Chatbot for Pregnant Women

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Abstract: With a significant paradigm change affecting diagnostic procedures, medication research, health analytics, interventions, and much more, artificial intelligence is revolutionizing healthcare. In this work, we concentrate on the use of AI-based chatbot systems, mostly based on machine learning techniques and Natural Language Processing, to comprehend and respond to patient and family demands. In specifically, we provide an application scenario for a chatbot that supports expectant mothers and families with young children by offering assistance and guidance when appropriate. Medical services are essential to human survival, despite the fact that they typically have minimal funding. Modern technology is used to improve service capability and save operating costs. Medical services can use auto-response systems, which are common in the world of online commerce.

Keywords **. Natural language processing, Machine learning, and chatbot.**

1.INTRODUCTION

Among the top three most popular mobile trends in the US is healthcare. According to a recent research, US consumers who own smartphones or other wireless devices have at least one health/fitness app on their phones (up 16% in the last two years), and in general, health apps receive some of the most downloads. A smartphone app would be used by two-thirds of women to address health-related issues. For Europe, similar developments are anticipated. Due to this and other factors, smart phones and wearable technology are increasingly coming with sensors and apps that can capture significantly more data about a person's health and fitness than previous generations of medical devices could. Correspondingly, a plethora of free and premium medical apps have been developed, with a variety of purposes and usage (e.g. drug dosage, medicine recommendations, symptoms diagnoses, etc.).

This allows us to link patients with medical facilities, improve adherence to medication and health monitoring regimens, manage chronic conditions, provide educational materials, and stop the spread of infectious and sexually transmitted diseases. Therefore, the spread of mobile devices to support medical and public health practises, known as mHealth, has the potential to increase accessibility and to support shifts towards prevention by making access to healthcare more equitable. This is supported by a number of indicators: for instance, in Europe, up to 50% of adults search online for health information; additionally, according to the tech giant's calculations, of the 40.000 searches that are made, 20,000 are for health-related terms.

As a result, the goal of this work is to use chatbot technology to build the medical consultant system service. In this project, our main goal is to understand and meet the needs of patients and their families by utilising AI-based chatbot systems, which are primarily built on machine learning algorithms and Natural Language Processing. In specifically, we outline a use case for an AI-chatbot that supports expectant moms, new mothers, and families with young children by offering assistance and guidance when appropriate. In this project, we are creating a CHATBOT application that enables expectant mothers to receive clarification on any questions they may have. This project was created using the NLP (natural language processing toolkit) and the LSTM machine learning algorithm (Long Short-Term Memory). LSTM will be trained with all potential questions and answers, and whenever a user asks a question, LSTM will anticipate an answer and give it to the chatbot so that the user may see it. While there was no publicly accessible dataset for training LSTM, we collected some questions and answers about pregnancy from the internet and saved them all as a dataset.

2.LITERATURE REVIEW

Comparative study of cloud platforms to develop a Chatbot:

There were only bots before chatbots: The development of chatbots ushered in a new age of technology known as conversational computing. A

chatbot is a computer program that, through interactive text conversion, can converse with any human being. There are several cloud-based systems available today for creating and deploying chatbots, including Microsoft Bot Framework and many more, however all of these methods have some disadvantages, such as integrated artificial intelligence, natural language processing, etc. This study compares all cloud-based chatbot solutions while keeping in mind limitations like built-in AI, setup and finish times, complexity, and others. Eventually, we will learn from the comparison whether cloud platform is effective and appropriate for constructing chatbots.

Facebook chatbot for Health Information on HIV/AIDS:

We demonstrate the use of an autonomous chatbot that is installed on Facebook and provides responses to numerous inquiries about HIV/AIDS and sexual health. To give users trustworthy information, the chatbot's response database is built from expert medical and public health sources. To our knowledge, this is the first retrieval-based chatbot to be implemented on a significant public social network. The system's backend is NPC Editor, a response selection platform trained on connected questions and replies.

A survey on web conversational BOT design: Human-Computer The use of speech for computer interface is growing. Discourse-based web crawlers and assistants, like Siri, Google Chrome, and Cortana, have recently become more prevalent. NLP techniques, such as NLTK for Python, can be used to decipher speech, and responses can be discovered by designing an engine to provide relevant human-like responses. The focus of this study is a Chatbot, a type of project of this nature. This paper offers a study on the methods used to create chatbots and compares various configuration systems from thirteen carefully selected papers according to the main methods employed. These papers provide as examples of the significant advancements made in chatbots during the past ten years.

Sanative Chatbot For Health Seekers:

Nowadays, consumers are more likely to look for knowledge or information online about health-related topics through online healthcare services. This system's primary goal is to overcome the language gap between patients and healthcare professionals by providing quick responses to questions asked by patients. Because they are dependable and offer immediate responses, autogenerated material for the healthcare industry is preferred to conventionally generated systems. What needs to be done to address the issue is a significant issue taken into account here. The inputs to the system are recognised and the system is seen as a whole. The analyst has a clear concept of what has to be done once analysis is complete. This article suggests a method for coding medical records that combines local mining with global strategies. By removing the medical ideas from each individual record and then mapping them to terminologies based on external authorised vocabularies, local mining tries to code the medical records. Global learning spreads precise terminologies among underlying related records in a big collection and seeks to learn missing important concepts.

Pharmabot - a pediatric generic medicine consultant chatbot:

In the study, a chatbot paediatric generic medicine consultant named Pharmabot is introduced. It is a conversational chatbot that can recommend, prescribe, and provide details about generic medications for kids. In the study, a computer program is introduced that serves as a medicine consultant for patients or parents who are uncertain about generic medications. In order to get the intended outcome in their study, the researchers employ Left and Right Parsing Algorithm.

3.METHODOLOGY

When patients are requested to fill out forms or respond to a set of questions using a prepared set of answers, they may experience a dehumanising interaction. Patients get more frustrated as a result since they are unable to completely convey their feelings, concerns, and sufferings. By the use of chatbots, patients can feel more at ease by avoiding the bias inherent in machine interactions. A third of all fatalities are attributable to cardiovascular disease (CVD), which is a primary cause of death worldwide. Early risk assessment is essential for CVD prevention. Several prediction models have been created over the past 20 years. Yet, each of these models had its own flaws and drawbacks.

Thus, it was imperative to create a trustworthy heart disease prediction system.

Drawbacks:

1. The replies given existing forms and applications are dehumanized and robotic.
2. The data trained in existing system can be faulty or not verified.
3. These old mode of query solving solutions take time to find the answers to the queries of the users.
4. The accuracy is low.

In this paper, we are creating a CHATBOT application that enables expectant mothers to receive clarification on any questions they may have. This project was created using the NLP (natural language processing toolset) and the LSTM machine learning algorithm (Long Short Term Memory). LSTM will be trained with all potential questions and answers, and whenever a user asks a question, LSTM will anticipate an answer and give it to the chatbot so that the user may see it. A third of all fatalities are attributable to cardiovascular disease (CVD), which is a primary cause of death worldwide. Early risk assessment is essential for CVD prevention. Several prediction models have been created over the past 20 years. Yet, each of these models had its own flaws and drawbacks. To help people predict their medical conditions, it was therefore imperative to design a trustworthy heart disease prediction model with high accuracy. While there was no publicly accessible dataset for training LSTM, we collected some questions and answers about pregnancy from the internet and saved them all as a dataset.

Advantages:

1. Assistance on time from any place.
2. Chatbot helps to get answers quickly in a humanoid way.
3. All the data set trained to the bot will be cross checked to avoid spreading wrong/fake answers.
4. Chatbot will be active every minute of the clock to help in query solving
5. The feedback given by the bot will be similar to that off a doctor, as well we are going to only use dataset that verifies by doctors

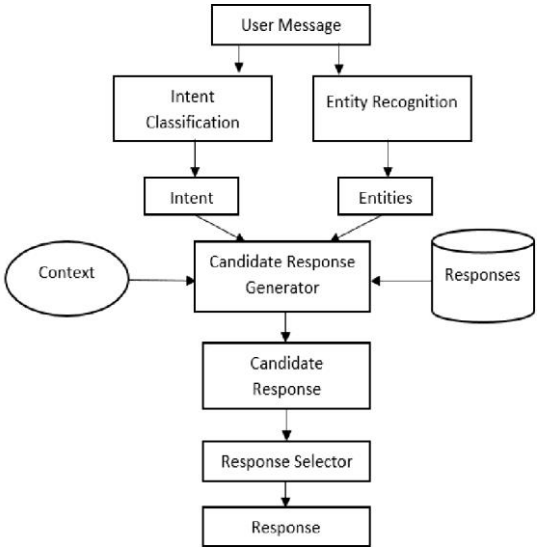

Fig.1: System architecture

MODULES:

We developed the modules listed below in order to carry out the aforementioned project.

- Tke the input from the user
- Analyze the users input given to the chatbot
- Identify the Internts and Entities
- Find the accurate solution from the Database
- Compose the solution in humanoid manner
- Display the solution to the user

4.IMPLEMENTATION

Long Short Term Memory algorithm:

A recurrent neural network called an LSTM network uses LSTM cell blocks rather than the typical neural network layers. The input gate, forget gate, and output gate are three different parts of these cells. RNNs are adept at handling sequential data, but they struggle with distant context. Intentionally, LSTMs are created to prevent the long-term reliance issue. The problem of the Vanishing/Expanding Gradient is likewise solved using LSTMs. They don't struggle to learn; rather, remembering information for extended periods of time is basically their default behaviour. All recurrent neural networks have the shape of a series of neural network modules that repeat. This recurring module in typical RNNs will be made up of just one tanh layer, for example. Bidirectional recurrent neural networks (BRNNs) work on the principle of feeding each training sequence into two independent recurrent nets, both of which are connected to the same output layer. (In certain circumstances a third network is used in place of the output layer, but here

we have used the simpler model). This implies that the BRNN has comprehensive, sequential knowledge of all points before and after each point in a given sequence. Moreover, there is no need to identify a (task-dependent) time-window or goal delay size because the net is free to use as much or as little of this context as is required. An LSTM has a hidden state, similar to a simple RNN, with H(n-1) standing for the hidden state of the prior timestamp and Ht for the hidden state of the present timestamp. Moreover, the LSTM has a cell state that is denoted by C(n-1) and C(n), respectively, for the prior and present timestamps. Here, the cell state is referred to as Long Term Memory, while the hidden state is referred to as Short Term Memory. The primary distinction between LSTMs and RNNs may be noticed in the fact that the gated unit or cell is the hidden layer in LSTMs. It has four layers that interact with one another to produce the cell's output and state. Both of these are carried over to the following layer. In contrast to RNNs, which have a single Tanh-based neural net layer, LSTMs have three logistic sigmoid gates in addition to a Tanh layer.

The idea behind the LSTM architecture is to add a module that learns when to remember and when to forget important information to a neural network. To put it another way, the network efficiently learns which pieces of information might be needed later on in a sequence and when those pieces of information are no longer required. For instance, the network can learn grammatical connections in the context of natural language processing.

Natural Language Processsing:

The chatbot must be able to comprehend the sender's objectives, decide whether a follow-up question or a direct response is necessary, and adhere to proper grammatical and lexical rules when creating the response. Certain models might make use of extra meta data from the data, like speaker id, gender, and emotion. Sentiment analysis is sometimes used to give a chatbot the ability to "understand" the user's mood by examining language cues and phrase structure. Virtual agents that are NLP-powered and part of the current generation of chatbots continually learn new things. Throughout the dialogue, they maintain notes and pick up new information. Your virtual agent should be configured as simply as possible, with the features you require but no moreto get the most out of it. Of course, there is always the option to upgrade or add new features as necessary in the future.

The NLU unit is in charge of translating the user's speech into a specified semantic frame in accordance with the system's standards, or in other words, into a format that the system can understand. Intent detection and slot filling are tasks included in this. For instance, intent could be a greeting, such as Hello, Hi, or Hey, or it could be informational, such as I adore Indian food, where user is providing more details. The actor's name, cost, start time, destination city, and other details of slots may be significantly varied depending on the customers' desires. As we can see, the intents and slots define Chatbot's closed-domain characteristics. However, NLG based on a semantically controlled LSTM recurrent network can learn from unaligned data by jointly optimising its surface realisation and sentence planning components using a simple cross entropy training criterion without any heuristics, and good quality language variation is obtained simply by randomly sampling network outputs.

Fig.8: Screenshot of response to

Fig.7: Screenshot of response to

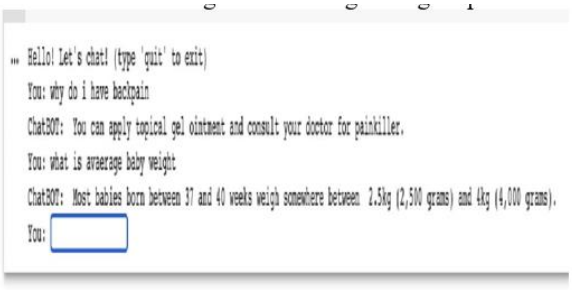

Fig.6: Screenshot of response to query

Fig.5: Chat bot greeting response

Fig.4: Chat bot greeting response

Fig.9: Screenshot of response to

5.CONCLUSION

In this study, a Chabot for Pregnant Women was suggested. Medical services are basic needs for human life although they normally have limited resources. Modern technologies are utilized for increasing service capability and decreasing the operation cost. Auto-response system or chatbot, which is widely known in the field of online businesses, can be applied to the medical services. Therefore, the objective of this work is to implement the medical consultant system service by using chatbot Technology One of the top three mobile trends in the US is healthcare. According to a recent research, US consumers who own smartphones or other wireless devices have at least one health/fitness app on their phones (up 13% in the last two years), and in general, health apps receive some of the most downloads. A smartphone app would be used by two-thirds of women to address health-related issues. In particular, we describe an application scenario for an AI-chatbot delivering support to pregnant women, mothers, and families with young children, by giving them help and instructions in relevant situations. The review comes to a close with a conclusion that examines the objectives and research questions, summarises the major points of the debate, and lists the solutions that were discovered. The research objective was to further the creation of healthcare chatbots by examining and compiling the existing studies. This would be accomplished by determining the chatbot's potential applications in the healthcare sector and whether it could function independently or whether additional technology was needed to add pedagogical value to schooling.

6.FUTURE WORK

The major goal of our product is to serve a large audience globally, hence we would like to update the Chabot by making it more linguistically compatible. Even although our project's accuracy is close to 100 percent, we can try to further enhance the dataset with time and more sophisticated technology. We want to further enhance the training process by giving more datasets because the publically accessible datasets are quite old and relatively little. The time it takes to forecast the results can be further decreased with the availability of cutting-edge gear. Also, we intend to enhance the GUI (graphical user interface).

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