AI VIRTUAL ASSISTANT "ALICIA"

Submitted in partial fulfilment of the requirements of the degree
BACHELOR OF ENGINEERING IN **COMPUTER ENGINEERING**

By

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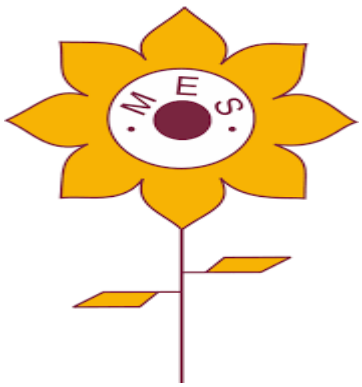

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CERTIFICATE

This is to certify that the Mini Project entitled **"AI VIRTUAL ASSISTANT – ALICIA"** is a bonafide work of **Shivam Rajendra Modhave (10), Rajat Jaiprakash Rai (33), Ishika Salil Raikar (34) and Aman Rajendra Sharma (46)** submitted to the University of Mumbai in partial fulfillment of the requirement for the award of the degree of **"Bachelor of Engineering"** in **"Computer Engineering".**

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Mini Project Approval

This Mini Project entitled "**AI VIRTUAL ASSISTANT -ALICIA"** by **Shivam Rajendra Modhave (10), Rajat Jaiprakash Rai (33), Ishika Salil Raikar (34) and Aman Rajendra Sharma (46)** is approved for the degree of **"Bachelor of Engineering"**in **"Computer Engineering".**

Examiners

1……
(Internal Examiner name & Sign)

2……
(External Examiner name & Sign)

Date:

Place:

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ABSTRACT

As we know Python is an emerging language so it becomes easy to write a script for Voice Assistant in Python. The instructions for the assistant can be handled as per the requirement of user. Speech recognition is the process of converting speech into text. This is commonly used in voice assistants like Alexa, Siri, etc. In Python there is an API called SpeechRecognition which allows us to convert speech into text. It was an interesting task to make this Assistant. It became easier to send emails without typing any word, Searching on Google without opening the browser, and performing many other daily tasks like playing music, opening your favourite IDE with the help of a single voice command. The main advantage of this Assistant is that it is connected with Security Face Detection. In the current scenario, advancement in technologies are such that they can perform any task with same effectiveness or can say more effectively than us. By making this project, we realized that the concept of AI in every field is decreasing human effort and saving time.

Functionalities of this project include:

1.It can send emails.

2.It will detect your face and then opens the application.

3. It can send text on WhatsApp.

4. It can open Virtual mouse, your favourite IDE, notepad etc.

5. It can open Virtual Keyboard.

6. It can do Wikipedia searches for you.

7. It can open websites like Google, YouTube, etc., in a web browser.

8. It can give weather forecast.

9. It can give desktop reminders of your choice.

10. It can have some basic conversation.

Now the basic question arises in mind that how it is an AI? The virtual assistant that is created is like if it is not an A.I, but it is the output of a bundle of the statement. But fundamentally, the main purpose of A.I machines is that it can perform human tasks with the same efficiency or even more efficiently than humans. It is a fact that my virtual assistant is not a very good example of A.I., but it is an A.I.

ACKNOWLEDGEMENT

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I express my heartfelt gratitude to our Principal Dr J.W Bakal , Pillai HOC College of Engineering and Technology , Rasayani for permitting me to carry out this project work.

LIST OF ABBREVIATIONS

1. Pyttsx3 – It is a text-to-speech conversion library in Python which works offline.

2. Os - Python's standard utility modules.

3. PyPDF2 - A Pure-Python library built as a PDF toolkit.

4. psutil - psutil (process and system utilities) is a cross-platform library for retrieving information on **running processes** and **system utilization.**

5. ttk - Tk themed widgets.

6. opencv – It is a huge open-source library for computer vision, machine learning, and image processing.

7. Xml - Extensible markup language.

8. API - Application programming interface.

9. EXE – Executable file.

10. JSON – JavaScript Object Notation

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1. INTRODUCTION

1.1 INTRODUCTION

Artificial Intelligence when used with machines, it shows us the capability of thinking like humans. In this, a computer system is designed in such a way that typically requires interaction from human. As we know Python is an emerging language so it becomes easy to write a script for Voice Assistant in Python. The instructions for the assistant can be handled as per the requirement of user. Speech recognition is the Alexa, Siri, etc. In Python there is an API called Speech Recognition which allows us to convert speech into text. It was an interesting task to make my own assistant. It became easier to send emails without typing any word, Searching on Google without opening the browser, and performing many other daily tasks like playing music, opening your favourite IDE with the help of a single voice command. In the current scenario, advancement in technologies are such that they can perform any task with same effectiveness or can say more effectively than us. By making this project, I realized that the concept of AI in every field is decreasing human effort and saving time. As the voice assistant is using Artificial Intelligence hence the result that it is providing are highly accurate and efficient. The assistant can help to reduce human effort and consumes time while performing any task, they removed the concept of typing completely and behave as another individual to whom we are talking and asking to perform task. The assistant is no less than a human assistant but we can say that this is more effective and efficient to perform any task. The libraries and packages used to make this assistant focuses on the time complexities and reduces time. The functionalities include , It can send emails, It can read PDF, It can send text on WhatsApp, It can open command prompt, your favourite IDE, notepad etc., It can play music, It can do Wikipedia searches for you, It can open websites like Google, YouTube, etc., in a web browser, It can give weather forecast, It can give desktop reminders of your choice. It can have some basic conversation. Tools and technologies used are PyCharm IDE for making this project, and I created all py files in PyCharm. Along with this I used following modules and libraries in my project. pyttsx3, SpeechRecognition, Datetime, Wikipedia, Smtplib, pywhatkit, pyjokes, pyPDF2, pyautogui, pyQt etc. I have created a live GUI for interacting with the JARVIS as it gives a design and interesting look while having the conversation

2. MOTIVATION

We are familiar with many existing voice assistants like Alexa, Siri, Google Assistant, Cortana which uses concept of language processing, and voice recognition. They listens the command given by the user as per their requirements and performs that specific function in a very efficient and effective manner. As these voice assistants are using Artificial Intelligence hence the result that they are providing are highly accurate and efficient. These assistants can help to reduce human effort and consumes time while performing any task, they removed the concept of typing completely and behave as another individual to whom we are talking and asking to perform task. These assistants are no less than a human assistant but we can say that they are more effective and efficient to perform any task. The algorithm used to make these assistant focuses on the time complexities and reduces time. But for using these assistants one should have an account (like Google account for Google assistant, Microsoft account for Cortana) and can use it with internet connection only because these assistants are going to work with internet connectivity. They are integrated with many devices like, phones, laptops, and speakers etc. Alicia also provides functions like – It does Face authentication before Opening the Assistant . It can take physical and virtual input .It can open Virtual Mouse ,Virtual Keyboard which again is created by us

1.3 PROBLEM STATEMENT AND OBJECTIVES

PROBLEM STATEMENT

Artificial Intelligence personal assistants have become plentiful over the last few years. Applications such as Siri, Bixby, Ok Google and Cortana make mobile device users' daily routines that much easier. You may be asking yourself how these functions. Well, the assistants receive external data (such as movement, voice, light, GPS readings, visually defined markers, etc.) via the hardware's sensors for further processing - and take it from there to function accordingly. Not too long ago, building an AI assistant was a small component of developers' capacities; however, nowadays, it is quite a realistic objective even for novice programmers. To create a simple personal AI assistant, one simply needs dedicated software and around an hour of working time. It would take much more time, though, to create something more advanced and conceptually innovative. Nonetheless, well thought-out concepts can result in a great base for a profitable startup. Let us consider the six most renowned applications based on artificial intelligence concepts that can help create your virtual AI assistant app

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. Virtual assistants can do that for you. 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 time15. In this respect, the ability of personal assistants to accurately recognize spoken words is a prerequisite for them to be adopted by consumers.

2. LITERATURE SURVEY

2.1SURVEY OF EXISTING SYSTEM

EXISTING AI ASSISTANTS

- **GOOGLE ASSISTANT**- Google Assistant is the most widely used assistant and it's popularity is due to it's compatibility with the countless number of hardware machines such as Mobile , TV , Smart speaker , Watch etc.
- **SIRI** -Siri is the world's most popular intelligent assistant. With SiriKit and Shortcuts, your apps can help users get things done with just their voice, intelligent suggestions, or the Shortcuts app. Your apps can also reach users across Apple platforms with Shortcuts on watchOS, SiriKit Music on HomePod, and SiriKit Media on Apple TV
- **AMAZON ALEXA** -Alexa is Amazon's cloud-based voice service available on hundreds of millions of devices from Amazon and thirdparty device manufacturers. With Alexa , you can build natural voice experiences that offer customers a more intuitive way to interact with the technology they use every day.We offer a colleection of tools, APIs, to build alexa

2.2 LIMITATION EXISTING SYSTEM

1) Initial cost could outweigh savings

While it's possible to make both time and cash savings using these virtual assistant devices, they don't always come cheap. For using Alexa we need to buy their specific devices which are expensive but for Alicia we don't have to spend any money

2)Virtual assistants can save you valuable time and money, as well as help keep your home secure, but it's important to use common sense when it comes to cyber security, as you would with any other web-connected device. THAT'S WHY , Alicia has special Authentication that provide safety to users

3) ALEXA , SIRI , Cortana doesn't provides user Face Detection but Alicia does.

3. PROPOSED SYSTEM

3.1 INTRODUCTION

It was an interesting task to make a Virtual Assistant. It became easier to send emails without typing any word, Searching on Google without opening the browser, and performing many other daily tasks like playing music, opening your favourite IDE with the help of a single voice command. ALICIAA is different from other traditional voice assistants in terms that it is specific to desktop and user does not need to make account to use this, it does not require any internet connection while getting the instructions to perform any specific task. It can take physical inputs i.e. finger gesture for operating the virtual mouse, virtual keyboard. The IDE used in this project is PyCharm, VS Code. All the python files were created in PyCharm and all the necessary packages were easily installable in this IDE. For this project following modules and libraries were used i.e. pyttsx3, SpeechRecognition, Datetime, Wikipedia, Smtplib, pywhatkit, pyjokes, pyPDF2, pyautogui, pyQt etc. I have created a live GUI for interacting with the JARVIS as it gives a design and interesting look while having the conversation. With the advancement ALICIAA can perform any task with same effectiveness or can say more effectively than us. By making this project, I realized that the concept of AI in every field is decreasing human effort and saving time. Functionalities of this project include, It can send emails, It can read PDF, It can send text on WhatsApp, It can open command prompt, your favourite IDE, notepad etc., It can play music, It can do Wikipedia searches for you, It can open websites like Google, YouTube, etc., in a web browser, It can give weather forecast, It can give desktop reminders of your choice. It can have some basic conversation.

3.2ARCHITECTURE/FRAMEWORK:

The Data Flow for ALICIA is as follows:

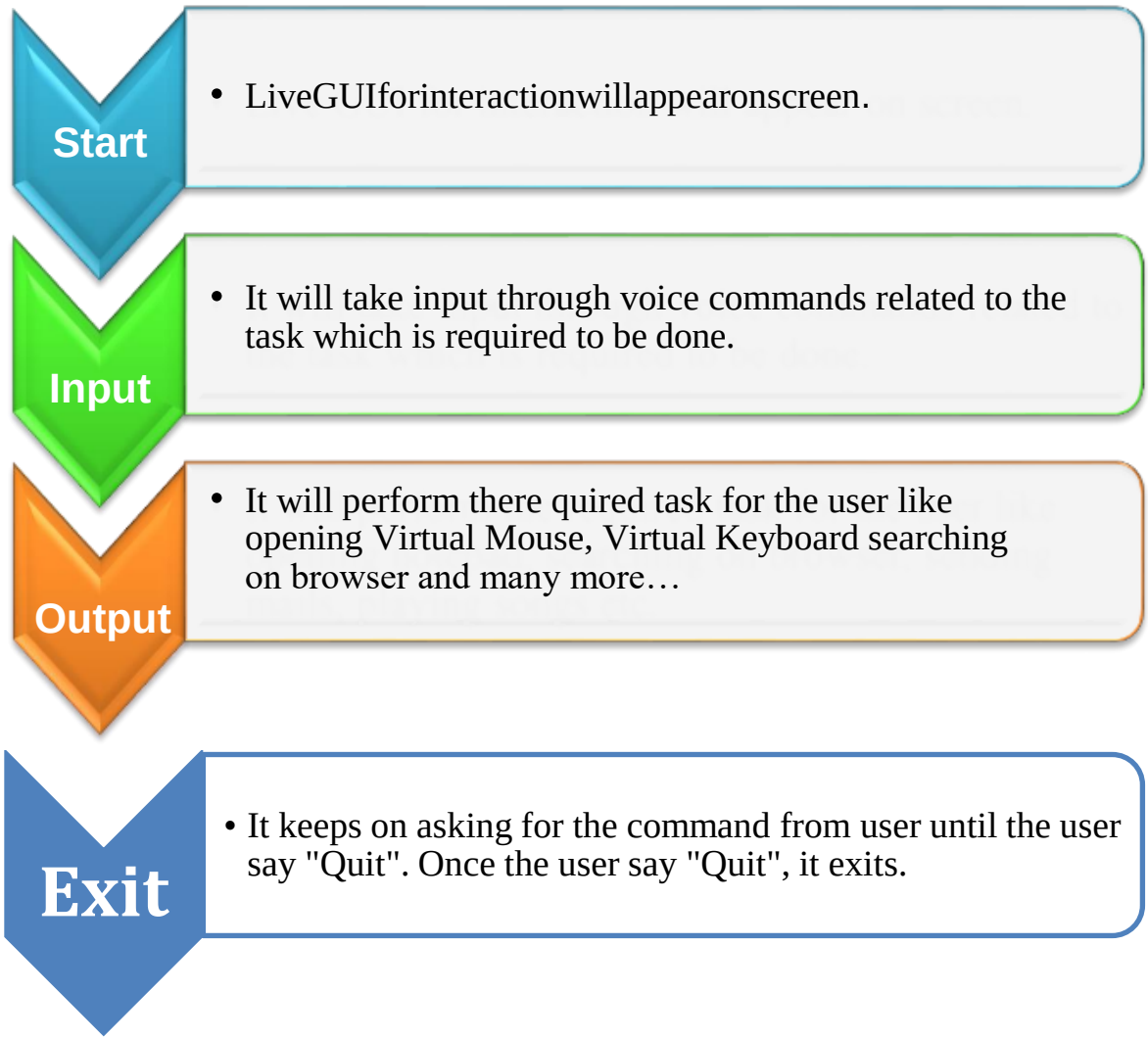


Figure 1:Data flow for ALICIA

The system is designed using the concept of Artificial Intelligence and with the help of necessary packages of Python.

Python provides many libraries and packages to perform the tasks, for example pyPDF2 can be used to read PDF and mediapipe can be used for detecting the finger gestures.

The details of these packages are mentioned in Chapter 3 of this report.

The data in this project is the face data and also the user input, whatever the user says, the assistant performs the task accordingly.

The user input is nothing specific but the list of tasks which a user wants to get performed in human language i.e. English.

The DFD for the Security Face Detection:

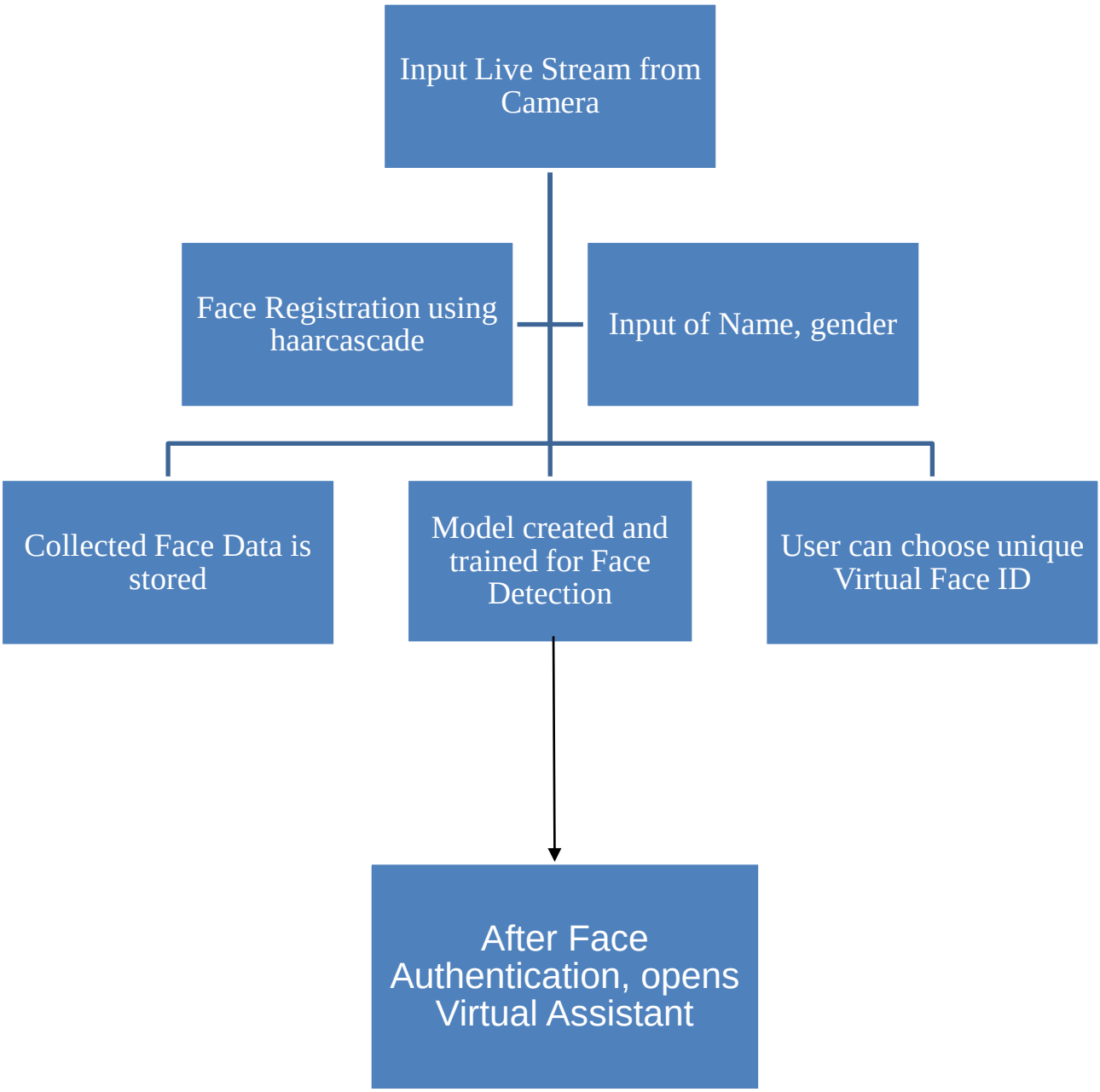


Figure 2:The DFD for the Security Face Detection

Face detection is usually the first step towards many face-related technologies, such as face recognition or verification. However, face detection can have very useful applications. The most successful application of face detection would probably be photo taking. When you take a photo of your friends, the face detection algorithm built into your digital camera detects where the faces are and adjusts the focus accordingly. Face recognition is a method of identifying or verifying the identity of an individual using their face. The most important modules used for Face detection is as follows.

1. Opencv
2. Numpy

3.Haar Cascade Fontalface classifiers

1. OpenCV is a Library which is used to carry out iusing programming languages like python. This project utilizes OpenCV Library to make a Real-Time Face Detection using your webcam as a primary camera.

2. NumPy is the fundamental package for scientific computing in Python. It is a Python library that provides a multidimensional array object, various derived objects (such as masked arrays and matrices), and an assortment of routines for fast operations on arrays, including mathematical, logical, shape manipulation, sorting, selecting, I/O, discrete Fourier transforms, basic linear algebra, basic statistical operations, random simulation and much more.

3. Haar Cascade Fontal face classifier is an Object Detection Algorithm used to identify faces in an image or a real time video. The algorithm uses edge or line detection features proposed by Viola and Jones in their research paper “Rapid Object Detection using a Boosted Cascade of Simple Features” published in 2001. Initially, the algorithm needs a lot of positive images (images of faces) and negative images (images without faces) to train the classifier. Then we need to extract features from it. For this, Haar features shown in the below image are used.They are just like our convolutional kernel. Each feature is a single value obtained by subtracting sum of pixels under the white rectangle from sum of pixels under the black rectangle

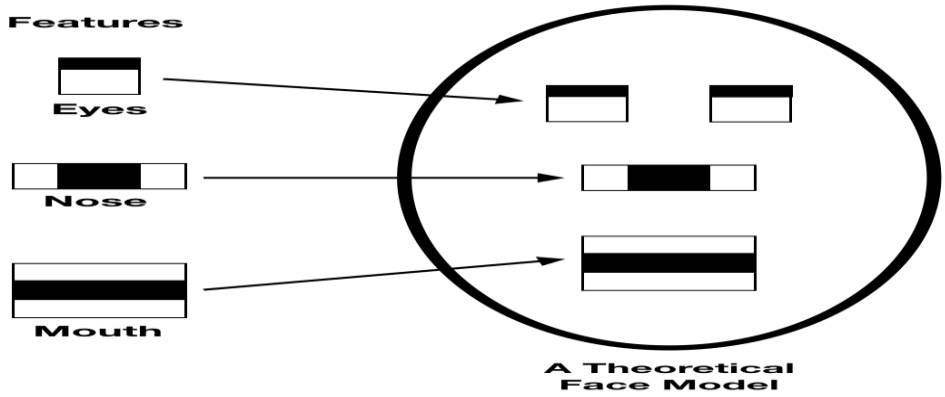


Figure 3:Theoretical Face Model

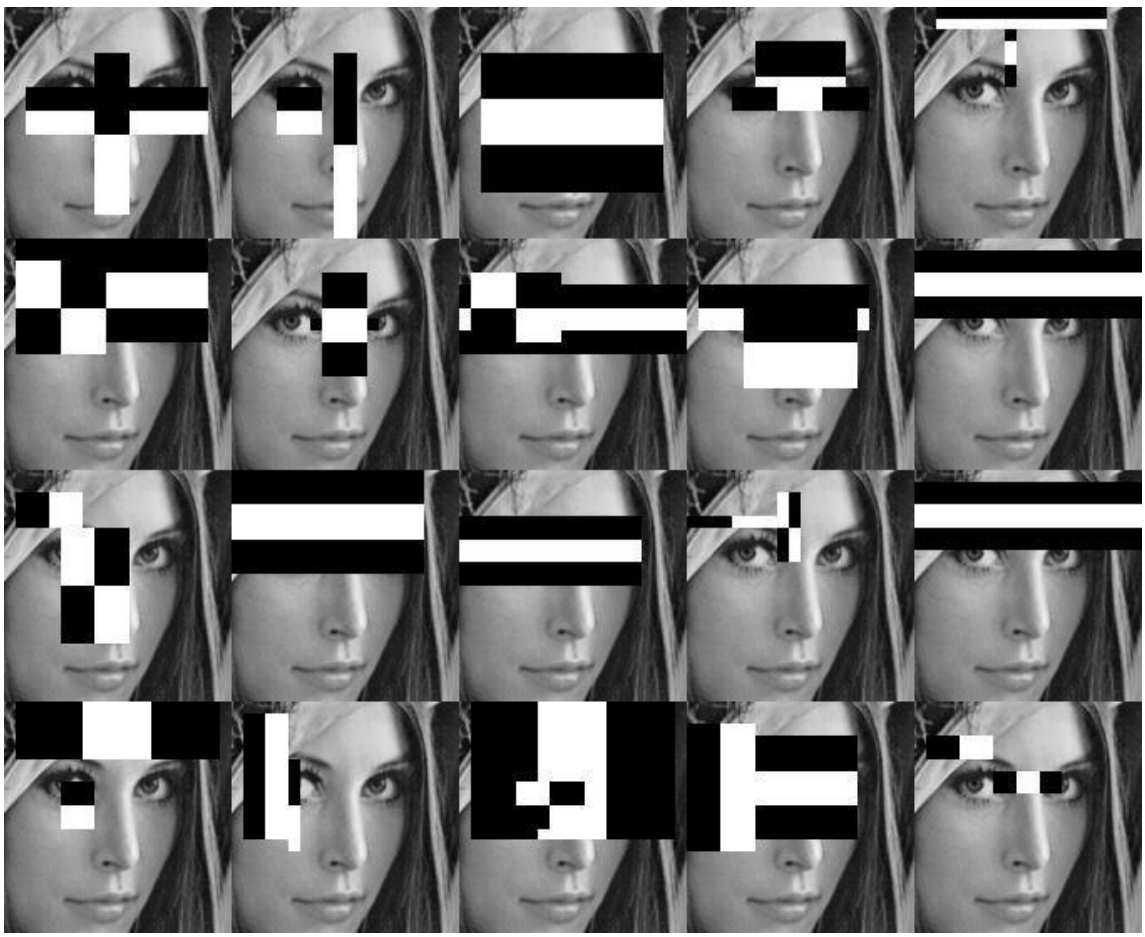


Figure 4:Face Detection Algorithm In Haarcascade

The basic idea behind the Face detection is facial colour detection. We all know that human skin consists of a wide range of colours. If by any means we could detect those ranges of colours, we can detect a face. But as the range is too high we cannot put all the data just by coding. So we have to take certain idea from the field of Artificial Intelligence. The haar files are of xml type used to run along with the code of the opencv in python. The files of haar cascade is called by using opencv only. The command to call haar files is as follows:

```
face_classifier=cv2.CascadeClassifier('Cascade/haarcascade_frontalface_default.xml')
```

The security face registration takes around 100 jpg images simultaneously of the end user and stores in the database folder. These images act as a face data of the end user. During Implementation of the Assistant it will do Security Authentication and checks whether the user's face is already stored in the face data or not. If the face is recognizable by the security application it opens the assistant. If not, it fails to authenticate and asks for the registration.

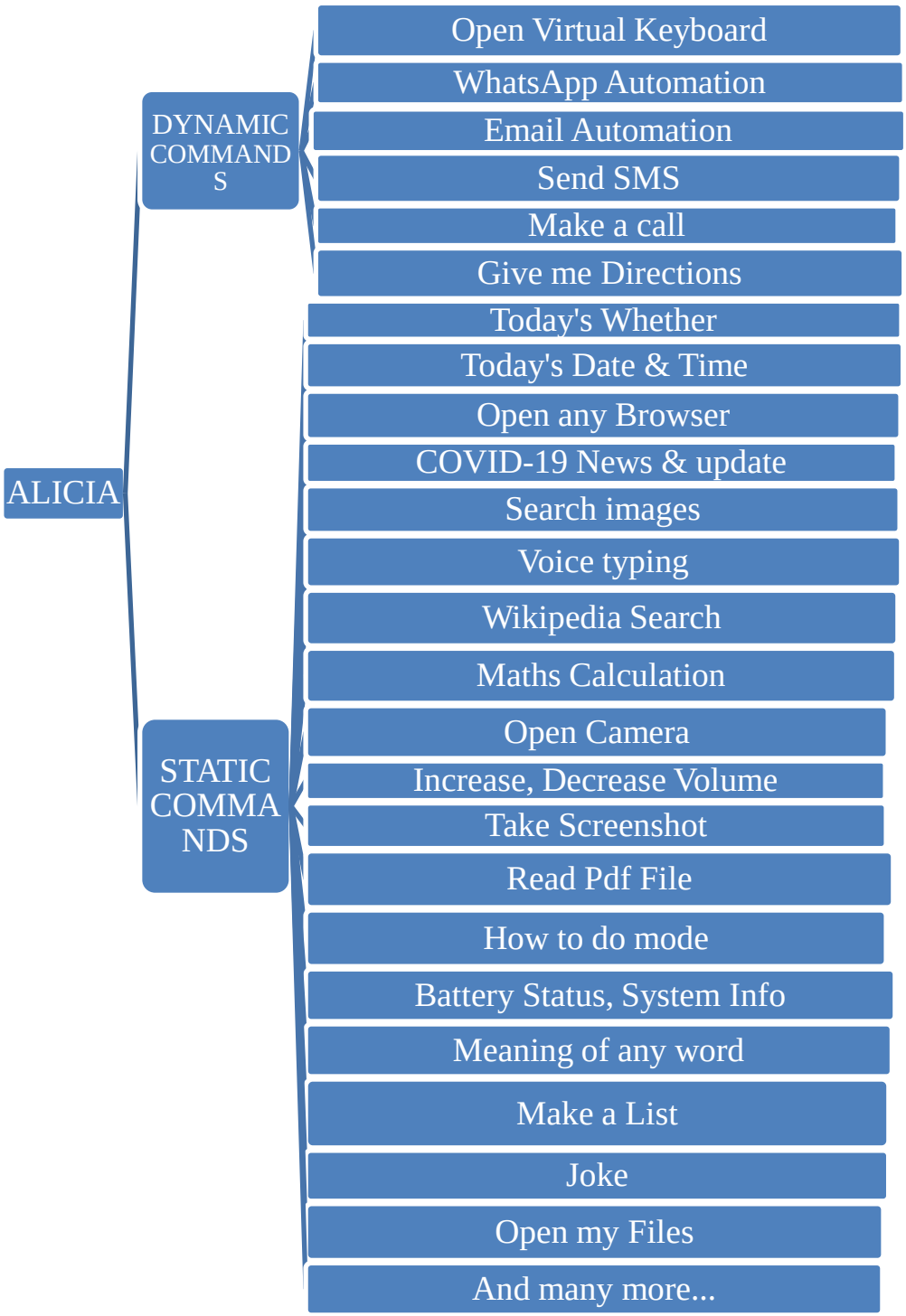


Figure 5:The DFD For The Virtual Assistant

After Face Authentication, the Assistant gets started with first giving the introduction of herself. After the introduction, the assistant starts to take the voice inputs simultaneously.

3.3**ALGORITHM AND PROCESS DESIGN:**

3.3.1 ALGORITHM

The Algorithm used in AI Virtual Assistant ALICIA is a combination of different applications and scripts running side-by-side along with the Virtual Assistant. The first step starts with the Security FaceRegistration. This registration will store end user's Name, Gender, image of the user (in .jpg format) and an Agreement to use face for security. After registration and before running the main application, the security application will first do the face authentication of the user, if face is found in the database; it starts the main Assistant application, if face is not found in the database; it allows the end user to complete their Face Registration process. After the successful face registration and authentication, the main assistant application starts running.

The step-by-step algorithm flow of ALICIA is as follows:

Step 1: START

Step 2: Opens Camera. Runs Security face detection application.

```
If (face found in database)
run GUIAssistant.exe
else  {
        register yourself
        run GUIAssistant.exe
}
```

Step 3: on Running: GUIAssistant.exe;

3a) Application gives introduction of herself with weather and time.

3b) Accepts all the voice input commands and runs accordingly.

3c) Exception (To get unregistered from the assistant):

GUIAssistant.exe -> Settings -> Clear Face Data.

Step 4: STOP (Through Voice Input Command).

3.3.2. **PROCESS DESIGN**:

ALICIA, a desktop assistant is a voice assistant that can perform many daily tasks of desktop like playing music, opening your favorite IDE with the help of a single voice command. ALICIA is different from other traditional voice assistants in terms that it is specific to desktop and user does not need to make account to use this, it does not require any internet connection while getting the instructions to perform any specific task.

The main purpose of making the AI Virtual Assistant ALICIA is to take the various Desktop Assistants onto the next level of giving servicing and programming. ALICIA is called AI Virtual Assistant because the concepts and service provided by the this Desktop Assistant is based on the Artificial intelligence and Machine Learning.

1. REALLIFEAPPLICATION:

- **Saves time:**
  JARVIS is a desktop voice assistant which works on the voicecommand offered to it, it can do voice searching, voice-activated device control andcanlet us complete asset of tasks.
- **Conversationalinteraction:**
  Itmakesiteasiertocompleteanytaskasit automaticallydoitbyusingtheessentialmoduleorlibrariesofPython,inaconversational interaction way. Hence any user when instruct any task to it, they feellike giving task to a human assistant because of the conversational interaction forgivinginput and getting thedesiredoutput in theform oftaskdone.
- **Reactive nature:**
  The desktop assistant is reactive which means it know humanlanguage very well and understand the context that is provided by the user and givesresponse in the same way, i.e. human understandable language, English. So user findsitsreaction in an informed and smart way.

3.3.3 DATA FLOW DIAGRAM (DFD):

Data Flow Diagrams show the flow of data from external entities into the system, and from one process to another within the system. The four symbols for drawing a DFD:

- Rectangles representing external entities, which are source or destinations of data.
- Ellipses representing processes, which take data as input, validate and process it and output it.
- Arrows representing the data flows, which can either, be electronic data or physical items.
- Open-ended rectangles or a Disk symbol representing data stores, including electronic stores such as databases or XML files and physical stores such as filing cabinets or stacks of paper.

Figure 6: Context Level Diagram of Alicia

3.4DETAILS OF HARDWARE & SOFTWARE:

The IDE used in this project is VS Code, PyCharm. All the python files were created in PyCharm and all the necessary packages were easily installable in this IDE. For this project following modules and libraries were used i.e. pyttsx3, SpeechRecognition, Datetime, Wikipedia, Smtplib, pywhatkit, pyjokes, pyPDF2, pyautogui, pyQt, ttk, tkinter etc. We have created a live GUI for interacting with the ALICIA as it gives a design and interesting look while having the conversation.

ALICIA is mainly a software comes with a setup file. The setup file contains all the dependencies which will be required to run the application. The main disadvantage in the application is that it will only run in that operating system which contains the following below mentioned things in the operating system

a.Web Cam
b. Microphone
c. OS with Anti-Virus

3.4.1. HARDWARE :

- **Operating System:** Any Operating system with Web Cam and Microphone.
- **Software file type:** Executable type (.exe).
- **System Supporting Software:** Python-3.8.6, Opencv-4.1.1**,** Numpy-1.21.4.
- **Processor:** Intel Core i5 7^{th} Gen 2.50GHz.
- **RAM:** 8GB
- **Storage Required:** 1.00 GB

3.4.2. SOFTWARE :

PYCHARM:

It is an IDE i.e. Integrated Development Environment which has many features like it supports scientific tools(like matplotlib, numpy, scipyetc) web frameworks (example Django,web2py and Flask) refactoring in Python, integrated python debugger, code completion, code and project navigation etc. It also provides Data Science when used with Anaconda.

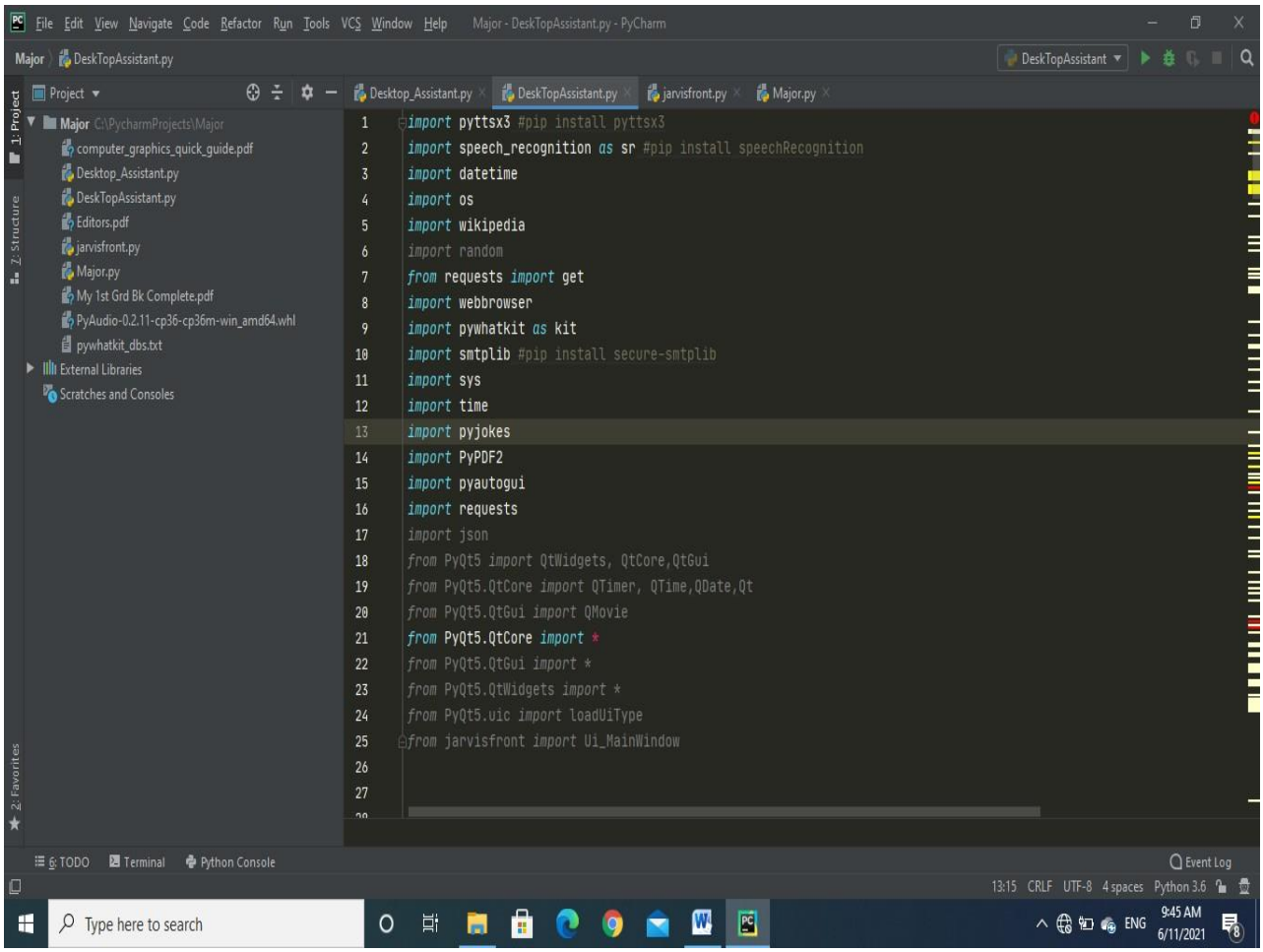


Figure 7:PyCharm IDE

VS CODE:

Visual Studio Code is a lightweight but powerful source code editor which runs on your desktop and is available for Windows, macOS and Linux. It comes with built-in support for JavaScript, TypeScript and Node.js and has a rich ecosystem of extensions for other languages (such as C++, C#, Java, Python, PHP, Go) and runtimes (such as .NET and Unity).

The extension makes VS Code an excellent Python editor, and works on any operating system with a variety of Python interpreters. It leverages all of VS Code's power to provide auto complete and IntelliSense, linting, debugging, and unit testing, along with the ability to easily switch between Python environments, including virtual and conda environments.

3.4.3. LIBRARIES & MODULES:

In ALICIA following python libraries were used:

System Modules:

SR.NO	MODULE	DESCRIPTION
1	pyttsx3	It is a python library which converts text to speech
2	SpeechRecognition	It is a python module which converts speech to text
3	Tkinter	Python provides the standard libraryTkinterfor creating the graphical user interface for desktop based applications
4	Mediapipe	It is a cross-platform library developed by Google that provides amazing ready-to-use ML solutions for computer vision tasks.
5	Opencv	OpenCV library in python is a computer vision library that is widely used for image analysis, image processing, detection, recognition, etc.

User Created Modules:

- **normalChat:**User defined module which contains the function of giving date, time, wish command etc. Functions get called in the main file.

- **math_function:** User defined module which contains all the functions required for any maths calculation.

- **appControl:** User defined module which contains all the functions for the system's controlling.

- **WebScrapping:** User defined module used for getting the information from the web browser rapidly.

- **userHandler:** User defined module used for getting, storing, and updating the end user's information.

- **ToDo:** User defined module containing the functions which will be used to make daily to do list for the user.

- **fileHandler:** User defined module for handling and creating different types of files.

3.5EXPERIMENTANDRESULTS:

3.5.1. EXPERIMENT

The Experiments are basically performed before starting any project to check whether the execution and implementation will be successful or not. But as a programmer we have to try new things to get the service better for the users. Any Desktop based application should be checked for the 100 times in your own system so that user cannot find any difficulty while using that application.The system testing is done on fully integrated system to check whether the requirements are matching or not. The system testing for AI Virtual Assistant ALICIA focuses on the following four parameters.

FUNCTIONALITY

In this we check the functionality of the system whether the system performs the task which it was intended to do. To check the functionality each function was checked and run, if it is able to execute the required task correctly then the system passes in that particular functionality test..

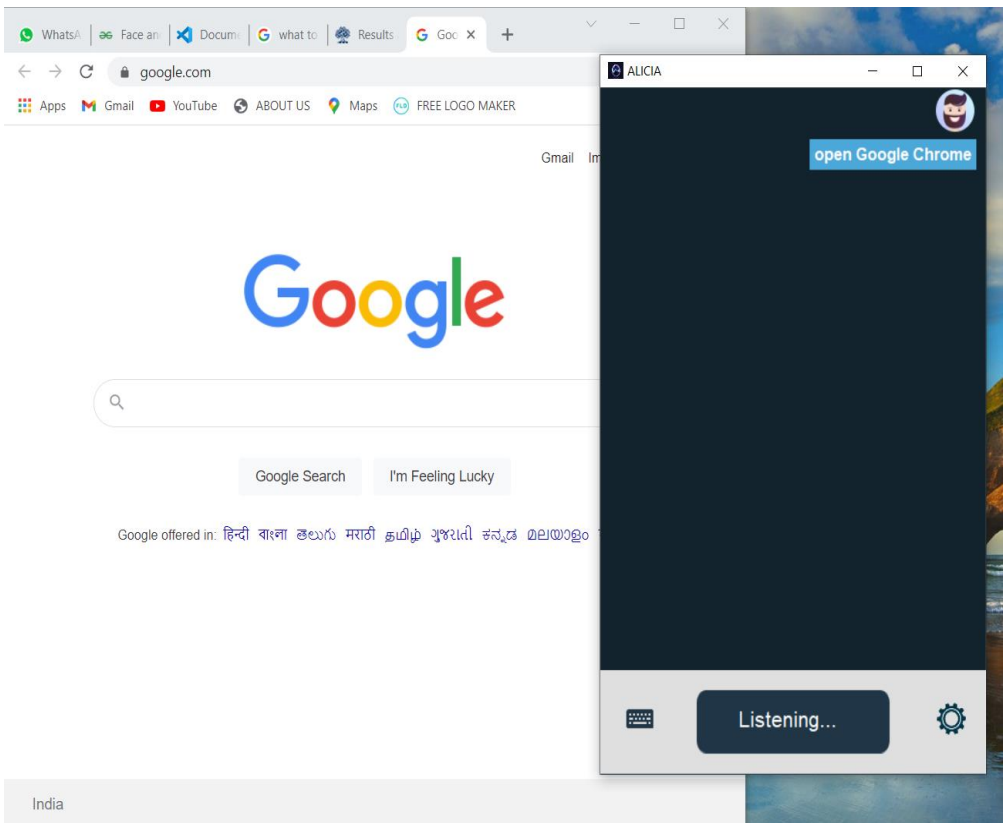


Figure 8:Input through voice commands

USABILITY

Usability of a system is checked by measuring the easiness of the software and how user friendly it is for the user to use, how it responses to each query that is being asked by the user.It makes it easier to complete any task as it automatically do it by using the essential module or libraries of Python, in a conversational interaction way. Hence any user when instruct any task to it, they feel like giving task to a human assistant because of the conversational interaction for giving input and getting the desired output in the form of task done. So user finds its reaction in an informed and smart way.The main application of it can be its multitasking ability. It can ask for continuous instruction one after other until the user "QUIT" it. It asks for the instruction and listen the response that is given by user without needing any trigger phase and then only executes the task

SECURITY

The security testing mainly focuses on vulnerabilities and risks. As ALICIA is a local desktop application, hence there is no risk of data breaching through remote access. The software is dedicated to a specific system so when the user logs in, it will be activated.

STABILITY

Stability of a system depends upon the output of the system, if the output is bounded and specific to the bounded input then the system is said to be stable. If the system works on all the poles offunctionality, then it is stable.

3.5.2. RESULTS:

The INPUT/OUTPUT Screenshots of AI Virtual Assistant Alicia are as follows:

- . Security Face Registration:

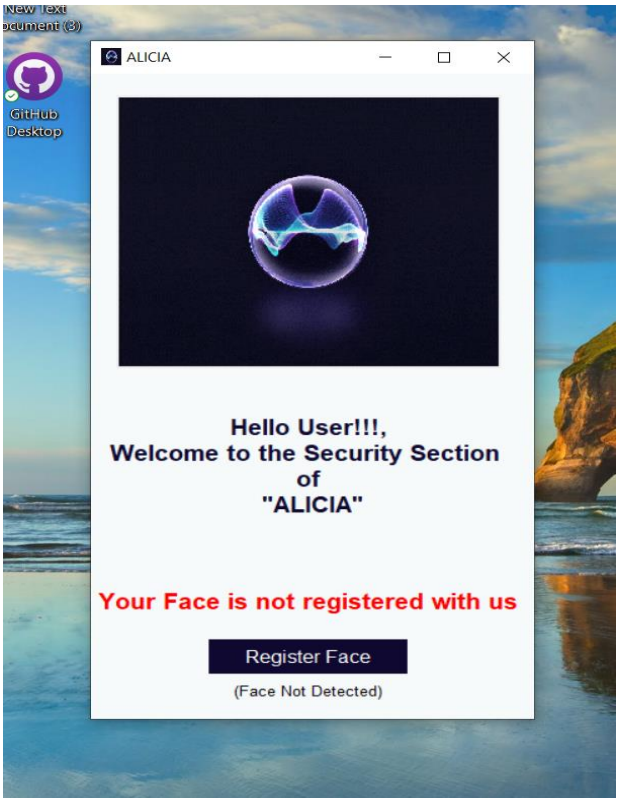


Fig 9: Security Face Registration

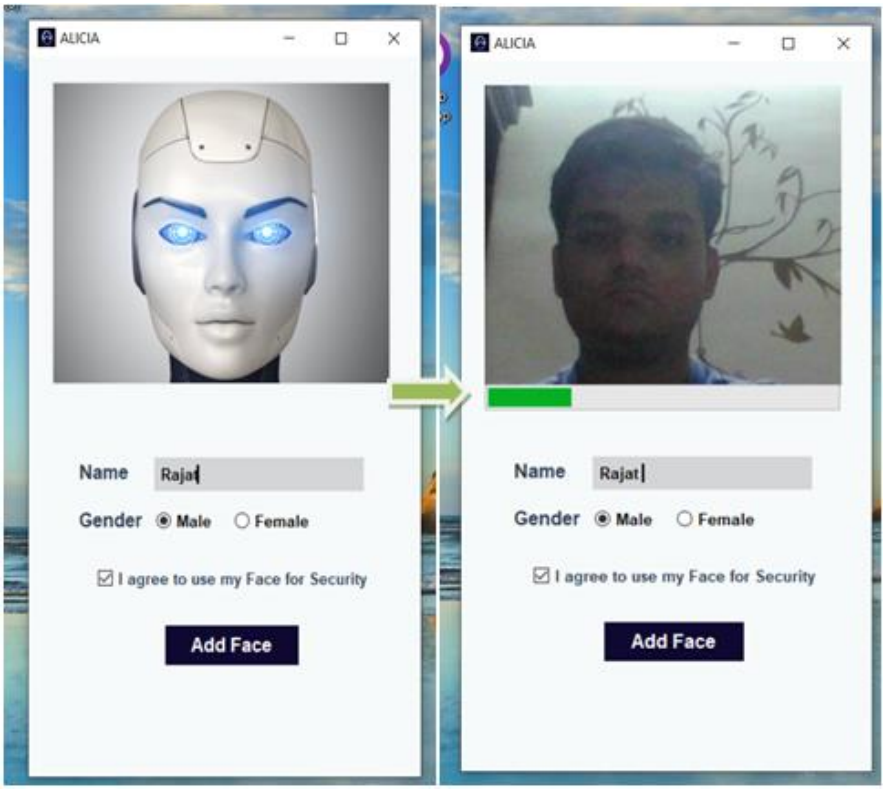


Figure 9.1: Security Face Registration Step 1

Figure 9.2: Security Face Registration Step 2

3.5.2.2. Security Face Authentication:

During Security Face Authentication, the application checks in the database whether the face data is there or not. If the face is not recognized by the saved face data, it fails to open the application.

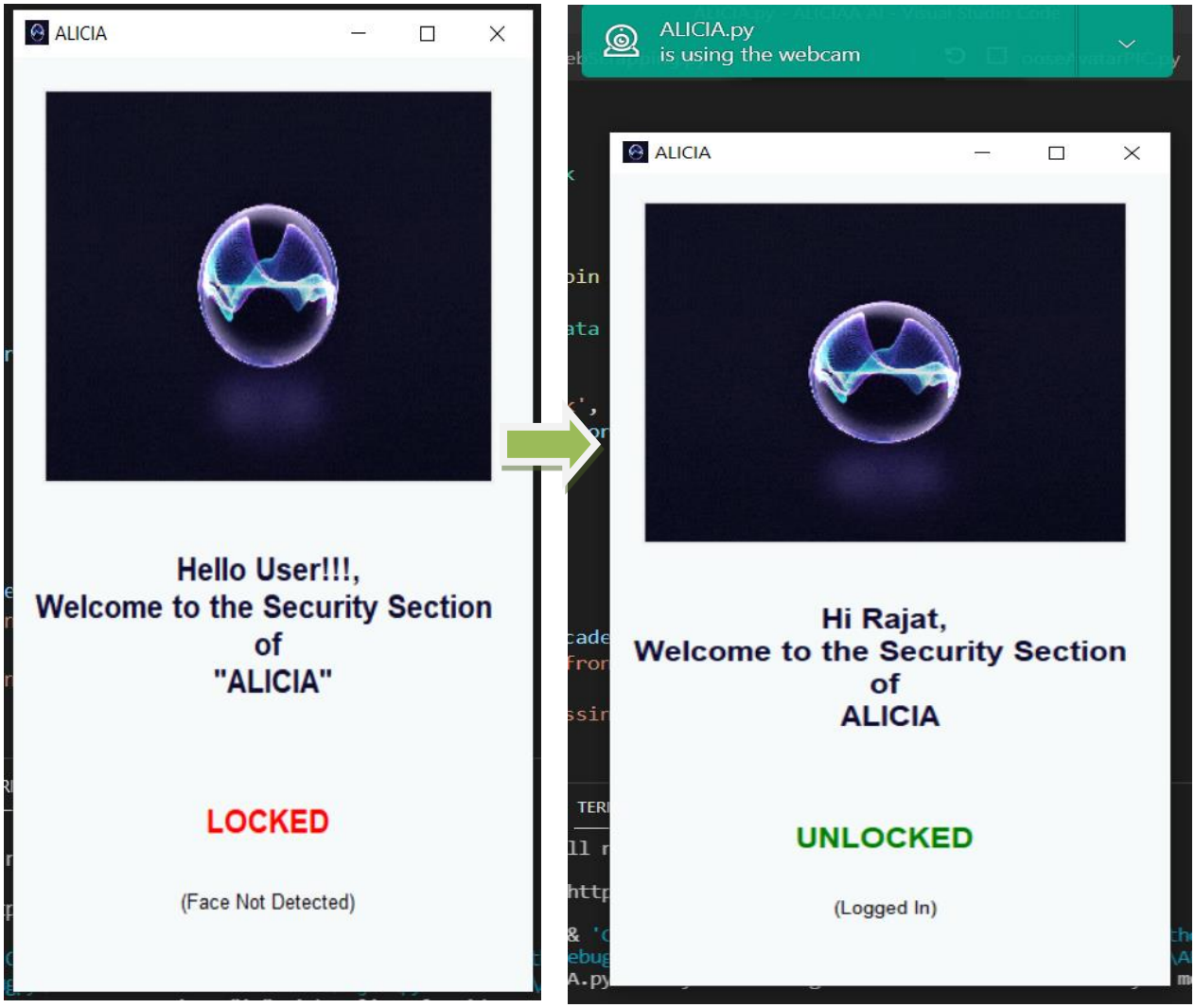


Figure 9.3: Security Face Authentication

3.5.2.3. Main GUI Application Running:

After the successful Face Authentication, the main application (Assistant) starts to run simultaneously; firstly, by giving her introduction along with greetings and the current time.

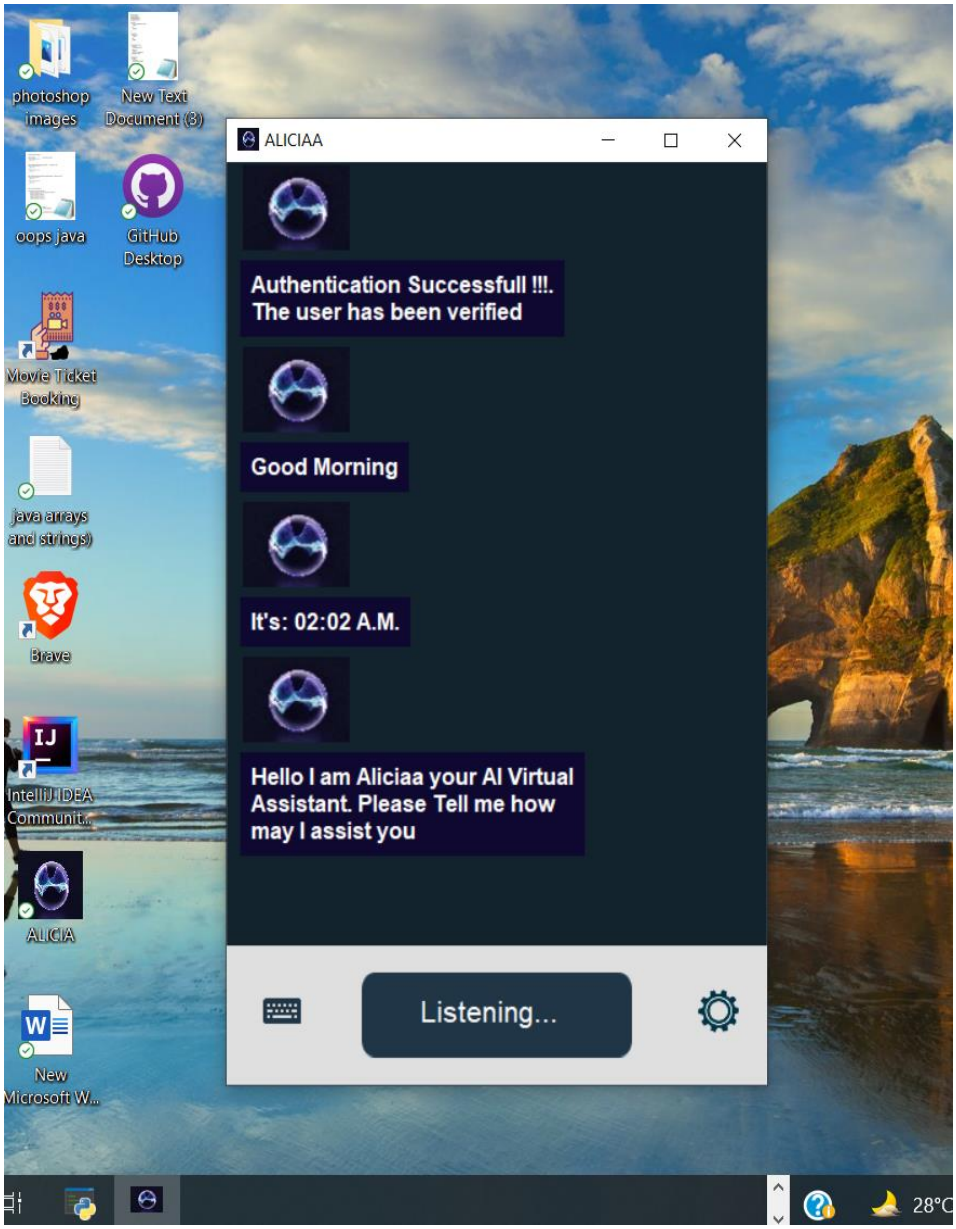


Figure 9.4: Live GUI Application

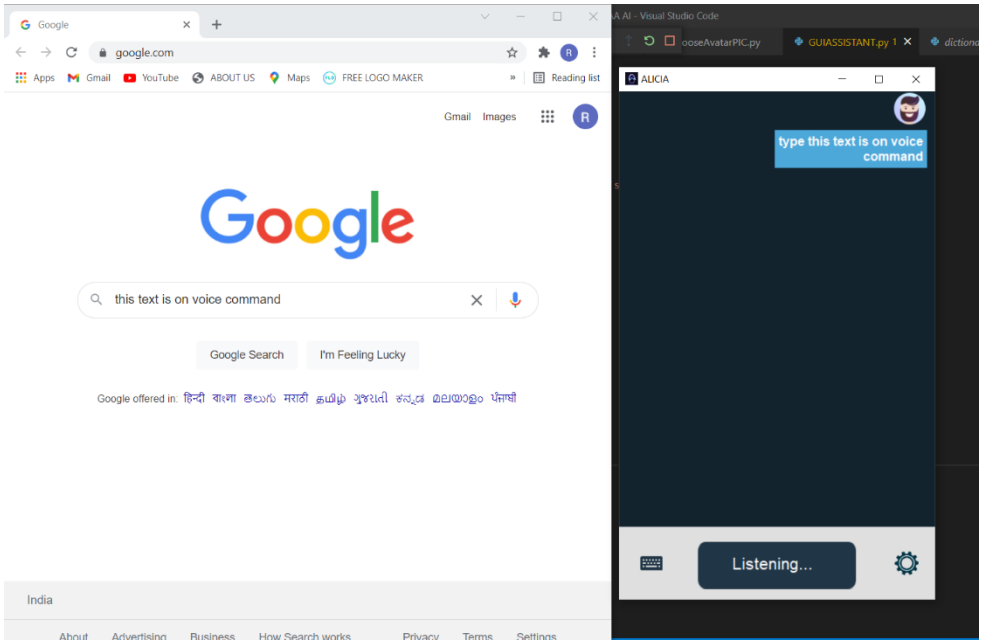


Figure 9.4.1 Input & Output for Google chrome Voice typing

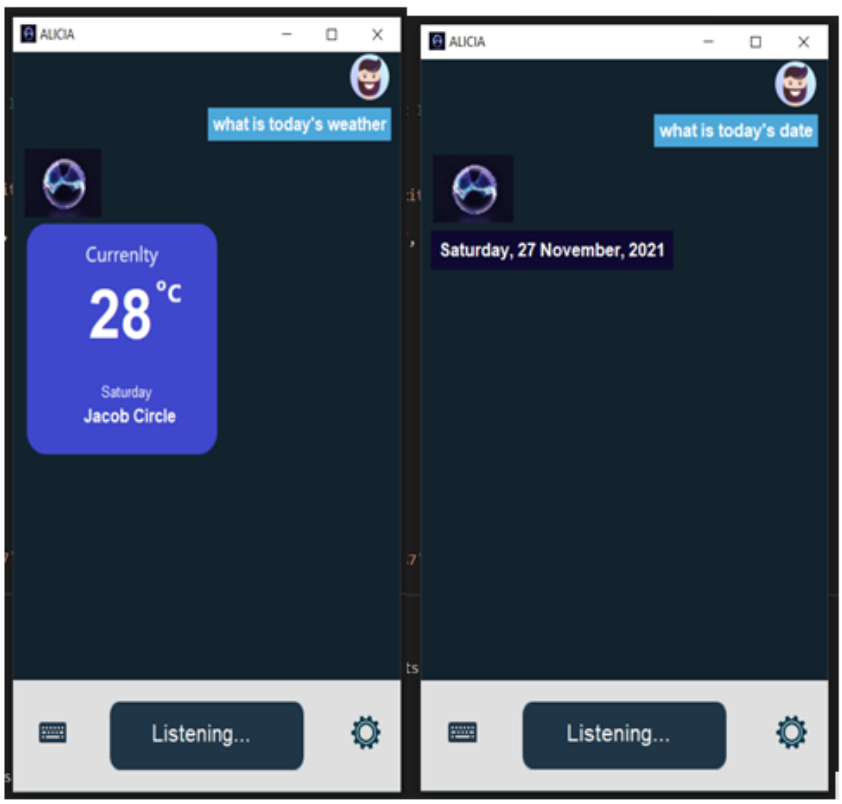


Figure 9.5: CHECK WEATHER AND CHECK DATE

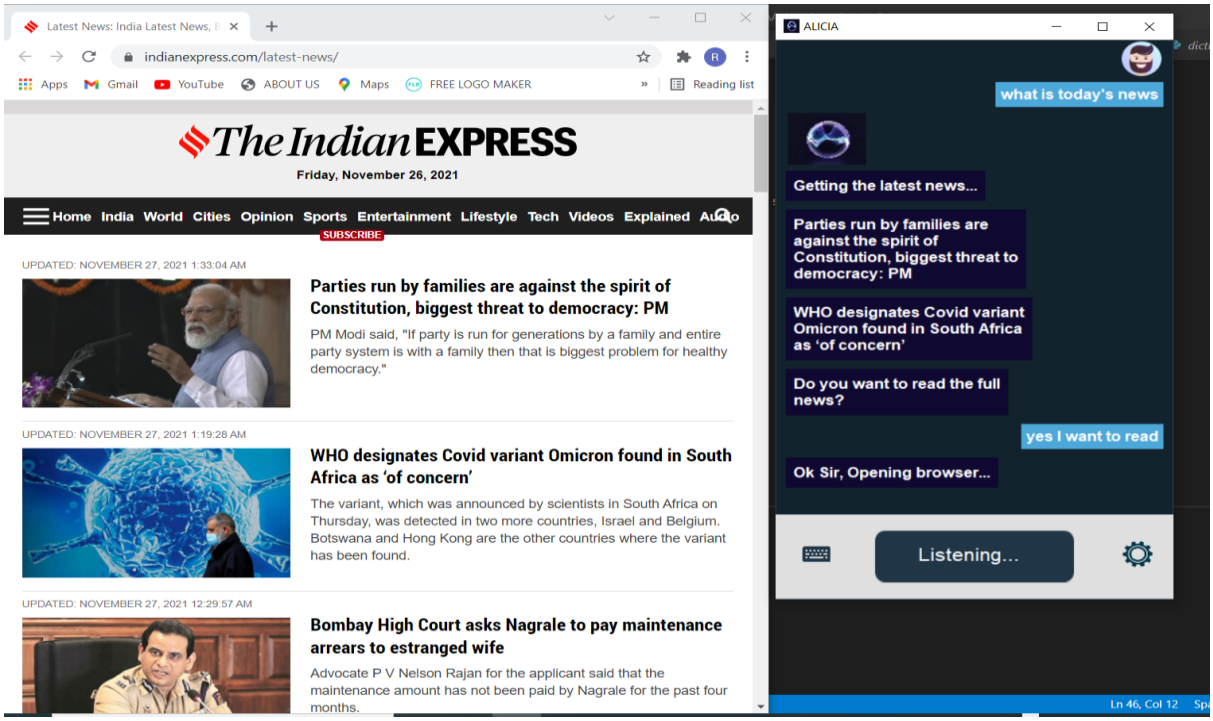


Figure 9.6: Check Today's News

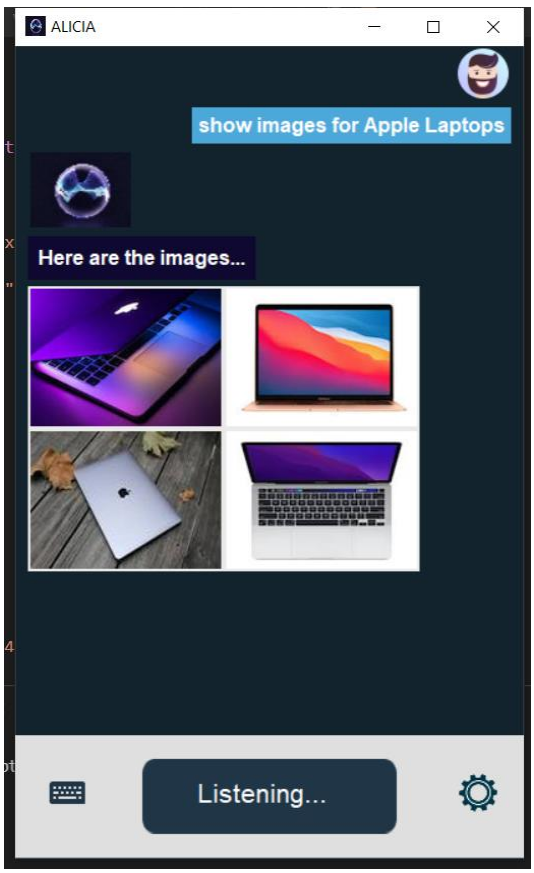


Figure 9.7: IMAGE SEARCH

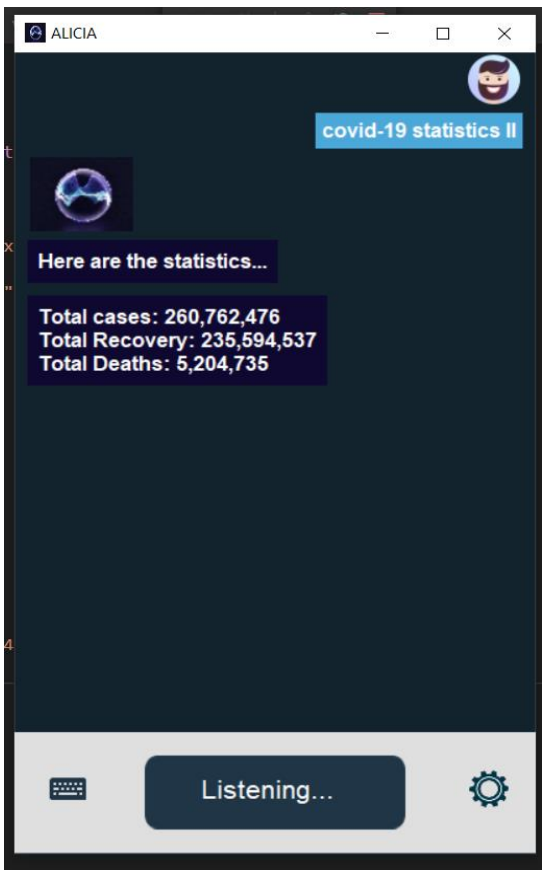


Figure 9.8: COVID 19statistics

Opening a virtual mouse:

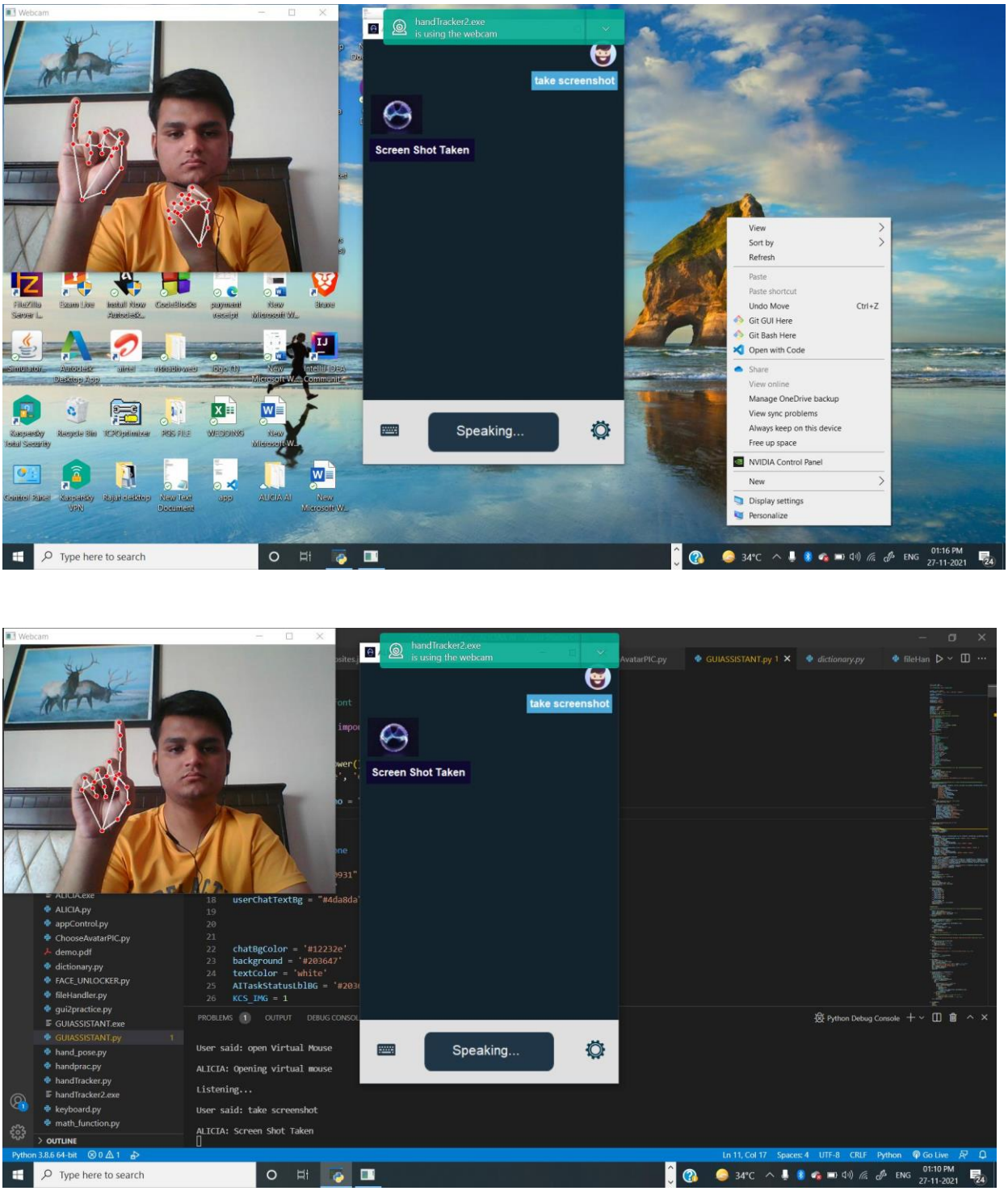


Figure 9.9: Working of virtual mouse

Opening a virtual keyboard:

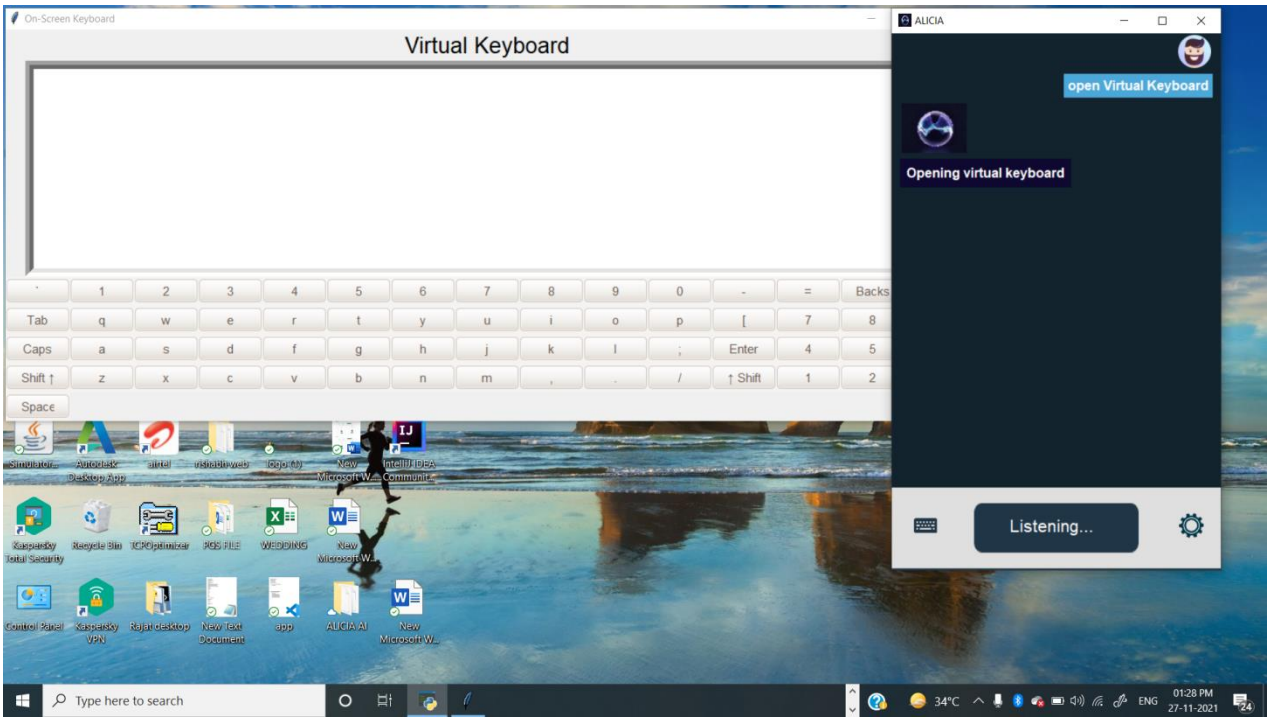


Figure 9.10: Input of Virtual Keyboard

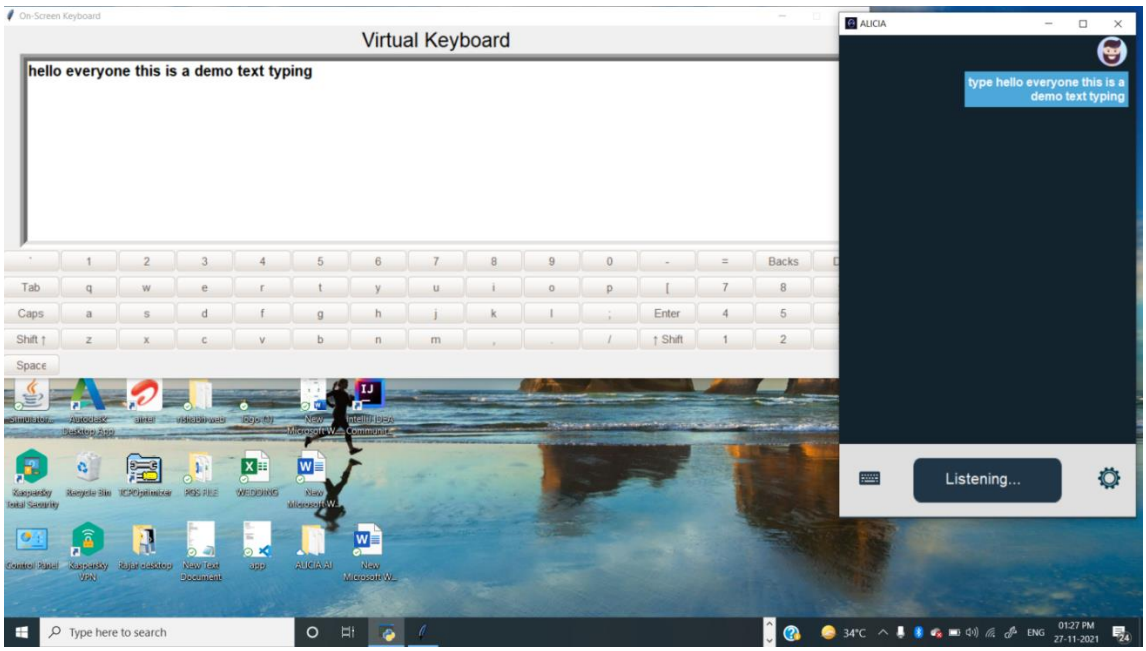


Figure 9.11 :Output of Virtual Keyboard

Sending a WhatsApp Message:

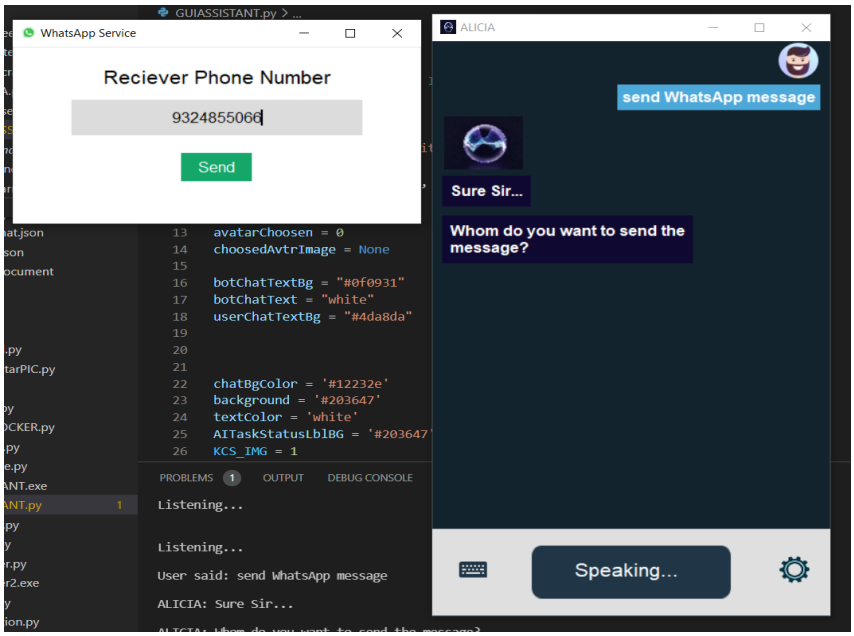


Figure 9.12: Sending Whatsapp messages

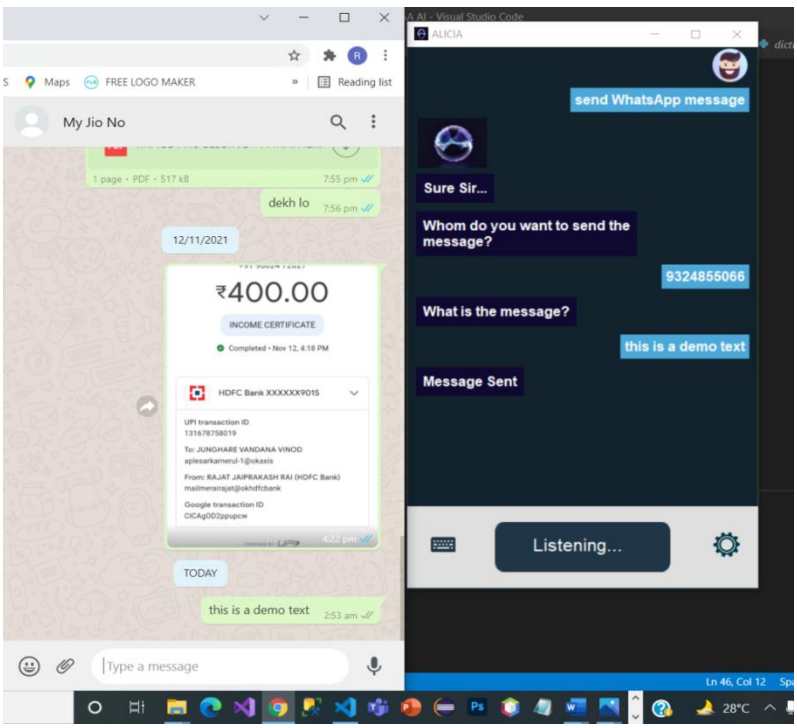


Figure 9.13: Sending Whatsapp messages

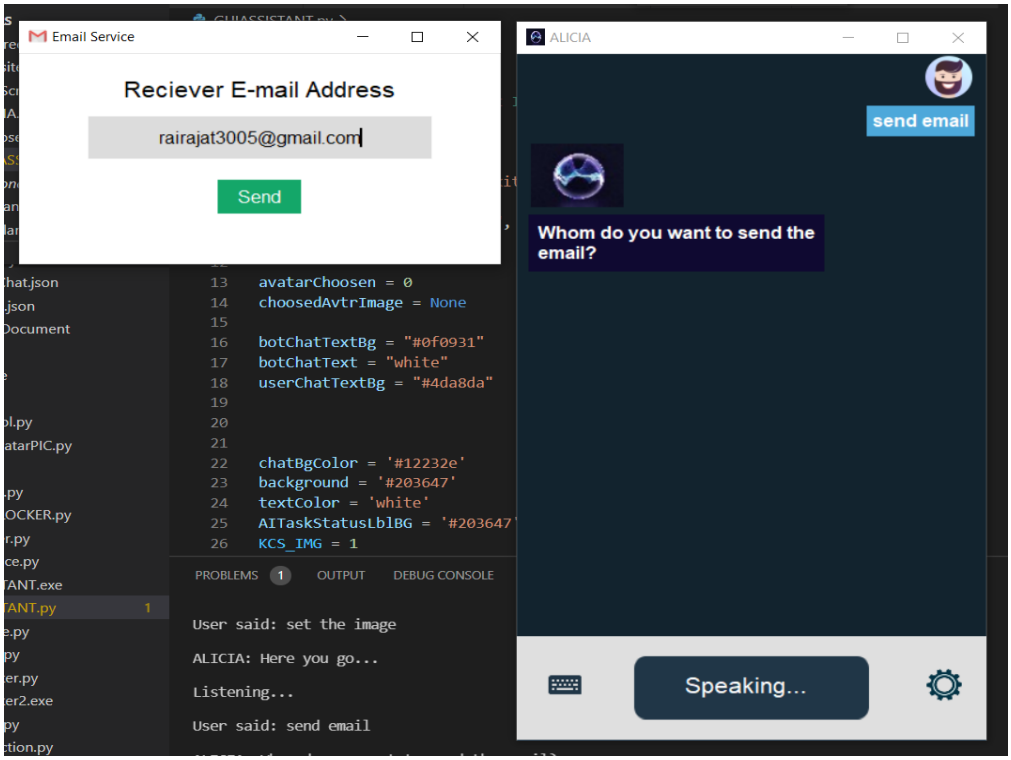


Figure 9.14: Sending an E-Mail

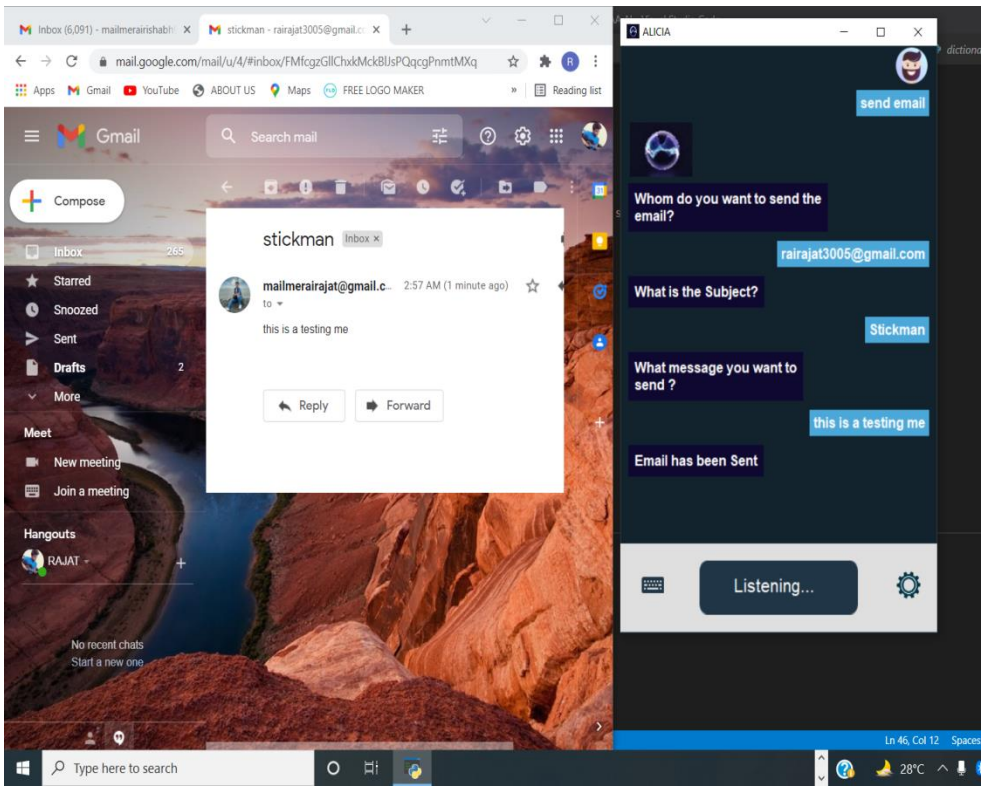


Figure 9.15: Send SMS

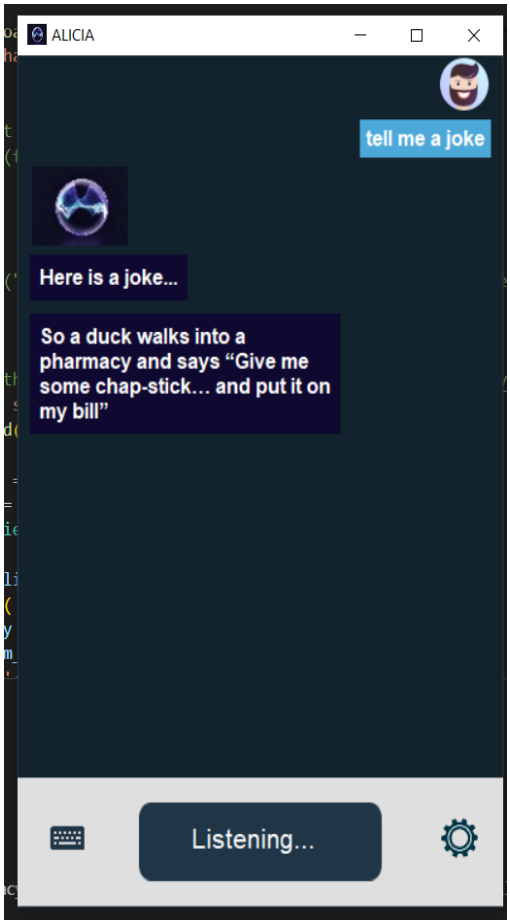


Figure 9.16: .Joke Teller

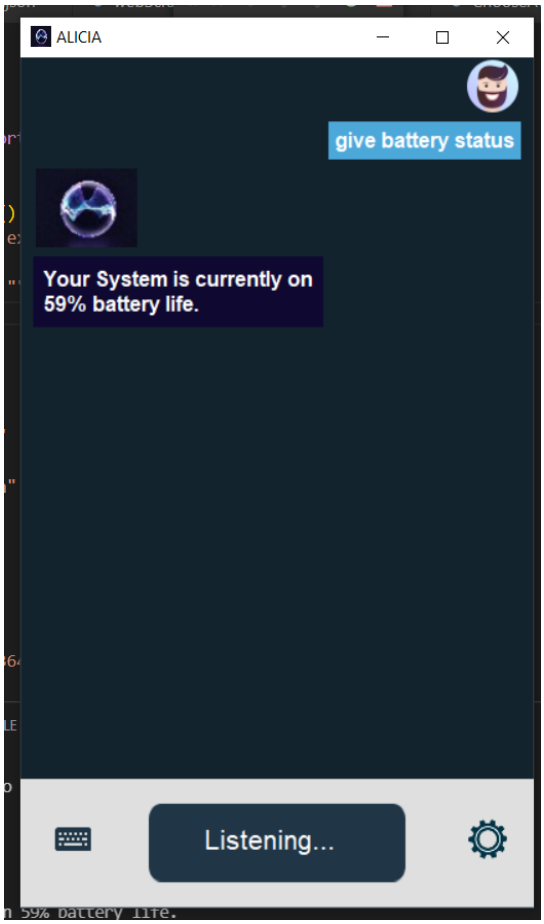


Figure 9.17: battery status

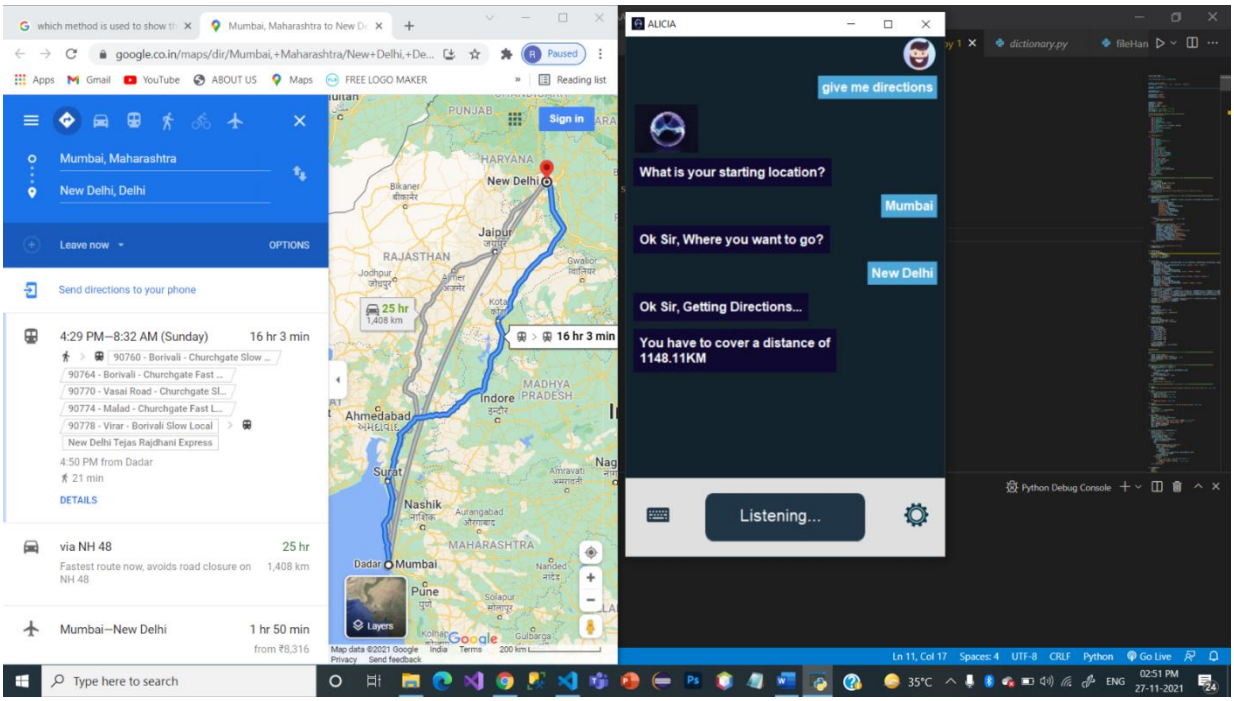


Figure 9.18: Gives Direction

AIR CANVAS

- Air Canvas which can draw anything on it by just capturing the motion of a coloured marker with a camera.
- Colour Detection and tracking features in OpenCV are used in order to achieve the objective.
- The colour marker is detected and a mask is produced

It includes the further steps of morphological operations on the mask produced which are Erosion and Dilation

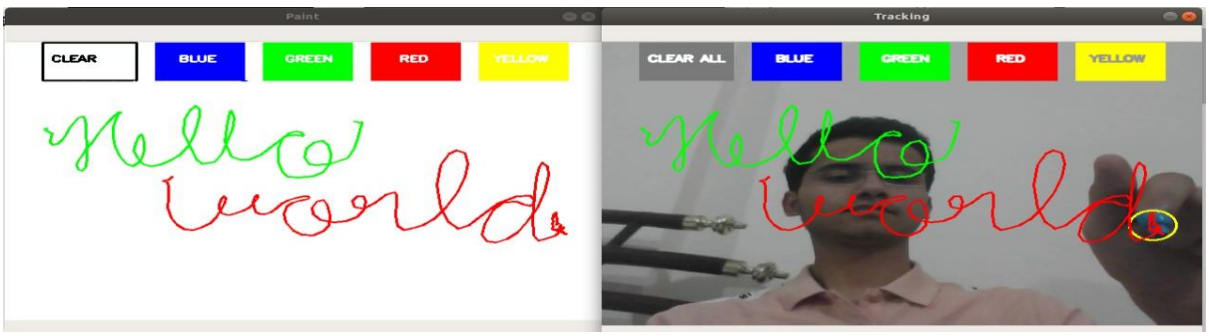


Figure 10: Air Canvas

QR CODE GENERATOR

- QR Code Generator generates a QR Code for the Respective Pages.
- It asks users about the website and name to save the QR code.
- This QR code can be scanned by any scanner and the end user will be prompted to the respective Url.
- QR code generator eliminates the need of sharing complex links among users.
- This uses two modules QR module and speech_recognition module.
- QR code module accepts the URLs as inputs and generates the QR code for the respective WebsiteSpeech Recognition module helps to take the voice inputs which makes entire process hands free and effective

-

```
Say Link to the Website...
You said :netflix.com
What should be file name...
Saving as :Netflix .png
[Finished in 31.9s]
```

Figure 11: Qr code generator

VIRTUAL QUIZ GAMES

Rock-Paper-Scissors Game

The object of the rock-paper-scissor python project is to build a game for a single player that plays with a computer, anywhere, and anytime. RULES-

- rock blunts scissors so rock wins
- scissors cut the paper so scissors win
- paper cover rock so paper wins
- This game is build using ASCII art and random modules, and the basic concept of python.

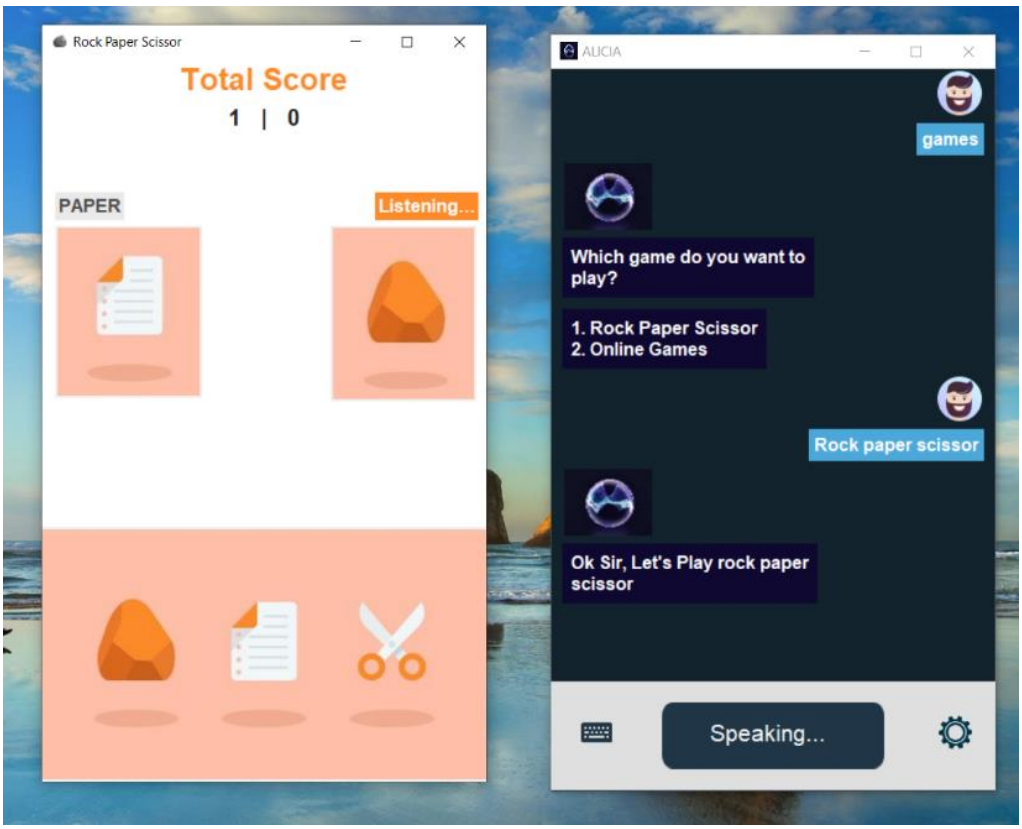


Figure 12: Virtual Games (a)

SNAKE GAME

- Snake Game is one of the traditional 2D game
- Player has to make sure that snake do not hit the walls or shouldn't collide in itself. Player can control the snake with Right, Left, Bottom, Top keys.
- There is an object on the screen referred to as 'food'. Every time snake collides with the food, the food disappears and snake body size is increases.
- There is a score for every successful collision of snake with the food.

This game is build using tkinter and random module

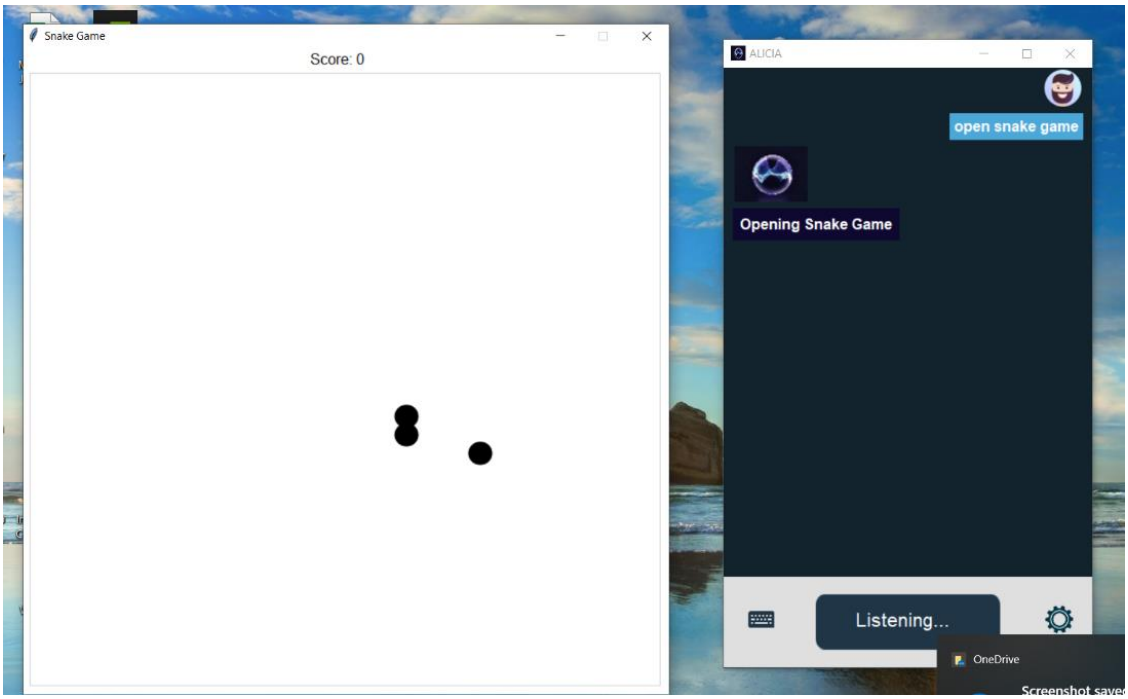
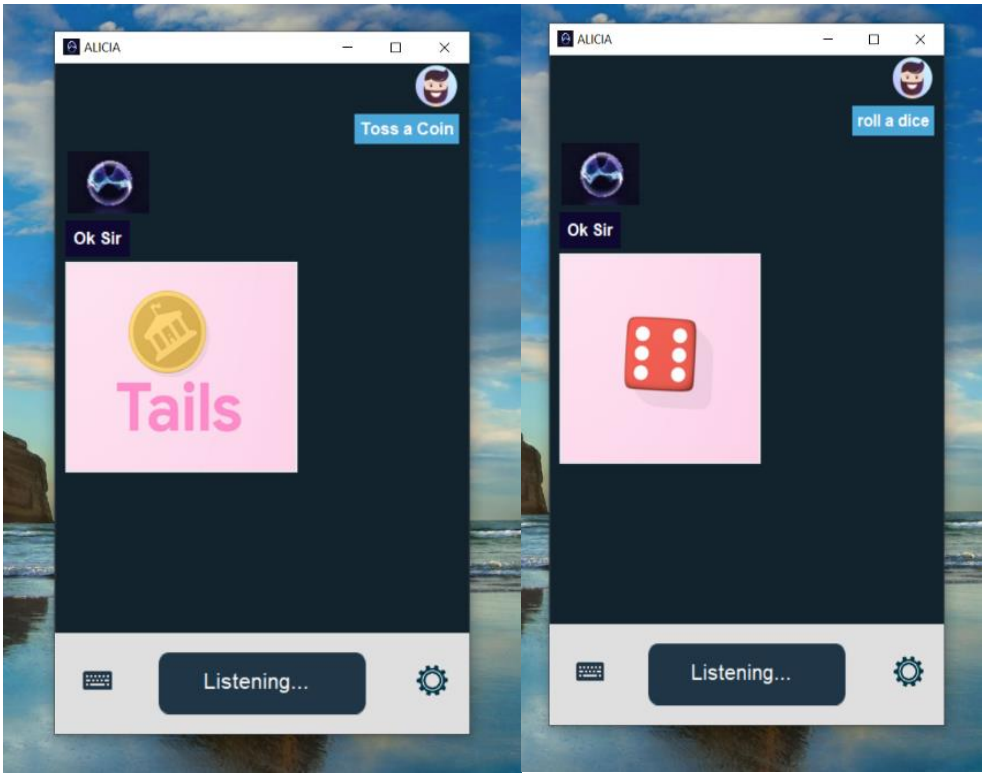


Figure 12.1 Virtual Games (b)

TOSS A COIN ROLL A DICE



QUIZ GAME

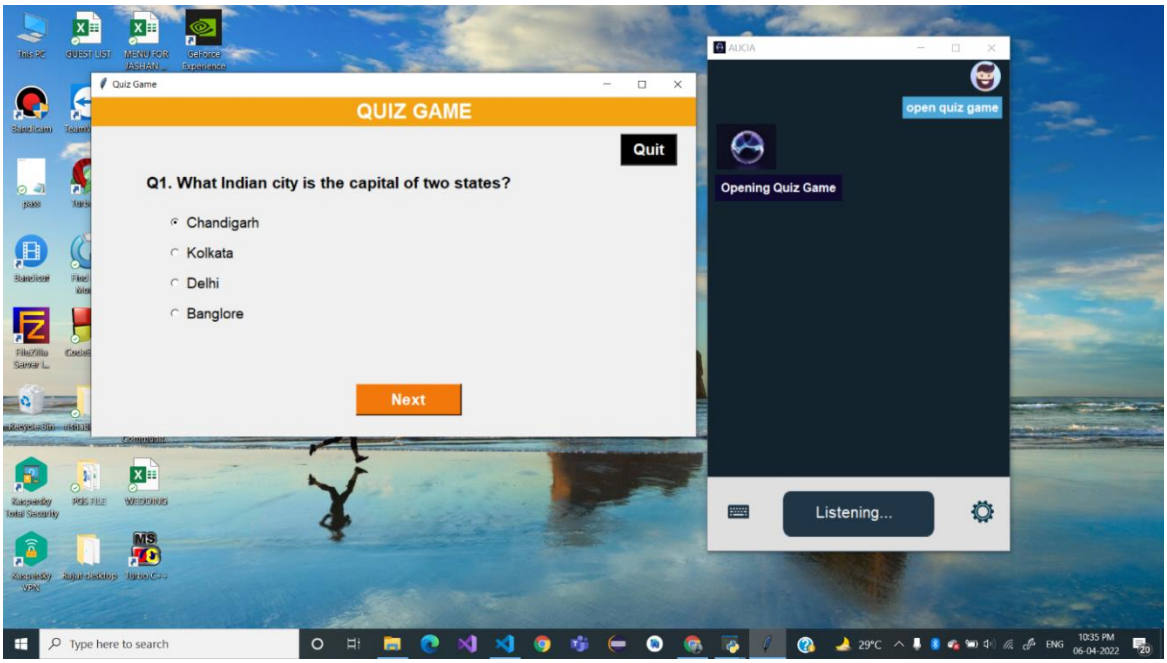


Figure 12.2: Quiz games

3.6 CONCLUSION

ALICIA is a very helpful voice assistant without any doubt as it saves time of the user by conversational interactions, its effectiveness and efficiency. She is different from other virtual assistants as they work on taking the static inputs. On the other hand, ALICIA uses Artificial Intelligence (AI) and Machine Learning (ML) concepts which helps her to get more attraction from the enduser. The users of ALICIA feel secure while using because it is protected with face security camera. Hence these concepts make ALICIA to look different and unique in front of the other virtual assistants.

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Journals and books :

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- Beginning Python:Using Python2.6 and Python 3.1.James Payne,Wrox Publication