

# A Chatbot Supported Smart Interactive Healthcare System

Ashutosh Sharma<sup>1</sup>, Pooja Shingate<sup>2</sup>, Shivam Shivgan<sup>3</sup>, Roshan Bauskar<sup>4</sup>

<sup>1,2,3</sup>Student, Department of Computer Engineering, L.E.S. G.V. Acharya Institute of Engineering and Technology, Maharashtra

<sup>4</sup>Asst. Professor Department of Computer Engineering, L.E.S. G.V. Acharya Institute of Engineering and Technology, Maharashtra

\*\*\*

**Abstract** - In the world of healthcare, we're yet far from having incredibly smart machines that have the potential yet to replace the typical medicinal suppliers. Chatbots can open up an entryway into the world where Artificial Intelligence is getting advanced, especially in the domain of healthcare, where patients will convey their problems with a messenger and get a consultation without wasting any time. The technology at the core of the rise of the chatbot is natural language processing ("NLP"). Recent progression in machine learning have greatly improved the quality and potency of natural language processing, making chatbots a viable option for many organizations. This improvement in NLP is ignition a great deal of additional research which should lead to continued change of state in the potency of chatbots in the years to come. Chatbots are computer programs able to carry out near - natural conversation with people. In this work, we describe the development of chatbots from a vestigial model to an advanced brilliant system. Healthcare has become an captivating market for companies developing chatbot applications for patients and clinicians. The idea is to provide a single point contact to the patient and his relatives to get all their queries resolved and for the hospital to focus on their starring tasks and not lose focus on non-primary activities.

**Key Words:** Healthcare chatbot with natural language processing(NLP), Word Order Similarity between Sentences, Artificial Intelligence, health tips.

## 1. INTRODUCTION

A Chatbot is a system that can interact with human users with natural language. The vast amount of information that is available on the internet allows Chatbots to provide accurate and efficient information based on the user's requirements. Chatbots are used in domains like Customer Support, Virtual Assistance, Online Trainings, and Online Reservations and also for general conversations.

The proposed Medical Chatbot can interact with the users, giving them a realistic experience of chatting with a Medical Professional. There has been a recent

upsurge in speech based search engines and assistants such as Siri, Google Chrome and Cortana [1]. Natural Language Processing (NLP) techniques such as NLTK for Python can be applied to analyse speech, and intelligent responses can be found by designing an engine to provide appropriate human like responses [2]. Some chatbots presents a technology demonstrator to verify a proposed framework required to support such a bot (a web service). While a black box approach is used, by controlling the communication structure, to and from the web-service, the web-service allows all types of clients to communicate to the server from any platform. With the modern era of connectivity and technological innovation, smartphones have rapidly gained the popularity and most users have their smartphones on or near them throughout the day.

There is a growing number of hospitals, nursing homes, and even private clinics, now use online Chatbots for healthcare on their websites. These bots interact with potential patients visiting the site, helping them find doctors, scheduling their appointments, and getting them access to the right treatment.

In this paper, however, the use of artificial intelligence in an industry where people's lives could be at stake, still sparks apprehensions in people.

## 2. LITERATURE SURVEY

Many people suffering with dementia retain much of their conversational abilities as their illness progresses. However, the shame and frustration that many dementia sufferers experience often make routine, everyday talks with even close family members challenging. From research paper, we have studied that many people with Alzheimer's disease struggle with short-term memory loss. As such, the

chatbot aims to identify deviations in conversational branches that may indicate a problem with immediate recollection- quite an ambitious technical challenge for an NLP-based system. The paper gives the information regarding products which is useful for consumers to obtain what they want exactly. Question Answering (QA) systems can be identified as information accessing systems which try to answer to natural language queries by giving suitable answers making a use of attribute available in natural language techniques[2]. This paper presents a survey on the techniques used to design Chatbots and a comparison is made between different design techniques from nine carefully selected papers according to the main methods adopted. These papers are representative of the significant improvements in Chatbots in the last decade, the Chatbots designed for dialogue systems in the selected studies are, in general, limited to particular applications. General-purpose Chatbots need improvements by designing more comprehensive knowledge bases[1]. The process of an online chat system would follow a client server approach which acquires the signal and streams it to a server. The input voice is then processed and a response is generated. This process places a large processing requirement on the server's processor and memory resources. This limitation is even more evident when a large number of users are to be simultaneously accommodated on the system. Voice recognition requires a two part process of capturing and analysis of an input signal[3].

Natural language processing used for understanding and Microsoft speech recognition is used in speech recognition and speech synthesis for speech to text and text to speech so people get along with it easily.

### 3. PROPOSED SYSTEM

Some chatbots are compact medical reference books which are useful not only for patients, doctors etc but also for those who want to learn something about health. The user feels that they are incorporated in the process of their health. Patients who feel included, who are interacting through chatbots with the healthcare system, will stay with the system, and that is important for them and the healthcare provider. The old chatbot are client communications systems and their best effort is a question and answer page on a website. Bot can facilitate to get the common health related question and prediction of disease without a human interference. This system helps users to submit their complaints and queries regarding the

health. Customer satisfactions the major concern for developing this system. . The actual welfare of the chatbot is the facilitate the people by giving proper guidance regarding the good and healthy living. For the reason that many of the people do not have fundamental awareness of physical condition. Some people live for years with debilitating but they do not pay attention to symptoms simply because they think they don't require a doctor. The working of the system is as follows:

#### User Login to System

User registers on Chatbot application. Then ask queries regarding to the health care and medical details

#### A. Ask some Questions

You can ask some questions regarding some healthcare. And its related to voice- text and text-voice conversation. Using Google API for inter conversion of text-voice and vice versa

#### B. Age based Medicine dosage details

You can ask medical dosage related queries to this app in voice and system gets output for medicine API and speak out and display all data. Get your age from registration data and provide data related to your data like age, area, gender and so on.

#### C. Get Medicine Details on medicine name

You can ask about medicine related details on the basis of medicine names.

### 4. SYSTEM ARCHITECTURE

This system helps users to submit their complaints and queries regarding the health. Customer satisfactions the major concern for developing this system. . The actual welfare of the chatbot is the facilitate the people by giving proper guidance regarding the good and healthy living.

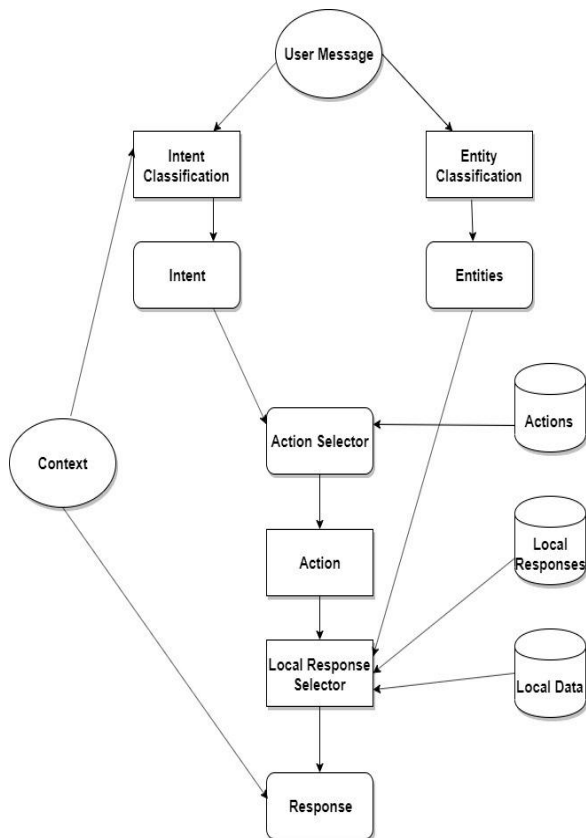


Fig 4.1 System Architecture

The Chatbots work based on three classification methods:

- 1 “Artificial Intelligence Markup Language (AIML), is a standard structured model of these Patterns.
2. *Natural Language Understanding (NLU)*

This NLU has 3 specific concepts as follows:

**Entities:** This essentially represents an idea to your chatbot.

**Context:** When a natural language understanding algorithm examines a sentence, it doesn’t have the historical backdrop of the user’s text conversation. This implies that, if it gets a response to a question it has been recently asked, it won’t recall the inquiry. Bot and get the information in a realtime manner, or take a bot’s advice such as diet and exercise So, the phases during the conversation of chat are separately stored. It can either be banners like “Ordering Pizza”. Or could include other parameters like “Domino’s: Restaurant”. With context, you can easily relate expectations with the necessity of comprehending the last question.

**Expectations:** This is what a chatbot must fulfill when the customer says sends an inquiry. Which can be the

same for different inquiries. For example, the goal triggered for, “I want to purchase a white pair of shoes”, and “Do you have white shoes? I want to purchase them” “show me a white pair of shoes”, is the same: a list of shops selling white shoes. Hence, all user typing text show a single command which is the identifying tag; white shoes.

### 5. SYSTEM FLOW CHART

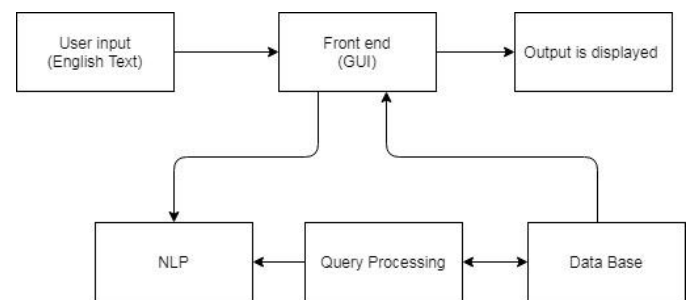


Fig 5.1 System Flow Chart

In this proposed system, our aim is to use existing advancements in creating advanced chatbots to focus on solving tasks in a hospital setting. For this, we will make a backend to the chatbot, which is connected with a database similar to one used in a hospital. The backend is responsible to use processed input from the chatbot and convert it into an action to be performed in the database. We will also use a web interface for the user to interact with the chatbot.

### 6. CONCLUSIONS

A health chatbot-supported smart wireless interactive healthcare system solution is developed for facilitating the objective data reception and transmission in a real-time manner to web server for further analysis. smart wireless interactive healthcare system supports two-way communication; not only smart wireless interactive healthcare system app can engage user with tailored feedback in an interactive way , but healthcare professional can proffer the more accurate medical advice to user also. Smart wireless interactive healthcare system app is developed, based on energy balance equation, to support and facilitate users to keep track of weight, dietary intake and physical activity on a daily basis in an easy and convenient way. Not only the AI-powered health chatbot can help monitor users’ health conditions and help users stay on track with inspiration and reminders given, but users can talk to the health chatplans, in the context of

healthy recommendation as well. Smart wireless interactive healthcare systems-based RCT will be carried out after obtaining IRB approval, which will be the 1st clinical trial conducted with health chatbot-supported interactive healthcare system in Taiwan.

## 7. REFERENCES

- [1] Mohammad Nuruzzaman , Omar Khadeer Hussain “A Survey on Chatbot Implementation in Customer Service Industry through Deep Neural Networks” International Conference on e-Business Engineering(ICEBE)**DOI:10.1109/ICEBE.2018.00019**
- [2] Yuhua Li, David McLeanook. “Conversational Bot for Pharmacy: A Natural Language Approach”, 2018 IEEE Conference on Open Systems (ICOS)**DOI:10.1109/ICOS.2018.8632700.**
- [3] Prof. K. Bala, Mukesh Kumar, “An Intelligent web based voice chatbots”, IEEE EUROCON 2019 International Research Journal of Engineering and Technology,**DOI:10.1109/EURCON.2009.5167660**
- [4] Rohit Binu Mathew, Sandra Varghese, Sera Elsa Joy,“Chatbot for Disease Prediction and Treatment Recommendation using Machine Learning” International Conference on Trends in Electronics and Informatics (ICOEI) **DOI: 10.1109/ICOEI.2019.8862707**