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AI COMMON SENSE AND IT'S FEATURES

1. INTRODUCTION

1.1 BACKGROUND :

In this project we attempted to create a system that not only accepts finite set of data provided by the user for their purposes, but also tries to understand the data fed into the machine. To develop a complete package of AI Common Sense is not only impossible but also tedious or hectic. So, to demonstrate our project we come up with several modules that can facilitiate human interaction with machines. With the help of these modules, common sense can be generated and further developed. Introducing new modules for the project forms the part of the whole package and so we realized that these modules are the building blocks of AI Common Sense as these forms features that are much needed for a successful approach towards implementation.

1.2 MOTIVATION :

As we dwell in the natural order of the world, we see that humans have natural tendency to acquire Common Sense right from their birth. We give less importance to the fact that if a person lack Common Sense he or she is much likely to think like a robot or a machine. Common Sense is such a wonderful gift that humans possesses. So, we came up with an idea to test our knowledge and try to replicate this special gift with our programs as far as we could. After thorough research we found that this project could be much valuable than we supposed. This sense (if practicable) is implemented in a system will perform marvellous task that humans can possibly think of. This project has the ability to revolutionize the way we expect responses out from a robot or a machine and so we started to build our project as simple as it could be.

1.3 **OUTCOME :**

The implemented software can open the application (if it's installed in the system), search Google, Wikipedia, YouTube, etc. Calculate the mathematical question by the just giving the command. We can process the data how we code things. Sometimes the term "Chatbot" is used to refer to virtual assistants generally or specifically accessed by the online chat. In some cases, online chat programs are exclusively for entertainment purposes. Some are able to interpret human speech and respond via synthesized voices. Users can ask their questions and media playback via voice, and manage other basic tasks such as email, to-do lists, and calenders with verbal commands. A similar concept, however with differences, lays under the dialogue systems.

1.4 **GOALS AND OBJECTIVES :**

Based on humans' common sense, our goal in this project will be to build and utilize a large commonsense knowledge base from the contributions of many thousands of people across the Web. In artificial intelligence research, commonsense knowledge consists of facts about the everyday world, such as "Lemons are sour", that all humans are expected to know. It is currently an unsolved problem in Artificial General Intelligence. Common sense knowledge also helps to solve problems in the face of incomplete information. Using widely held beliefs about everyday objects, or common sense knowledge, AI system make common sense assumptions or default assumptions about the unknown similar to the way people do. Also, the objective of our project is to let the machine decide what type of data it is, what type of response to be generated at a particular query, etc according to the modules designed.

2. DESCRIPTION OF THE MODULES

2.1 Speech Recognition :

Objective of the speech recognition is to identify the voice, its way of speaking and also to identify the order/ wish of the master and to search the following thing ask and to make the work of master easier.

2.2 Audio to Text :

Objective of the audio to text is to speak the searched information and to make the work of master easier.

2.3 Noise Reduce Master :

Objective of the noise reduce master is to identify the noise in the respective surrounding and to make sure that the noise will not interrupt the master voice.

2.4 Chatbot :

Objective of the chatbot is to merge all the codes and situations according to the search list of the master and to hear it properly to give the best result out of it.

2.5 Text Summarizer :

Objective of the text summarizer is to summarize the text taken from a website and to give the summary of the same.

2.6 Graph :

Objective of graph is to plot the data searched by the master according to the history, saved item and bookmarks.

3. DIVISION OF WORKS

I.) <u>Speech Recognition</u> :

i.) Audio to Text

ii.) Chatbot

- Done by Manish Bajagai

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iii.) Noise Reduce Master

iv.) Common Sense Questions

- Done by Adwait Verma

I.) Speech Recognition is an interdisciplinary subfield of computational linguistics that develops methodologies and technologies that enables the recognition and translation of spoken language into text by computers.It is also known as automatic speech recognition (ASR), computer speech recognition or

speech to text. It incorporates knowledge and research in the linguistics, computer science and electrical engineering fields.

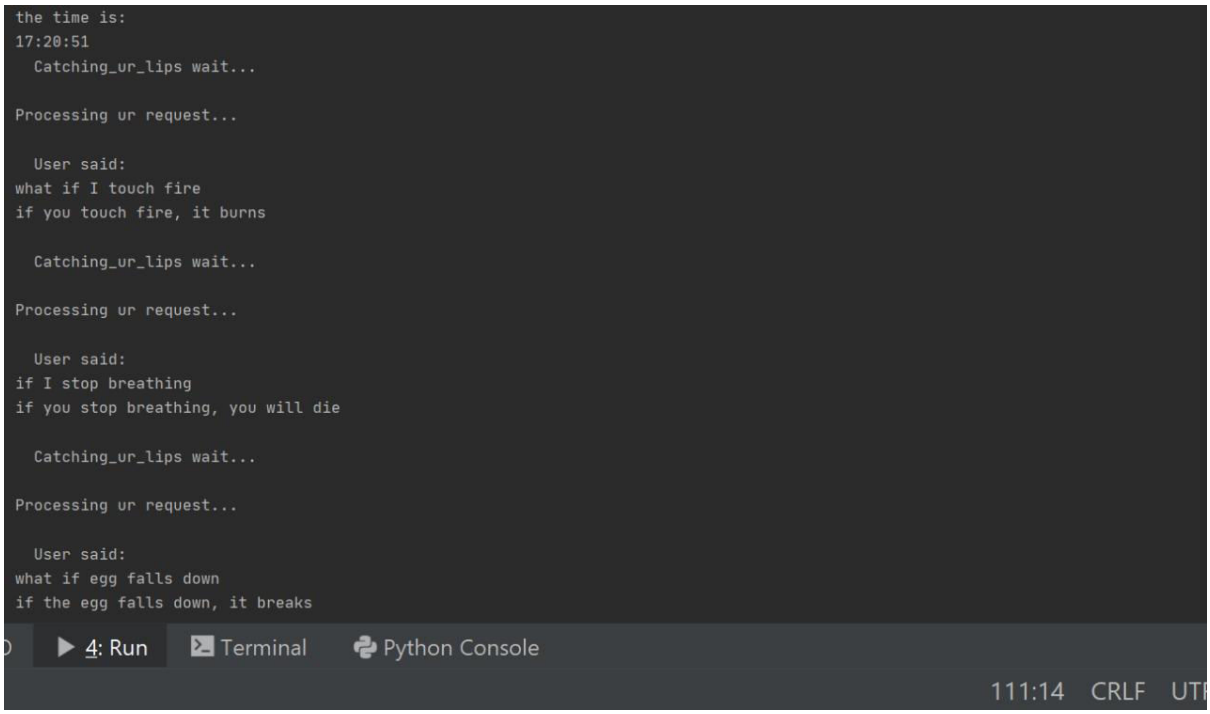
We used Speech Recognition module for the purpose of input and output. Also named chatbot, it uses this module so as to get commands or input. This module uses microphone of our laptop as source and following the query or the question asked response will be generated. Output will be in the form of voice defined as per the module which can also be printed onto the screen of our console or the machine.

I. i.) Audio to Text : Audio to text is the artificial production of human speech. A computer system used for this purpose is called a speech computer or speech synthesizer, and can be implemented in software or hardware products. A audio to text converts normal language text into speech; other systems render symbolic linguistic representations like phonetic transcriptions into speech.

ii.) Chatbot : The chatbot is used to merge all the codes and situations according to the search list of the master and to hear it properly to give the best result out of it. They generally use natural language processing (NLP) to match user text or voice input to executable commands. Many continually learn using artificial intelligence techniques including machine learning.

iii.) Noise Reduce master : Noise Reduce Master is a method for reducing unwanted sound by the addition of a second sound specifically designed to cancel the first. Sound is a pressure wave, which consist of alternating periods of compression and rarefaction. A noise-cancellation speaker emits a sound wave with the same amplitude but with inverted to the original sound. We want our microphone to attend to ambient source.

iv.) Common Sense Questions : In the query line we added some basic common sense questions that are raw inputs, yet unanswered by traditional or modern assistants like siri, google assistant,etc.



II.) <u>Text Summarizer</u> :

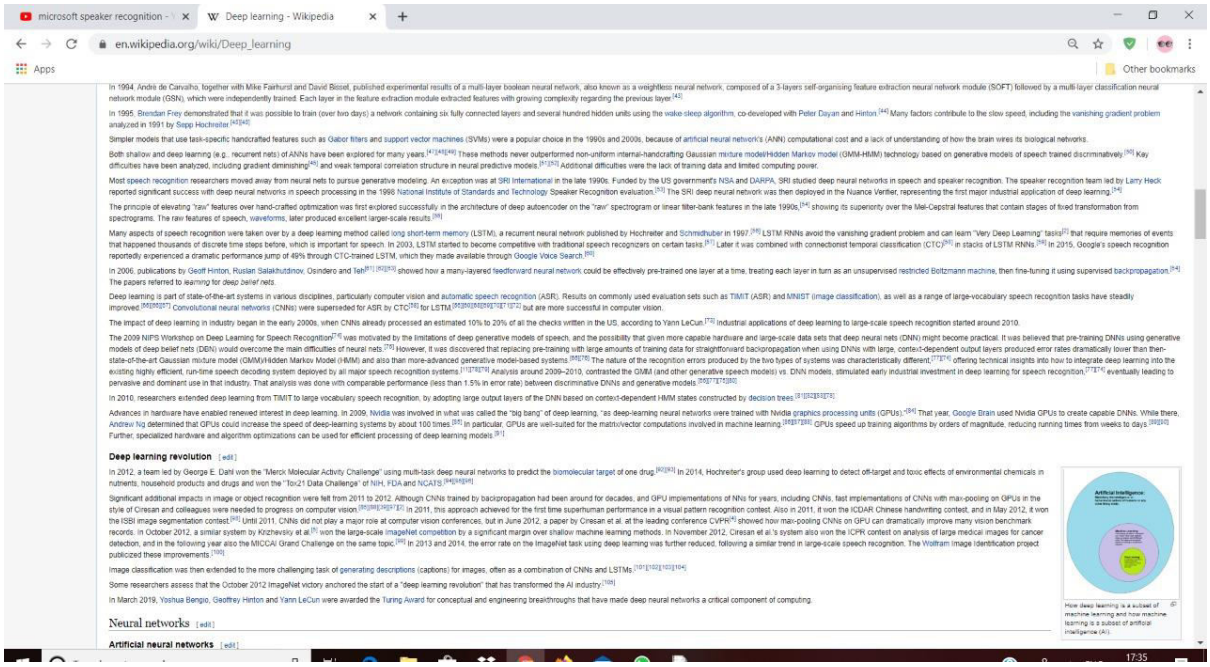
- Done by Shivraj Kumar Singh

Text Summarization refers to the technique of shortening long pages of text. The intention is to create a coherent and fluent summary having only the main points in the document. Automatic text summarization is a control problem in machine learning and natural language processing.

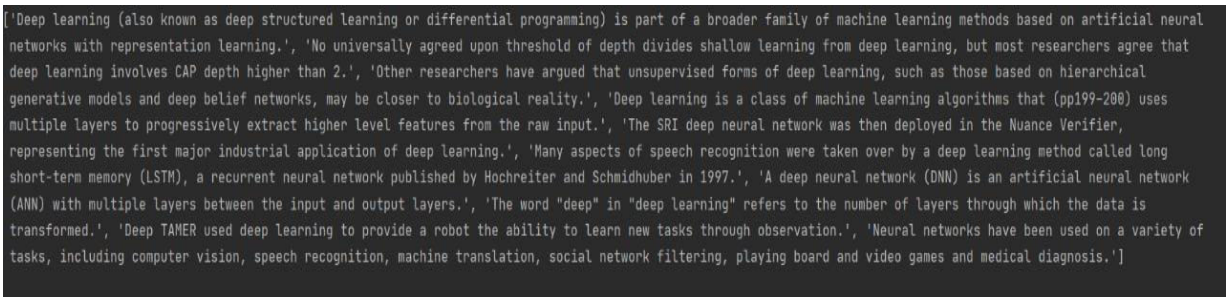
Modules-:

1. Scrapping of contents using the urlib module.
2. It involves cleaning up the data from extra spaces, quotations, numbers using the re module.
3. Tokenizing the data-: this phase uses the nltk module and the methods word_tokenize and sent_tokenize which tokenizes the sentences.
4. This is the final phase and we use the logic of word frequency and weighted word frequency of which is calculated using the maximum no of word and with this a sentence score is calculated using which the summary is computed using a heap function.

USED-: Data structures used heapq and dictionaries.



Picture : Unsummarized

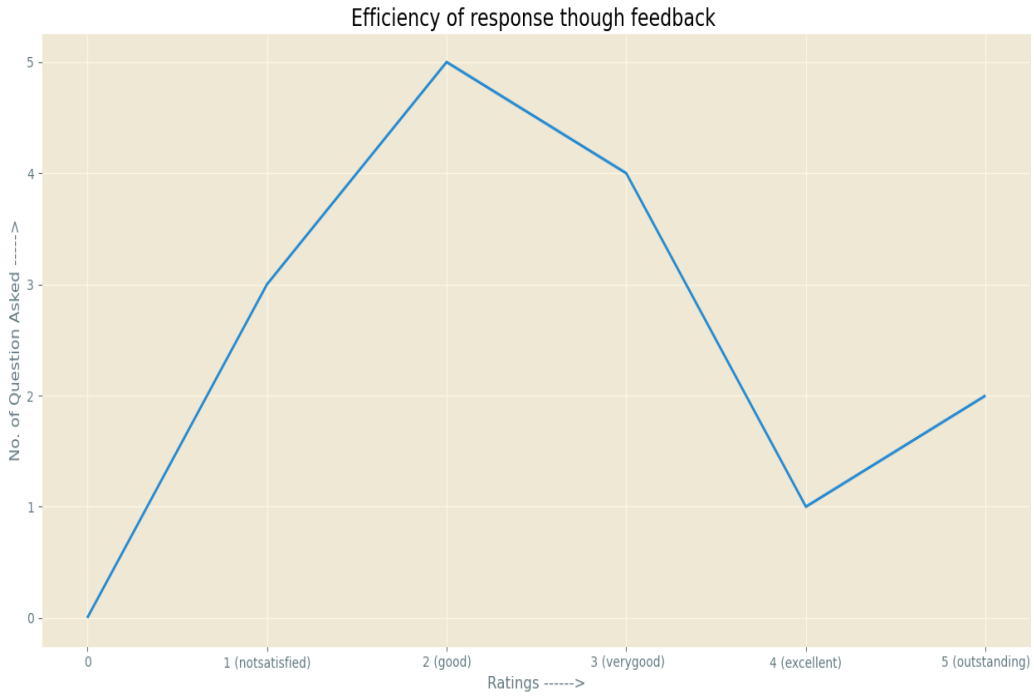


Picture : Summarized

III.) <u>Response Graph</u> :

- Done by Harsh Rai

In its essence, a graph is an abstract data type that requires two basic building blocks: nodes and vertices. A graph utilizes the basic idea of using vertices to nodes. In terms of applications, many real world relationships are best modeled using graph structures. In this project we used graph to measure the scalability or efficiency of the response provided by the machine. After every response we prompt the user to rate the quality of the response. Using this rtings or the values we form graph to easily visualize our productivity of the result.



4. TECHNOLOGIES AND FRAMEWORK USED

- Python Programming Language
- Atom Idle or Python Idle
- speech Recognition Modules
- matplotlib
- sapi5
- pyttsx3
- datetime
- wikipedia
- webbrowser
- os
- urlib
- bs4

- re
- nltk
- heapq

5. CONCLUSION

- <u>SWOT Analysis</u> :

<u>STRENGTH</u>	**<u>WEAKNESS</u>**
➢ Aid to incomplete information ➢ Simple and effective ➢ Low cost ➢ Easy to use and install ➢ Improved human interaction with robots or machine ➢ Minimizes Search Results	➢ One Request at a time ➢ No multiple users allowed ➢ Search results are effective only when device is connected to internet (online) ➢ Effectiveness of the results requires human interactions
<u>OPPORTUNITY</u>	**<u>THREAT</u>**
➢ Several other modules can be further added or developed like story feeding and testing ➢ Ability to tap on different geographical markets with different languages ➢ Training and professional Development for Product Design and networking	➢ Dependencies are pre-requisite that are to be installed first, to run the program ➢ Integration of several modules to form a complete package ➢ Complex situation requires complex definition that are not easy to implement