K.D.K. COLLEGE OF ENGINEERING, NAGPUR

DEPARTMENT OF COMPUTER TECHNOLOGY

"AI Based Voice Assistant Using Python"

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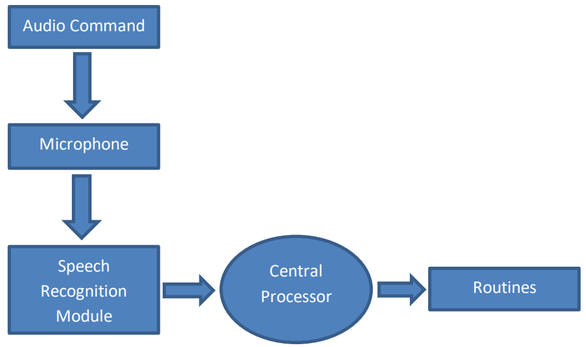
Abstract: Artificial intelligence technologies are beginning to be actively used in human life, this is facilitated by the appearance and wide dissemination of the Internet of Things (IOT). Autonomous devices are becoming smarter in their way to interact with both a human and themselves. New capacities lead to creation of various systems for integration of smart things into Social Networks of the Internet of Things. One of the relevant trends in artificial intelligence is the technology of recognizing the natural language of a human. New insights in this topic can lead to new means of natural human-machine interaction, in which the machine would learn how to understand human's language, adjusting and interacting in it. One of such tools is voice assistant, which can be integrated into many other intelligent systems. In this paper, the principles of the functioning of voice assistants are described, its main shortcomings and limitations are given. The method of creating a local voice assistant without using cloud services is described, which allows to significantly expand the applicability of such devices in the future.

Introduction:

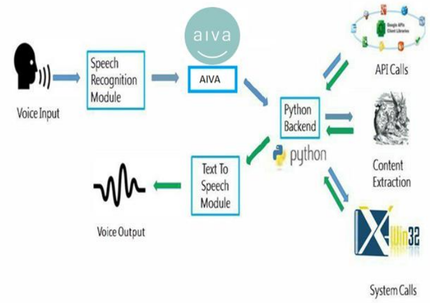
Today the development of artificial intelligence (AI) systems that are able to organize a natural human-machine interaction (through voice, communication, gestures, facial expressions, etc.) are gaining in popularity. One of the most studied and popular was the direction of interaction, based on the understanding of the machine by the machine of the natural human language. It is no longer a human learns to communicate with a machine, but a machine learns to communicate with a human, exploring his actions, habits, behavior and trying to become his personalized assistant.

The work on creating and improving such personalized assistants has been going on for a long time. These systems are constantly improving and improving, go beyond personal computers and have already firmly established themselves in various mobile devices and gadgets. One of the most popular voice assistants are Siri, from Apple, Amazon Echo, which responds to the name of Alex from Amazon, Cortana from Microsoft, Google Assistant from Google, and the recently appeared intelligent assistant under the name "AIVA".

Implementation/Model/Approach/Methodology



Basic Workflow



Methodology

Conclusion and Future scope:

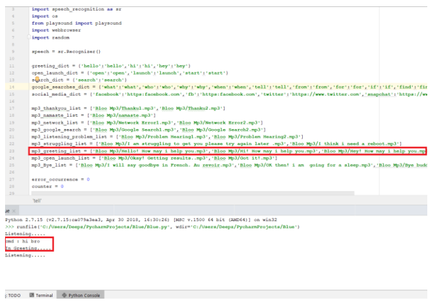
Conclusion:

In this paper, we discussed the design and implementation of a Digital Assistance. The project is built using open source software modules with PyCharm community backing which can accommodate any updates in the near future. The modular nature of this project makes it more flexible and easy to add additional features without disturbing current system functionalities. It not only works on human commands but also give responses to the user on the basis of query being asked or the words spoken by the user such as opening tasks and operations. It is greeting the user the way user feels more comfortable and feels free to interact with the voice assistant.

Future scope:

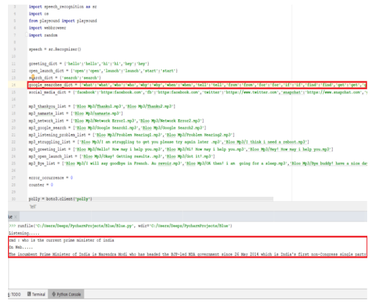
The possibility of added functionality required in making the assistant more accurate and fast while the interaction with the user. This project can be further improved by implementing the voice command in Google search queries. Better speech recognition so that the user can get prompt output and applications such as locking pc or opening pc on the commands of the user. In coming days our proposed system can be applied in multilingual application so that a person can use the application in their own language without any trouble. In addition, our proposed system can be deployed with the IoT.

Implementation results:

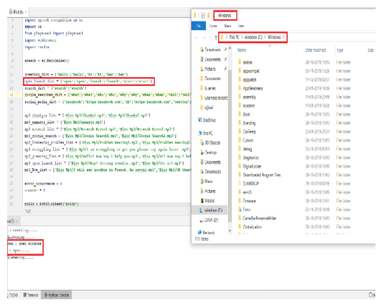


Implementation Of Speech To Text Module

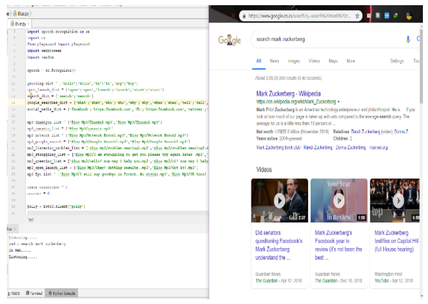
Implementation/Simulation results:



1.Implementation Of Text To Speech Module



2.Implementation Of System Call Module



3.Implementation Of Google Search Module

References:

[1] B. Marr, The Amazing Ways Google Uses Deep Learning AI.

[2] G. Bohouta, V. Z. Këpuska, "Comparing Speech Recognition Systems (Microsoft API Google API And CMU Sphinx)", Int. Journal of Engineering Research and Application 2017, 2017.

[3] Hill, J., Ford, W.R. and Farreras, I.G., 2015. Real conversations with artificial intelligence: A comparison between human–human online conversations and human–chatbot conversations. Computers in Human Behavior, 49, pp.245-250.

[4] Cortana Intelligence, Google Assistant, Apple Siri.

Program Outcome (PO's)

PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12
3	3	3	3	3	2	2	3	3	3	2	3

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