DESKTOP VOICE ASSISTANT

A Course Based Project Report Submitted in partial fulfillment of
the requirements for the award of the degree of

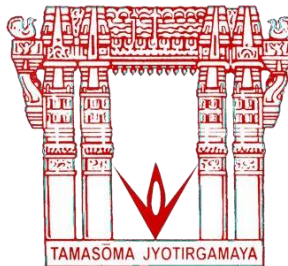## BACHELOR OF TECHNOLOGY IN
CSE (*IOT*)

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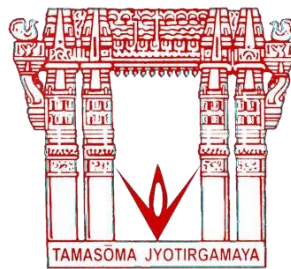
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DEPARTMENT OF CSE (INTERNET OF THINGS)

CERTIFICATE

This is to certify that the project report entitled "**DESKTOP VOICE ASSISSTANT**" is a bonafide work done under our supervision and is being submitted by **Yogesh 21071A6959, Nivas 21071A6944, Rithvik 21071A6934, Akshith 22075A6959, Nikhil 21071A6932, Surya 21071A6906** in partial fulfillment for the award of the degree of Bachelor of Technology in CSE (Internet of Things), of the VNRVJIET, Hyderabad during the academic year 2022-2023. Certified further that to the best of our knowledge the work presented in this thesis has not been submitted to any other University or Institute for the award of any Degree or Diploma.
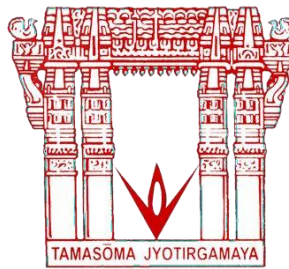
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DECLARATION

We declare that the major project work entitled "**DESKTOP VOICE ASSISSTANT**" submitted in the department of CSE(Internet of Things), Vallurupalli Nageswara Rao Vignana Jyothi Institute of Engineering and Technology, Hyderabad, in partial fulfillment of the requirement for the award of the degree of **Bachelor of Technology** in **CSE(Internet of Things)** is a bonafide record of our own work carried out under the supervision of **P.Nethrasri, Assistant Professor**. Also, we declare that the matter embodied in this thesis has not been submitted by us in full or in any part thereof for the award of any degree/diploma of any other institution or university previously.

Place: Hyderabad

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ABSTRACT

Speech recognition is the process of converting audio into text. This is commonly used in voice assistants like Alexa, Siri, etc.

Python provides an API called **Speech Recognition** to allow us to convert audio into text for further processing.

It will be converting large or long audio files into text using the Speech Recognition API in python.

Based on the commands given to the assistant it will perform tasks like opening and closing the apps ,browsing the net, playing music .

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1. INTRODUCTION

Technology has advanced in the twenty-first century.

Today, we teach our computers to complete tasks on their own.

As a result, the concept of a virtual assistant was born.

Our virtual assistant is a "Desktop Voice Assistant" that uses speech recognition.

It can understand and carry out the audio instructions given by the user.

2.SYSTEM STUDY

Define the problem: This step involves defining the problem that the AI voice assistant is meant to solve. For example, the problem could be to provide hands-free control of smart home devices or to answer questions about a particular topic.

Requirements gathering: This step involves gathering information about what the AI voice assistant should be able to do, such as what commands it should recognize, what information it should provide, etc. This information should be gathered from the end-users, stakeholders, and other relevant parties.

Market research: This step involves researching existing AI voice assistants and their capabilities to determine what is currently available and what is lacking. This information can be used to guide the design and development of the AI voice assistant.

Technical feasibility: This step involves evaluating the technical feasibility of the AI voice assistant, including the availability of hardware and software resources, the level of expertise required to develop the AI voice assistant, and the potential costs involved.

Design and development: This step involves designing and developing the AI voice assistant. The design should take into account the requirements gathered in step 2 and the results of the market research and technical feasibility analysis.

Testing and evaluation: This step involves testing the AI voice assistant to ensure that it meets the requirements defined in step 2 and performs as expected. This step may involve testing the AI voice assistant in different environments, such as noisy environments or environments with poor acoustics, to ensure that it performs well in real-world situations.

Deployment: This step involves deploying the AI voice assistant to the end-users, who will use it to control smart home devices or to get information. Maintenance and support: This step involves providing ongoing support for the AI voice assistant, including bug fixes, updates, and other improvements as needed.

Overall, the goal of a system study for an AI voice assistant is to ensure that the AI voice assistant is designed and developed to meet the needs of the end-users, is technically feasible, and can be deployed and maintained effectively.

3.DESIGN

## 3.1. REQUIREMENT SPECIFICATION

SOFTWARE

DESCRIPTION ARDUINO

IDE:

   Figure 3.1 shows the Arduino Software IDE – It has a word processor for formulating code, a message area, a message console, a toolbar along with the options for normal capabilities and a sequence of menu [21]. It connects with the arduino apparatus to upload code into IoT boards and communicate with them. IDE is an open-source software, which is used to write and upload code to the Arduino boards Arduino. The IDE application is suitable for different operating systems such as Windows The**,** Mac OS X**,** and Linux. It supports the programming languages C and C++. Here, IDE stands for Integrated Development Environment. The program or code written in the Arduino IDE is often called as sketching. We need to connect the Genuino and Arduino board with the IDE to upload the sketch written in the Arduino IDE software. The sketch is saved with the extension '.ino'[12][13].

   Arduino Uno is an open-source microcontroller board developed by Arduino.cc. It is based on the Microchip ATmega328P microcontroller. It is one of the most popular Arduino development board and is universally known as 'stock Arduino'. It is a small development board having size
2.7 in * 2.1 in. It is both highly hardware and software compatible. This board is equipped with sets of digital and analog input/output (I/O) pins but the pin counts are less than Arduino, but Uno is good for small developmental project and prototyping. Its less cost and features makes it a good choice among engineers and students for project development [13].

3.2.USECASE DIAGRAM:
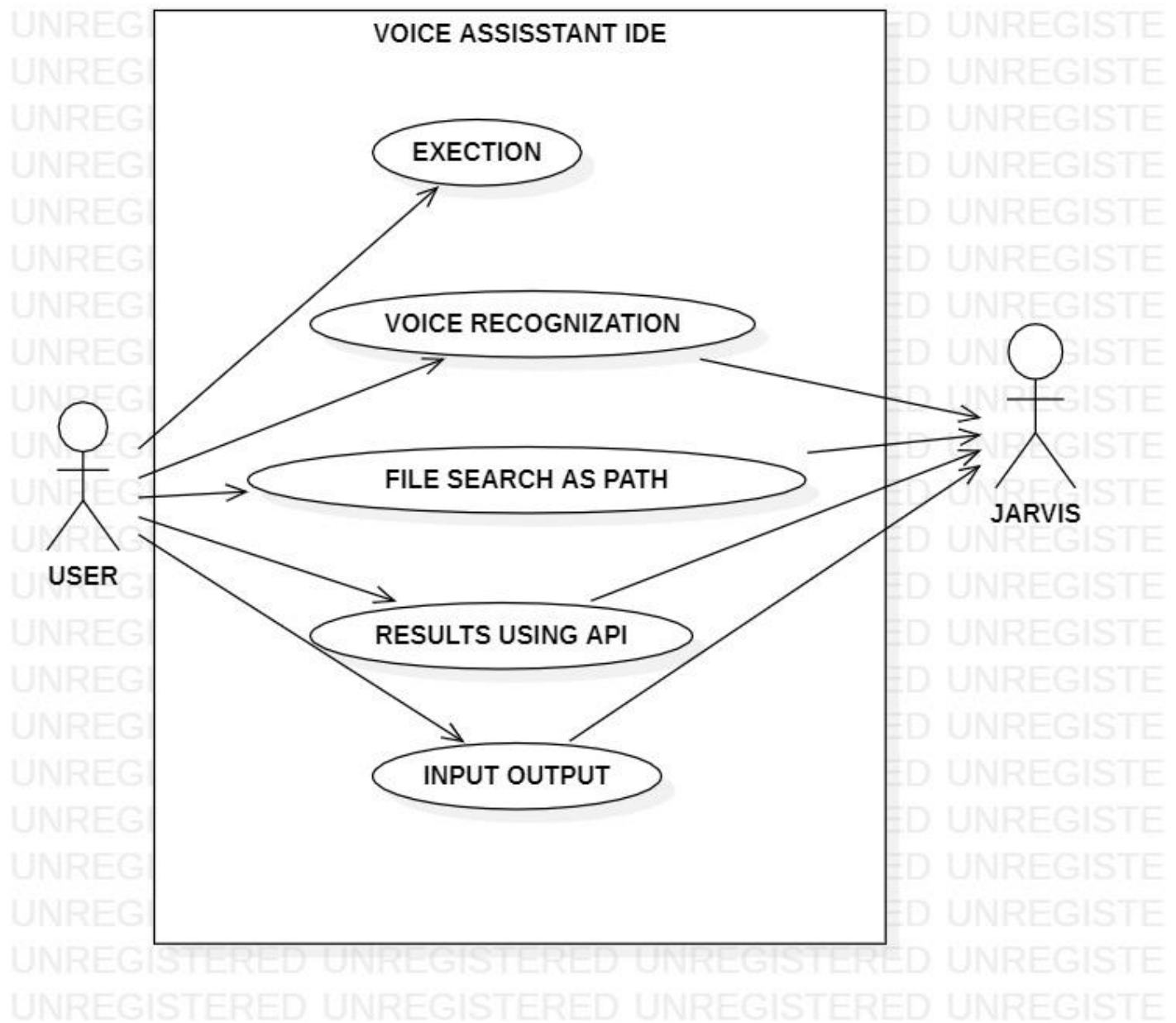
Figure 3.5 Usecase Diagram

4.IMPLEMENTATION

1. Subprocess
2. Wolfram Alpha
3. Pyttsx3
4. Tkinter
5. Wikipedia
6. Speech recognition
7. Web Browser
8. Ecapture
9. Pyjokes
10. Datetime
11. Twilio
12. Requests
13. Beautiful Soup

✓ **Subprocess** - used to run new applications or programs through Python code by creating new processes. It also helps to obtain the input/output/error pipes as well as the exit codes of various commands.

✓ **WolframAlpha** - an API that can calculate expert-level answers with the help of the algorithms, knowledgebase, and Artificial Intelligence (AI) technology of Wolfram which is made possible by the Wolfram Language.

✓ Pyttsx3 - a text-to-speech conversion library in Python. Unlike alternative libraries, it works offline, and is compatible with both Python 2 and 3.

✓ **Tkinter** - It is a standard Python interface to the Tk GUI toolkit shipped with Python. Python with tkinter is the fastest and easiest way to create the GUI applications.

✓ **Wikipedia** - This module allows us to get and parse the information from Wikipedia. In simple words, we can say that it is worked as a little scrapper and can scrap only a limited amount of data.

✓ **Speechrecognition -** a machine's ability to listen to spoken words and identify them. You can then use speech recognition in Python to convert the spoken words into text, make a query or give a reply.

✓ **Web Browser** - a convenient web browser controller. It provides a high-level interface that allows displaying Web-based documents to users. webbrowser can also be used as a CLI tool.

✓ **Ecapture** - This module is used to capture images from your camera.

✓ **Pyjokes** - a python library that is used to create one-line jokes for programmers.

✓ **Datetime -** supplies classes to work with date and time. These classes provide a number of functions to deal with dates, times and time intervals.

✓ **Twilio** - a web application programming interface (API) that software developers can use to add communications such as phone calling, messaging, video and two-factor authentication into their Python applications.

✓ **Requests** - allows you to send HTTP requests using Python. The HTTP request returns a Response Object with all the response data (content, encoding, status, etc).

✓ **BeautifulSoup -** a Python library for pulling data out of HTML and XML files. It works with your favorite parser to provide idiomatic ways of navigating, searching, and modifying the parse tree. It commonly saves programmers hours or days of work.

5. TESTING

Testing is an important part of the development process for AI voice assistants. Here are some of the types of testing that are commonly performed on AI voice assistants:

Functionality testing: This type of testing involves checking that the AI voice assistant can perform the tasks it was designed to perform, such as recognizing and responding to voice commands, providing information, and controlling smart home devices.

User interface testing: This type of testing involves checking that the user interface of the AI voice assistant is intuitive and easy to use, and that it provides clear and useful feedback to the user.

Usability testing: This type of testing involves evaluating the AI voice assistant from the perspective of the end-user to see how well it meets their needs and how easy it is to use. This type of testing can be performed through surveys, focus groups, or user testing sessions.

Performance testing: This type of testing involves evaluating the performance of the AI voice assistant, such as its response time, processing speed, and resource usage. This testing is important to ensure that the AI voice assistant performs well even under heavy load.

Security testing: This type of testing involves evaluating the security of the AI voice assistant, including its ability to protect sensitive information and to resist attacks from malicious actors.

Compatibility testing: This type of testing involves checking that the AI voice assistant works well with other devices, such as smart home devices, wearable technology, and mobile devices.

Regression testing: This type of testing involves checking that changes or updates to the AI voice assistant have not negatively impacted its performance or functionality.

Overall, the goal of testing for an AI voice assistant is to ensure that it is reliable, efficient, and easy to use, and that it meets the needs of the end-users. Testing is an ongoing process that should be performed throughout the development life cycle of the AI voice assistant.

6.RESULTS

There are 6 python files used to develop our Desktop Voice Assistant.
1. actions.py
   Modules included - configparser, datetime, webbrowser,
   pyttsx3, requests.
   This module is to setup your Desktop Voice Assistant
   configuration.
2. commands.py
   Modules included – configparser, random, smtplib, sys,
   wikipedia, mixer from pygame.
   And also from actions we included open_url, search and
   speak.
   This file processes your speech and give output according to
   it.
3. gui.py
   Modules included - tkinter
   This file makes GUI of our Desktop Voice Assistant.
4. p.py
   Modules included - configparser
   For setting the configuration to default.
5. Jarvis2_4windows.py
   Modules included – configparser, os, gui, actions, commands,
   speech_recognition.
   This file is for user queries. It takes commands from user and
   identify the desired task that user wants to perform and generate
   output according to it.
6. Jarvis2.py
   Modules included - datetime, getpass, os, random, smtplib,
   sys, webbrowser, pyttsx3, speech_recognition, wikipedia, gui.

This is a file which opens interface to Desktop Voice Assistant
where you can meet your Voice assistant and chat with it.

So by using all these modules together we tried to built our own Desktop Voice Assistant .
This Voice Assistant performs basic operations with no difficulty.

7.CONCLUSION

Desktop Voice Assistant(aka VPA) are very effective way to organize your schedule. These are also reliable than Human Personal Assistant because, they are more portable and you can use then anytime. They also have lot of information than any assistant as they are connected with internet.

These assistants make life easier for humans. We can use artificial intelligence and the internet of things to improve these gadgets.

8.FUTURE SCOPE

The future of AI voice assistants is bright and holds great potential. Here are some of the areas where AI voice assistants are likely to see significant growth and development in the coming years:

Improved natural language processing: AI voice assistants are likely to become even better at understanding and responding to human speech, allowing for more natural and intuitive interactions.

Integration with other technologies: AI voice assistants are likely to be integrated with other technologies, such as smart home devices, wearable technology, and autonomous vehicles, to provide even more functionality and convenience.

Customization and personalization: AI voice assistants are likely to become more personalized, allowing users to customize the assistant to meet their specific needs and preferences.

Increased security and privacy: As AI voice assistants become more widespread, there will be a greater focus on ensuring the security and privacy of the data that is collected and processed by these assistants.

Expansion into new markets: AI voice assistants are likely to expand into new markets, such as healthcare and education, providing new opportunities for innovation and growth. Increased automation: AI voice assistants are likely to become more automated, allowing users to perform complex tasks with just a few simple voice commands.

Development of more advanced AI models: As AI technology continues to advance, AI voice assistants are likely to become even more sophisticated, allowing for more accurate and helpful interactions.

Overall, the future of AI voice assistants is exciting and holds great potential for improving our lives and making our world a better place.