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Virtual Conversational AI-Assistant Chatbot for Animal Healthcare: PET-O-CARE

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***Abstract*— A chatbot is a smart computer software that mimics human interaction by understanding client requests and automating responses to them using AI and NLP. It is efficient to use. The model can be used to treat animals well and boost efficiency in the field of animal healthcare. It analyses information provided by users in natural language and responds with informed and pertinent information. Bots that may be used to triage patients and route them to the right care are known as health chatbots. These chatbots are more dependable and secure when compared to Google search when consumers are attempting to determine the origin of their symptoms [2]. The objective is to create a medical chatbot using artificial intelligence that can recognize the condition and deliver basic details about it before a patient contacts a doctor. By using a medical chatbot, this will lower healthcare expenses and increase access to medical information [5].**

***Index Terms*— NLP, AI Assistants and Animal Healthcare.**

I. INTRODUCTION

The project is aimed at developing a chatbot application, which is going to provide all the facilities for a pet owner on their finger tip. Chatbot is an intelligent computer program that uses both AI and NLP to understand client requests and provide automated response to them, replicating human conversation.
Chatbots are user friendly, automated systems in a two-way conversation. These assistants that can talk back to the user, to help them achieve the task they are interested in. Finding Veterinary doctors, NGOs, pet shops at your fingertip, no more waiting in rows i.e., Hassle-free appointment scheduling. It assists in serving a sizable target audience simultaneously.

II. LITERATURE SURVEY

The clever personal voice assistants that are integrated into certain home speakers or smartphones have advanced chatbots powered by artificial intelligence, They were able to control automated home gadgets, read email, speak in a computer voice, and understand voice commands. Artificial Intelligence-powered medical chatbots that allow for self-diagnosis will essentially make the process of waiting in lines to get diagnosed easier and give users information before seeing a doctor. People need to connect and be as honest as possible about the issues they are having in order to live a healthy lifestyle. The chatbot will then create an application using NLP [9].
Chatbots have an ability to conduct smart and better conversation—Which is two ways, either via text or voice.

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They use machine learning which can perform interaction with humans and become increasingly flexible with each interaction. It recognizes user input for accessing information to provide the user with proper output. In a chatbot keywords are being scanned and then respond with the most similar matchingkeywords is provided from a database. These applications make the communication between people and services, make the experience of customer even better.

Few examples of the chatbots which are widely used in day to day lives of the people are:

Apple created Siri in 2010, which was the first personal assistant. Through Messengers, users can communicate with it and ask questions by using voice commands. Since a few years ago, Apple has had a voice-activated personal assistant called Siri. Siri first debuted on the iPhone 4S, but it is also available on the different apple products. As Siri has developed and changed with time, its knowledge has increased, as have its skills. It has also had to stay up with its competitors, Google Assistant and Amazon Alexa. Siri is a voice-activated personal assistant that can only be accessed by Apple users. It assists you in getting things done, whether it is scheduling a dinner reservation or sending amessage, so the idea is that you speak to her like you would a friend. Speaking to Siri and having her talk back to you will allow you to find or perform everything you need on your apple products in a seamless manner. You can query her or request demonstrations from her.

IBM developed a chatbot in 2011 called Watson (Watson Assistant IBM Cloud, 2020). A research team led by principal investigator David Ferrucci created IBM Watson, a question-answering computer system that can respond to inquiries in natural language, for IBM's DeepQA project. Thomas J. Watson, a businessman, founded IBM and served as its first CEO. IBM implemented Watson in 2013, which is used in the domainof Healthcare, Finance, Legal, Retail, Fantasy Football, etc.

Google Now was developed in 2012. It provided information to the user while taking the user's location, preferences, and time of day into account. The advanced version Google Now is Google Assistant, which was developed in 2016. With Google Now, consumers can get "what they need, when they need, when they need it" on their Android-powered mobile devices. By selecting the categories of the relevant information, you want to stay up to date on with Google Now, such as music, sports and local weather, you may personalize your experience. In order to respond to queries, offer advice, and act, Google Now uses a natural language interface to send requests to multiple online services. Along with answering user-initiated question. Google Now also passively delivers the data consumers anticipate based on their surfing behavior. The Knowledge Graph project from Google is used by the system. The system is used to evaluate the relevance and significance of search results in order to assemble more thorough search results.

Florence -Hospitals are the most popular setting for providing sick patients with medical analysis, disease diagnosis, and medication prescription. Nearly everybody on the planet now behaves in this way. By eliminating the need for patients to wait in line for hours to acquire their medications, the proposed solution would make it simpler for people to monitor their health. This study seeks to implement the RASA framework for creating a chatbot. The chatbot may interact with individuals like any other person and adopt the user's symptoms. The mostlikely disease will then be identified, along with a prediction ofit and suggested treatments. This will enable consumers to quickly find all their queries without any hassle. The aim of this project is to generate a chatbot that is all-time available and can effectively diagnose patients by analyzing the primary symptoms and using a conversational approach with the aid of the RASA and NLP. The state's health industry will be significantly impacted by the chatbot that was created. Accuracy will increase, and manual errors are less likely to occur [9].

Heal Bot – Coronavirus, commonly known as Covid-19, has spread globally since it was discovered. Due to the increase in reported events, it has become difficult for hospitals and medical staff to keep up with the influx of patients. It becomes quite difficult to see a doctor when the epidemic starts, particularly in more rural locations. Hospitals are only treating the most serious cases. Overcrowding exists in hospitals and quarantine facilities. Due to their restricted access to information, people in rural locations are also attempting to treat the illness without having any knowledge of it. This is due to the necessity for a chatbot to aid patients in identifying appropriate treatment alternatives and in recognizing Covid symptoms at home. The creation of AI based Chatbot for identifying COVID-19 exposure and offering effective treatments.

The model was created by combining Random Forests, Decision Trees, and Logistic Regression. Machine learning models are assessed for accuracy using data of COVID-19 patients from hospitals that was used to train the model. The accuracy of the algorithms was established. The severity of the COVID-19 infections was predicted using an implemented prototype, and RASA, MongoDB and FastAPI were used to train the model [12].

Some more examples are Woebot Health, Mitsuko and Netomi. Woebot is a chatbot that assists you in discovering about yourself and mood monitoring. Woebot uses brief daily dialogues to ask people how they're

feeling and what's going on in their life, drawing on a therapy approach known as Cognitive Behavior Therapy. In addition, Woebot discusses mental health and wellness with you and delivers you movies and other helpful tools based on your current mood and requirements.
Mitsuku is a chatbot which is emotionally smart that engages people in conversation in a manner that is very humanly, including comedy and empathy. Mitsuku engages her users in casual conversations on any subject in an effort to create friendships.

III. PROPOSED SYSTEM

Whenever there's a situation where either a patient needs healthcare facilities for his pet, a NGO need to announce a pet for adoption or offer their services for pet owners, or veterinarians who wants to market themselves, the nature of this job is too manual because all these facilities are diverse and there is no common interface for them. The proposed system provides a common interface for all these facilities and makes this tedious work smoother. The flow of the bot will be as follows,
This is the welcome flow and the bot will work accordingly.

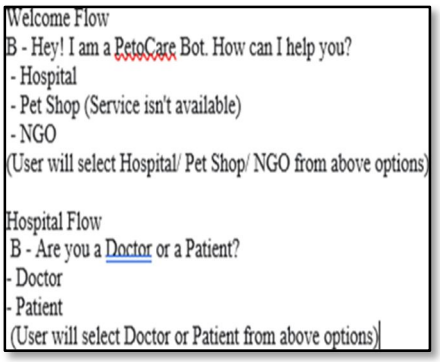

Figure 1. Bot Welcome Flow

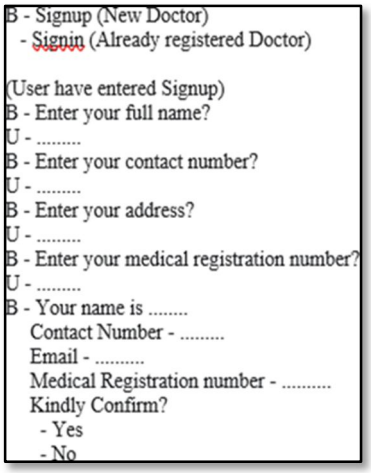

Figure 2. The Registration Form

After the registration is done, the user can avail all the facilitiesthat are being provided by the bot.

A. Use Case

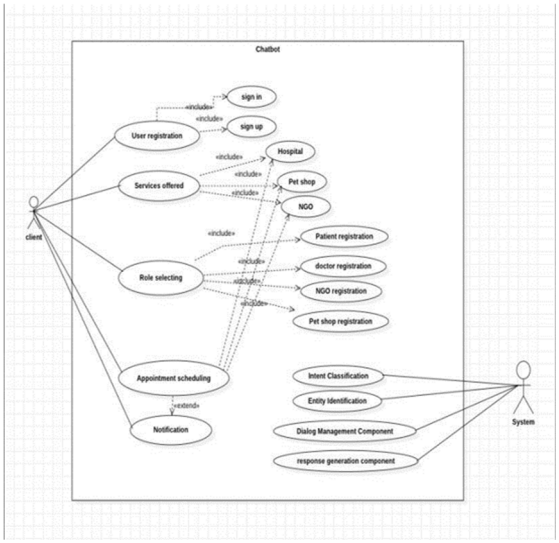

Figure 3. Use Case diagram showing various use cases of actors

B. System Architecture

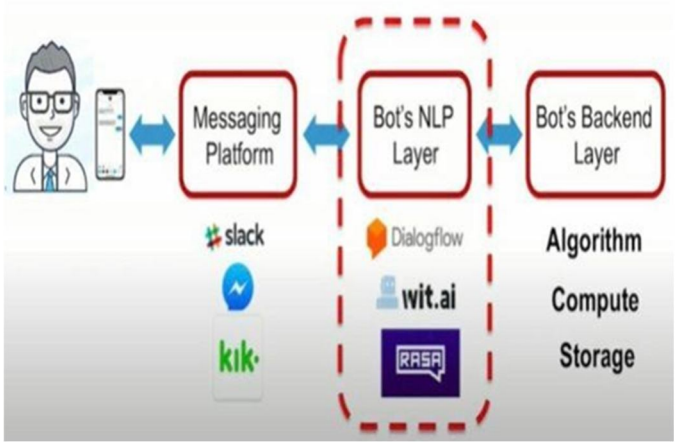

Figure 4. System Architecture

IV. METHODOLOGY

A. Workflow

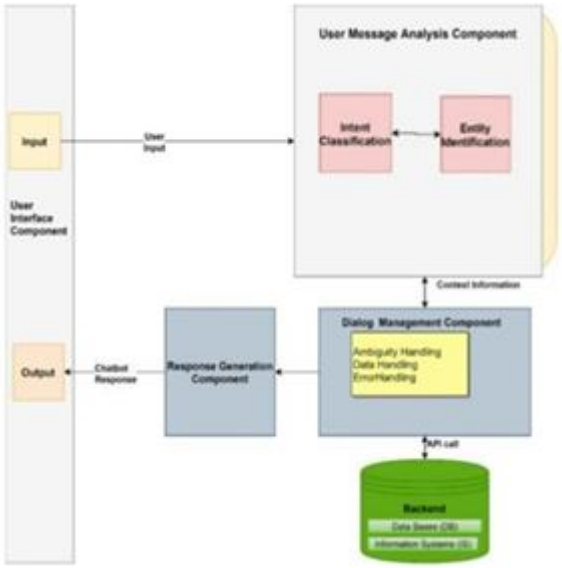

Figure 5. Overall workflow of the proposed system In this project, there is a conversational chatbot where the end user can be anyone, a doctor or a patient, or an NGO owner etc., it will provide convenient and efficient service without much of human interference. Initially, the bot will provide user with the options to select. The flow will be continued for the doctor, patient, NGO and all other end users. Later bot will take input through a form to collect details of the end user for registration purpose. The one who is already registered will have to enter the registration number for entering the bot and the ones who haven't will have to sign up.

Same process will be followed for NGOs and other services provided by the chatbot. Once this process is over, the end user opting for the hospital will now get the recommendations of the doctors and will be able to book their respective time slots for the appointments. Here, the bot will provide them with date and time options with the help of calendar and timing buttons. Once the slot is booked, the end user will receive the confirmation message with their respective booking ID on provided contact numbers and emails respectively.

Furthermore, we have added a recommender system, which will now allow users to select a veterinarian in the radius of 5 to 10 kilometers in their locality itself. Using a recommender system will help by increasing their pace of work of the users by saving their maximum time by providing doctors nearby. This will also reduce the transportation time and cost and will provide the end user with a satisfactory experience. There are several types

of recommender systems available, however, a recommender system makes recommendations depending on the type of data we have, hence we have used Hybrid Recommender System here. A Hybrid type of recommender system comprises the features of various types of recommender systems to provide a smoother experience.

V. Result

The chatbot will be deployed on the telegram as shown in the image below. The user will use it depending on his/her needs and will select needed options. The bot will reply the users accordingly and will perform the further procedure.

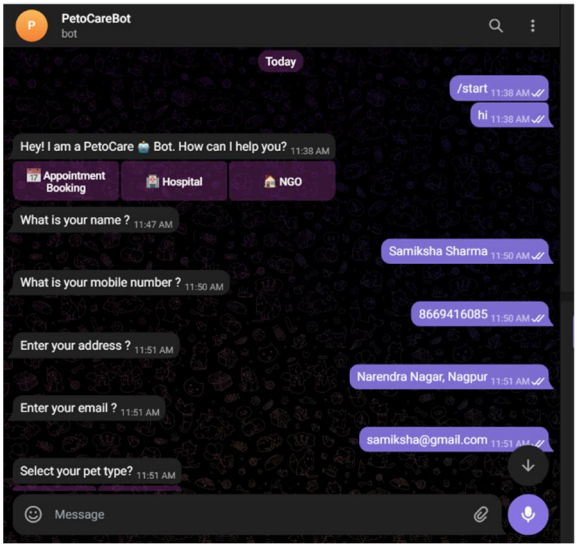

Figure 6. Telegram Integration

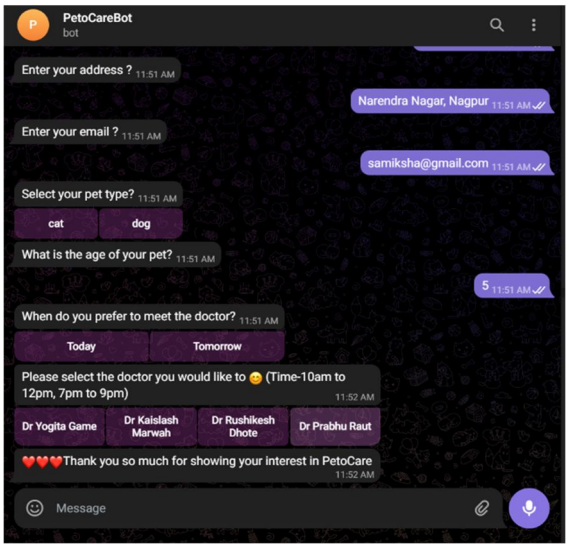

Figure 7. Telegram Integration (Cont.)

The user will be provided with this kind of user interface of the chatbot on their respective telegram accounts.

VI. Conclusion

Due to numerous difficulties faced during collection of resources and information regarding animal healthcare facilities, the nature of work is often manual, thus the proposedsystem offers solutions to all these problems by providingcommon facilities to NGO's, pet owners, doctors for easier access to animal healthcare facilities.

Future Scope

A. Recommender System

After the registration/login procedure, when the user will book an appointment with the doctor or an NGO owner, the bot will recommend the user with the list of doctors or NGO's present within a particular radius to the user's location. This will provide the users with multiple options, so that the user can choose according to his/her needs.

B. Location Tracker

Once the scheduling is done by the user, the bot will send a confirmation message or email to the user. The message will consist of a link which will direct the user to the google maps and will provide the user with the total path from his/her location to the selected destination. This will create an ease for the users in finding the location and reach on time hassle free.

C. Deployment on WhatsApp at public level

Being user friendly and having excellent usability should always be one of the primary concerns of any business applications. Deploying the bot on WhatsApp will make it more user friendly, which will be easier to adopt by the common public. Doing this the bot will also provide results faster and efficiently. Repeating customers or users of the bot will love the application due to its fast and hassle-free nature.

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