AI-HEALTHCARE CHATBOT SYSTEM

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1. INTRODUCTION

Artificial enabled healthcare chatbot systems are used recognize the diseases based on most comman symptoms by interaction with machine. Healthcare chatbot system will also provide the possible medicine prescription.Artificial healthcare chatbot system uses neural networks for calculating the output from the given input using the repeated iterations while training the data after it will use natural language processing for understanding the human language. Artificial healthcare Chabot system can understand the text based input as well as voice interface to communicate with the patients.This system will be very useful because it can take the decisions faster and it will also reduce the cost charged by the doctor. Although it can't replace the doctor but it will help to provide the treatment to the most common diseases. Artificial enabled Chabot system will ask the questions in the series about symptoms to diagnose thee health condition of the patients. It will reduce the cost of the diagnosis as compared to doctors without appointments. Artificial intelligence healthcare Chabot systems are revolutionary technology that is leading the way in transforming the medical diagnosis systems. We have need of artificial intelligence in healthcare because now a days we have huge amount of data to train the models and it increases the ability for healthcare professionals to better understand the day to day patterns and need of peoples they care for. Modern healthcare chatbot systems can provide the cure for more diseases than ever before because new technology is bringing the innovation to old treatments. It can bring patients answers and advice whenever they need it.Google in oncology using deep mind neural networks for recognizing the cancer cells. Artificial intelligence in healthcare is trending now a days. Neural networks are being used for providing personalized medicine and patient monitoring. Top tech giants like google and IBM also developing their own algorithms for healthcare systems.

2. Literature Survey

2.1 Existing solutions:

There are lots of artificial intelligence chatbots are available that provides personalized health diagnosis. Using Machine learning complex algorithms to analyze and take accurate decisions to provide relevant treatments and products and services.

One of the trending application of artificial intelligence healthcare bot is **Your.MD** founded on 2012.This web application can be used by patients as well as clinicians.Your.MD application can provide self-diagnosis based on trained models. Algorithms trained on validated medical reports over 1000 medical conditions on different types of diseases. Another one trending mobile application is **Sensely** founded on 2013.This is a mobile application that can take user input in multiple formats like chat images and in video format. Virtual medical assistant of sensely integrates artificial intelligence to recommend diagnosis on the basis of patient symptoms using smartphone. Sensely platform algorithms trained on large volume of medical data such as medical chronic disease information and medical protocols to analyze the patient symptoms and recommends appropriate diagnosis. For example patients can describe their symptoms to the virtual medical chatbot using speech or text and it will

provide the proper treatment. **Buoy Health** chatbot algorithm was trained on huge volume of clinical data from different medical conditions.
This all healthcare chatbots are equipped with artificial intelligence but some weaknesses are also existing there. Some of cons of this applications like they needs active internet connection, data privacy, complex user interface requires lot of time to understand, decision making is very poor that leads to people don't trust on such digital healthcare chatbots.

2.2 Artificial intelligence in healthcare:

Artificial intelligence in healthcare uses the deep learning neural networks and uses the human cognitive analysis for diagnosis of different types of diseases from the huge volume of complicated medical data.There is huge different from AI technologies from traditional technologies in healthcare is the ability to process data and give well defined outputs based on machine learning algorithms. This algorithms can recognize the patterns using classification and create its own logic. The main goal of artificial intelligence in healthcare systems is the analysis of relationship between treatment and prevention techniques and patient health diagnosis. AI healthcare programs have been developed and implemented to treatment protocol development, diagnosis processes, personalized health assistant, and patient monitoring etc. Companies such as IBM and google also working on development of healthcare algorithms. Artificial intelligence in healthcare is cutting edge technology that can detect the cancer cells through radiology.

3. PROBLEM DOMAIN

3.1 Imbalance between health workforce and patients: It is a major challenge in healthcare sector, as imbalances between health workforce or lower health professionals leads to lower quality and productivity of medical services, increasing wait time, diversion of emergency department of patients.
3.2 Human errors in medical diagnosis: Diagnostic Error is concern with the failure of establish an accurate and timely explanation of the patient's health problem or that explanation to the patient. This can cause serious health risk.
3.3 Increasing individual healthcare expenses: This is the most common issue in healthcare sector for consulting a healthcare professional diagnosis and medication cost are too high.
3.4 Real time health monitoring: There is not any system available that will monitor our health in real time because less number of healthcare workforce that leads to lack of personal assistance of the patient health.
3.5 unnecessary diagnostic tests: unnecessary diagnostic tests lead to expensive medical services. Not all people can afford that much high cost of health consultation.
3.6 continuous shortage of nursing and technician staff: lack of access to healthcare, especially in rural areas. Currently available physicians for the general population has not been able to keep up with the current healthcare demand. Healthcare service providers have been pressured to take care of more patients than they can handle, leading to lower quality of care.

4. SOLUTION DOMAIN

We have developed artificial intelligence healthcare chatbot system that can be used to eliminate the above problems regarding common health issues. Our healthcare chatbot will not save personal information of any user. Chatbots don't have that much level of cognitive intelligence that will take accurate decisions. We will add custom google search to eliminate the decision making of chatbot so that the people can find out detailed information about their health issues. By adding custom google search from some trusted sites will provide in depth knowledge from multiple sources. This software is built using natural language processing and chatterbot (a python library module).

4.1 Technology used:

4.1.1 Natural Language Processing

Natural Language Processing (NLP) is the study of computer programs to understand human Language. The ultimate goal of NLP is to read, translate, understand and make sense of the human

languages.NLP will be used to understand the input (syntax) given by the user for automatic analysis and representation of human language that machine can understand. We will use datasets to train the model. It will perform the sentimental analysis of trained datasets and will diagnose the diseases based on input symptoms.

4.1.2 Chatterbot

ChatterBot is a conversational dialog engine based on machine-learning algorithms. chatterbot is build in Python which generates responses based on collections of already known conversations. The language independent design of ChatterBot be trained to speak any language. It is simple and easy to use for building a chatbot.

4.1.3 Flask (web framework)

We have used flask web framework for creating the web based user interface of ai healthcare chatbot system. Flask is also known as microweb framework and It is easy to use, quick to learn, and also easy for creating web applications.

4.2 Flowchart

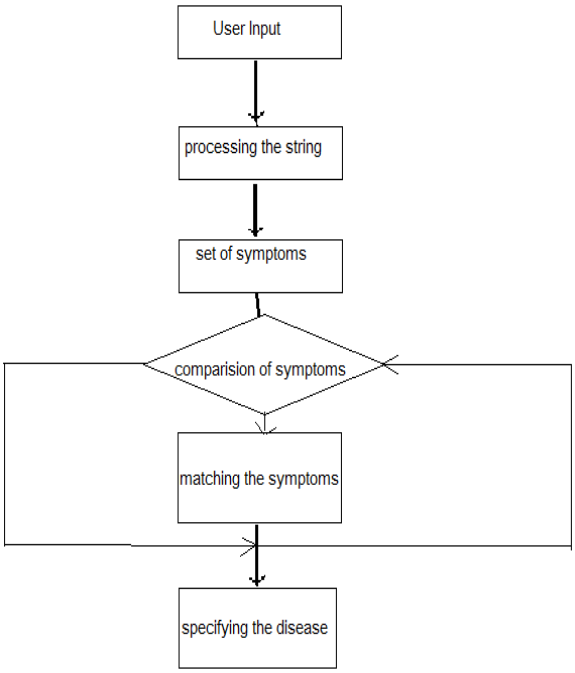

Fig 1

5 SYSTEM DOMAIN

5.1 Hardware Requirements:

Processor: Pentium IV (minimum)
Hard Disk: 40GB
RAM: 256MB (minimum)

5.2 Software Requirements:

Operating System: Windows or Linux
Technology: PYTHON, ChatterBot, NLP (natural language processing)

6 APPLICATION DOMAIN

6.1 Personal health assistant:

Artificial intelligent integrated healthcare system can be used as personal health assistant for diagnosing and treatement of most comman diseases. It will help patients in quick response of their query by communicating through text or voice and can prescribe medicines on health issues.

6.2 Patient health monitoring:

Virtual healthcare chatbot system will track and help reminder to take prescription and to analyze the patient's health status. It also gives advice on treatment for a common health conditions.

6.3 Treatment planning:

Artificial in healthcare will also help to define treatment process of patients by providing huge volume of health database of patients. When patient has any health issues before, which health diagnosis process has done before. With the help of this database.

6.4 Advancement in diagnosis process:

Artificial intelligence in healthcare can detect the diseases more accurately and takes decisions faster in a will be helpful for faster diagnosis. Doctors will be able to provide quick diagnosis and more able to save the life of patients because most of peoples lost their life because of wrong diagnosis or late detection of symptoms.

6.5 Reduces cost:

Implementation of artificial intelligence in healthcare will leads to decrease in doctor's visit for most comman diseases and according to a survey it has potential to reduce cost by 50%.

7. EXPECTED OUTCOME

7.1 AI healthcare chatbot system will be able to recognize diseases according to taken symptoms as input.
7.2 AI healthcare chatbot system will be run as web application and it is completely offline.
7.3 It will work as personal health assistance for diagnosing and treatement of most comman diseases.
7.4 AI healthcare chatbot system can communicate through text which will recommends medicines and possible treatments.
7.5 This system can be used by the multiple users to get the counselling sessions 24 x 7.
7.6 It will save money and time and guides the patients.

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