify correlations among data and make predictions or decision-making.

An algorithm is a collection of precise guidelines or procedures used to solve a specific issue. It utilizes logical procedures to process input data and produce significant outcomes. In this study, users' symptoms are analyzed, and their likely health issues are predicted using artificial intelligence.

In order to provide virtual medical guidance by way of interactive dialogues, the application is implemented as a chatbot. When users text the symptoms, they are experiencing, the chatbot uses natural language processing (NLP) to determine them. When necessary, the chatbot will add lifestyle recommendations and urgent care guidance to its potential health predictions based on the analysis. The chatbot's goal is to integrate with symptom-checker APIs and medical databases to increase reliability. Interaction with the system is made easy and accessible by a user-friendly mobile application user experience.

The process is organized as follows: individuals input their symptoms, the virtual assistant uses natural language processing (NLP) to analyze them, and then it provides potential illnesses based on medical datasets that have been trained. Furthermore, it suggests whether users ought to consult with a healthcare provider. By enabling users to check the chatbot's recommendations, a feedback system progressively improves the correctness of the model.

There are plenty of advantages to this study, such as easier access to early medical guidance, less stress on medical services, and a greater understanding of possible medical problems. In addition to giving an affordable

and long-lasting virtual healthcare solution, the chatbot helps people to make more informed health decisions by providing immediate and data-driven symptom assessments. Lastly, it improves health outcomes by operating as a link between medicine and technology.

REVIEW OF RELATED LITERATURE

Chatbots as Conversational Healthcare Services

As mentioned by Jovanovic, M., in "Chatbots as Conversational Healthcare Services," 2021, a promising platform such as chatbots can help deliver healthcare assistance and access for immediate health queries. The article states that service provision and improvements in human and computer interaction can be relevant to the integration of artificial intelligence into healthcare.

From Text to Treatment: An Overview of Artificial Intelligence Chatbots in Healthcare

In addition, Singh, M. (2024), in "From Text to Treatment: An Overview of Artificial Intelligence Chatbots in Healthcare," 2022, point out the artificial intelligence-powered medical chatbots transformative role in the challenges of the health industry and healthcare when it comes to affordability and accessibility. The study explains that AI-driven chatbots can become an essential tool in healthcare delivery and improve access to medical services.

Artificial Intelligence and Human Virtues: Towards a Moral and Quality Healthcare System

As mentioned by Cordero, D. A. Jr., in "Artificial Intelligence and Human Virtues: Towards a Moral and Quality Healthcare System" (2022), explains the pros and cons when applying artificial intelligence (AI) to healthcare, mostly in a relationship to handling information about patients. Results that match with our study by demonstrating the ways in which artificial intelligence-powerd technology, such as chatbots and models based on machine learning, can help medical professionals to improve interactions with patients.

Application of Expert Systems with Artificial Intelligence in the Medical Field: A Literature Review

As Ramirez et al. in "Application of Expert Systems with Artificial Intelligence in the Medical Field: A Literature Review" (2025), shows how expert systems driven by artificial intelligence are altering a number of medical areas of expertise by imitating human decision-making, improving patient care, and improving diagnosis. These given systems are already being used in fields such as gynecology, neurology, orthopedics, ophthalmology, and cardiology. However, there are still challenges, particularly in guaranteeing accuracy and reliability when facing complex conditions like gynecological diseases.

A Systematic Review and Comprehensive Analysis of Pioneering AI Chatbot Models from Education to Healthcare

Further to this literature, Wangsa, K. entitled "A Systematic Review and Comprehensive Analysis of Pioneering AI Chatbot Models from Education to Healthcare" (2024), stated that chatbots should have security and ethical implications, especially since artificial intelligence is evolving every year and the rise of AI-driven chatbots such as ChatGPT, Llama, and Bard is fast and in demand.

AI chatbots in clinical laboratory medicine: Foundations and trends

As He, S. in "AI chatbots in clinical laboratory medicine: Foundations and trends" (2023), highlights the potential and role of artificial intelligence, especially chatbots, in medicine. Although artificial intelligence can give quick responses, its interpretation of multiple and complex laboratory data is underexplored. The study points out that while AI-driven chatbots can improve medical education, they still suffer from limitations that can lead to misinformation.

Transforming healthcare with chatbots: Uses and applications—A scoping review

Barreda, M., in "Transforming healthcare with chatbots: Uses and applications—A scoping review," (2025), claims that AI-powered health assistance and chatbots become important tools, especially during the times of the COVID-10 pandemic. The study shows that the chatbots faced challenges such as ethical concerns,

integration, and need for access, even though it shows potential for the improvements of healthcare efficiency and access.

Artificial intelligence (AI) and public health

In addition, Corpuz, J., in "Artificial intelligence (AI) and public health" (2023), states that artificial intelligence is rapidly evolving different industries like healthcare. Technologies of artificial intelligence can revolutionize healthcare by improving health outcomes, disease surveillance, and even reducing healthcare costs with the use of computer vision, natural language processing (NLP), and machine learning.

Table 2.1: Comparison of Accuracy to Similar Studies

Title	Accuracy
PERSONAL HEALTHCARE CHATBOT FOR MEDICAL SUGGESTIONS	82%
Ailbot: A Respiratory-Focused Symptom Checker Chatbot for Children.	82.5%
Pitik: A Cebuano-Binisaya Intent-Based Chatbot	79.44%
AI-enhanced chatbot for improving healthcare usability and accessibility for older adults	85%
Vitalis: AI-Driven Chatbot for Virtual Health Assistance and Symptom Analysis for Common Illnesses (proposed chatbot)	**93%**

Conceptual Framework

The conceptual framework represents the connected elements of the artificial intelligence chatbot and serves as a structured model for virtual health assistance and symptom assessment. It outlines the input, process, and output, and shows their aims regarding users the chatbot system through the use of artificial intelligence, and the expected information returned, such as health instructions or guidance. Thus, this conceptual framework will guide the study by outlining the way users will interact with the chatbot, how the chatbot system will manage health inquiries, and how the outputs a user receives, i.e., symptom interpretations and advice for some common illnesses, will be trustworthy.
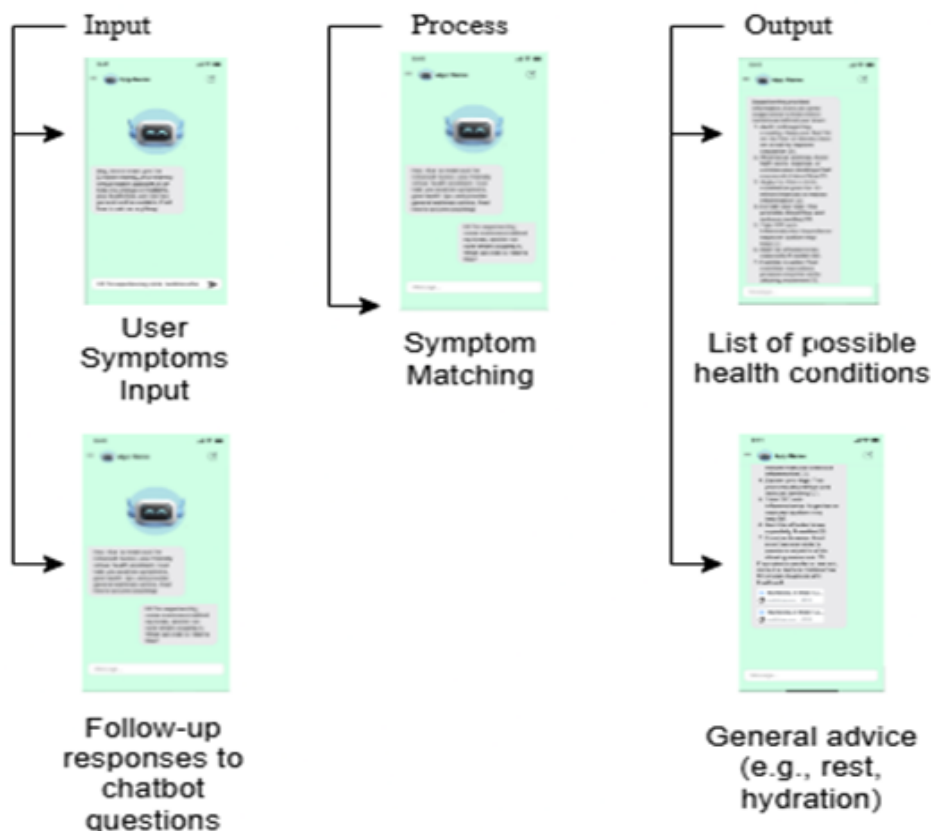

Figure 2.2: Input-Process-Output Model

Figure 2.2 presents the fundamental design framework of the study, serving as the blueprint for developing the AI-driven chatbot for virtual health assistance and symptom analysis for Common Illnesses. The model shows how inputs such as health inquiries by the user and reported symptoms are considered through artificial intelligence and machine learning algorithms to generate outputs to accurately present and make accessible health guidance, interpretations of symptoms, and recommendations for a common illness. This level of structure and organization helps ensure the system is easy to use, accurate, and effective in addressing non-urgent health inquiries.

Input Phase. Users start by entering simple personal information such as name, age, gender, and email, along with any other relevant pre-existing medical history that can provide a more informed analysis regarding the user's health concerns. Users will next enter their health concerns by text or through audio, and indicate symptoms, health-related questions, or descriptions of a condition. The personal data provides the chatbot a baseline for assessing and analyzing potential health concerns.

Process Phase. The collected details are interpreted by the chatbot with respect to NLP and health centered database. It translates users' symptoms and connects them to medical content. It analyzes the evidence to identify possible explanations. It then provides the user with personalized responses, including recommendations for public health, preventative, and self-care. Despite its usefulness, the chatbot highlights how crucial it is to see a doctor for an accurate diagnosis and treatment plan.

Output Phase. The system provides explicit and practical outputs that include health-related suggestions, preventative methods, and potential causes of the reported symptoms. Previous chat history is used to support better responses to future interaction s and continuity of care. The chatbot also reminds users about the need to seek clinical attention when the symptoms persist or are indicative of a more serious condition. The overall goal of the output is to highlight the value of professional healthcare while providing users with current health information.

METHODOLOGY

This section shows and clarifies the structured approach that was used to guide the development of the system. It can guarantee that each phase, from planning to implementation, was well-organized and in line with the goals of the project by outlining every step taken from beginning to end. The project stayed on course, and tasks were carried out effectively with regard to the chosen model. This study utilizes Agile methodology.

Research Design

Agile is a flexible way to develop a system and a collaborative approach for developing systems that focuses on completing tasks in small, manageable phases. The entire procedure is divided into cycles, or steps, where planning, designing, developing, testing, deployment, evaluation, and refinement are all done continuously rather than all at once

This methodology allows the team to make adjustments based on frequent feedback, address problems early, and quickly adjust to improvements. Agile allowed for adjustments along the way while maintaining consistent progress for this final task.


Figure 1: Agile of Vitalis

Requirements

In order to find out the feasibility and popularity of using an AI-powered chatbot for virtual health assistance, the proponents first collected initial patient survey responses. Results showed that 81.8% of the 300 respondents were willing to use the app in order to enter mild or non-urgent symptoms for early recommendations instead of immediately seeking medical care. In addition, 86.4% of participants reported that they were finding it difficult to decide between visiting a clinic or managing their symptoms at home. To obtain advice from experts on the system's creation and design, the proponents also conducted an interview with a licensed general practitioner. The discussions made it clear that a trustworthy, approachable chatbot that could analyze the initial signs of common diseases was needed. The requirements gathered form the basis for developing a system that meets the needs of both patients and healthcare providers, ensuring that the proposed solution is both practical and beneficial.

Design

The proponents created some diagrams, workflows, and prototypes to visualize what the system would look like and its workflow based on the design and operation of the AI-driven chatbot for virtual health assistance and symptom analysis for common illnesses. The users can easily input symptoms, ask health-related questions, and access recommended solutions owing to the interface's carefully planned layout. At this point, developers had a concrete framework to direct the coding and implementation stages since the design process had clearly visualized how the system would function in terms of workflow and interaction with others.
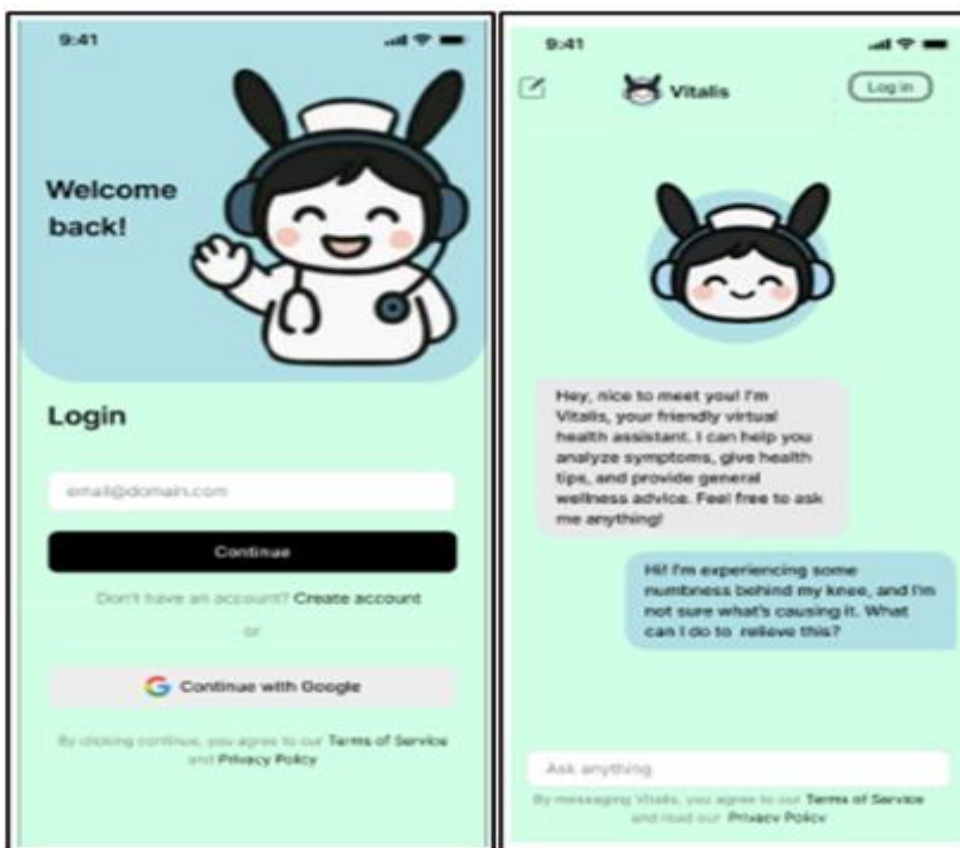
Implementation

The proponents utilize and incorporate Natural Language Processing (NLP) for the functions and characteristics of the proposed chatbot system. The NLP algorithm used in the system was specifically trained to comprehend English and Filipino Languages. Conversations were handled by API, using pre-trained data. The chatbot uses natural language processing to understand and interpret the symptoms and compare it with the data in the database, depends on the user's prompt. The chatbot technology can also recall previous symptoms prompt from the user that showcase context-awareness and continuous contact. This ensures that the user data is saved and gives additional supports for them.

Testing

As the proponents developed the chatbot system, a survey was conducted from different hospitals and stakeholders to take their feedback and opinions for enhancements of the system. Given that, stakeholder's recommendations were extensively checked to find out what improvements can be made. During this analysis stage, couple of bugs have been seen and encountered and fixed right away by the developers. The procedure assures that the chatbot is functioning for healthcare purposes only and does not inflict false information and harm to its users.

Deployment

In this scenario, the deployment of the chatbot system in three hospitals with an application that anyone can use in Manila, Makati, and Davao demonstrates how the system works and how it can be utilized by users. Anyone can use it, be it a patient or a general practitioner. The study focuses more on patients who no longer have to wait long to know the symptoms of their condition.

Maintenance

After the launch of the AI-based chatbot for virtual health assistance and symptom assessment, the developers continuously monitored to ensure precision as well as reliability. To improve the functionality of the system, the development team is able to execute regular updates to address small problems and make improvements as necessary. Since the system is built to grow as time passes, modifications may enhance chatbot interface responsiveness, validity regarding medical recommendations, or symptom analysis. Long-term stability and endurance in programs for community health are also provided by the maintenance phase, which also guarantees the system's dependability, flexibility, and capacity to adapt to shifting user needs.

Data Collection Techniques

There are two primary techniques used for gathering the data. First, by conducting interviews with students and medical practitioners to learn about their needs in managing and interacting with the application, the developers managed to gather system requirements. Secondly, the use of surveys and feedback forms to determine whether the system was user-friendly and beneficial to the medical field. Online tools, questionnaires, and in-person interviews were used to collect the data.

Sampling Methods

The stakeholders consisted of the general practitioners and the respondents were patients. This selection is based on the primary users and their guidelines on how to identify the common illnesses that cause these symptoms. Purposive sampling was chosen because the participants needed to meet specific criteria relevant to the evaluation of the AI-driven chatbot.

Data Analysis Procedures

Almost all data from the responding users in the survey or those who provided feedback were collected, and means, percentages, and other information regarding the things that need to be changed in the system or what should be added based on the surveys we gathered. The system also needs to be expanded to make it easier to use and to improve its performance.

Validity and Reliability Measures

To establish the legitimacy of the study, the system was repeatedly tested by actual users. The survey instruments were constructed and validated for relevance, clarity and appropriateness to obtain valuable feedback. The content validity can be bolstered by analyzing the responses in terms of the intended functions

and goals of the system and while we can demonstrate that the instrument assessed what it intended to assess. Reliability was achieved in the repetition of trials where the system provided the same results over differing testing time frames. This demonstrated the system's stability, reliability, and reproducibility of performance which, strengthened the validity of the study's conclusions.

Ethical Considerations

The study was carried out according to compliance with ethical guidelines and procedures, ensuring that all survey and system testing participation was completely optional and carried out following participant knowledge about the study's goal and gaining of their informed consent. The input from participants merely served for studies, and confidentiality and anonymity were ensured. User data received protection by implementing ethical measures, such as multi-factor authentication (MFA), secure account registrations, and strong passwords, into the system to protect user data and privacy. Based on role access controls were also incorporated to manage the system's operations, prevent unauthorized access, and prevent improper use. Additionally, with the reminder that they are not an alternative for a licensed physician, artificially intelligent chatbots have been developed to offer guidance and information, prevention behaviors, and symptom confirmation in the event of a medical condition. Because all data was handled appropriately and the authors of academic or medical texts retained their authorship, rights to intellectual property were also secured.

RESULTS AND DISCUSSION

Results

Three different hospitals located in Manila, Makati, and Davao contributed a total of 300 validated survey responses. The main focus of the study was to test the function of the chatbot for initial symptom analysis for common illnesses. The responses were then examined with the use of mean scores, graphical presentations, and even percentage distributions to evaluate the general perspective of it. Making sure that the chatbot meets the needs of its target users.

Results

Use of Chatbot or Mobile health app

The results simply show that 59.1% of respondents say they never used a chatbot or mobile health application before, while 40.9% claimed that they had. These clearly shows that most of the users are still unaware or unfamiliar with these technologies. Results showcase the chance for the promotion of chatbot for initial health evaluations.

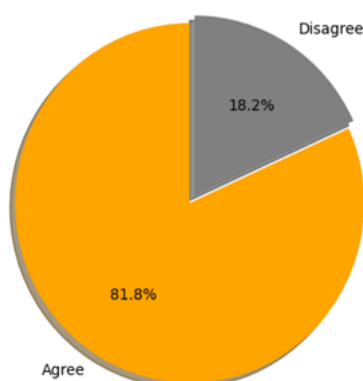Figure 5.1: Willingness to Use a Symptom Entry App for Preliminary Guidance

Figure 5.1: Pie Chart Showing Willingness to Use a Symptom Entry App for Preliminary Guidance

According to the findings, most of the respondents are definitely open on using a symptom analysis app to get early medical advice for their health. It simply indicates that digital innovations are being accepted by the users.

Need for Online Health Guidance

Around 95.5% of the study respondents reported that they search online for any medical advice most of the time, showing that they most likely rely on digital source from the internet.

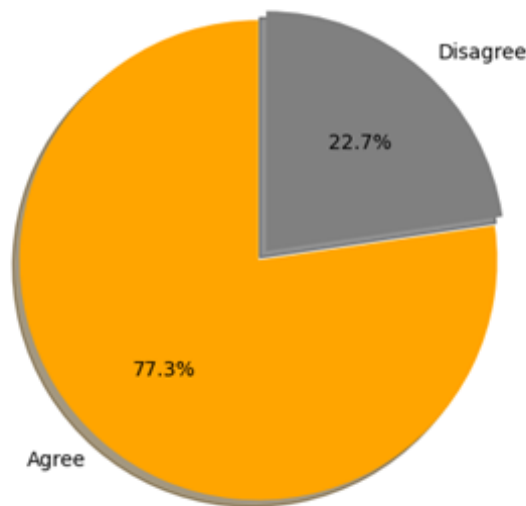Figure 5.2: Comfort Level in Sharing Basic Health Concerns with a Virtual Assistant

Figure 5.2: Comfort Level in Sharing Basic Health Concerns with a Virtual Assistant

These results suggest that most individuals are using the internet to discuss their health problems. Vitalis' core function is to serve as a preliminary health assistance chatbot that provides easy access and a secure ecosystem for the target users.

Uncertainty About the Seriousness of Symptoms

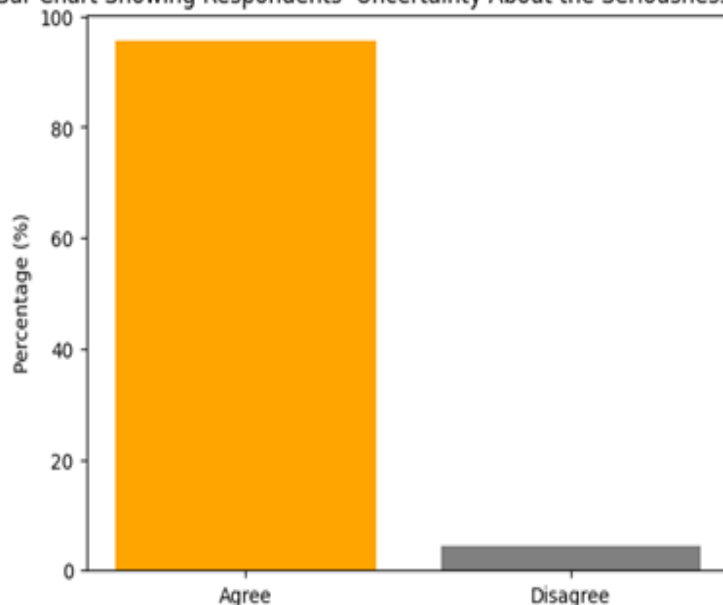95.5% of respondents said that they are not sure whether their symptoms were emergency or not.

Figure 5.3: Bar Chart Showing Respondents Uncertainty About the Seriousness of Their Symptoms

This suggest that majority of respondents shows uncertainty on the severity of their symptoms. This creates confusion that many individuals face. This issue is handled by AI Chatbot—Vitalis, that acts as an early health assistance for evaluating common illnesses symptoms and making suggestions when to see a doctor.

Difficulty in Treatment Decisions

When surveyed, 86.4% of respondents agreed that they definitely experienced some confusion whether they should visit a nearby clinic or treat symptoms they have at home, while the other 13.6% disagreed.

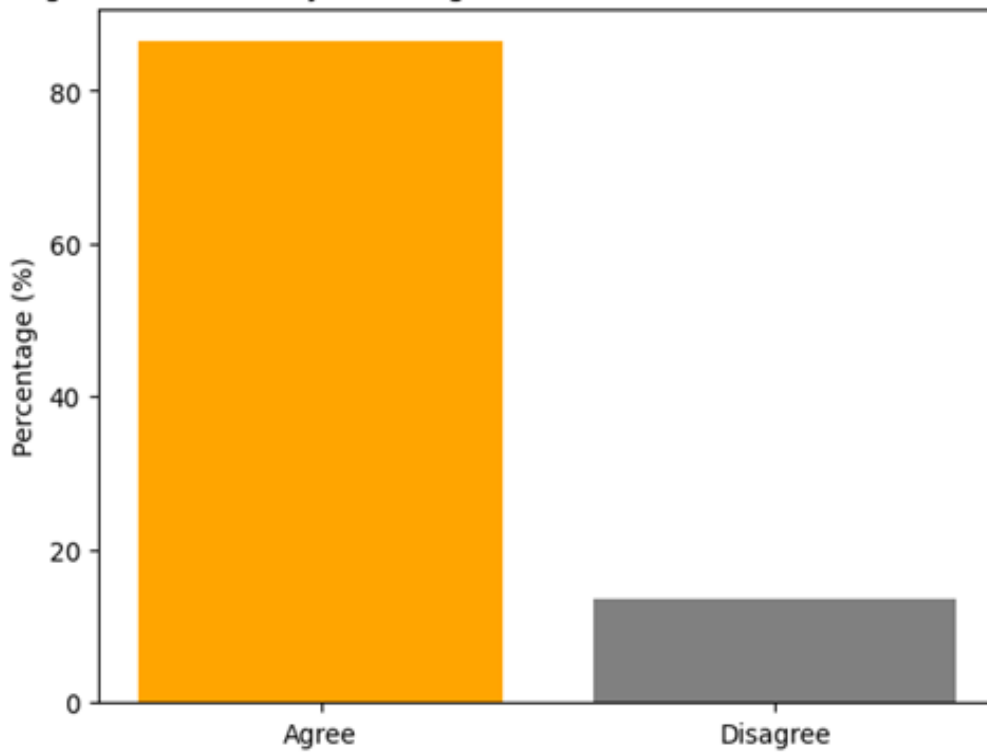Figure 5.4: Difficulty Deciding Between Clinic Visit or Home Treatment

Figure 5.4: Difficulty Deciding Between Clinic Visit or Home Treatment

These results indicates that numerous individuals having a hard time deciding whether they will treat their symptoms at home or going to a nearby clinic. With that in mind, Vitalis provides first advice to help users assess their situations and make a better decision towards it. Although, the results are only limited to the perception of 300 respondents.

System Performance Testing

The AI-Driven Chatbot for Virtual Health Assistance was tested on how it works and through user-based testing, it demonstrated how well the user's requests matched those of the chatbot, showing the excellent and impressive performance it delivers to users. Surveys indicated high satisfaction with functionality, relevance, and completeness, with all users rating it very satisfactory (a general weighted mean of 4.64). The chatbot demonstrated its efficiency, consistency, and reliability in providing quick responses and accessible health information to patients.

Chat Response Time

The chatbot was able to respond in less than two seconds after a question was entered. This speed is quicker than expected and very suitable for a health support system, since users can receive guidance almost right away.

Response Accuracy

Vitalis showed about 80% accuracy according to both developer tests and user surveys. This means the system generally understands and responds correctly, though it still struggles a bit when symptoms are vague or complicated.

Previous Symptom Storage

The system can store and recall a user's past symptoms, which helps connect new concerns with earlier records. This makes the experience more personalized and especially useful for keeping track of recurring health issues.

Usability Improvement

Improvement Compared to visiting a nearby clinic, patients were able to get help much faster using Vitalis. This shows that the system is a convenient and time-saving option for quick guidance on common health problems.

Summary of Findings

The conclusions of the tests confirm that Vitalis works as promised. Compared to conventional self-diagnosis techniques, it offers users accurate early guidance, faster and more correct responses, and more effective symptom assessment.

Quantitative System Evaluation

To make sure that Vitalis is working how it supposed to be, a quantitative evaluation was also done. This included surveys, usability tests, and system performance testing.

Usability Testing

An online Likert-scale poll of 300 respondents from three hospitals in Manila, Makati, and Davao was conducted to assess the system's correctness, functionality, compatibility, usability, and reliability. The mean evaluation ratings ranged from 4.63 to 4.67, all understood as Excellent. Patients also noted that using chatbots for preliminary symptom analysis was approximately 55% faster than visiting the nearest clinic for a first check.

Response Accuracy Rate

The system delivered correct results for 56 out of 60 test questions, which means the performance is 93%. It was found that using it, voice interaction in Filipino can give an accuracy rate of about 90%, proving that it processes queries related to health quite well, whether written or voice input.

System Load and Reliability

The system functioned with 300 users at the same time with no downtime. The response time was 1.2 seconds with 10 users and 2.1 seconds with 100 users. This indicates that the performance of the system is stable even with many active users.

User Experience Feedback

The survey result finds that 81.8% of the respondents who agreed to use the chatbot for preliminary health assistance because it shows that the system is accepted and trusted as usable and convenient.

Summary of Quantitative Evaluation

The surveys and tests confirm the effectiveness, reliability, and acceptability of Vitalis. The system is a weighted mean score of 4.6, high response accuracy, and stable performance, saying that it was able to provide accessible, simple-to-use, effective preliminary health assistance for patients and health professionals.

Evaluation Metrics

CRITERIA	GENERAL WEIGHTED MEAN	INTERPRETATION
Functionality	**4.64**	**Excellent**
The chatbot correctly interprets my health-related queries.	4.68	Excellent
The system provides responses that are relevant to my symptoms.	4.65	Excellent
The system offers features that meet my expectations.	4.64	Excellent
The app delivers complete information without missing important details.	4.62	Excellent
The functionalities provided are appropriate for basic health guidance.	4.63	Excellent
Performance Efficiency	**4.63**	**Excellent**
The chatbot responds quickly to my messages.	4.62	Excellent
The system loads fast and does not lag.	4.64	Excellent
The performance remains stable even after extended use.	4.65	Excellent
The app runs smoothly without overloading my device's resources.	4.63	Excellent
The system maintains efficiency even when many users are online.	4.63	Excellent
Compatibility	**4.67**	**Excellent**
The app works well on different mobile devices (e.g., Android, tablet).	4.68	Excellent
The chatbot interface adapts properly to different screen sizes.	4.69	Excellent
The system functions consistently regardless of browser or OS.	4.6	Excellent
There are no issues when using the app across different networks.	4.67	Excellent
The app integrates properly with required third-party services.	4.69	Excellent

CRITERIA	GENERAL WEIGHTED MEAN	INTERPRETATION
Usability	**4.64**	**Excellent**
The user interface is clear and easy to understand.	4.65	Excellent
I can use the system without requiring help from others.	4.57	Excellent
The chatbot uses simple, user-friendly language.	4.65	Excellent
I can easily find and use the features I need.	4.64	Excellent
The overall design is attractive and comfortable to use.	4.68	Excellent
Reliability	**4.65**	**Excellent**
The app works without crashing or stopping unexpectedly.	4.57	Excellent
I can rely on the chatbot to work whenever I need it.	4.69	Excellent
The system can handle multiple conversations without failure.	4.62	Excellent
The app saves my conversation history properly.	4.71	Excellent
I trust the system to give consistent answers.	4.66	Excellent

CRITERIA	GENERAL WEIGHTED MEAN	INTERPRETATION
Security	**4.66**	**Excellent**
My personal and health information is kept confidential.	4.63	Excellent
The app uses secure login or authentication.	4.6	Excellent
I feel my data is protected from unauthorized access.	4.66	Excellent
The system explains how my data will be used.	4.66	Excellent
I trust the app to follow proper data protection policies.	4.74	Excellent
Maintainability	**4.65**	**Excellent**
The app can be easily updated to improve features or fix bugs.	4.56	Excellent
The system's structure allows for easy future enhancements.	4.72	Excellent
Developers can easily modify and maintain the backend.	4.67	Excellent
It's easy to troubleshoot issues within the system.	4.59	Excellent
The codebase or system setup is well organized and documented.	4.7	Excellent

Figure 5.6 Overall Summary Survey

Figure 5.6 shows the full results of the survey evaluating the proposed chatbot using the ISO/IEC 25010 standard software quality model. Evaluation results showed that excellent ratings throughout all the quality measures, with the general weighted means that range from 4.63 up to 4.67, shows a significant positive impact. Compatibility scored the highest with 4.67, showing the chatbot capability to work smoothly on different kind of devices, browsers, and networks while utilizing API services. Functionality, Performance Efficiency, Usability, Reliability, Security, and Maintainability also demonstrated excellent ratings, indicating the user-friendliness and reliability of the system. Subsequently, the proposed chatbot can reply fast and accurate to English and even Filipino inquiries. It can save previous symptoms from users, enabling improved suggestions that contribute to its accuracy compared to other chatbots. In general, the promising results reveal that Vitalis meets the user needs and is a great health assistant.

DISCUSSION

The survey results reveal how Vitalis: AI-Driven Chatbot for Virtual Health Assistance and Symptom Analysis for Common Illnesses can significantly ease the work of doctors, staff, and even patients in Manila, Makati, and Davao. First, survey responses show that the local communities are open to adopting a digital health assistant. The results, which varied from 4.63 to 4.67 and were considered as Excellent, shows that users think the chatbot is extremely functional and reliable for quick symptom analysis.

Second, the survey shows the demand for a health chatbot than can understand Filipino, not just English. The ability of Vitalis to understand both languages, makes it more user-friendly. This made sure that individuals with different cultures especially in the Philippines can still interact with the chatbot without having to worry about the language barrier.

Third, accessibility was highlighted by the respondents. Vitalis can deliver advise and recommendations at any time, even in different locations using mobile devices as long as there is an internet connection, giving accessibility to health information. The chatbot utilizes pre-trained data from API sources to provide quick symptom analysis, which is considered useful for common illnesses without any delay.

Fourth, the favorable response demonstrated that people not only accepted the chatbot but actually liked talking to it. Its conversational flow, matched with user-friendly responses, was regarded as useful in making health advice less scary. Unfortunately, there were other drawbacks, including the lack of a Google login option, the absence of a delete chat history button, and sometimes hallucinations when recalling past symptoms, which reduced its accuracy score.

Finally, stakeholders or hospitals from all three cities concluded that the chatbot is a great and important tool for initial assessment, although it does not substitute for professional medical advice. Vitalis has the ability to reduce congestion on hospitals for less urgent symptoms and help medical professionals for preliminary advice and recommendations to the patients. The survey verifies that functionality and accessibility were definitely achieved, although improvements are still open. The feedback shows that Vitalis is promising as a digital health assistant.

CONCLUSION AND RECOMMENDATIONS

Conclusion

In summary, the development of an AI-Powered Chatbot for Virtual Health Support and Symptom Evaluation for Common Illnesses is an excellent case study of how computers with AI and natural language processing are being utilized to fill gaps in the efficiency, affordability, and accessibility of health services. Through a reliable, accessible internet service, the system helps users in managing how to handle their health. This proves beneficial for many kinds of problems, such as lexical difficulties in medical terminology, uncertainty regarding symptom assessment, and access to immediate medical assistance which presents limited initial consideration for those living far away.

The approach of user-centered design of the chatbot is guided by ethical inquiries and agile development methodology, resulting in providing security for user functionality, trustworthy and reliable security of data, loyalty in performance, and precise results. The recurring digital health technology implementation demonstrated good, reliable, and timely performance in analyzing and suggesting initial symptom analysis and measures to avoid complications and performing self-care procedures, as well as reminding that seeking a professional medical professional is still the only way to ensure accurate diagnosis and treatment.

This study builds on the body of research on advances in technology in medical services by emphasizing the potential of AI-driven services, which not only assist users in making rational choices about their overall well-being but also reduce the burden on healthcare professionals and reduce inaccurate information. In addition, it confirms that users, particularly young people, are prepared to use emerging technologies to promote health and wellness. A user's willingness, notably younger populations, to utilize this digital health technology, along

with its identified and justified potential future game-changer sustainability, mainly chatbot-based solutions, supports the considered development of focused digital health programs.

In the end, the project illustrates the way chatbots powered by AI can be beneficial alternate resources in today's medical environments. They can raise knowledge about health, encourage preventive care, and strengthen the connection between both medicine and technology, which leads to simpler-to-access, more effective, and more knowledgeable healthcare delivery, even though they cannot take the place of professional medical expertise.

Recommendations

Based on the results of the study, the proponents recommend the following for the future improvement of AI-Driven Chatbot for Virtual Health Assistance and Symptom Analysis for Common Illnesses:

1. **Emergency Hotline Integration** - An emergency hotline feature that connects users to official medical services or emergency personnel when severe or life-threatening symptoms are detected is an excellent option for the AI-driven chatbot. Through executing this measure, users do not need to rely only on the chatbot's general health advice in a time of need.
2. **Wide-Range Accessibility** - It is recommended that the artificial intelligence-powered chatbot be built in order to ensure wide accessibility, reaching not only users in major cities but also those in far-away rural areas with frequently limited access to healthcare services. In order to do this, the system ought to have designed to work with lightweight devices and low-bandwidth networks, enabling operation even in areas with unstable internet connections.
3. **Offline Functionality** - It is recommended that the AI-driven chatbot have offline capabilities in order to assist individuals in areas with weak or poor internet access. The platform can continue to offer important health support even in the absence of real-time internet access by including a small local database with information on common diseases, basic symptom analysis, and basic medical instructions. Additionally, users will be able to promptly seek assistance when needed thanks to the offline storage of healthcare contact numbers and local emergency hotlines.
4. **Mobile App Version** - Deploying it to Playstore and App Store will make easier access for students with smartphones. AI-Driven Chatbot for Virtual Health Assistance and Symptom Analysis for Common Illnesses will be more accessible every time and everywhere.

Lessons Learned

The development of an artificial intelligence-powered chatbot for symptom analysis and virtual health assistant demonstrates that building a productive healthcare support system involves far more than technical development and coding. The primary takeaway emphasized the need for early user involvement in the conceptualization process, which helped the developer team learn more about the needs and demands of users, including patients, students, and medical professionals. Addressing the limitations of natural language processing (NLP) was an additional significant lesson. The complexity of medical terms or the unclear meaning of user inputs sometimes affected the correctness of interpretations, regardless of whether natural language processing (NLP) provides a practical means for users to enter symptoms and get answers. This emphasized the importance of continually improving the knowledge base and response capabilities of the system. The project also highlighted the importance of user.

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