IJARCCE ISSN (O) 2278-1021, ISSN (P) 2319-5940

International Journal of Advanced Research in Computer and Communication Engineering

ISO 3297:2007 Certified ⁜ Impact Factor 8.102 ⁜ Vol. 12, Issue 4, April 2023

DOI: 10.17148/IJARCCE.2023.124108

SURVEY ON INNOVATIVE VIRTUAL HEALTHCARE ASSISTANT WITH BMI CALCULATOR USING MACHINE LEARNING TECHNIQUE

Pranjali Dalvi[1], Manjeeri Ghanekar[2], Mohini Pawar[3], Vedanti Choudhari[4], Prof. Smita Khot[5]

Computer Engineering, DIT Pune[1-4]

Assistant Professor, DIT Pune[5]

Abstract: Technologies like AI ,machine learning, data science are becoming upgraded. The advancement in available, portable, low cost handheld devices like cell phones and availability of network connection has resulted within the user's mobility at an unprecedented level. We've studied different methodologies like Smart goal annotation, state phase annotation, collection process, agreement results also as annotation skills for achieving the health goals. The user has got to type their health regarding the query based on that assistant giving the acceptable answer. The facilities like report generation and scheduling assignment are provided. It'll increase the interaction between humans and machines with the assistance of different technologies, vast dialogue ,conversational knowledge based, public knowledge based. The system uses different algorithms for disease recognition, behavior abnormality detection, prediction etc. Experimental results show that: Compared with traditional methods,the proposed method is more accurate and faster and patients can get service anywhere and anytime.

Keywords: Conversational Interface, Machine Learning, NLP Algorithm, Patient health monitoring, SVM Algorithm.

I. INTRODUCTION

Lack of disease awareness and access to first aid professionals is one of the most prevalent issues people nowadays encounter. In certain instances, people even pass away, and simple illnesses turn fatal. The Virtual Health Assistant now begins to work. By providing users with considerably more interactive access to a centralized clinical library, the proposed web service aims to remove the need for users to diagnose their own diseases. Users can also make online and offline appointments with doctors, as well as ask questions about their ailment[8].

The application keeps a copy of the user's health information on a remote server. Users can enter symptoms or diseases, and our system will try to diagnose it and provide the user with an immediate course of action. It might be some over-the-counter medications or emergency care. A specific prescription is produced in the end. It has an intuitive user interface and is more accurate than the current system. When recommending medicines to users or patients, personal allergies are taken into consideration. Additionally, it offers doorstep medical testing and online medication delivery[2].

II. LITERATURE REVIEW

Virtual assistant bots, also known as chatbots, are one of the emerging technologies that will touch our daily lives as machine learning and artificial intelligence demand rises. The evolution of chatbots from menu/button-based to keyword-based to contextual based is now complete. The most advanced of the aforementioned is contextual based because it makes use of machine learning and artificial intelligence techniques to store and process the training models that enable the chatbot to respond to user questions more appropriately and effectively when they are domain-specific [1]. Chatbots are self-contained and can provide prompt fixes for minor problems. Additionally, since the chatbot is free to use, consumers can reduce the expense of doctor's appointments. A healthy lifestyle can be attained because users won't miss much of their medication routine. Users could take better advantage of the scanning functionality by learning more about the medications they are taking [9]. The "Healthcare Aide" programmed was created to not only make interactions between doctors and patients, residents and doctors, and nurses and patients more convenient, but also to facilitate real-time decision-making [7]. Neural networks have been trained on data for this work using a variety of tools that aid in producing better outcomes. To achieve better outcomes, we will combine Deep Learning with Natural Language

International Journal of Advanced Research in Computer and Communication Engineering
ISO 3297:2007 Certified ⁜ Impact Factor 8.102 ⁜ Vol. 12, Issue 4, April 2023
DOI: 10.17148/IJARCCE.2023.124108

Processing in this chatbot [5]. A brand-new kind of clinical visit is emerging: the video-conferencing (VC) appointment with nurse support. These online care services make it more convenient and lessen the travel stress of patients could profit from this service, but given the expense of organising nurses to help patients at home, it's uncertain whether patients as well as the healthcare organisation would [6]. Healthcare is a big part of our daily lives; whenever someone is ill, they go to the doctor or a clinic nearby to find out what problems they are having. In recent years, many businesses and institutions have partnered with hospitals to offer support that can help doctors and medical staff deal with patients more effectively and with less effort by using technology. In this research, an exploratory study on the use of conversational interfaces (CIs) to assist doctors in occupational health consultations is presented. The CI was accomplished via a web-based information dashboard that included a chatbot assistant for text message suggestions in real-time. Two system designs were created, one utilizing proactive chatbots and the other utilizing on-demand interactions. Eight healthcare consultations were used in a field trial to examine the efficacy of the suggested CI and the two different chatbot designs. Quantitative findings demonstrated that the CI was well received as a trustworthy instrument to be utilized in medical consultations and that occupational health doctors were keen to employ this technology in their practice [2]. Diabetes is becoming more common everywhere. Recently, a number of digital health techniques have emerged to support the most effective diabetes treatment while minimizing clinical, financial, and humanistic repercussions. The first iteration of an Educational Virtual Assistant (EVA) is described in this study with the goal of boosting user involvement in diabetes care through interaction, recommendations, and ongoing education. Since the patient plays a crucial part in the course of his disease, the ultimate goal of EVA is to lower the risk of critical events by encouraging patients to adopt the best diabetes management options and, in turn, enhancing their quality of life on a daily basis. Natural language processing (NLP) approaches that offer the chance to apply natural language understanding (NLU) through machine learning were used to implement EVA, which was trained using standardized instructional materials (ML) [3]. The development of these interactive systems has numerous difficulties, including acquiring user confidence, privacy issues, accuracy restrictions, accurate decision-making, and response generating constraints. Risk reduction may be aided by standard compliance. Beyond these difficulties, it is advantageous for society, particularly in impoverished nations where a lack of healthcare services has led to a high rate of sickness. These virtual medical assistants aid patients in choosing the best medical specialist while lowering the cost of care. Additionally, it aids medical professionals and students in making clinical decisions [10].

III. PROPOSED SYSTEM

By providing users with considerably more interactive access to a centralized clinical library, our proposed system aims to reduce the need for users to diagnose their own diseases. Users can also make online and offline appointments with doctors, as well as ask questions about their ailment. The BMI Calculator Application is a piece of software that can quickly calculate and find someone's BMI without the need for additional human labor. The user's health history is kept on a remote server by our Web Service. Users can enter symptoms or diseases, and our system will attempt to diagnose them and provide the user with an immediate course of action. It might be some over-the-counter medications or emergency care. Our system can remind diabetic or cardiac patients at a specific time of day when the medication is to be eaten so they may not forget to take their daily medication and avoid any medical issues as a result of missing the appointment.

NLP Algorithm for Language Processing : Computers can now comprehend natural language just like people do thanks to NLP. Natural Language Processing is required because computers can understand structured data, such as spreadsheets, but not unstructured data, such as human speech or written text. Natural language processing uses artificial intelligence to take real-world input, process it, and make sense of it in a way that a computer can comprehend, regardless of whether the language is spoken or written.

SVM Algorithm for Classification : Support Vector Machine (SVM) is a Supervised Machine Learning algorithm that is used for regression and/or classification. Although it is occasionally quite helpful for regression, classification is where it is most often used.

SYSTEM ARCHITECTURE

To train models to comprehend and produce human language, NLP mainly utilizes machine learning methods like supervised and unsupervised learning, deep learning, and reinforcement learning. The user engages with the system by providing input in various formats, such as audio, photos, or text. The system employs an NLP algorithm to input voice based on the input. The speech is recognised by the system. Speech-to-Text (STT) and Text-to-Speech (TTS) systems both translate spoken words into written text, whereas TTS systems do the reverse. The first step is for the computer to translate natural language into artificial language.Speech recognition, often known as speech-to-text, accomplishes this.

IJARCCE ISSN (O) 2278-1021, ISSN (P) 2319-5940

International Journal of Advanced Research in Computer and Communication Engineering

ISO 3297:2007 Certified ⁜ Impact Factor 8.102 ⁜ Vol. 12, Issue 4, April 2023

DOI: 10.17148/IJARCCE.2023.124108

The first stage of natural language understanding is this. Nowadays, the bulk of voice recognition systems employ hidden markov models (HMMs). These statistical algorithms translate your speech into text by using mathematical calculations to ascertain what you said. HMMs determine which phoneme you said in each unit by listening to you speak, dividing it into small units (usually 10–20 milliseconds), and comparing it to previously recorded speech (a phoneme is the smallest unit of speech). The programme then analyzes the phoneme sequence and applies statistical analysis to find the most likely phrases and words.

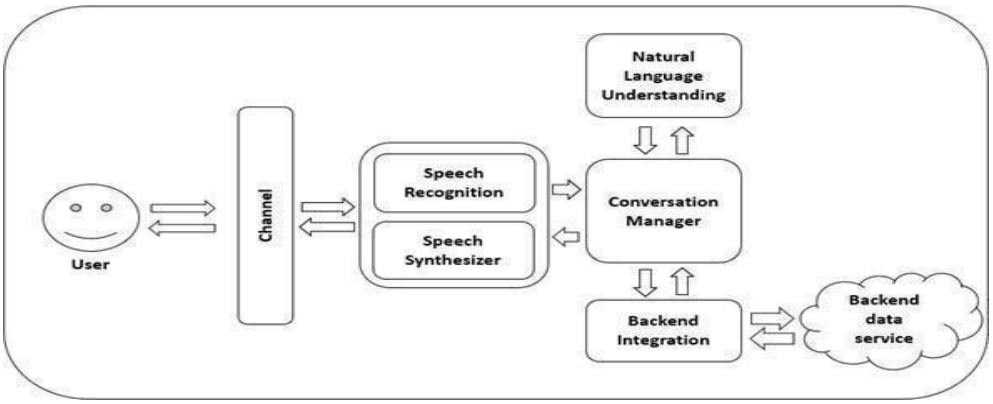

Fig. 1 System Architecture

The comprehensive system architecture of the Heart Disease Prediction System has shown how all of the system's components and their interrelationships are easily understood. Both technical and non-technical users can benefit from understanding a system through its structural representation. The system, database, and interface design make up the architecture, which helps users see things more clearly. To make the system's components, features, and behaviors easier to grasp, the overall design of the system is described.

The patient first registers by supplying a few parameters. When he went to check on his health, the collected values or data that has been stored in a database utilizing machine learning approaches, such as data gathering techniques employing some feature extraction approaches, data that has been stored in the database is extracted. When data is extracted, it goes through a number of steps before being used to predict an illness and create a report. This is an overview of the machine learning-based heart disease prediction system.

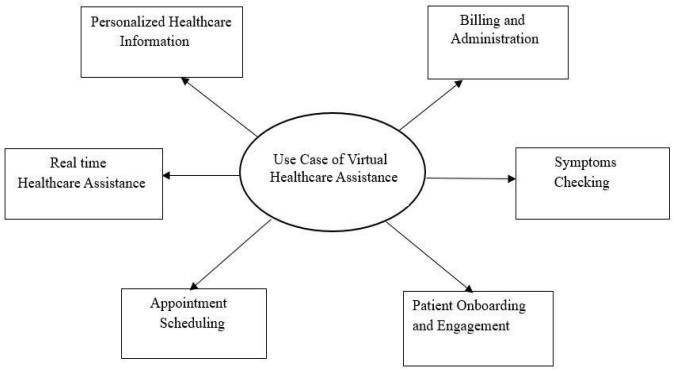

Fig. 2 Use cases for virtual healthcare assistant

IV. CONCLUSION

The usage of virtual health care assistants is user-friendly and can be utilized by anyone who knows how to enter in their native language in the mobile app or desktop version, according to a review of several journals. Based on symptoms, a healthcare system offers individualized diagnoses. More medical features, such as location, duration, and strength of symptoms, as well as more thorough symptom descriptions, could be supported in the future, which would considerably improve the bot's performance in terms of symptom recognition and diagnosis. Personalized medical assistant

International Journal of Advanced Research in Computer and Communication Engineering
ISO 3297:2007 Certified ⁜ Impact Factor 8.102 ⁜ Vol. 12, Issue 4, April 2023
DOI: 10.17148/IJARCCE.2023.124108

implementation mainly relies on AI and ML techniques in addition to the training data. Ultimately, the use of tailored medicine would successfully save many lives and raise public awareness of medical issues.

REFERENCES

1] Prathamesh Kandpal Dept. of Electronics & Telecommunication Vishwakarma Institute of Technology Pune, India, Kapil Jasnani Dept. of Electronics & Telecommunication Vishwakarma Institute of Technology Pune, India Contextual chatbot for healthcare purposes(using Deep Learning).

2] XIPEI REN 1 , GABRIELE SPINA2 , SIMON DE VRIES2 , ANNICK BIJKERK2 , BABS FABER3 , AND ANNA GERAEDTS2 ,Understanding Physician's Experience With Conversational Interfaces During Occupational Health Consultation.

3] Magdalini Anastasiadou , Anastasios Alexiadis† , Eleftheria Polychronidou‡ , Konstantinos Votis§ and Dimitrios Tzovaras Centre for Research and Technology Hellas Information Technologies Institute(CERTH/ITI), Thessaloniki, Greece. A prototype educational virtual assistant for diabetes management.

4] Md. Moshiur Rahman, Ruhul Amin, Md Nazmul Khan Liton and Nahid Hossain Department of Computer Science and Engineering United International University, Dhaka, Bangladesh. Disha: An Implementation of Machine Learning Based Bangla Healthcare Chatbot .

5] PO-SHENG CHIU1, JIA-WEI CHANG 2, MING-CHE LEE3, CHING-HUI CHEN3, AND DA-SHENG LEE4. Enabling Intelligent Environment by the Design of Emotionally Aware Virtual Assistant: A Case of Smart Campus.

6] Xiaojie Wang, Yongpei Guan, and Xiang Zhong Design of Video-Based Clinical Visits with Nurse Assistant for Chronic Diseases Management.

7] Sheikh lqbal Ahamed, Shameem Ahmed, Moushumi Shzarmin. Design and implementation of a virtual assistant for Healthcare professionals using pervasive computing technologies.

8] Mohit Dodhia, Rushab Kumar Jha, Anudeep, Preetam Sarmah. Virtual healthcare assistant.

9] Mrs. Sharvari Patila , Ms. JInal Darjib , Mr. Shubham Hinguc , Mr. Akhil Thakkard . Medic : Smart Healthcare AL Assistant.

10] Ubaid Ur Rehman, Dong Jin Chang, Younhea Jung, Usman Akhtar,Muhammad Asif Razzaq, Sungyoung Lee. Medical Instructed Real Time Assistant for Patients with Glaucoma and Diabetic Conditions.

11] G. Preethi, S. TamilSelvi, Varikoti Sai Sathwik Reddy, Sarath Chandra Venkata Sai,Ram Gupta Biyyapu, Vasanth D. Virtual Assistant For Healthcare Services.

12] G. Preethi, S. TamilSelvi, Varikoti Sai Sathwik Reddy, Sarath Chandra Venkata Sai,Ram Gupta Biyyapu, Vasanth D. Virtual Assistant For Healthcare Services.

13] Saad Harous a, Mohamed El Menshawy b , Mohamed Adel Serhani a,* , Abdelghani Benharref c. Mobile health architecture for obesity management using sensory and social data.

14] Mohd Javaid a,* , Abid Haleem a , Ravi Pratap Singh b , Rajiv Suman c , Shanay Rab a. Significance of machine learning in healthcare: Features, pillars and applications.

15] Vikas Hassija a , Rahul Ratnakumar b , Vinay Chamola d, *, Soumya Agarwal a , Aryan Mehra c , Salil S. Kanhere e , Huynh Thi Thanh Binh f. A machine learning and blockchain based secure and cost-effective framework for minor medical consultations.