Chatbot System for Healthcare using Artificial Intelligence

[1]Aishwarya Kedar, [2]Jyoti Dahale, [3]Khushboo Patel, [4]Shivani Lahamage, [5]Prof. S. G. Chordiya

[1,2,3,4]Students, [5]Project Guide

***Abstract*: ChatBot can be described as software that can chat with people using artificial intelligence. These software are used to perform tasks such as quickly responding to users, informing them, helping to purchase products and providing better service to customers. In this paper, we present the general working principle and the basic concepts of artificial intelligence based chatbots and related concepts as well as their applications in various sectors such as telecommunication, banking, health, customer call centers and e-commerce. Additionally, the results of an example chabbot for donation service developed for telecommunication service provider are presented using the proposed architecture. We are using it for educational purpose to solve the quires of users. Chatbots are programs that mimic human conversation using Artificial Intelligence (AI). It is designed to be the ultimate virtual assistant, entertainment purpose, helping one to complete tasks ranging from answering questions, getting driving directions, turning up the thermostat in smart home, to playing one's favorite tunes etc. Chatbot has become more popular in business groups right now as they can reduce customer service cost and handles multiple users at a time. But yet to accomplish many tasks there is need to make chatbots as efficient as possible. in this system we provide the design of a chatbot, which provides an efficient and accurate answer for any query based on the dataset of FAQs using Artificial Intelligence Markup Language (AIML) and Latent Semantic Analysis (LSA). Template based and general questions like welcome/ greetings and general questions will be responded using AIML and other service based questions uses LSA to provide responses at any time that will serve user satisfaction.**

***Keywords*: Chatbot, Text to Speech, AI.**

Introduction:

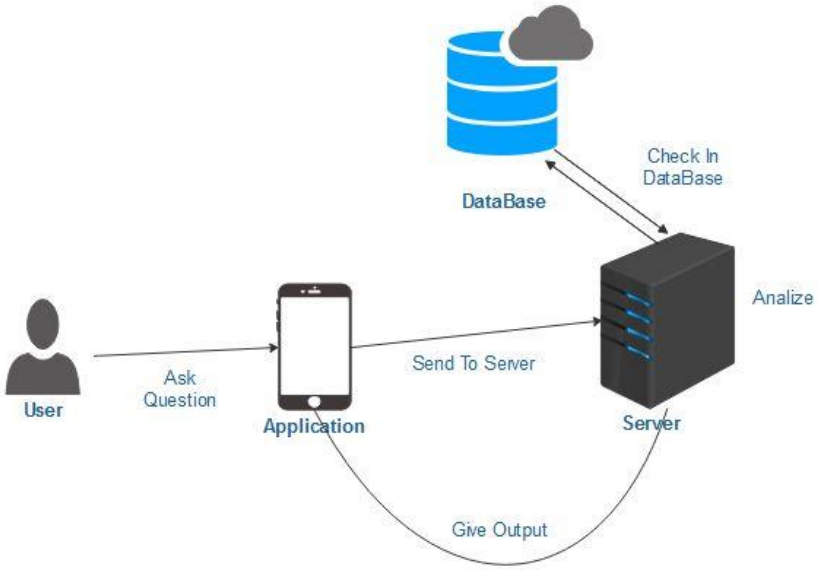
It was reported that 65% of the world's population live in countries where obesity and overweight kills more people than underweight. Obesity and overweight are the fifth leading risk for global deaths but obesity is preventable [1]. Obese people are at increased risk of many serious health conditions compared to normal or healthy people[2]. Obesity and overweight not only increase the risk of many chronic diseases, but exhibit some modest growth in US, UK, Canada, Italy, South Korea and Spain also[3, 4]. Eight out of the ten leading causes of death in Taiwan are associated with obesity [5]. Obesity appears to be associated with increased cardiovascular mortality and increased mortality from certain types of cancer[6], but weight loss shows the improvement in many mortality risk factors.

The study objective was to develop a solution called "Smart Wireless Interactive Healthcare System" (SWITCHes) to facilitate data reception and transmission in a real-time manner to web server protected by encryption for further analysis of data extraction. SWITCHes is made up of two main components: an interactive web-based dashboard and a smartphone app. An artificial intelligence (AI)-powered health chatbot lives inside SWITCHes app. The SWITCHes-based clinical trial is set to be carried out after obtaining Institutional Review Board (IRB) approval. This paper presents an overview of development and implementation of SWITCHes. which is set to attain the goals of reducing the health care spending, allow the early detection, diagnosis as well as treatment, and improve clinical outcome[8, 9]. mHealth app can be viewed as a wide reaching approach, which can reach out to many more users who need the medical consultation or treatment throughout the rural or remote areas, if appropriately designed.

Working:

We are making a system with the help of artificial intelligence and machine learning, our system is based on the hospital managements, Each user has to login to the system to use it, we are providing a chatbot for hospitals which will perform operation like appointment booking, surgeon information, doctor presence etc. we making a smart system that will allows user to get overall information of hospital in finger tips. Through chatbots one can communicate with text or voice interface and get reply through artificial intelligence. Typically, a chatbot will communicate with a real person. Chat bots are used in applications such as ecommerce customer service, call centers and Internet gaming. Chatbots are programs built to automatically engage with received messages. Chatbots can be programmed to respond the same way each time, to respond differently to messages containing certain keywords and even to use machine learning to adapt their responses to fit the situation. A developing number of hospitals, nursing homes, and even private centers, presently utilize online Chatbots for human services on their sites. These bots connect with potential patients visiting the site, helping them discover specialists, booking their appointments, and getting them access to the correct treatment. In any case, the utilization of artificial intelligence in an industry where individuals' lives could be in question still starts misgivings in individuals. It brings up issues about whether the task mentioned above ought to be assigned to human staff. This healthcare chatbot system will help hospitals to provide healthcare support online 24 x 7, it answers deep as well as general questions. It also helps to generate leads and automatically delivers the information of leads to sales. By asking the questions in series it helps patients by guiding what exactly he/she is looking for.

Architecture:-



Methodologies:-

I. AES:-

The Advanced Encryption Standard (AES) is a symmetric block cipher chosen by the U.S. government to protect classified information. AES is implemented in software and hardware throughout the world to encrypt sensitive data. It is essential for government computer security, cyber security and electronic data protection. AES has been adopted by the U.S. government and is now used worldwide. It supersedes the Data Encryption Standard(DES), which was published in 1977. The algorithm described by AES is a symmetric-key algorithm, meaning the same key is used for both encrypting and decrypting the data. AES is based on a design principle known as a substitution–permutation network, and is efficient in both software and hardware. Unlike its predecessor DES, AES does not use a Feistel network. AES is a variant of Rijndael, with a fixed block size of 128 bits, and a key size of 128, 192, or 256 bits. By contrast, Rijndael *per se* is specified with block and key sizes that may be any multiple of 32 bits, with a minimum of 128 and a maximum of 256 bits.

II. Hashing and mapping:-

A hash function is any function that can be used to map data of arbitrary size to fixed-size values. The values returned by a hash function are called *hash values*, *hash codes*, *digests*, or simply *hashes*. The values are used to index a fixed-size table called a *hash table*. Use of a hash function to index a hash table is called *hashing* or *scatter storage addressing. A* map is a symbolic depiction emphasizing relationships between elements of some space, such as objects, regions, or themes. Many maps are static, fixed to paper or some other durable medium, while others are dynamic or interactive. Although most commonly used to depict geography, maps may represent any space, real or fictional, without regard to context or scale, such as in brain mapping, DNA mapping, or computer network topology mapping. The space being mapped may be two dimensional, such as the surface of the earth, three dimensional, such as the interior of the earth, or even more abstract spaces of any dimension, such as arise in modeling phenomena having many independent variables.

Future Scope:-

A chatbot is a computer system, which can interact with users by using natural language. Normally, it is designed to serve in a certain domain such as online shopping, online frequently asked questions (FAQ) and also assistant system. Users can easily use it without background knowledge or experiences. Moreover, chatbot can serve many people at the same time with the same topic and without getting bored. Consequently, this may be the suitable capability to be adopted in public service such as the medical service. Hence, the objective of this work is to increase the service capability and decrease the operation cost of medical consultant service by using the chatbot.

Conclusion:-

It determined that the modern chatbots perform at a very high standard to provide a reliable response to users compared to the traditional chatbots. Unlike existing chatbots which focused on various domains of healthcare. This is the best solution for people

who are busy with their job schedules. They do not need to wait in the queue for hours to get an appointment with a doctor every time instead they can chat with the bot.

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