MEDBOT

Ms. Ankalesha Thakare
(Mentor) B.E in IT
Computer Engineering
Thakur Polytechnic
Kandivali, Mumbai, India

Mr. Yash Soni
Computer Engineering
Thakur Polytechnic
Kandivali, Mumbai , India

Mr. Prateek Baranwal
Computer Engineering
Thakur Polytechnic
Kandivali, Mumbai, India

Mr. Shashank Singh
Computer Engineering
Thakur Polytechnic
Kandivali, Mumbai, India

Mr. Shubham Vishwakarma
Computer Engineering
Thakur Polytechnic
Kandivali, Mumbai, India

Abstract **- Automatized MEDBOT are conversationally built with technology in mind with having the potential to reduce efforts to healthcare costs and improve access to medical services and knowledge. We built a diagnosis bot that engages patients in the conversation for their medical query and problems to provides an individualized diagnosis based on their diagnosed manifestation and profile. Our MedBot system is qualified to identify symptoms from user inputs with a standard precision of 65%. Using these extracted diagnosed symptoms correct symptoms were identified with a recall of 65% and a precision of 71%. Finally, the MedBot returned the expected diagnosis for furthermore operations.This determines that a MedBot can provide a somewhat accurate diagnosis to patients with simple symptom analysis and conversational approach, this suggests that an effective spoken language medical bot could be viable. Moreover, the relative effectiveness of this bot indicates that more proceeds automated medical products may flourish to serve a bigger role in healthcare.**

Keywords – Android application, chatBot Systems, database, android server.

Introduction

A MedBot is a software application used to conduct an online chat conversation via text or text-to speech, instead of providing direct contact with a live human agent. Designed to convincingly simulate the way a human would behave as a conversational partner. In the proposed system, we presented a MedBot that generates a dynamic response for online client's queries. The Proposed System is based on Artificial Intelligence-powered Chatbot. This proposed chatbot identifies the user context which triggers the intent for a response. Since it is responding dynamic response, the desired answer will be generated for the user. The proposed system used machine learning algorithms to learn the MedBot by experiencing various user's responses and requests. Nowadays MedBot has started to become so robust because Artificial Intelligence aids the human touch in every conversation, medbot understand the user's query, and trigger an accurate response.Literature Review

The advancement of chatbots has been a interesting travel, traversing a few decades and seeing critical headways in innovation, manufactured insights, and characteristic dialect handling. Here's an outline of the key points of reference within the advancement of chatbots:

1. Early Beginnings (1960s-1980s):

- The most punctual form of chatbots rose within the 1960s with programs like ELIZA, made by Joseph Weizenbaum at MIT. ELIZA recreated a discussion with a psychotherapist by utilizing design matching and basic dialect handling procedures.

- Within the 1970s and 1980s, chatbots proceeded to advance with programs like Repel, which recreated a individual with jumpy schizophrenia, and Jabberwacky, an early endeavor at making conversational AI.

2. Rule-Based Frameworks (1990s-2000s):

- Amid the 1990s and early 2000s, chatbots essentially depended on rule-based frameworks, where responses were pre-programmed based on watchwords or designs.

- AOL's Moment Flag-bearer introduced "SmarterChild" within the early 2000s, which given computerized reactions to client questions and got to be one of the primary widely-used chatbots.

3. Present day AI and NLP (2010s-present):

- Stages like Apple's Siri (2011), Google Right hand (2016), and Amazon Alexa (2014) presented chatbots with progressed voice acknowledgment and characteristic dialect understanding capacities, empowering more consistent intuitive.

- Chatbot frameworks and stages such as IBM Watson (2013) and Microsoft Bot System (2016) given engineers with devices to construct modern chatbots capable of understanding setting, estimation, and aim.

AI-powered chatbots got to be progressively coordinates into different businesses, counting healthcare, back, e-commerce, and instruction, advertising personalized encounters and mechanizing monotonous errands.

Overall, the advancement of chatbots reflects the nonstop advance in AI and NLP innovations, driving towards more cleverly, intuitively, and human-like conversational specialists that upgrade different viewpoints of communication, client benefit, and client involvement.

System Design

MedBot is a robust Android application designed for online chat conversations via voice or text. The system's architecture is divided into three integrated sections: front-end, back-end and database server. To enable seamless functionality, the system uses the Java- powered interpretive programming interface AndroidStudio and integrates his Firebase database technology on the client side for efficient data exchange with the server. The relational database management system Firebase Database is used for structured data storage. The system is divided into two modules, each targeted at a specific role within the audit process:

Administrator Module: The Administrator Module serves as the backbone for system administration. Monitors the addition of registered user information to the system database to ensure data integrity and security.

User Module: The User Module provides a streamlined user experience with login options for one-to-one communication.

When you type or speak a prompt or question, the system immediately generates and displays the results to the user.

Functionality of the System

Login and Enrollment: To guarantee qualification for examinations, understudies experience a enrollment handle where they total a frame. Amid this handle, special login qualifications, counting a username and watchword, are relegated to each understudy. This builds up a secure and personalized get to point for examination support.

Logout: The logout highlight gives a consistent move for understudies back to the login page after completing an examination. This usefulness improves security and permits clients to conclude their examination session productively.

Starting Chat Interface: Users have the ability to start a conversation with the ChatBot and ask several questions regarding any medical issues.

Bot Response: After accepting user's input, the bot will give a personalize response with respect to user's query and provide a possible solution for the same. The response is super quick and pretty accurate.

Reference Videos: User can go through a vast collection of videos which might be helpful for them regarding a specific matter or the bot can suggest some videos which are related to user's query for a better understanding of their issue.

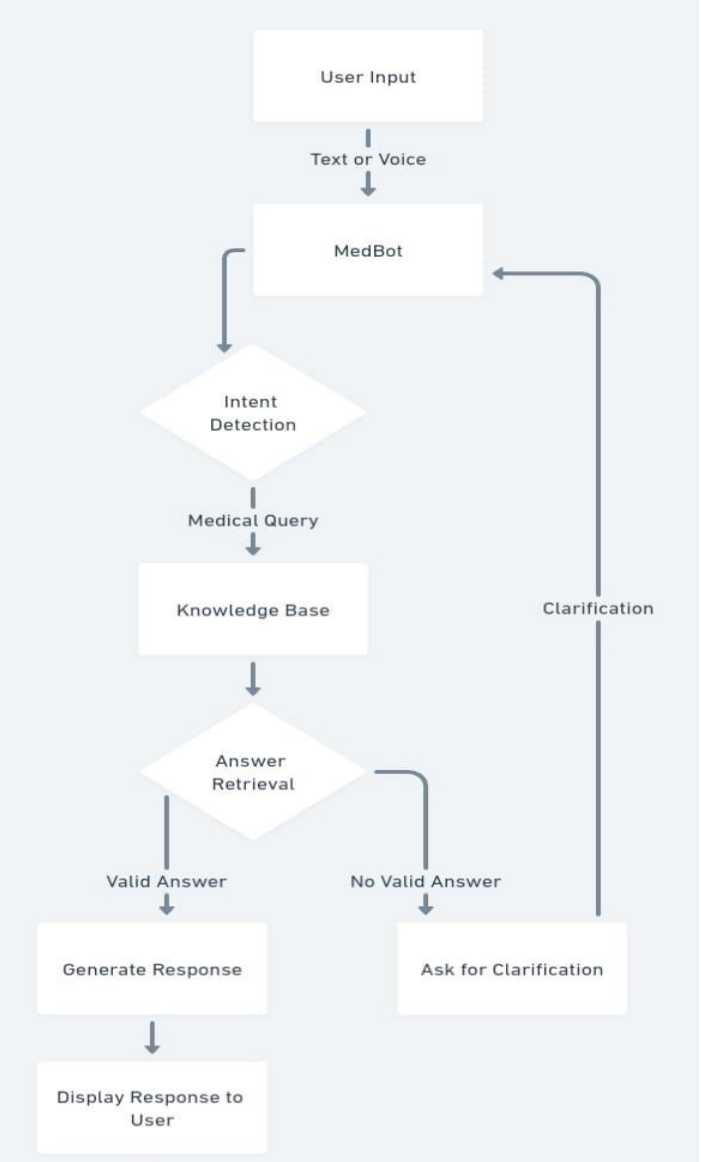

Fig.1 Functionality of System

This modular approach enhances the efficiency of the Medbot(Chatbot) system by customizing functionalities to cater to the specific requirements of healthcare providers, patients, and administrators. Leveraging advanced technologies and a clearly structured architecture emphasizes the system's dependability and agility in facilitating a seamless and efficient healthcare interaction process

Database Design

The Firebase Realtime Database is a cloud-hosted NoSQL database that lets you store and sync data between your users in real time Firebase is a Backend-as-a-Service (Baas). It provides developers with a variety of tools and services to help them develop quality apps, grow their user base, and earn profit. The Firebase Realtime Database lets you build rich, collaborative applications by allowing secure access to the database directly from client-side code. Data is persisted locally, and even while offline, Realtime events continue to fire, giving the end user a responsive experience. When the device regains connection, the Realtime Database synchronizes the local data changes with the remote updates that occurred while the client was offline, merging any conflicts automatically. The Realtime Database provides a flexible, expression- based rules language, called Firebase Realtime Database Security Rules, to define how your data should be structured and when data can be read from or written to. When integrated with Firebase Authentication, developers can define who has access to what data, and how they can access it. The Realtime Database is a NoSQL database and as such has different optimizations and functionality compared to a relational database. The Realtime Database API is designed to only allow operations that can be executed quickly. This enables you to build a great Realtime experience that can serve millions of users without compromising on responsiveness. Because of this, it is important to think about how users need to access your data and then structure it accordingly.

Problem Statement

In the healthcare sector, communication gaps and administrative inefficiencies pose significant challenges to quality care delivery. Existing methods often result in delays, errors, and a lack of personalized attention for patients, while healthcare providers grapple with overwhelming administrative burdens. To address these issues, there's a pressing need for a MedBot (Chatbot) system tailored to the specific needs of healthcare providers, patients, and administrators. By adopting a modular approach, this system aims to enhance efficiency, streamline communication, and provide personalized support. Leveraging advanced technologies like artificial intelligence and natural language processing, the MedBot (Chatbot) system seeks to revolutionize healthcare interactions while ensuring accuracy, reliability, and compliance with healthcare regulations.

The development of the MedBot(Chatbot) system prioritizes user- friendliness, accessibility, and seamless integration with existing healthcare infrastructure. By employing a well-defined architecture, the system aims to improve reliability, responsiveness, and overall effectiveness in healthcare delivery. Ultimately, the implementation of this innovative solution promises to enhance patient outcomes and transform the healthcare experience for both providers and patients alike.

Advantages

MedBot chatbots offer several advantages in the healthcare domain. Here are some key advantages:

24/7 Availability: MedBot chatbots are accessible round-the-clock, providing users with immediate access to medical information and support. This availability is particularly beneficial for individuals with urgent queries or those in remote areas with limited access to healthcare resources.

Timely and Convenient Assistance: MedBot chatbots can quickly analyze symptoms, provide initial assessments, and offer appropriate recommendations or next steps. This timely assistance reduces waiting times and allows users to receive guidance without the need for scheduling appointments or visiting healthcare facilities.

Personalized Support: MedBot chatbots can tailor their responses and recommendations based on user inputs, medical history, and preferences. This personalized support enhances user engagement, ensures relevant information delivery, and promotes a sense of individualized care.

Health Education and Empowerment: MedBot chatbots can disseminate accurate and reliable health information to users, empowering them to make informed decisions about their health. By providing educational resources and answering questions, MedBot chatbots contribute to health literacy and encourage proactive healthcare management.

Triage and Prioritization: MedBot chatbots can assist in triaging patients based on the severity of their symptoms or medical conditions. By providing initial assessments, they can help healthcare professionals prioritize cases, allocate resources efficiently, and ensure timely intervention for critical cases.

Reduced Workload for Healthcare Professionals: MedBot chatbots can handle routine inquiries, appointment scheduling, and basic medical advice, thereby reducing the workload on healthcare professionals. This allows healthcare providers to focus on more complex cases and improves their efficiency and productivity.

Enhanced Patient Engagement and Satisfaction: MedBot chatbots provide an interactive and conversational platform that engages users in their healthcare journey. By offering personalized recommendations, addressing concerns, and promoting self-care, MedBot chatbots contribute to higher patient satisfaction and engagement.

Cost Savings: MedBot chatbots can help reduce healthcare costs by minimizing unnecessary visits to healthcare facilities, optimizing resource utilization, and preventing avoidable complications through timely interventions and education.

Scalability and Reach: MedBot chatbots have the potential to reach a large number of users simultaneously, making them highly scalable. They can cater to diverse populations, regardless of geographical location or language, thereby ensuring healthcare accessibility for a broader demographic.

While MedBot's chatbots offer many benefits, it's important to note that they shouldn't completely replace medical professionals.

Instead, they should complement existing healthcare systems by providing efficient and accessible support, with seamless handover to human experts when needed.

System Interface

Fig 2. Splash Screen

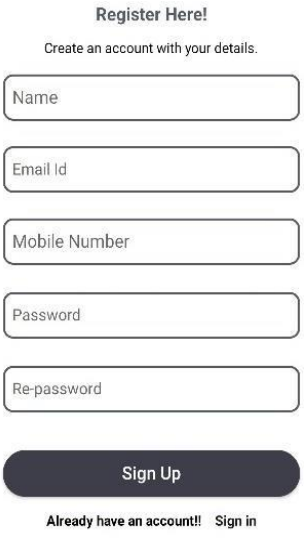

Fig 3. Registration Page

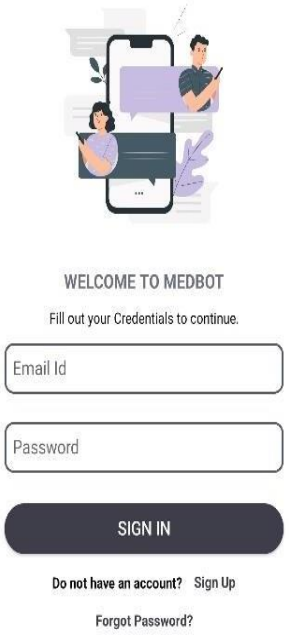

Fig 4. Login Page

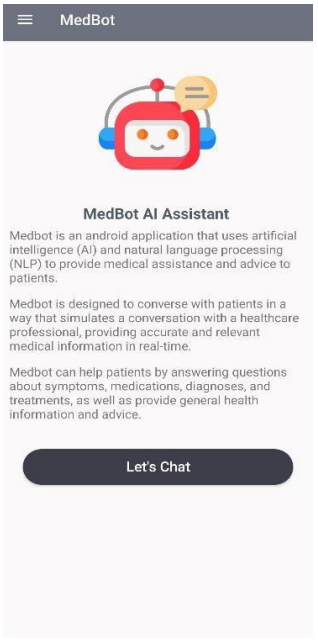

Fig 5. HomePage

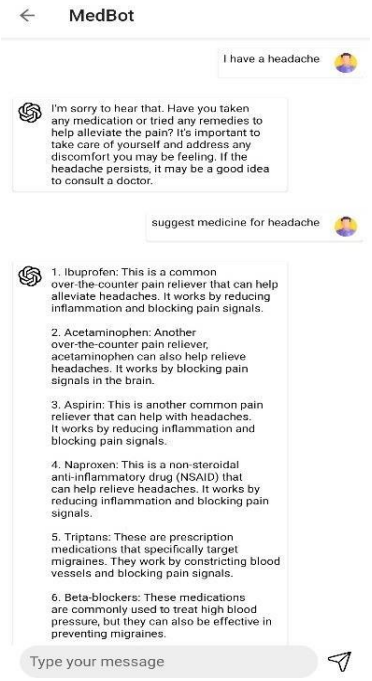

Fig 6. Chat Interface

Conclusion

As we know that prevention is better than Cure, so it is the main goal of MedBot. MedBot are undoubtedly beneficial for healthcare industries+ for patients. Healthcare industries can implement MedBot on their sites to get timely advice, send daily reminders, scheduling appointments and to even send invoices. And this also cut down the hospital admissions and emergency care and will surely prove as a boon in medical field. MedBot are powerful tools but it's important to first define your expectation before you implement them.

References

[1] Benyon, D. and Murray, D. (1993). Applying user modelling to human-computer interactiondesign. Artificial Intelligence Review. 7(3-4):199-225

[2] Sande, B. V. D. (2013). Properties of the Bayesian Knowl-edge Tracing Model. Journal of Educational Data Mining.5(2):1-10.

[3] Nguyen, L. And Do, P. (2009). Combination of Bayesian Network and Overlay Model in UserModelling. International Journal of Emerging Technologies in Learning(iJET), 4(4):5-14.

[4] Schilitand Theimer, Miguel A.Muñoz MarcelaRodríguez Jesus Favela Ana 1.Martinez-GarciaCenter of Scientific Research and Higher Education of Ensenada, Mexico Victor M.González University of California, Irvine- Contex-aware mobile communication inhospitals.