A Mini Project Synopsis on

Voice Assistance for APSIT Campus

S.E. - I.T Engineering

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CERTIFICATE

This to certify that the Mini Project report on **Voice Assistance for APSIT Campus** has been submittedby Soham Bolla (20104135), Sakshi Ahire (20104021), Sakshi Gaikwad (20104015) and Disha Panchal (20104126) who are a Bonafede students of A. P. Shah Institute of Technology, Thane, Mumbai, as a partial fulfilment of the requirement for the degree in **Information Technology**, during the academic year **2021-2022** in the satisfactory manner asper the curriculum laid down by University of Mumbai.

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Chapter 1

Introduction

In this project, we tried to make a voice assistant for APSIT campus. We all are surrounded with many different kind of technologies. In all of this, Artificial intelligence has a separate fan base. The main purpose to make this project is to automate some tasks and make them easy to perform.

In today's world, everything is leaning towards automation, may it be your home or car. There is an unbelievable change rather advancement in technology over the last few years. Believe it or not, in today's world you can interact with your machine. What is interacting with a machine? Obviously giving it some input, but what if the input is not in the conventional way of typing, rather it is your own Voice. What if you are talking to the machine, giving it commands and wanting the machine to interact with you like your assistant? What if the machine is not giving you answers just by showing you the best results but also by advising you with a better alternative. An easy access to machine with voice commands is the revolutionary way of human system interaction. To achieve this, we need to use speech to text API for understanding the input.

Many companies like Google. Amazon and Apple are trying to achieve this in generalized form. . Understanding the importance of this we have decided to make a system that can be placed anywhere in vicinity and you can ask it to help you do anything for you just by speaking with it. This device can be very handy for day to day use and it can help you function better by constantly giving you reminders and updates. Why would we need it? Because your own voice is turning into a best input device than a conventional enter key.

1.1 Purpose:

Purpose of voice assistant is to being capable of voice interaction, music playback, making to-do lists, setting alarms, streaming podcasts, playing audiobooks, and providing weather, traffic, sports, and other real-time information, such as news. Voice assistants enable users to speak natural language voice commands in order to operate the device and its apps.

There is an increased overall awareness and a higher level of comfort demonstrated specifically by millennial consumers. In this ever-evolving digital world where speed. efficiency, and convenience are constantly being optimized, it's clear that we are moving towards less screen interaction.

1.2 Objectives:

Main objective of building personal assistant software (a virtual assistant) is using semantic data sources available on the web. user generated content and providing knowledge from knowledge databases. The main purpose of an intelligent virtual assistant is to answer questions that users may have. This may be done in a business environment, for example, on the business website, with a chat interface. On the mobile platform, the intelligent virtual assistant is available as a call-button operated service where a voice asks the user "What can I do for you?" and then responds to verbal input.

Virtual assistants can tremendously save you time. We spend hours in online research and then making the report in our terms of understanding, assistant can do that for you. Provide a topic for research and continue with your tasks while assistant does the research. Another difficult task is to remember test dates, birthdates or anniversaries. It comes with a surprise when you enter the class and realize it is class test today. Just tell assistant in advance about your tests and she reminds you well in advance so you can prepare for the test.

One of the main advantages of voice searches is their rapidity. In fact, voice is reputed to be four times faster than a written search: whereas we can write about 40 words per minute, we are capable of speaking around 150 during the same period of time 15. In this respect, the ability of personal assistants to accurately recognize spoken words is a prerequisite for them to be adopted by consumers.

Functionalities provided by Voice Assistant are as follows:

- It fulfils the lack of a virtual assistant in Linux systems.
- It has an easy to install and use interface.
- It accepts inputs even through voice or keyboard.
- It automates tedious tasks like deployment, unit testing through a single command.
- It gives live weather updates

1.3 Scope:

Voice assistants will continue to offer more individualized experiences as they get better t differentiating between voices. However, it's not just developers that need to address the complexity of developing for voice as brands also need to understand the capabilities of each device and integration and if it makes sense for their specific brand. They will also need to focus on maintaining a user experience that is consistent within the coming years as complexity becomes more of a concern. This is because the visual interface with voice assistants s missing. Users simply cannot see or touch a voice interface.

Among the Various roles played by voice assistant are:

- Search Engine with voice interactions.
- Reminder and To-Do application.
- Vocabulary App to show meanings and correct spelling errors.
- Weather Forecasting Application.

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Chapter 2

Problem Definition:

Usually, user needs to manually manage multiple sets of applications to complete one task. For example, a user trying to make a travel plan needs to check for airport codes for nearby airports and then check travel sites for tickets between combinations of airports to reach the destination. There is need of a system that can manage tasks effortlessly.

We already have multiple virtual assistants. But we hardly use it. There are number of people who have issues in voice recognition. These systems can understand English phrases but they fail to recognize in our accent, Our way of pronunciation is way distinct from theirs. Also, they are easy to use on mobile devices than desktop systems. There is need of a virtual assistant that can understand English in Indian accent and work on desktop system.

When a virtual assistant is not able to answer questions accurately, it's because it lacks the proper context or doesn't understand the intent of the question. Its ability to answer questions relevantly only happens with rigorous optimization, involving both humans and machine learning. Continuously ensuring solid quality control strategies will also help manage the risk of the virtual assistant learning undesired had behaviors. They require large amount of information to be fed in order for it to work efficiently.

Virtual assistant should be able to model complex task dependencies and use these models to recommend optimized plans for the user. It needs to be tested for finding optimum paths when a task has multiple sub-tasks and each sub-task can have its own sub-tasks. In such a case there can be multiple solutions to paths, and the it should be able to consider user preferences, other active tasks, priorities in order to recommend a particular plan.

2.1 User Problem Statement:

We are all well aware about Cortana, Siri, Google Assistant and many other virtual assistants which are designed to aid the tasks of users in Windows, Android and iOS platforms. But to our surprise, there's no such virtual assistant available for the paradise of Developers i.e. Windows platform.

Chapter 3

3.1 Proposed System:

The proposed system will provide following features:

- It always keeps listing for its name and wakes up to response upon calling with the assigned functionality.
- It keeps learning the sequence of questions asked to it related to its context which it remembers for the future. So when the same context is mentioned, it starts a conversation with you asking relevant questions.
- Performing Arithmetic calculations based on voice commands and giving back the computed solution through a voice.
- Searching Internet based on user's voice input and giving back the reply. through a voice with further interactive questions by machine.
- Other features such as playing music, setting an alarm, checking weather conditions of device's location. Setting reminders, spell-correct, etc can be performed by an input from user's voice.

3.2 Features and modules:

Features:

- Greets you as per time
- Agenda and routines
- Message and communication
- News and current events
- Plays music and videos
- Faster time to market
- Less failure rate of new releases

Modules used

- Pyttsx3: Basically, this module is used to convert text to speech in python. We can install this library using "pip install pyttsx3" command. The main advantage of this module is that it works offline.
- Speech recognition: As we are building virtual assistant, the necessary thing is that it recognizes user's voice. We can install this module using "pip install speech recognition" command.
- Date Time: The datetime module supplies classes to work with date and time.
- Wikipedia: This module is used to get the information from Wikipedia or to search something on Wikipedia. We can install this module using "pip install Wikipedia" command.
- Web browser: This is used to display web-based documents on the web browser. This module is built-in in python.
- Os: The OS module in Python provides functions for creating and removing a directory (folder), fetching its contents, changing and identifying the current directory, etc.
- Smtplib: SMTP (simple mail transfer protocol) is used to send an email or to route an email between servers. Python provides the smtplib module for this functionality. We can install this module using "pip install smtplib".

Chapter 4

Project Outcome:

- It fulfils the lack of a virtual assistant in Linux system
- It has an easy to install and user interface
- It accepts inputs even through voice or keyboard
- It automates tedious tasks like deployment, unit testing through a single command.
- It gives weather updates.
- It opens moodle and homepage

Chapter 5

Software used:

Language: Python

IDE: Pycharm

Chapter 6

Project Design:

The project started with the motivation and brain storm, repeatedly implement in the developing life cycle until the system has been fully constructed.

Brain storm, the project start with the ideas from the brain storm. Here the basic ideas and design the primary concepts, prototype of the program have been obtained.

- While the ideas has been obtained, it has been analyzed which of them can be accomplished and make sure the structure of the project.
- According to the requirements that had been identified, collected all the resources and useful references from any channel, together with the programming skills and experiences, the design items were pointed out.
- Implement each individual design item based on the planning, structure and references.
- Test each single module that has been implemented and fix the possible bugs appear in the code implementation and make sure the functions are well constructed.
- Integrate all the individual sections to contribute to a complete system.
- Try the black and white box testing strategies to test the system, both the functional and non-functional logic and implementation should be verified.
- Debug the system and optimize the project from the possible aspects.
- Build the product and pack all the stuffs as a whole.

Working:

- Speak something (for e.g. "Hello")
- Assistant records the voice and match with available commands.
- If it is available then proper response is provided.
- And proper action is taken.

Process:

The overall system design process consists of following phases:

(a) Data collection in the form of speech.

(b) Voice analysis and conversion to text.

Chapter 7

Project Scheduling Template

Sr. No	Group Member	Time duration	Work to be done
1	Soham Bolla	Second and third week of February	Collected information for the topic and had discussion with guide. Studied more libraries.
2	Sakshi Ahire	First and Second Week of March	Worked on the base of project. Studied Algorithms and started with the development of UI.
3	Sakshi Gaikwad	Third and forth Week of March	Accessed some of the links such as youtube, email, camera with voice control and performed operations through the code.
4	Disha Panchal	First week of April	Worked on report file and other operation added to the program. Finally implemented all the commands.

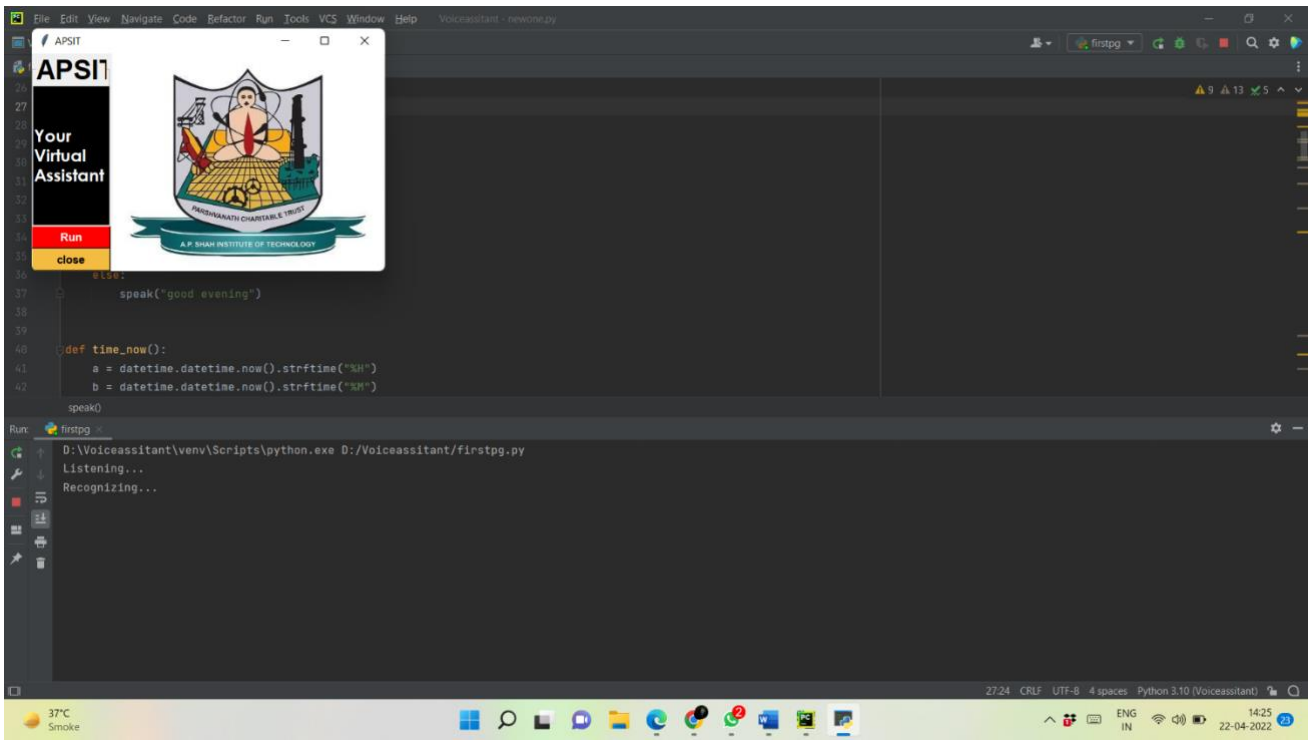

Figure 1: GUI Page

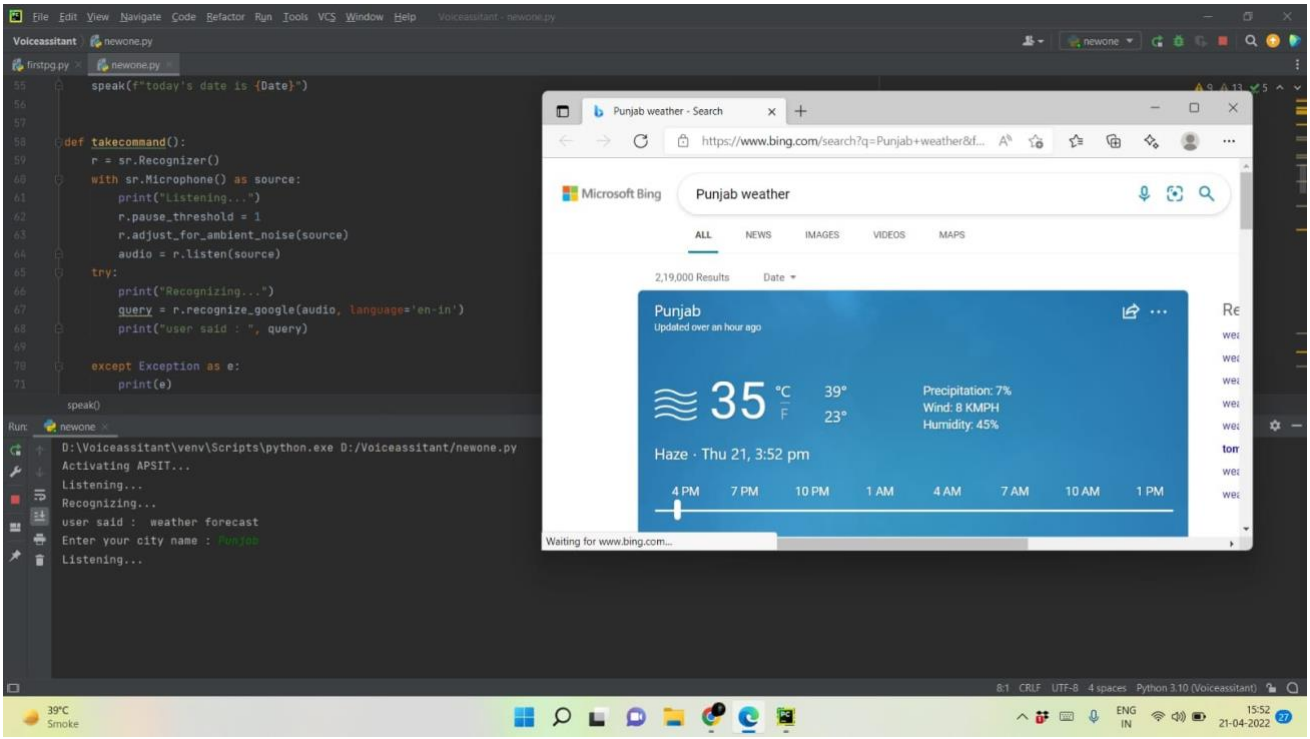

Figure 2: Weather Forecast

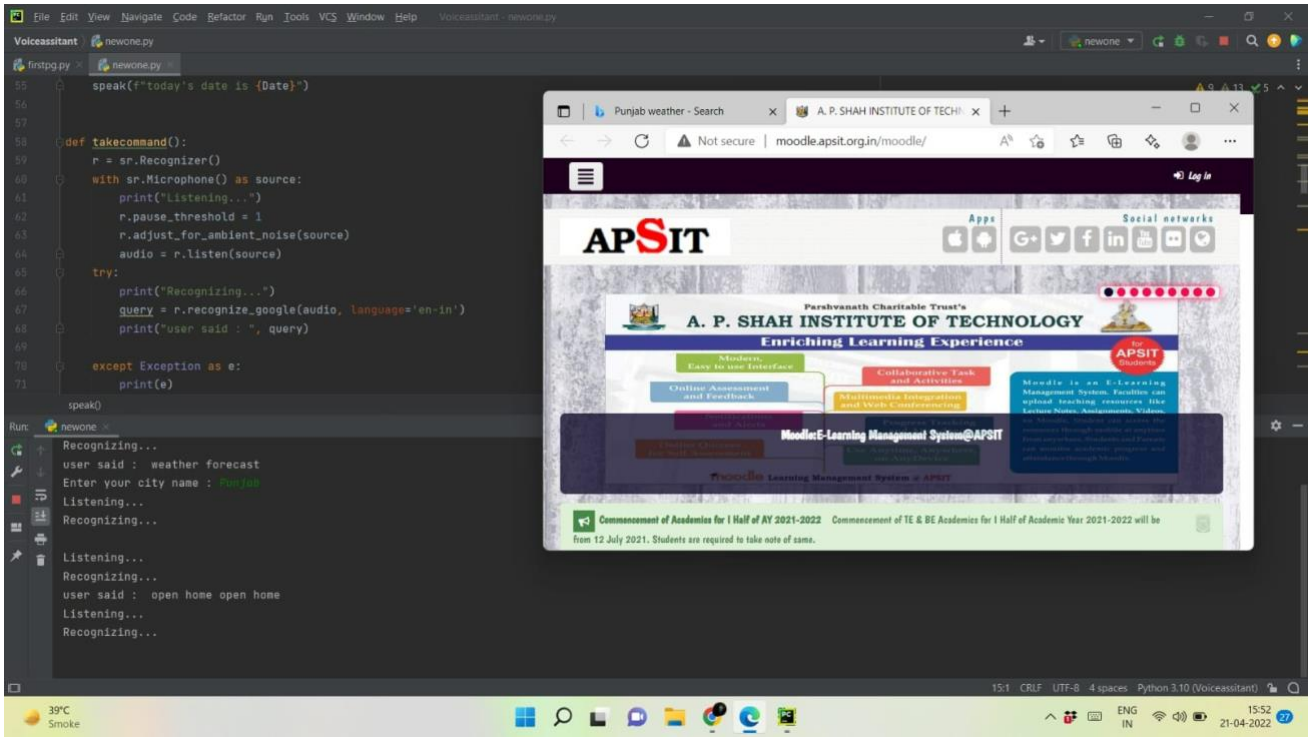

Figure 3 : Open Moodle Web page

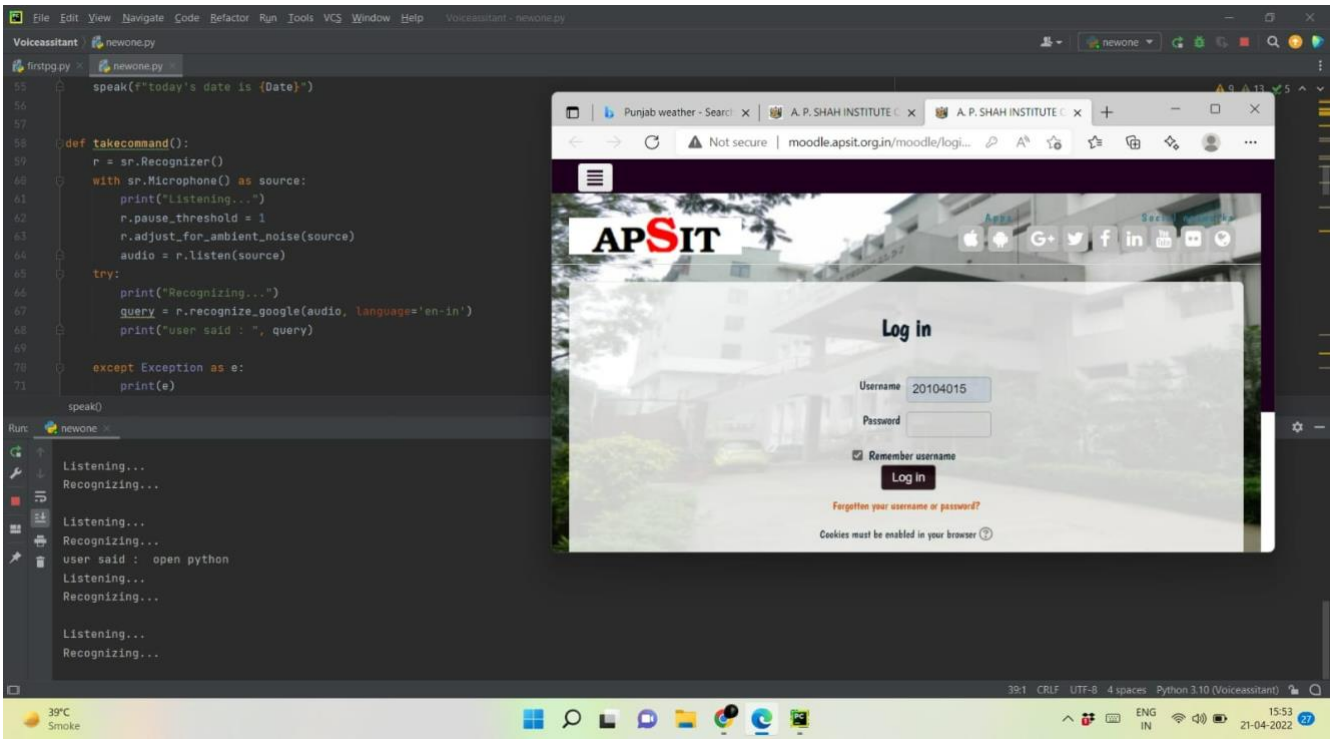

Figure 4 : open python lab

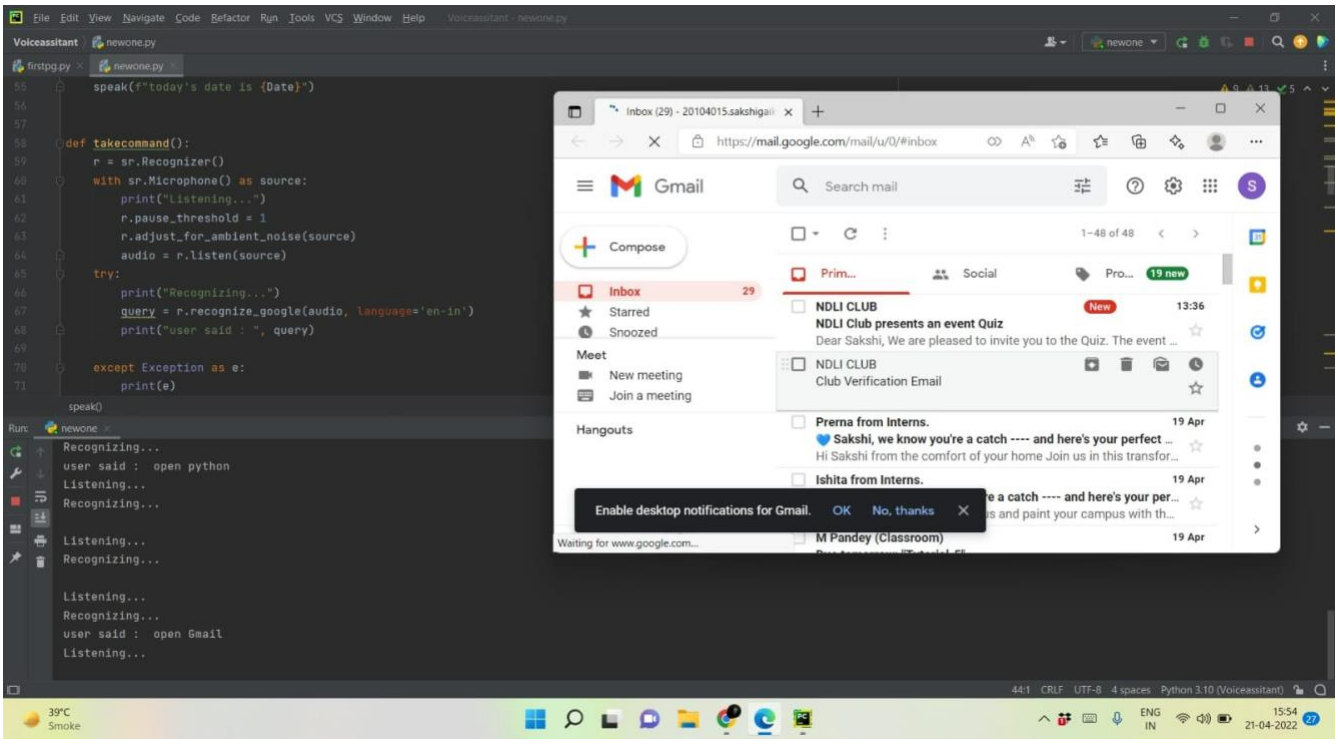

Figure 5 : Open Gmail

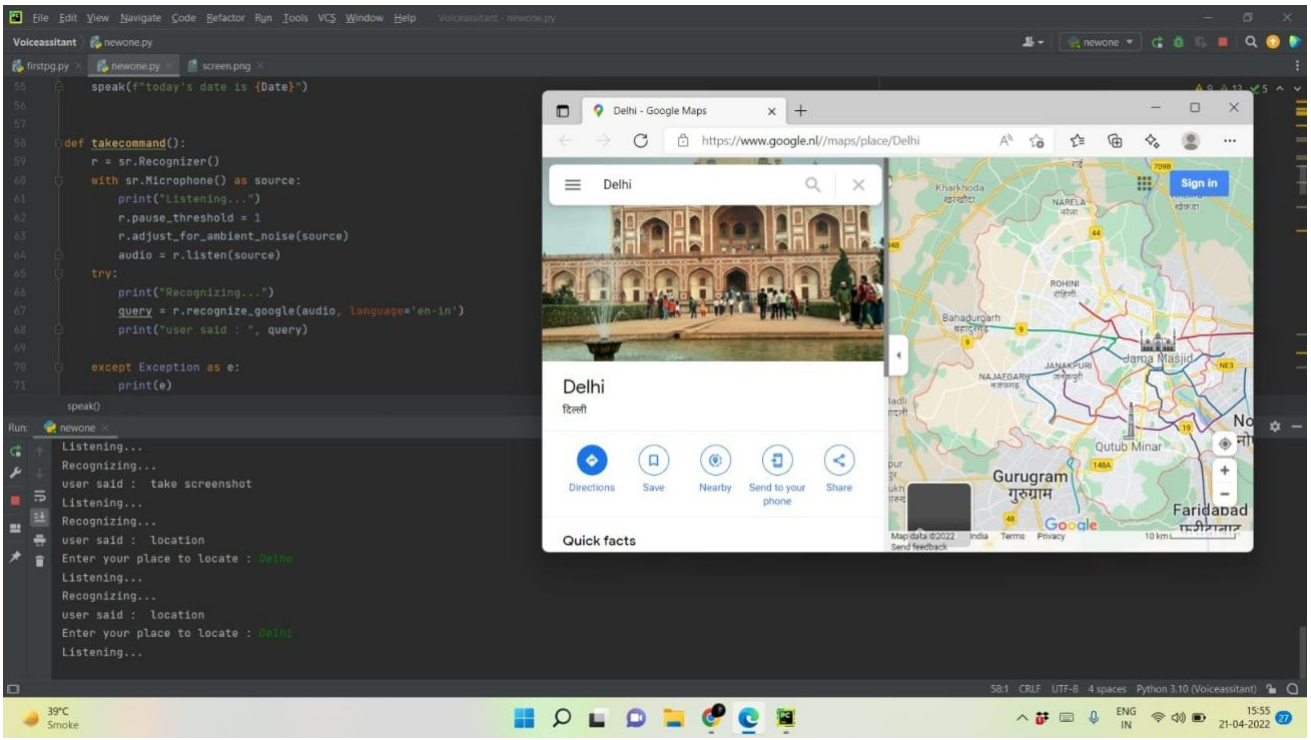

Figure 6 : Location

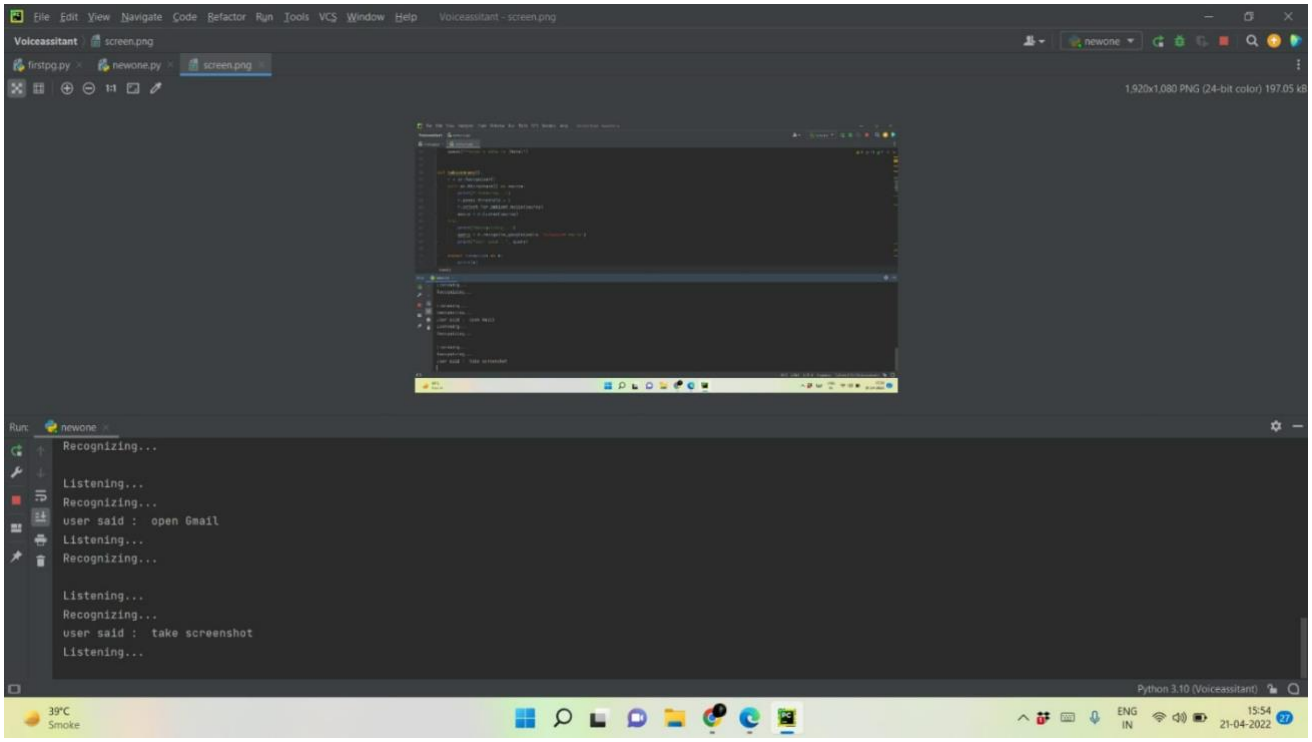

Figure 7 : Take Screenshot

Chapter 8

Conclusion:

Through this voice assistant, we have automated various services using a single line command. It eases most of the tasks of the user like searching the web. retrieving weather forecast details, vocabulary help and medical related queries. We aim to make this project a complete server assistant and make it smart enough to act as a replacement for a general server administration.

The future plans include integrating Assistant with mobile using React Native to provide a synchronized experience between the two connected devices. Further, in the long run. APSIT is planned to feature auto deployment supporting elastic beanstalk, backup files, and all operations which a general Server Administrator does. The functionality would be seamless enough to replace the Server Administrator with voice assistant.

Future Scope:

We plan to Integrate assistant with mobile using react native, to provide a synchronized experience between the two connected devices. Further, in the long run, voice assistant is planned to feature auto deployment supporting elastic beanstalk, backup files, and all operations which a general Server Administrator does. The functionality would be seamless enough to replace the Server Administrator with Voice Assistant.

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