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Health Care System with Smart Assistance

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Abstract: Health Care System is a web application developed for hospitals to manage staff data and patient's data effectively. A Chatbot is software that authorize you through start a conversation between the user and the system. It is AI based software that can be set up as web applications. Normally users don't know about the whole symptoms of a particular disease. Chatbot is question answering system that uses NLP. Chatbots are making a mark in the stream of medicine and provide an actual method to handle patients of medical organizations.
Medical chatbots can conduct one-on-one conversations with patients and evaluate each patient's individual requests. Project's goal is to analyze the existing e healthcare system that involves a novel human – machine interaction and proposes an alternative system: A Chat Interface that is designed and instructed to react and interact with patients as a human being. Also, the Patient can book an appointment with the physician.

Keywords: AI (Artificial Intelligence), Disease Prediction, Health Tips, Doctor's Appointment, Chatbot, Healthcare.

I. INTRODUCTION

Most healthcare organizations, nowadays, have a passive relationship to their clients when it comes to communication. The client searches the website to discover details or it is even firm to steer to reach the precise information they want.
Most organizations, like hospitals, medical practices, etc. have done slightly little to advance their client communications systems. Often this includes a question-and-answer page on the website. This is limited and patients aren't very satisfied with the results. We can overcome these limitations with a Chabot, where the conversation is to and fro, which allows the client to navigate towards information they want with great precision. Using Chatbot the consumers not only get quick and access to information and also an interactive platform.
Chabot acts as an data supplier which is works quickly i.e., answering the queries on the spot. The chatbot can direct the related patients by understanding and evaluating their symptoms that they are experiencing and find the care that they need. Patient experience can be improve with the help of chatbot.
Additionally, they can help in setting up an appointment with the doctor, predict health problems based on symptoms and provide daily health tips to improve the patient's lifestyle. It can be used securely by an huge audience when chatbot technology is combined with existing well liked web services that provide healthcare services. Patients will just have to put their query to the bot which is used for chatting. The Architecture of preferred system provides a way to have an informal communication between a human user and a computer system that uses a natural language, thus enhancing user experience and providing new opportunities for increasing the customer's engagement process and operational efficiency by decreasing the usual cost of the customer service. Artificial intelligence will used to response patients' queries. Chatbot can help to patients for answering their queries, by using this web-based system at any time.

II. LITERATURE SURVEY

A Chatbot can provides a solution to the healthcare sector in the type of a chat interface that can improve the way patients interact with doctors. Based on the symptoms the AI can predict the diseases and give the list of available treatments or provide contact details of the best physician to consult. The System can also give the composition of the medicines and their prescribed uses. Patients get a quicker solution to their health-related questions and can act promptly during critical conditions. It can perform certain functions on the patients side thus making interaction smoother. When the user can diagnose all kind of diseases and provide some necessary information then the user can achieve the real benefit of a chatbot. The system use pattern matching algorithms for processing all the data which is receive from the users, and give a correct and quick response. Another way of developing an intelligent system is by incorporating Voice recognition where a simpler input method using voice is introduced; all messages are formatted in an XML. This service provides an interface which allows XML processing. The chatbot contains with the interface that is using the Relational Database Management Systems (RDBMS). The data place in the knowledge repository and every time the user poses a question to the chatbot system, the data is fetched based on a pattern matching algorithm.

(A) Existing Systems:
Health Organizations invest heavily in Health functions to connect with patients for their behavior coaching, medication monitoring, observing their symptoms. The result is mixed. Research shows that some applications are successful and others are unsuccessful. Even for the people who give the word for, these applications often require a

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team of clinicians to follow up with patients to make sure that they use the technology solution on a day to day life basis. This affects the "scalability" factor of such technologies. The average performance of these Health apps lacks a truly engaging user experience. Another way of engaging patients is through Telephone helpline systems that are already available as part of customer service. But supplying customer service is too tedious job in the form of financial sense and customer satisfaction. And in case of Web-Based Customer Service, Patients are asked to fill an enquiry form with personal details. The drawback with this is that patients are not willing to reveal their individual data through the Web-based customer service options, particularly if the website does not provide security features. Another risk with a Web-based system that does not rely on live chat is infuriating consumers with delayed responses. And if all the above means it doesn't work for the patient/customer, he may have to pay a visit to the hospital or the medical institute for obtaining the information he is looking for. Thus, there is a requirement of developing a system that can help to overcome the above-mentioned shortcomings and an Ai based chatbot can provide us a solution.

A Chatbot is selfless and dedicated to you, it is always there for you and it always has time for you. And that is even more incredible about this technology. In a model researched by Bayu Setiaji et. al. The machine has embedded knowledge to name the sentences and decide itself as a response to answer a question. The reply concept is matching with the input word from the user.

From the given input, it will be scored to achieve the similarity of sentences; the higher the score get more same the reference sentences. The sentences similarity calculation in the paper with bigram which split input sentence as two words of input sentence. The information of chatbot is stored in the database.

The chatbot contains of interface that is getting the core in relational database management systems (RDBMS). The database has been working as data storage and interpreter has been working as placed programs of function and process for pattern-matching requirements. The interface is alone which has make using the programming language that is Pascal and Java. In another research by Hyo Jin Do was researching for health related information online can affect negative feelings such as confusion or frustration. We prepare a virtual chat assistant that is answer health related queries easily based on a doctor and patient communication model. We plan to showing that our proposed assistant is not only informative but also supplies the positive user experience. Ashay Argal et. al.

Chatbot is a computer application that communicate with users by using natural language in an equivalent path to imitate a human travel medium. A successful execution of a chatbot can evaluate user preferences and forecast collective intelligence. In the most cases, it can supply best user centric recommendations. Hence, the chatbot is become an integral role of the future consumer services. The paper is an execution of an intelligent chatbot system in the travel domain for Echo platform which would combined user preferences, model collective user information base, and suggest using the Restricted Boltzmann Machine (RBM) with Collaborative Filtering. With the chatbot based on DNN, we can increase the human to machine interaction in the travel domain.

III. MOTIVATION

As COVID-19 has spread globally and as we are practicing social distancing the technologies like Chatbot are coming to rescue. Chatbot, also called as conversational agents, interactive agents, virtual agents, virtual humans, or virtual assistants, are artificial intelligence programs bulid to simulate human conversation via text or speech.

Many positive viewpoints have been made on the potential uses of health care chatbot within the marketing and business world; however, little scientific research has examined their effectiveness in real-world patient scenarios, that is, to improve health outcomes. Chatbot are commonly used in marketing applications such as to guide consumers through electronic commerce websites, answer questions related to products and services, help troubleshoot problems with internet service, act as a personal caretaker, or provide consumer advice. In the circumstances of health care, chatbot are intended to provide personalized health and therapy information to patients, provide relevant product and service to patients, as well as suggest diagnoses and recommend treatments based on patient symptoms. Chatbot do not get worn out, fatigued, or sick, they don't need to sleep; they are cost effective to use and can run 24 hours a day, which is useful for patients who have medical concerns outside of their doctor's operating hours. Chatbot can also communicate in multiple different languages to better experience for the need of individual patients. Patients may also feel that chatbot are safer interaction partners than human physicians and are willing to show more medical information and report more symptoms to chatbot.

IV. METHODOLOGY

In this project, we proposed a system in which a chatbot can predict the disease which is suffered by a patient by understanding their symptoms. Additionally, they can help in setting up an appointment with the doctor, predict health problems based on symptoms and provide daily health tips to increase the patient's lifestyle. The Hospital Management System organizes the stable functioning of daily tasks and interactions. This portal can perform various operations, stores the user's data.

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JavaScript: For designing the web application, these are the building-blocks of web pages that authorize you for putting images, text, videos, forms, and other pieces of content together into a cohesive webpage.

Web Server:

1. Apache Tomcat 9.0 : Apache Tomcat called "Tomcat" in short is a free and open-source implementation of the Java Servlet, Java Server Pages, Java Expression Language and Web Socket technologies.[2] Tomcat provides a "pure-Java" HTTP web server environment in which Java code can run.
2. Tomcat is develope and maintained by the open group of developers below the influence of the Apache Software Foundation, declared under the Apache License 2.0 license.
3. Glass Fish Server 4.1.1 : Glass Fish is an open-source Jakarta EE platform application server project started by Sun Microsystems, then promote by Oracle Corporation, and currently living at the Eclipse Foundation and support by the Payara, Oracle and Red Hat.[2] The supporting version under Oracle was called Oracle GlassFish Server.

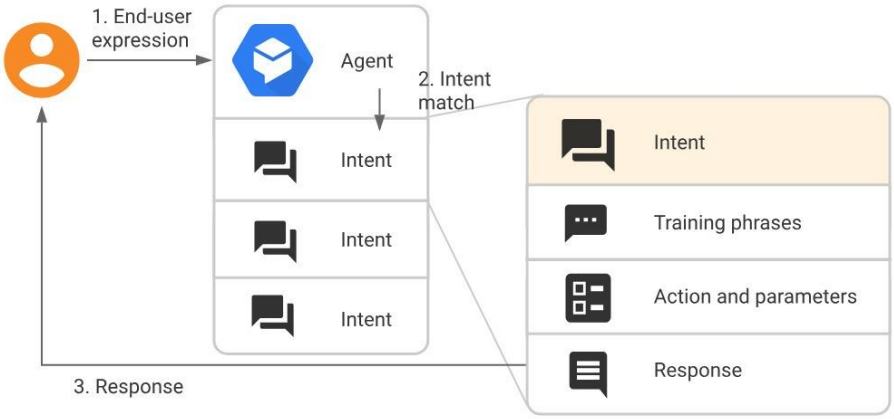
Database Server: MySQL

Hosting Service:

1. AWS EC2**:** Amazon Elastic Compute Cloud (EC2) is part of Amazon.com's cloud-computing platform, Amazon Web Services (AWS), that grant users for rent virtual computers on which is start their own computer applications. EC2 motivates scalable classification of applications by provides a web service through which is the user can booting an Amazon Machine Image (AMI) to configure a virtual machine, which Amazon called as"instance", containes software desired.

Following are the modules which are developed in our project:

1. **Patient Management:** This module is used to control patient flow. It is used to registered the users, get the information from the patients' health condition, get the on going treatment, and checking the medical history of patient and reports.
2. **Appointment Module:** Patient can book an appointment according to his time and he/she can select the specialist doctor as per required. It is helping to organize the accessibility of medical specialists at any time. Doctor can accept the appointments and patient can get confirmation message after confirming.
3. **Virtual Health Check-up:** User can monitor various health related basic functionalities like B.M.I, calculate sugar level to check if it is in the safe zone or not.
4. **Chatbot:** In this we can integrate a chatbot use Dialog Flow platform.



It is virtual chatbot system integrated on portal. This can be used for navigating system. User can communicate with bot by giving basic inputs. According to the input it gives responses in the form of text. Patient can view the appointment details by giving appointment id as input.

5. **User Management (Admin functionality):**

Admin have privileges for user's record maintenance. He can approve the registered doctors in the system after verifying the doctor's details. After approval doctor can get confirmed message for registering a mobile number. If some user's access is revoked, then admin can delete that user's record from the system.

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6. **One Time Password (OTP):**

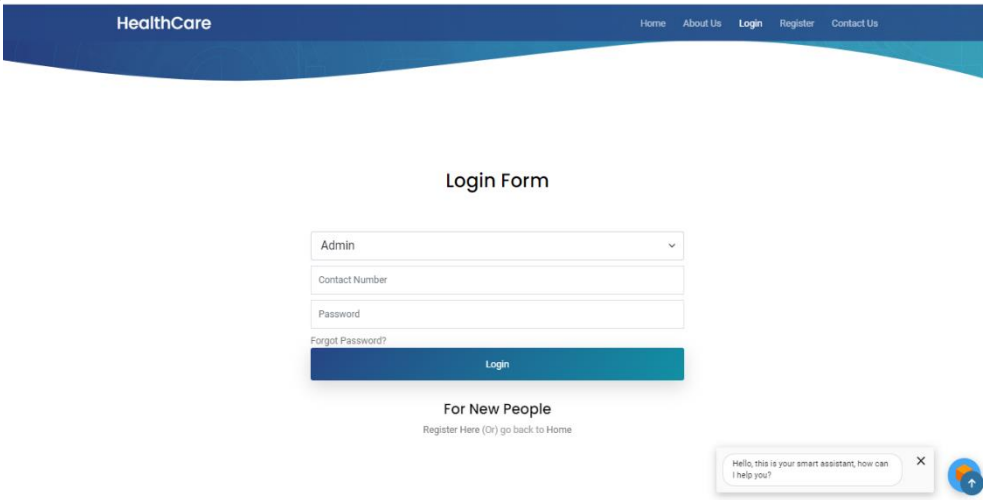
When user, doctor or admin is about to reset a password the OTP will sending to the registere mobile number of user, doctor or admin which is valid for only 5 minutes. After confirmation of OTP user can change his/her password.

7. **Doctor's Registration:**

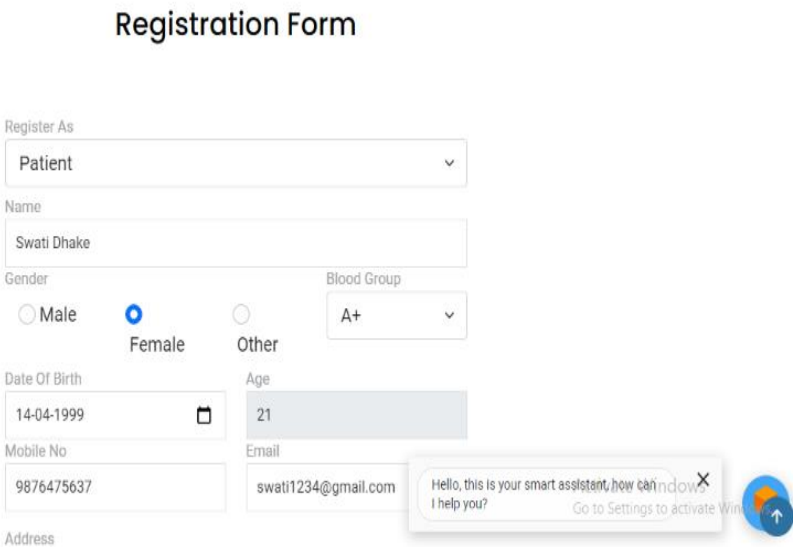
When the doctor registers on the website, admin has to approve for the doctor by seeing all the documents that particular doctor has mentioned. After approval, the message is send to the doctor.

V. RESULT

1. Login Page



2. Registration Form



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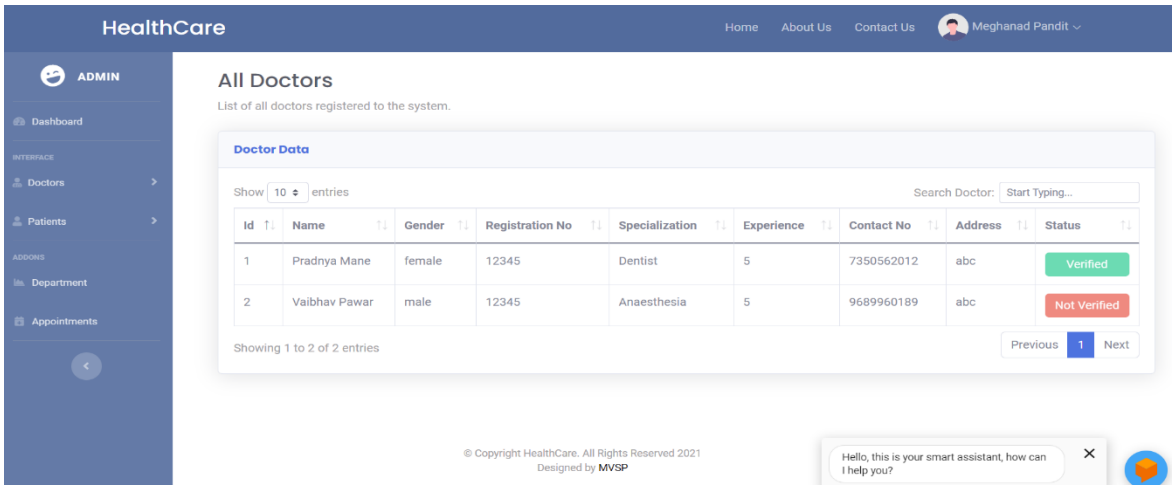
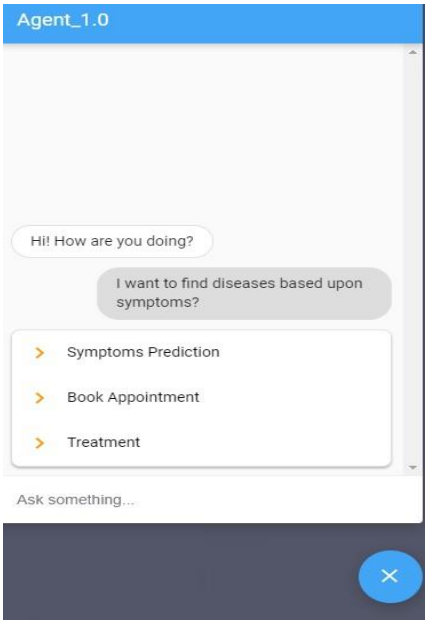
3. Book Doctor's Appointment



4. Chatbot



When the user click on the 'View Appointment Details', as shown in the above figure, the user is able to observe all the details of his appointment i.e. name of the doctor, on which date his/her appointment is scheduled, etc.

VI. Conclusion

The main goal of the project is to develop an algorithm that will be used to find answers related to users' queries. The information stores about the user queries, the system responses, keywords, reminders, logs, and customer feedback information. The system offers many services. Most of them are overly complex. So as time passes each module can be perfected.

So, this system must be designed in such a way that each module must be upgradable independently. The system is able to increase the performance of each module. Thus, the system can be improved easily, and the capabilities of the system also improves. (We can scale the system to include more information that can predict increased diseases, as well as can describe more medicines) However, AI based chatbot does pose some challenges, such as the accuracy of results and this algorithm and machines is replace most of the jobs in future.

Finally, a successful execution of personalized medicine would save many lives and make the lives of individuals easier.

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