A Mini Project Synopsis on

Chatbot for Healthcare

T.E. - I.T Engineering

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CERTIFICATE

This to certify that the Mini Project report on Chatbot for Healthcare has been submitted by Omkar Bhoir(19104071), Kunal Shetty (19104071) and Nilesh Virkar(19104072) who are a Bonafede students of A. P. Shah Institute of Technology, Thane, Mumbai, as a partial fulfilment of the requirement for the degree in **Information Technology**, during the academic year **2021-2022** in the satisfactory manner as per the curriculum laid down by University of Mumbai.

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Chapter 1

Introduction

It is critical to have good health in order to live a happy life. However, obtaining a doctor's consultation for any health issue is quite tough. The goal is to use Artificial Intelligence to construct a medical chatbot that can diagnose an illness and provide basic information about it before contacting a doctor. Through the use of a healthcare chatbot, this will help to minimize healthcare expenses and enhance access to medical knowledge. Chatbots are computer programs that communicate with users using natural language.

To begin with, a chatbot is a software application that assists in replicating human-like discussions through voice commands, text-based chats, or both. It's a service backed by rules and, in certain circumstances, Artificial Intelligence that communicates with customers via various communication platforms. Chatbots are continuously in need of training and testing in order to meet the developers' ideal requirements. The goal of completing such a work was to have a better understanding of the importance of virtual assistants in the next years and how they will cause market disruption in a variety of industries. They have a wide range of uses in customer support, request routing, and data collection.

1.1.Purpose:

Healthcare chatbots boost operational efficiency and bring cost savings to businesses while offering convenience and added services to internal employees and external customers. It will provide information on the specific disease it asked on and respond accordingly. To help hospitals as well as doctors to save their time on minor problem so they would be free for patients who have more need for them and give 24x7 support to any minor problem for any users.

1.2 Objectives:

Chatbot should be able interaction with people instantaneously without any delay and provide at most accurate or answer which the users where looking for. For lessen the staff workload and to avoid unnecessary visits to doctors.

And to give a basic guide on treatment which not necessary require on any medical knowledge prior to the users. To also give more knowledge on cause on problems on their health as to keep them on the safer side for the future.

1.3 Scope:

The project can be applied in different industries such as banking, government, agriculture and each education to increase the engagement of the users as well as to provide a general knowledge on the website and acts question and answers section. It could also view as to be useful for students, teachers and parents in education medium as it would be able solve all basic or asked frequently queries at any time. It would be also be modified in task on everyday application for user usage in like booking of airplane or train and help in collect data on users to help them further to increase their products or application.

Chapter 2

Problem Definition

Nowadays more people visit the doctors for even minor infection or some people have no time to give a visit to doctors as it would not have match their timing of work. Due to this people tend to spent unnecessary money on the doctor visits and tests which tends to be a waste of time even for the patient and doctor.

Even if patients are able to visit the doctor they are not able to fully convey their problems and neglect to ask some personal problems which they came for thus not giving all the problems they face. Chatbot helps to be the messenger between the doctor and patients or even as play small part as doctor for people who just need to get better from basic flu and spread more awareness on new diseases easily as people use chatbot for talking on their free time.

Chatbot in healthcare would help to give basic precaution and awareness on new diseases like coronavirus and make people who use it safer. Also give an interactive experience to the user in a more engaging manner than searching on the internet

Chapter 3

Proposed System

Chatbot for healthcare will use Machine Learning technique like Natural Language processing to understand the user input and will predict output as per the trained model and response as per the best matching reply it find.

The Chatbot is trained before from the given data before it is consider properly functional. Mainly first a json files with tag, pattern and response is processed by the nltk to give us the array of each one of them then converting those into response and pattern into number by the converting it into bag of words and further processed in the model and train module. We developed a neural network model using pytorch and then train the model, after that model is trained then it is saved in data.pth torch format to be used when the chatbot is active.

3.2 Features and Functionality

1. Give response instantly – The Chatbot is able to provide response on the user input very quickly as possible.

2. Easy to understand User Interface – The Graphic User Interface on the chatbot should be clean and easy to understand able and have flexible display window of the chat.

3. Proper response – Chatbot is able to predict the response according to the user question as accurate as possible to give answer which are needed in engaging and interactive manner.

Chapter 4

Project Outcomes

The outcome of our project is to provide a chatbot in healthcare which should be able to response with correct response it process from the given input and satisfy the user with the given response of the asked statement. Offer as a place to any user a place to chat with some minor concern over their health and get a solution correspondingly without visiting doctor, thus also helping hospitals also on avoiding large appointment on minor problem but also save the user time and money in the long run.

Our goals is also to provide a simple and clean user interface on the chatbot so the user would easily able to reply and easily read the reply from the bot. Main part of the data is also that the response given by the chatbot as per the trained model should be with as accuracy as possible and as least possible misinformation on the healthcare awareness to any person needed.

Chapter 5

Software Requirements

Software Used –

- Python (greater than 3.6),

- Flask,

- Pytorch,

- NLTK (Natural Language Tool Kit),

- Numpy,

- HTML, CSS and JavaScript

- Any IDE which is able run python application.

Chapter 6

Project Design

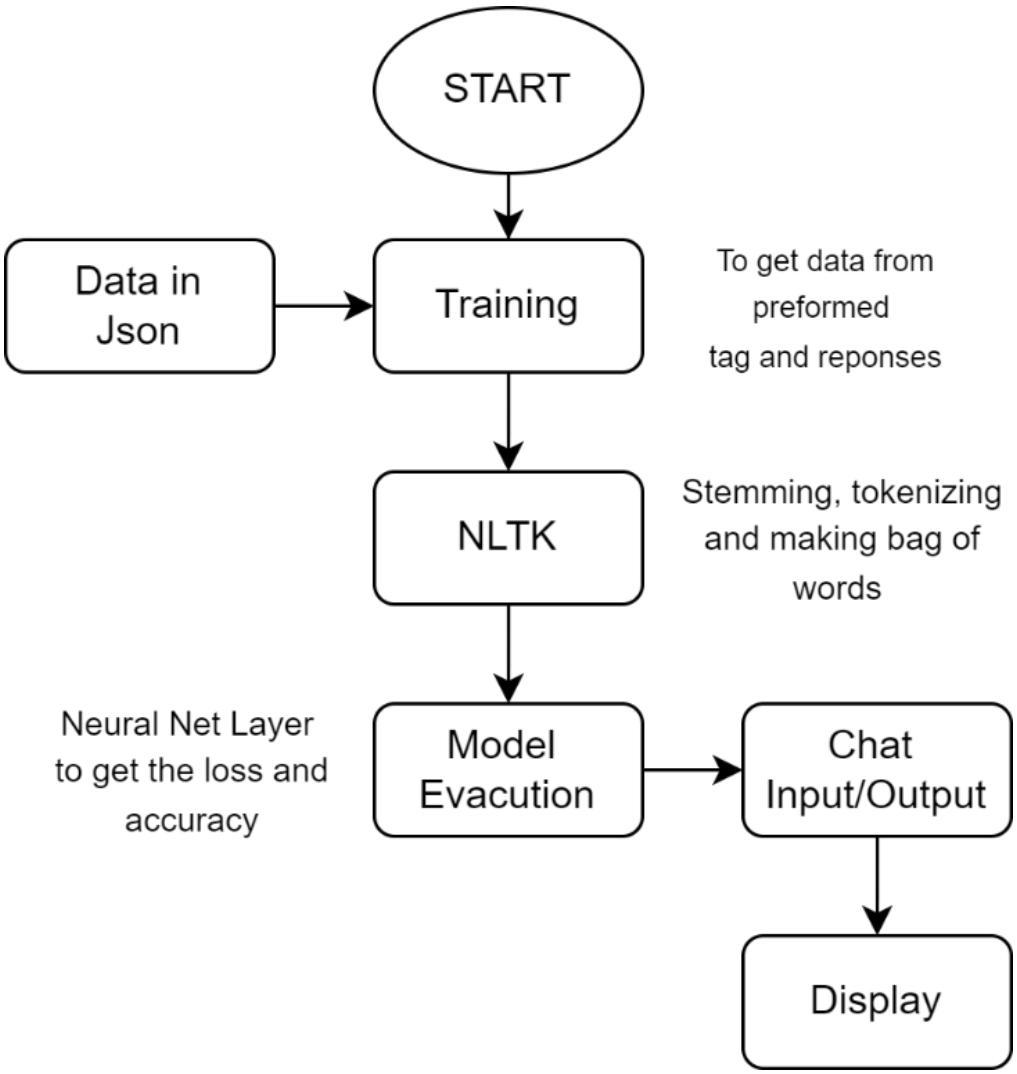

Figure: Flow of Modules

For our project the main machine learning code is done using python and using pytorch, numpy and nltk libraries. The flow of modules in our project is that at first we have to train the data which is available at intents.json which is consist of tags along with pattern and responses which the bot chooses from to give to the user. As for training the data first nltk tokenizes the tags, pattern and response and forms array and then stemming of porter type is done to the words, so that the words should be form of basic words meaning rather than any complex. So after all this words are made into bag of words so that words are converted into number as the model is not able to understand words.

Model is made on neural network layer so the processing of data gets as accurate result as possible with least loss possible in the prediction. Next process is to connect to the user interface which is made using HTML, CSS and JavaScript. The chatbot windows message inputted by the user are first processed and then a tag and pattern for the input matching as close as possible is chosen and response with a probability to the chosen to give response according to input and displayed along other side of the user window. The chatbot windows is also provide with auto scroll feature to avoid the user have manually scroll through the text window.

Chapter7

Project Scheduling Template

Sr. No	Group Member	Time duration	Work to be done
1	Kunal Shetty	1st week of February	Implementing 1st module/ functionality (*nltk.py/ By making on this module we were able make the input and output of words in array, by tokenizining and stemming and coverting it into numbers)*
		2nd week of February	Testing 1st module (*train.py/ By using intents.json we were able process the data and also train the model and get loss and accuracy*)
2	Omkar Bhoir	3rd week of February	Implementing 2nd module/ functionality (*model.py/ We build a neural network to predict and train and test model and get data preprocessed accordingly*)
3	Nilesh Virkar	By the end of march month	Implementing 3rd module/ functionality (*chat.py/Making the gui and connecting the different module to each other, and displaying the result as working chatbot*)

Chapter 8

Screenshot of Application

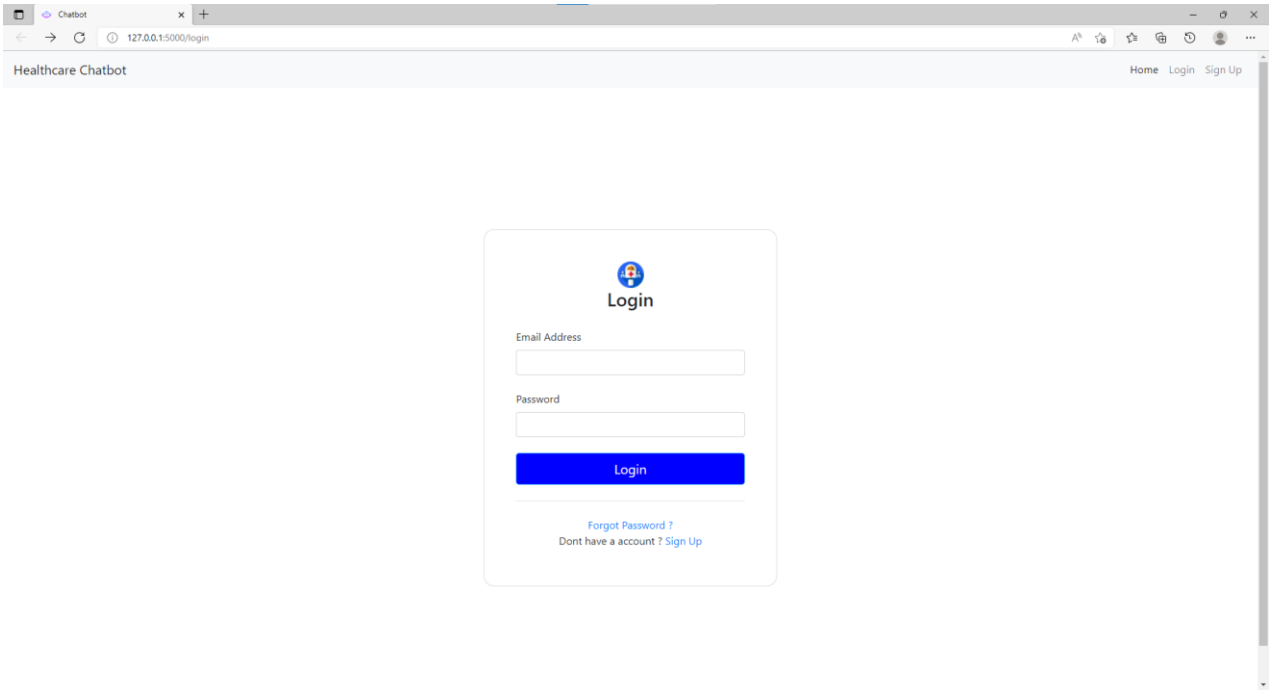

Figure: Login Page

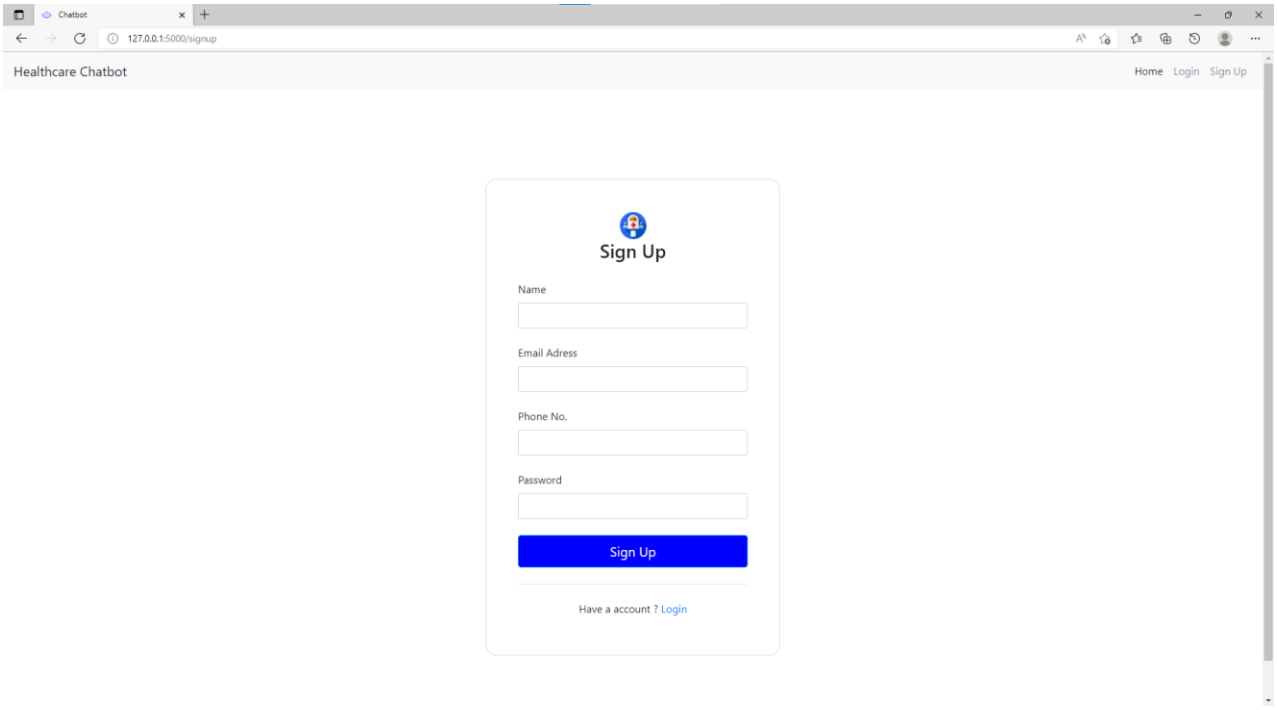

Figure: Register Page

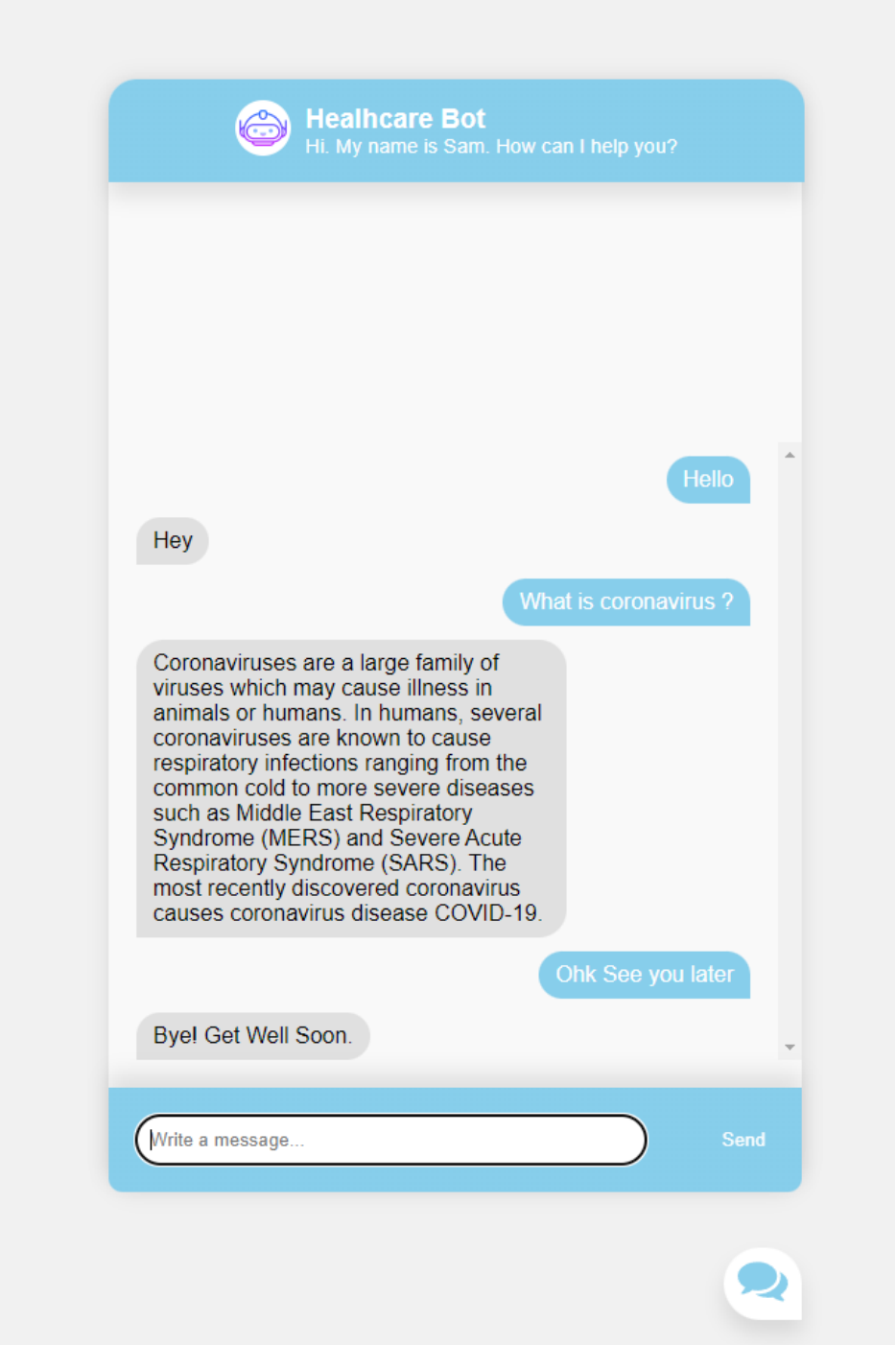

Figure: Main Page (Chat Window)

Chapter 9

Conclusion

Chatbot is a great tool for conversion and it’s developed to provide a quality of answers in easy and engaging manner. This project help us to understand training and testing of model along with response and pattern data processing for chatbot. It is also able to remove burden from the provider by directly the answer to the user using an expert system. It also will help in long term for users to save users time in consulting the doctors or experts for the healthcare solution.

Working on chatbot also is able us to provide brief exposure in the domain of Virtual Assistantship and how it will shape our lives in future. Chatbot are now becoming a main part of every enterprise from very large to small on getting the user interact with website in more than few ways to increase engagement on their website and also to give user more information of their product or services in interact manner while having user attention in larger span.

References

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