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Voice Assistant with Home Automation

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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 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 favorite 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.***
Keywords: Arduino UNO, Servo motor, LED, Jumper wire,Resistor

Functionalities of this project include:

1) It can send emails.
2) It can read PDF.
3) It can send text on WhatsApp.
4) It can open command prompt, your favorite IDE,notepad etc.
5) It can play music.
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 isan AI? The virtual assistant that I have created is like if it is not an A.I, but it is the output of a bundle of the statement. But fundamentally, the mail purpose of A.I machines is that it can perform human tasks with thesame 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 itis an A.I.

I. 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 itbecomes 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 thereis 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 favorite IDE with the help of asingle 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 helpto reduce humaneffort and consumes time whileperforming any task, they removed the concept of typing completely and behave as anotherindividual to whom we are talking and asking toperform 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 assistantfocuses on the time complexities and reduces time.

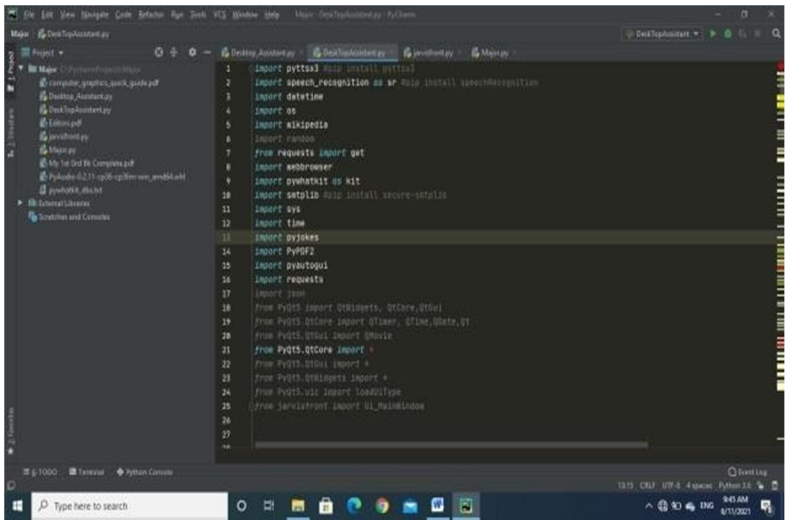
The functionalities include , It can send emails, Itcan read PDF, It can send text on WhatsApp, Itcan open command prompt, your favorite IDE,notepad etc., It can playmusic, It can do searches for you, It can open websites like Google,YouTube, etc., in a web browser, It can give weather forecast, It can give desktop reminders of your choice. It can have some basic conversation. Tools and technologies used are PyCharm IDE formaking 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 theJARVIS as it gives a design and interesting lookwhile having the conversation.

A. Software Details

The IDE used in this project is 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 etc. I have created a live GUI for interacting with the JARVIS as it gives a design and interesting look while having theconversation.

B. Pycharm

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



C. Python Libraries

```
import pyttsx3 #pip install pyttsx3
import speech_recognition as sr #pip install speechRecognition
import datetime
import os
import wikipedia
import random
from requests import get
import webbrowser
import pywhatkit as kit
import smtplib #pip install secure-smtplib
import sys
import time
import pyjokes
import PyPDF2
import pyautogui
import requests
import json
from PyQt5 import QtWidgets, QtCore,QtGui
from PyQt5.QtCore import QTimer, QTime,QDate,Qt
from PyQt5.QtGui import QMovie
from PyQt5.QtCore import *
from PyQt5.QtGui import *
from PyQt5.QtWidgets import *
from PyQt5.uic import loadUiType
from jarvisfront import Ui_MainWindow
```

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II. LITERATURE SURVEY

This system is designed to be used efficiently on desktops. Personal assistant software improves user productivity by managing routine tasks of the user and by providing information from online sources to the user. JIA is effortless to use. Call the wake word 'JIA' followed by the command. And within seconds, it gets executed.

Voice searches have dominated over text search. Web searches conducted via mobile devices have only just overtaken those carried out using a computer and the analysts are already predicting that 50% of searches will be via voice by 2020.Virtual assistants are turning out to be smarterthan ever. Allow your intelligent assistant to make email work for you. Detect intent, pick out important information, automate processes, and deliver personalized responses.

A personal voice assistant is the software that can perform task and provide different services to the individual as per the individual's dictated commands. This is done through a synchronous process involving recognition of speech patterns and then, responding via synthetic speech. Throughthese assistants a user can automate tasks ranging from but not limited to mailing, tasks management and media playback. As the technology is developing day by day people are becoming more dependent on it, one of the mostly used platform is computer. We all want to make the use of these computers more comfortable, traditional way to give a command to the computer is through keyboard but a more convenient way is to input the command through voice. Giving input through voice is not only beneficial for the normal people but also for those who are visually impaired who are not able to give the input by using a keyboard. For this purpose, there is a need of a voice assistant which can not only take command through voice but also execute the desired instructions and give output either in the form of voice or any other means.

A. Arduino UNO

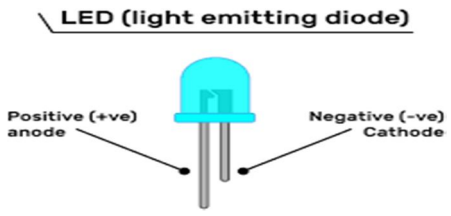
Microcontroller : ATmega38P – 8 bit AVR familymicrocontroller
Operating Voltage : 5V
Digital I/O Pins : 14 (Out of which 6 provide PWMoutput)
Arduino uno : we are going to use Arduino uno toglow led using our virtual voice assistance

B. Servo Motor

A servo motor is a rotary actuator that allows for precise control of angular position. It consists of a motor coupled to a sensor for position feedback. It also requires a servo drive to complete the system. The drive uses the feedback sensor to preciselycontrol the rotary position of the motor.

C. LED

A Light Emitting Diode (LED) is a semiconductor device, which can emit light when an electric current passes through it. To do this, holes from p- type semiconductors recombine with electronsfrom n-type semiconductors to produce light



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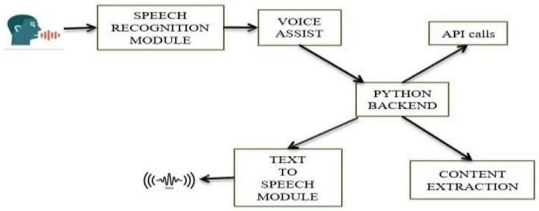
III. DESIGN, DEVELOPMENT, DRAWING

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. Jarvis 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 performany specific task.

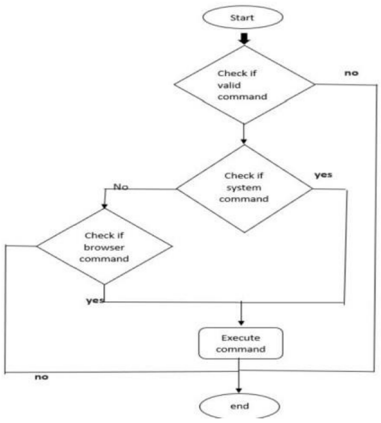
It was an interesting task to make my own assistant.It became easier to send emails without typing any word, Searching on Google without opening thebrowser, and performing many other daily tasks like playing music, opening your favorite IDE with the help of a single voice command.

of the steps of that processing also allowed us to easily fix color casts, which happened to be very strong in some of the subsets of the dataset, thus removing another potential bias.

Block Diagram



Flow Chart



The data in this project is nothing but 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.

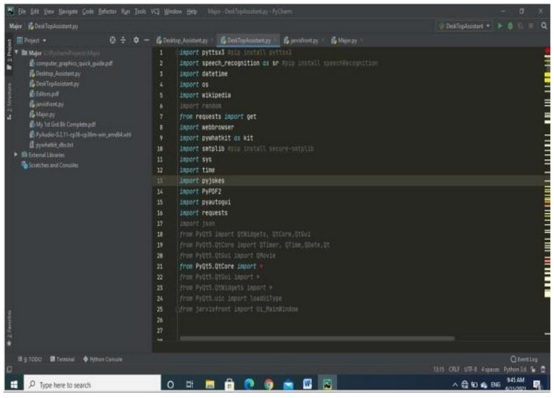
IV. DESKTOP VOICE ASSISTANT FOR VISUALLYIMPAIRED

A personal voice assistant is the software that can perform task and provide different services to the individual as per the individual's dictated commands. This is done through a synchronous process involving recognition of speech patterns and then, responding via synthetic speech. Through these assistants a user can automate tasks ranging from but not limited to mailing, tasks management and media playback. As the technology is developing day by day people are becoming more dependent on it, one of the mostly used platform is computer. We all want to make the use of these computers more comfortable, traditional way to give a command to the computer is through keyboard but a more convenient way is to input the command through voice. Giving input through voice is not only beneficial for the normal people but also for those who are visually impaired who are not able to give the input by using a keyboard. For this purpose, there is a need of a voice assistant which can not only take command through voice but also execute the desired instructions and give output either in the form of voice or any other means.

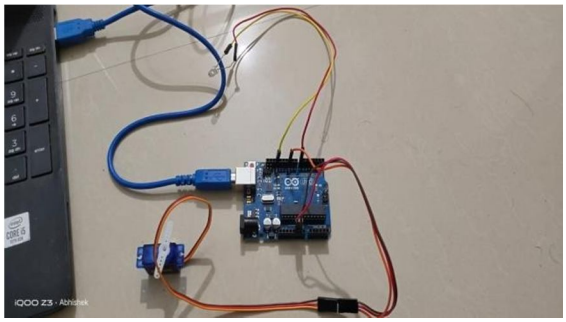
Allow your intelligent assistant to make email workfor you. Detect intent, pick out important information, automate processes, and deliver personalized responses.

Voice searches have dominated over text search. Web searches conducted via mobile devices have only just overtaken those carried out using a computer and the analysts are already predicting that 50% of searches will be via voice by 2020.

V. DATA IMPLEMENTATION ANDPROGRAM EXECUTION

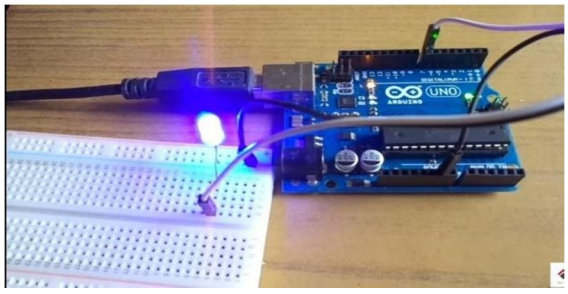


VI. HARDWARE CONNECTION



In hardware connection we have used servo motor and led with Arduino to control them and using ourvoice assistant we can turn led on and led off by passing commands and servo motor can be turn on and turn off using the commands
The system testing is done on fully integrated system to check whether the requirements are matching or not. The system testing for JARVIS desktop assistant focuses on the four parameters:

VII. RESULT



VIII. FUTURE SCOPE

1) Make our desktop voice assistant to learn moreon its own and develop a new skill in it.
2) Voice assistant android app can also bedeveloped.
3) Make more voice terminals.
4) Voice commands can be encrypted to maintainsecurity

IX. CONCLUSION

Our desktop voice assistant is a very helpful voice assistant without any doubt as it saves time of the user by conversational interactions, its effectiveness and efficiency. Voice assistants have had a huge change in user' s interaction with technologies embedded in their devices. Like any other technology of such magnitude, they have altered the basic genome of the sphere in which they operate. While this has largely created a better world with drastic benefits for communities, which were before kept in dark with reference to technological innovations, they have posed new kind of threats with respect to user's privacy and security.

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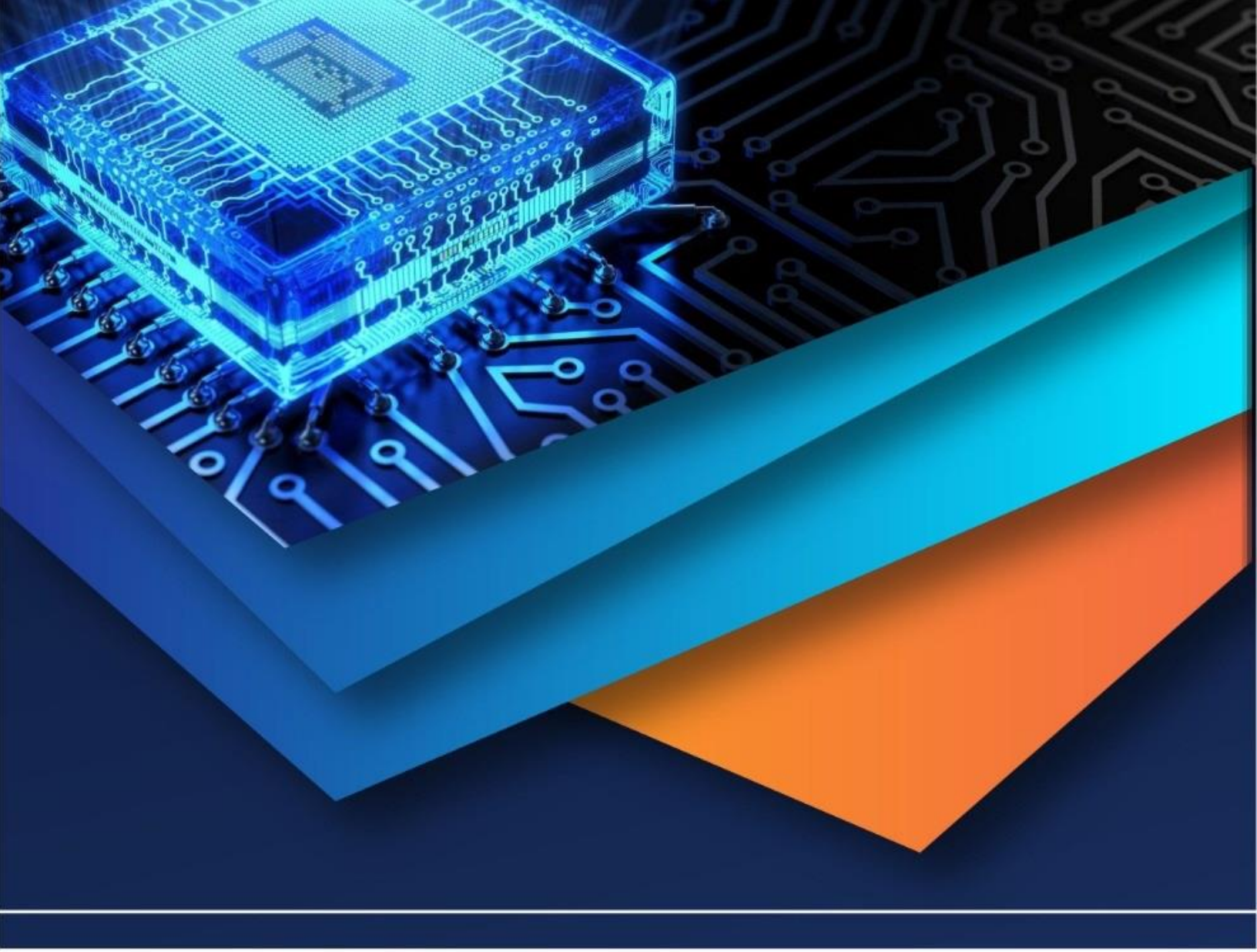

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