AI Course

Team Project Final Report

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| Tony ChatBot |

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BotHut

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1. Introduction

1.1. Background Information

It all started when Alan Turing published an article named “Computer Machinery and Intelligence” and raised an intriguing question, “Can machines think?” ever since, we have seen multiple chatbots surpassing their predecessors to be more naturally conversant and technologically advanced. These advancements have led us to an era where conversations with chatbots have become as normal and natural as with another human..

Chatbots are also known as chatter bots. A chatbot is developed with the help of AI (ArtificialIntelligence) application. It gives permission to humans to interact with digital devices as if theywere communicating with a human being. AI chatbots employ machine learning, an AI capability that allows bots to become smarter overtime as they are used. AI chatbots are a natural match for customer service because of this.Chatbots use digital instant messenger to communicate with people and can be integrated into avariety of applications and websites.

A chatbot is a software or computer program that simulates human conversation or "chatter" through text or voice interactions. Users in both business-to-consumer (B2C) and business-to-business (B2B) environments increasingly use chatbot virtual assistants to handle simple tasks

1.2 Motivation and Objective

As we have see in daily life the chatbox has been a very attractive tool for many websites our objective is to make such an attractive chatbot with few interesting features

It’s objectives is to chat with the user along with giving the customer the standard responses like what is the time, weather based on their location and giving the news highlights if asked. Then providing the human like reactions like thanking, exclamatory and playing jokes. The main event of this chatbot is this must be able to give responds not only to the text by for voice also.

1.3 Members and Role Assignments

J.Ravi Kiran – idea, source, coding, coordinating

G.Srihari – coding research

Vinay – code implementation

G.Salamulla–code for deployment and style

Praveenpaul – implementation and input errors.

The work has be shared among irrespective of ratios and proportions of work details and work load we co-ordinated ourselves with our free time and out schedules then made the process steadily.

1.4 Schedule and Milestones

|  |  |  |  |
| --- | --- | --- | --- |
| Date | Topic worked | Bugs/Difficulties faced |  |
| 4th Oct | Package installation |  |  |
| 5th Oct | Data processing, Training & Modelling | Kind of activation to use, ‘No module named 'tensorflow.optimizers'’ |  |
| 7th Oct | Start of predict,def speak engine &function, def wiki for search, | Errors in enumerate the results, ‘speech recognition time limit’, intent not found |  |
| 10th Oct | Defined features like songs, news, time, weather, and exit function, def response | newsapi is not responding, weather api is not found, voice input is not taking |  |
| 13th Oct | Def create note, add todo, show todo, timer,coviddeaths | Error in recognizing the voice for note |  |
| 17th Oct | Open browser, jokes, screenshot, search, play song in youtube, spelling correction, | Unable the display or speak the text as it is shown in terminal |  |
|  |  |  |  |

2. Project Execution

2.1 Data Acquisition

The data that will be used in the chatbot is in the form of json which will be in tag-pattern-response format.

The data will be names intent.json file and all the responses will be getting from this file and the questions or the request must be in one of the form in the pattern and then the words.pkl and classes.pkl will be formed made in the form of an array and they will be used or called during the training

2.2 Training Methodology

* The chatbot will be trained on the dataset which contains categories (intents), pattern and responses. We use a special recurrent neural network (LSTM) to classify which category the user’s message belongs to and then we will give a random response from the list of responses.
* The project requires you to have good knowledge of Python, Keras, and Natural language processing (NLTK). Along with them, we will use some helping modules which you can download using the python-pip command.
* We will make **train\_chatbot.py** – In this Python file, we wrote a script to build the model and train our chatbot.
* In create our training data first we will create an empty array for our output *“training = [ ]”*
* Then we will initialize our bag of words and take the list of tokenized words for the pattern and lemmatize each word - create base word, in attempt to represent related words the then we append the words to the bag array if the word match found in current pattern

*“for w in words:*

*bag.append(1) if w in pattern\_words else bag.append(0)”*

* Shuffle our features and turn into np.array
* Create train and test lists. X - patterns, Y – intents

*“train\_x = list(training[:,0])*

*train\_y = list(training[:,1])”*

2.3 Speech Recognition

* This is done using python speech recognition and pyttsx3 library
* First the engine will be set along with the properties for the voice of system
* The speak function is defined using the speech engine.

3. Results

3.1. Data Preprocessing

* The data file is in JSON format so we used the json package to parse the JSON file into Python.
* Intents.json – The data file which has predefined patterns and responses.
* Then we tokenize the pattern and append the words to an array

*w = nltk.word\_tokenize(pattern)*

*words.extend(w)*

* Then add documents in the corpus and then add to our classes list
* Finally by using *“pickle.dump”* we will place the words & classes onto words.pkl & classes.pkl respectively.

3.2 Modeling

The modeling is done using sequential method using relu and softmax activation for the training dataset along with setting the droprate and then using an keras adam optimizer the model shall be compiled with a matrics on accuracy then the model shall be epoched to 200 batches with a batch size of 10. Finally the model will be saved with a .h5 type.

3.3 User Interface (Interface).

The interface for this chatbot will be in two phases the fully developed backend code which will be running on the terminal and the responses as well as the input are also taking in the terminal itself. And the other phase will be that the chat will be deployed on the website which will be accomplished with the help of javascript and the website will be a basic html formal which will be focusing only on the chatbot and nothing more.

4. Projected Impact

4.1. Accomplishments and Benefits

1. It can chat with you. Try asking me for jokes or riddles

2. It can date and time

3. It can wikipedia search for you.

4. It can get the present weather for any city.

5. It can get you the top 10 trending news in India.

6. It can get you the top 10 trending songs globally.

It can also speak the results that are printed in text as it can take the voice input also.

4.2 Future Improvements

In further development of this chatbot we can try linking the program to a well sourced server incase of no answer for the user. And making it well working in the website without any trouble or bugs for a better user experience.

If we can make this act like more human then the user shall gradually be accustomed and may even consider this Tony chatbot as a companion as it can both display the text and speak.