



## Self-Diagnosing Health Care Conversation Bot Using Machine Learning

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October 28, 2024

# Self-Diagnosing Health Care Conversation bot using Machine Learning

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## Abstract

It is very important to recognize that having the goal in life to be happy and healthy is important for all of us. Seeing a doctor for whatever ailment, which is very difficult in today's world. The proposed idea is to apply AI in developing a medical conversationbot that can identify an ailment before the patient meets the physician. The key goal of the medical conversationbot is to minimize the consumption of financial resources on health care and to make relevant information more available. There are a few dozen conversationbots, they are dictionaries for patients, providing information about their states and helping people become healthier. The user can take use of a conversationbot's primary benefit where they can diagnose almost all illness and give basic information. Some patients can even discuss their medical problems with a text-to-text conversationalist diagnostic tool.

Keywords – Conversationbot, machine learning,  
AI, Health care diagnosis, Medical Health Care diagnosis.

## 1.INTRODUCTION

A civilized society cherishes its people and their happiness, and everyone's happiness as well as a society's success is impossible without good health. An A population that is

The availability of good health is a well-known factor that encourages well-being, creative thinking and work output. However, due to time constraints and poor knowledge, modern life often leads to health carelessness [1]. Similarly writing in The Times of India, it was pointed out by many employees sign their lives away to their workplace opting not to go for check up or foregoing symptoms that are alarming [5]. This disregard underlines the fact that easily accessible healthcare treatments are required urgently. When it comes to these problems, there is one emerging approach – the use of medical conversationbots. These AI powered systems offer consumers freedom of free, anytime and any place access to health information and support [3]. When it comes to using artificial intelligence for conversationbots it is highly informative that reliable medical guidance, in this way avoiding in person consultations due to busy schedules [4] A good example of a conversationbot is Erica developed in the Netherlands for a dental practice. Currently, Erica helps as an online receptionist where she entertains the most common questions from patients and other visitors through the practice's website. [5]. This application helps to

underscore the powerful possibilities that conversationbots can bring into the delivery of health care services.

The proposed idea of having a free, round the clock, medical ‘conversation’ bot is perfectly fitting the current internet addiction and reliance on the people. While using the internet, people pay much attention to sharing information but neglect their own health. Its availability as a convenient platform to address health concerns and time-sensitive issues, the conversationbot motivates the user to stay cautious about their health condition and seek timely consultation with healthcare providers [4]. Furthermore, the real-time assistance of the conversationbot makes no constraint of geographic location to access healthcare products and services. This is because users can get medical advice from their workplace or home environment all from the comfort of their devices[3] Additionally through the use of conversationbots in healthcare the overhead costs of consulting specialized doctors for basic questions are eliminated. Thus this cost efficiency is able to offer health care to a wider population group for instance those who cannot afford or have insufficient health covers [4]. Acknowledging this, the implementation of medical conversationbots in a healthcare system is a step towards achieving a healthy nation. All these platforms leverage the use of the Artificial Intelligence to provide the users with easy access to medical help and support in a world where everyone’s schedule requires that they take care of their health.

## 2.LITERATURE SURVEY

The use of conversationbots in different areas of health care has become quite popular in the last few years, and researchers investigate the applying of these bots in improving medical support, diagnosis, and patients’ interaction. Here, the author gives an extensive review on the related literature on the use of conversationbots applied in the field of healthcare, which include, mental health interventions, medical consultation, predictive models and patient treatment. Such health care preference was conducted a systematic review by Oermann et al to

ascertain the effectiveness of Synchronous text based dialogue systems for mental health interventions. Their study was focused on proving the usefulness of applying conversationbots for psychological people’s assistance and counselling. Such interventions utilize the written communication modality to provide individualised support and therapy as informed by the fact that text-based communication is relatively asynchronous. Mishra et al have designed a medical conversationbot known as Dr Vdoc, in health sector it works like a virtual doctor[2]. This conversationbot is used as a one-stop-shop for user’s healthcare needs addressing medical queries and questions about symptoms and treatments. Mobile pertinently occupies a unique status between expertise and necessity for patients in contexts where access to healthcare is a challenge for individuals, groups or communities. Madhu et al. presented a new concept, a trained conversation-bot for medical help [3]. Their study focuses on feature combination using natural language processing and artificial intelligence to build a medical assistant which is precise and timely.

This way, by teaching conversationbot a wide range of medical information it becomes capable of answering questions, explain the use of interpretations of the terms and even educational assistance for students, diagnose if necessary, and give advice regarding to the management of health issues. At the time of writing, Kazi et al proposed a career known as Med Conversationbot, a new intelligent system that utilizes the UMLS as its working foundation; Med Conversationbot is specifically helpful for medical students. [4]. This conversationbot has semantic capability that enables it to understand medical terms and help the students by educating them.

Enabling better learning processes and easing access to a broad range of medical-related knowledge, MedConversationbot contributes to improve the understanding of the topic. The paper by Drăgulescu and Albu introduces the Medical Predictions System – a machine learning approach that predicts various outcomes for the specific patient [5]. In their work, they show that

healthcare can benefit from Predictive analytics, early detection of diseases, prognosis and treatment management. Using the patient administrations data histories and clinical data including accumulated patient therapies, the system liberates knowledge to aid clinical judgements and enhance patient treatment. Lokman et al. outlined the necessity of the system in medical organisation proposing to

Development of a disease related conversationbot specifically designed for diabetic patients [6]. Their research mainly points out the fact that there's a need to engage consumers into healthcare individualized treatment plans.

chronic conditions. The kind of conversationbot that can be developed involves using a question response framework where the people involved in the conversation complete each other's sentences.

as the outcome of providing patient's information, regarding diabetes management, dietary information, and lifestyle changes, the study will aid the patients in self-care and disease management. Pavlidou et al using natural language processing and artificial intelligence for developing a medical assistant that will be efficient and prompt. Their paper also emphasizes the importance of communication processes in healthcare organizations. Based on observed conversational data and fine-tuned retrieval models, the study seeks to enhance patient-caregiver communication and later information retrieving. Comendador et al. created Pharmabot, a pediatric generic medicine consultant conversationbot [8]. This conversationbot helps the caregivers choose the right generic drugs for children, thus supporting cost efficient interventions. Pharmabot health information and dosage recommendation also help to improve medication compliance and pediatric health outcomes generally. Specifically, the literature review shows that conversationbots are versatile in the context of healthcare, including mental health, medical advice, and prognosis. These studies demonstrate the value of future conversationbots to the delivery of healthcare systems and

outcomes by providing customized services, enhance the accessibility of medical information and boost patient experience and results.

## METHODOLOGY

### i) Proposed Work:

The user interface of the proposed system offers a linear structure, which starts with symptom extraction and symptom mapping, proceeds to the diagnosis of a major or a minor disease and, if the patient has the former, he is referred to the doctor whose details are stored in the database. User is recognized by the login details stored in database Files. A finite state graph is applied where conversationbots layouted about the conversational design of the conversationbots are used. The state transition logic was built, working with natural language generation templates, and, to get the proper diagnosis, the system gave initiative to the user to answer individually. Three main areas that become apparent when interacting with the agent are outcomes data, symptom data and diagnostic data. Our bot collects the user's email address and password when logging in, then goes through a sequence of symptom extraction phases up to the point where there is enough information to give a diagnosis. They can return through the loop to talk to the doctor about a new set of problems or they can go through their history of the chats that were held about the discussed topics.

### ii) System Architecture:

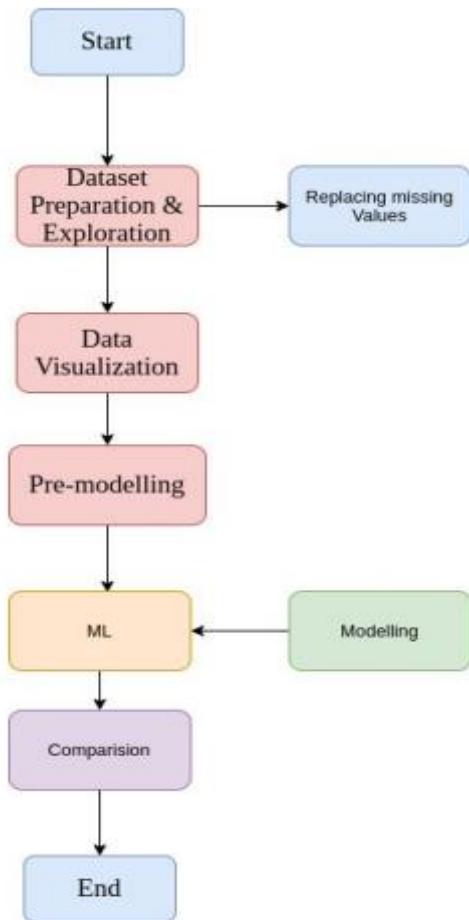


Fig 1

Proposed Architecture

### iii) Modules:

Before creating a conversationbot system, there are several steps that have to be taken which includes data preparation, training, and the way it interacted with end users. Below is an overview of the process involved in creating a conversationbot system: Build Conversation: Prior to developing a conversationbot patient data and preprocessing is a crucial factor. This dataset will be used to build the natural language comprehension that will be used in the conversationbot. The conversational data may be in form of exchanges, frequently asked questions or any other kind of textual data that the conversationbot will be expected to comprehend and respond to. Create Flask Object: Flask is web applications that allow the

development of web applications using scripting language Python. On this step, a Flask object is created to act in the capacity of the back end environment for the deployment of the conversationbot. One of these steps include routing for HTTP request and response flow that involves setting up routes for handling HTTP requests and responses.

Create Conversationbot: This is where the related conversationbot has to be introduced. This entails the acquisition of the natural language processing (NLP) modules that are in charge of preprocessing and answering a user's question. The conversationbot may leverage tokenization, the tagging of part of speech, and opinions of the input provided by the users.

Train Conversationbot: Thus, when the architecture of the conversationbot has already been developed, it is further trained using the prepared set. Basically, in the training phase, the conversationbot develops the mapping of the inputs provided by the users and the output that needs to be delivered to those users. This can also be made utilizing the machine learning or deep learning algorithms with the aim of enhancing performance of the conversationbot in as much as is an ability to reply with contextually appropriate messages. Enter Message: Thus, after the training process, the conversationbot is oriented to receive user messages. Customers can provide inputs in the form of textual messages, which can be inputs in a narrow text input field or a chat window. User Sends Message: Whenever a user posts a message to the conversationbot, Flask server or backend receives an HTTP request from the user input.

It is then handed over to the conversationbot where it is processed. Receive Response from Bot: When the user sends the message, the conversationbot automatically runs through its NLP routines for analyses. That's why this type of chatbot processes the text input, determines the user's intent, and provides an adequate answer with reference to the training and experience.

During this process the Flask backend takes the role of the go-between for the conversation with the user interface and

the conversationbot used for sending messages and receiving responses. By doing this, one will be in a position to create functional conversationbot system that will enable conversational interfaces between the user and the AI, the bot to give assistance or give the user the necessary information.

## EXPERIMENTAL RESULTS

```
user@ramesh:~/Desktop/41/finished/First/60/Self-Diagnosing Health Care Chatbot
sing Machine Learning$ python3 app.py
* Serving Flask app "app" (lazy loading)
* Environment: production
WARNING: This is a development server. Do not use it in a production deploy
nt.
Use a production WSGI server instead.
* Debug mode: off
* Running on http://127.0.0.1:5000/ (Press CTRL+C to quit)
```

Fig 2 Local Host

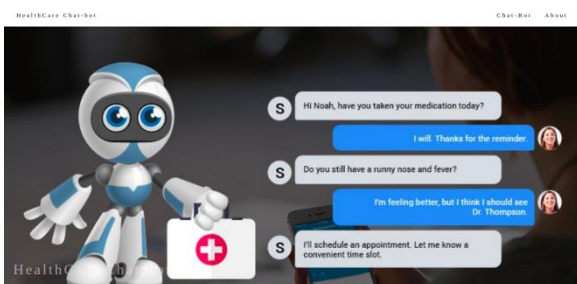


Fig 3 Home Page

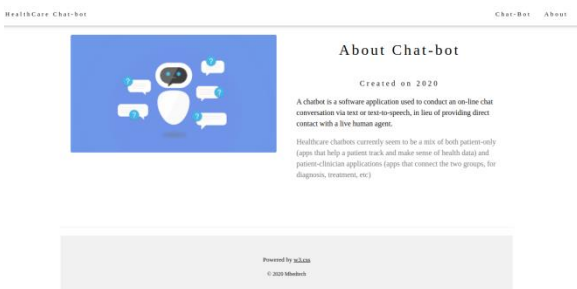


Fig 4 About Page



Fig 5 Health – Care Chat Bot

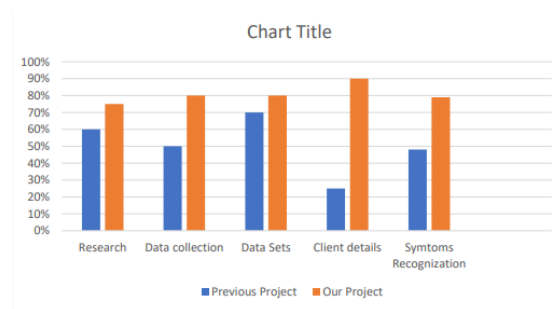


Fig 6 Graph

## 2. CONCLUSION & FUTURE SCOPE

In consultation with the presented studies, it is considered that Conversationbots does not presuppose any highly specialized skills and are available to everyone, provided they are able to type on a keyboard in their first language in a portable application or on a PC. A medical chatbot gives diagnostic recommendations according to the seen adverse events. More favorable clinical features including area, span, and force of indications in a later phase could significantly further improve the

side effect recognition and determination capability of the bot. The use of Personalized Medical Collaboration requires computations of AI and preparation data. Finally, the concept of tailor medicine would prove effective in total, and put the population into clinical consciousness. In conclusion, I reiterate that this is the time for informative application, for the audience will expend more time and effort in the informative applications than in any other applications. Therefore, therapeutic conversationbots are enjoying a great and evolving prospective. Thus two such people may have this therapeutic conversation regardless of the distance that separates them. The basic requirements are just a plain space or the user's smartphone with an Internet connection. Assuming that new word combinations can be introduced into the conversation and databases used more actively, the output of a conversationbot can be raised and a clinical Chabot trained in dealing with a greater number of diseases. In fact, the framework may include voice conversation as well, that makes it very convenient.

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