

ARAV: Human Like Virtual Assistant

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Abstract - An AI assistant or a Virtual assistant are the programs made by humans to make their task easier, it can be in the form of chat bot where you can simply ask the questions or you can command any task to it (for example - to save a file in specified directory), it is going to complete it. Isn't it miracle you are talking to a computer just like human and also it understands you, we have used python standard libraries, NLP wordnet, Tkinter for user interface, the main objective of this project is learning about the various disciplines of AI and ML

Key Words: Speech recognition , Virtual Assistance, NLP, STT, TTS.

1. INTRODUCTION

Earlier, if a user want to perform some task on a computer he/she must write the program for that or at least use command prompt, but thanks to Alan Kay and his team, we were introduced to gui (Graphical User Interface), Now the era of icons and buttons came, everyone gets used to it and why not it was the easiest way of performing tasks by user, it drastically increased the usage of computer, it gave rise to a concept of getting output without knowing the procedure behind it, even a person with almost no knowledge of programming can use the computers with ease. Now we have innumerable of GUI based System and we are used to them.

As we all know "Necessity is the Mother of Invention".

There arose an Idea, what if we can speak to a computer like we did with human's and computer will actually perform that task, With the Idea here comes the first virtual assistant IBM Simon Introduced in early 1990's. It was a digital speech recognition technology that became a feature of the personal computer with IBM and Philips. A virtual assistant, also called an AI assistant or digital assistant, is an application program that understands natural language voice commands and completes tasks for the user. We all know what is Virtual Assistant. If you don't, don't worry, open your mobile and say "Okay Google" or "Hello Siri". Well, Google Assistant, Alexa , Siri all these are example of Virtual Assistant.

1.1 Problem Statement

Previously, a person would have to open various applications to complete the duties. For example, if they

need to send an email, they must complete the following tasks:

- i) I Launch a web browser;
- ii) Log in to the mail server;
- iii) Compose the message; and finally, they can send the message. However, using this program, users may simply write the email in the ARAV (virtual assistance) and send it with a single click.

This standalone application can also launch various applications that are already present on the system but that most users are unaware of how to access.

This is a superior option to hiring a computer helper to conduct your technical tasks for a free.

So this application can be used by anyone from a world famous IT firm to an ordinary man who barely knows how to operate the computer.

1.2 Scope and Motivation

In 2016, Mark Zuckerberg's AI Machine was launched.

Why work with your hands when you can accomplish anything with your voice .

As a software engineer, we wanted to create our own virtual assistant rather than use an existing one.

One of the better projects for learning about AI and robotics. As we all know that "the more we study, the more we grow."

As voice assistants improve in distinguishing between voices, they will be able to provide more personalised experiences. Developers aren't the only ones who must deal with the complexities of building for voice; companies must also understand the capabilities of each device and integration, as well as if it makes sense for their brand. They'll also have to concentrate on keeping a consistent user experience in the future years, as complexity becomes more of a worry. This is due to the lack of a visual interface for voice assistants. A voice interface cannot be seen or touched.

1.3 Project Objectives

The main goal of developing personal assistant software (virtual assistant) is to use web-based semantic data sources, user-generated content, and knowledge from knowledge libraries.

The primary goal of an intelligent virtual assistant is to provide answers to users' questions. This can be done in a business setting, such as on a company website with a chat interface. The intelligent virtual assistant is a call-button driven service on the mobile platform that asks the user, "What can I do for you?" and then replies to vocal input. Virtual assistants can help you save a lot of time. We spent hours doing web research before writing the report in our own words. ARAV can help you with that. Provide a research topic and carry on with your tasks while ARAV conducts the research. Remembering test dates, birth dates, and anniversaries is another difficult endeavour. When you walk into class and discover it's time for a class test, you're taken aback. Simply notify ARAV about your tests ahead of time, and it will remind you well in advance so you can prepare. Voice searches have a number of advantages, one of which is their speed. In fact, a voice search is said to be four times faster than a written search: whereas we can write around 40 words per minute, we can speak roughly 150 in the same amount of time. In this regard, the ability of personal assistants to recognise spoken words accurately is a requirement for their adoption by consumers.

2. Literature Review

Here we will discuss elements such as the project's literature review and what other projects exist and have been successfully implemented in the market from which the creators of this project drew inspiration and so decided to proceed with the project covering the problem statement.

Sr. no.	Title	Author(s)	Findings
1.	Advances in Signal Processing and Intelligent Recognition Systems - 26 Feb 2019	1. Amrita Sunil Tulshan. 2. Sudhir Namdeorao Dhage.	This paper analyses the improvements required in voice recognition, contextual understanding and hand free interaction.
2.	Virtual Assistants for Learning: A Systematic	1. Regina Gubareva. 2. Rui Pedro Lopes.	The review provides an array of uses and techniques for

	Literature Review - 2020		developing virtual assistants and how they can be used for education support.
3.	Personal Assistant with Voice Recognition Intelligence - 2017	1. Dr. Kshama V. Kulhalli 2. Dr. Kotrapa Sirbi 3. Mr. Abhijit J. Patankar	This paper reviews the designing of a system to help Native and especially for Blind persons which works on their Voice Commands, Also giving the capability of recognizing the voice commands without internet connection.

Table -1: Literature Survey Papers

2.1 Algorithms

Algorithms we are using to create virtual assistance in the form of chat-bot are:

- Naïve Bayes
- Decision Trees
- Support Vector Machines
- Recurrent Neural Networks (RNN)
- Markov Chains
- Long Short Term Memory (LSTM)
- Natural Language Processing (NLP).
- Speech to Text (STT)
- Text to Speech (TTS)

2.2 Proposed System

The works included in ARAV (virtual assistance) are:

- Voice/speech to text (STT) : Text to speech (TTS).
- Intelligent tagging and decision making.
- Image recognition.
- Performing Various Tasks.
- History Implementation.
- Learning Based on History.
- Voice Interface.

3. Requirement Analysis and Planning

The tasks involved in determining the needs or conditions to meet for a new or altered product or project, taking into account the possibly conflicting requirements of various stakeholders, analysing, documenting, validating, and managing software or system requirements are all included in requirements analysis. The use of schedules such as Gantt charts to plan and then report progress within the project context is referred to as project planning. The project scope is specified first, followed by the proper means for finishing the project.

3.1 System Requirement

The programme is designed to be lightweight in order to reduce the amount of pressure placed on the computer that executes it. This system is designed to be compatible with a wide range of hardware and software. The minimum hardware and software requirements for a virtual assistant are listed below.

3.1.1 Hardware Requirement

- Pentium-pro processor.
- RAM 4GB.
- WebCam.
- Earphone/Microphone.

3.1.2 Software Requirement

- Windows 10
- Python 3
- Chrome Driver
- IDE : Visual Studio Code
- SQLite

3.2 Nonfunctional requirements

3.2.1 Availability

When a user requests to utilise the system, it should be available. The system should be able to perform functions at all times.

3.2.2 Performance

One of the most important aspects of a system's successful operation is its reaction time.

- To deliver a correct response to all of the user's questions.
- By incorporating existing knowledge, the system should deliver good performance.
- Fast response of question.
- Maintain effective analysis of regular asked question.

3.2.3 Security

- Only authorised users will be allowed access to the system.
- Only the authorised user is permitted to make changes to the data.

4 Implementation

Hence we are created virtual assistance in the form chat bot

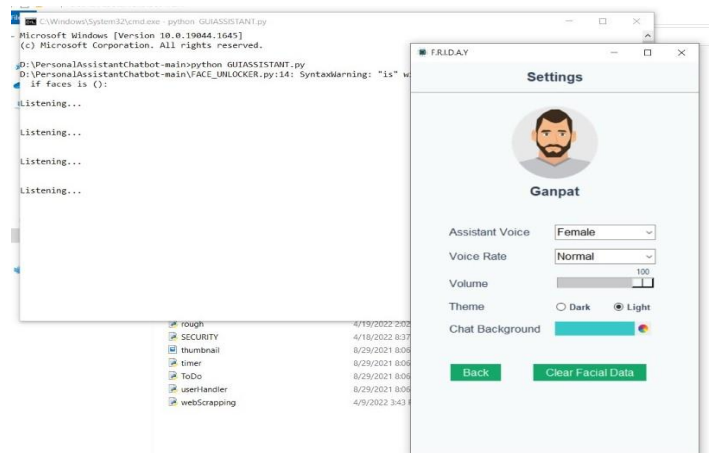


Figure 4.1: Creating account in Virtual assistance

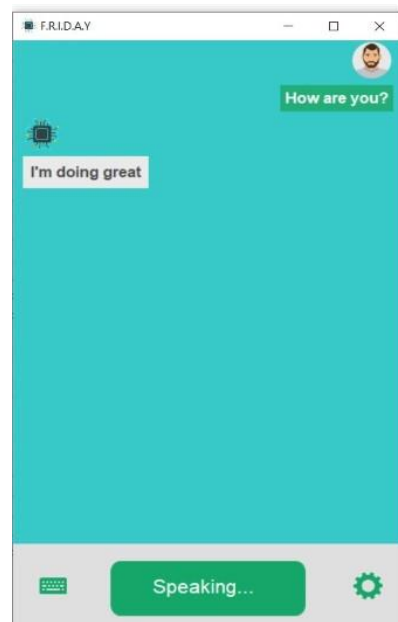


Figure 4.2: Interface of virtual assistance in a form of chat-bot

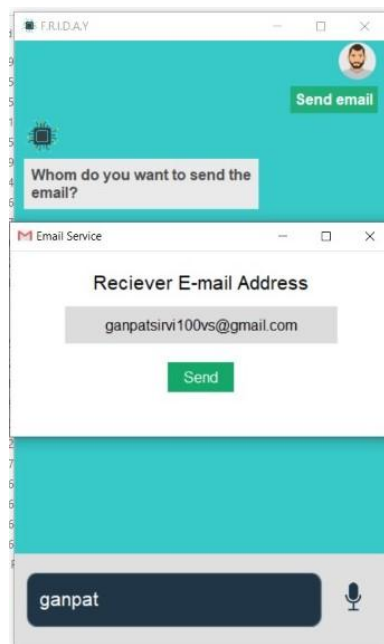


Figure 4.3: One of the various function of virtual assistance

Other various features of virtual assistance are as follows:

- Call someone from my contacts list
- Launch an application on my laptop
- Send a text message to someone
- Set up a meeting on my calendar for 9am tomorrow
- Set an alarm for 5am tomorrow morning
- Play a specific song in my music library
- Enter a new note
- Reminders
- Email
- Calendar, Google Calendar
- Outlook
- Evernote
- Facebook, LinkedIn
- News Feeds

5 Conclusion

In today's world, AI assistants are significantly more valuable than we previously believed. Everyone wants their tasks to be completed in a more efficient and timely manner, and virtual assistants are the greatest at doing so. It also gives us a lot of opportunities to apply it in different fields and learn about the various possibilities of Machine Learning and Artificial Intelligence. As a result, we've successfully created a Virtual Assistant in the form of a Chat Bot that can save you time while also allowing you to learn about the various possibilities of Machine Learning and Artificial Intelligence.

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