HEALTHCARE CHAT-BOT

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Abstract - Chat-bots can provide a gateway into the world where artificial intelligence is developing, particularly in the healthcare industry, where patients can quickly communicate their problems with a chat-bot and receive advice. The chat-bots are computer programs that converse in plain English with users.It stores and analyses the training models using machine learning and NLP approaches, allowing the chat-bot to answer to user inquiries more correctly and successfully when they are subject-specific. Natural Language Processing powers the functionality of medical chat-bots and allows users to submit issues related to their health. Healthcare chat-bots will never take the place of doctors. However, they offer a lot of chances for them to perform better or make their job easier.

Key Words: Machine Learning, Natural Language Processing , Deep Learning.

[I] Introduction

A chat-bot is a computer program that can communicate in natural language with users. Because of the large amount of information on the internet, chat-bots can deliver precise and effective information based on the user's needs. The healthcare industry has made great strides in recent years thanks to the usage of digital technologies including artificial intelligence(AI), machine learning(ML), and natural language processing(NLP). Chat-bots are one such technology that is steadily gaining popularity in the healthcare industry. A chat-bot is an AI-based tool that can communicate with users via text or speech. A chat-bot system that interacts with patients has been proposed. Patients are more likely to worry about their medications and other activities they use because of their medical conditions. A chat-bot is an application of software that can communicate with and learn from users. For user input and output to and from chat-bots, the great majority employ a graphical user interface (GUI) similar to that of a messenger. The chat-bot understands and responds to user remarks. A medical healthcare chat-bot is one designed specifically to provide patients with healthcare services. Wait times can be decreased, healthcare services can be more easily accessed, and overall patient satisfaction can be improved. A variety of medical functions, such as dispensing advice, managing chronic diseases, and prescribing medication, may be assisted by the chat-bot for patients. The use of natural language processing (NLP) and the Keras framework in medical chat-bots has opened up new options for the development of personalized and efficient healthcare services. Natural language processing algorithms can analyse and interpret natural language text messages, as well as extract relevant data. Keras is an open-source neural network library that provides an intuitive interface for developing and training machine learning models. Instead of calling an unknown person to receive a quick response, chat-

bots will be used. Quick responses are given to commonly requested queries by the consumer.

[II] Objective

The main objective of the system is to create a healthcare chat-bot that can diagnose illnesses and deliver basic information. A healthcare chat-bots goal is to provide users with personalized and timely health information, advice, and assistance. The chat-bot should be developed to assist users in better managing their health by delivering relevant information on symptoms, diseases, treatments, and medications. The healthcare chat-bot try to improve healthcare outcomes by allowing users to make informed decisions about their health and wellness, thereby assisting them in achieving a higher quality of life.Using a healthcare chat-bot will save healthcare costs while increasing access to medical information.

[III] Literature Review

[1] This paper indicate that chat-bots may be a beneficial tool in the field of health care for patient education, support, and counselling. More research is needed to discover the best successful chat-bot design and deployment in healthcare .

[2] The main goal is to provide proper information and medication for the chronic diseases and the help the user in every aspect possible.

[3] A chat-bot uses a question and answer protocol to answer users queries.This chat-bot is an attempt to help users understand their symptoms and obtain a basic diagnosis of the illness they may be suffering from.

[4] The NLP permits users to ask a query. The machine recognizes the relevant parts in the user's input that may be related to specific features in a data set and provides an answer. The stored information includes a text file with symptoms associated to a specific condition, from which we are able to predict the disease. The paper uses artificial intelligence to forecast disease based on symptoms and provides a list of available medical treatments.

[5] The pattern matching method is used in most Chat-bots and is frequently referred to as a response architecture based on coordinated types. Patterns can be generated by utilizing the logical operators AND, OR, and NOT.

Machine Learning

Machine learning enables a medical chat-bot to analyse and interpret natural language inputs and offer exact answers. ML can be used in either supervised or unsupervised reinforcement learning strategies. Although ML can improve a patient's access to healthcare services and support, moral issues must be addressed.

Tensorflow Keras

Keras and TensorFlow are two popular frameworks for building ML models, particularly medical chat-bots. Keras, a high-level neural network API, is built on TensorFlow, a free platform for designing and deploying machine learning models.

These libraries enable programmers to develop advanced machine learning (ML) models for medical chat-bots that can process massive amounts of data, detect patterns, and respond precisely to inputs in basic English. Furthermore, they provide pre-trained models and data preparation tools, which aid in the development process. However, keep in mind that the accuracy and dependability of these models are dependent on the quality of the training data.

Sequential model

A sequential model is a sort of neural network design in which data is handled in a sequential order of layers. Each layer in the series gets input from the previous layer and generates output that is fed into the following layer.

 Sequential models are useful in deep learning because they enable the model to learn complicated relations between input and output data, allowing it to generate correct predictions or classifications.

They are also reasonably simple to develop and implement, as the layers are added to the model one by one.

Tkinter

Tkinter is a Python framework for creating graphical user interfaces (GUI) for desktop apps such as healthcare chat-bots. It provides a set of widgets and tools for constructing windows, frames, buttons, text boxes, and other interactive elements that can be used to create a user-friendly interface for the chat-bot. Developers can create a unique GUI for the medical chat-bot using Tkinter, which can display patient data, chat history, and other relevant information. Patients can also use the GUI to communicate with the chat-bot and get answers to their questions. To ensure usability, keep in mind that the GUI's design should be thoroughly researched.

[IV] Implementation

Our Health-Care Chat-bot is a communication programme. Artificial Intelligence, Machine Learning, and Deep Learning Technologies are used in the Health-Care chat-bot. Python is the greatest programming language for implementing AI and machine learning technologies. To deploy the chat-bot on the web, the Tkinter Framework was used. The chat-bot makes use of a dataset that consists of various symptoms and disease kinds. The dataset was later cleaned, and the text fields were transformed to numerical form. The data will then be used to train the TensorFlow Keras model. SGD Optimizer was used to train the Classification Algorithms and machine learning models on the dataset; after training the models, we will predict the disease based on the input symptoms by combining the prediction models.This improves the safety and accuracy of our overall prediction. The disease will be predicted dependent on the comparison of the input symptoms to the symptoms in the dataset. This system includes an overview of the system architecture of a chat-bot healthcare application. The consumer types the query into the UI as text. The user enquiry is received by the UI and forwarded to the chat-bot programme .

Tokenization, where the words are tokenized, and feature extraction is based on n-gram, TF-IDF, and cosine similarity, are among the literary experiences per-processing methods in the chat-bot application. The question answers are recorded in the knowledge database in order to obtain the answer. Healthcare chat-bots now appear to be a hybrid of patient-only and patient-clinician applications.

[V] Conclusion

The suggested method is an efficient, low-cost, simple, and quick approach for patients to have a one-on-one interaction with the Chat-bot that supports and assists them in taking effective care of their health. Users are able to use the Chat bot to express their symptoms and receive treatments from the bot. The project was developed for the user to save time whereas visiting specialists or doctors for medical services. We used machine learning in developing this application. This chat-bots future potential is tremendous. This chat-bots smartness and intelligence can be strengthened by performing additional research and expanding the database so that Chat-bot can answer any sort of query concerning any type of disease. The system can be accessed from anywhere and at anytime conveniently. The chat bot is available 24/7.

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