Python JARVIS Speech Recognition

Contents

Time required: 60 minutes

This series of tutorials were inspired by
https://www.freecodecamp.org/news/python-project-how-to-build-your-own-jarvis-using-python/

NOTE: You may need to run this program from the command line for it to work.

The JARVIS Project

This ongoing project will be submitted in GitHub.

https://classroom.github.com/a/ZvHoxr6p

Speech Recognition

What good is an Iron Man suit if we can't communicate with it? Until the next release of Python, JARVIS can't read your mind . . . . yet.

The Python SpeechRecognition library performs speech recognition. It has support for several engines and APIs, online and offline.

https://pypi.org/project/SpeechRecognition/

1. Go to a command prompt → **pip install SpeechRecognition**

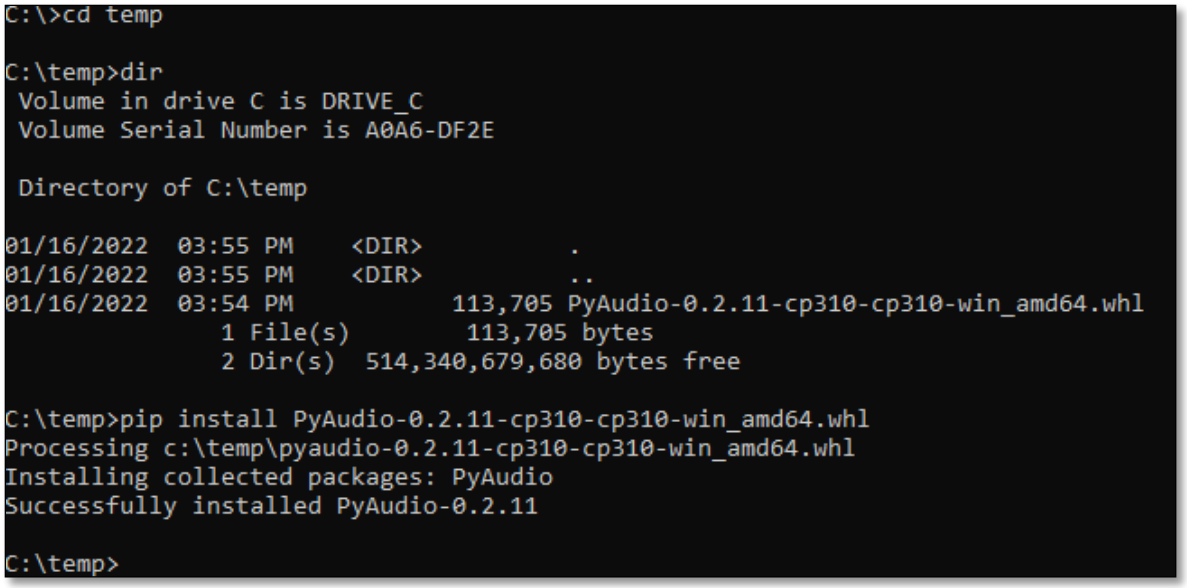
PyAudio

To use your microphone, we need to install the PyAudio library. PyAudio is a cross-platform audio input/output stream library.

https://pypi.org/project/PyAudio/

Unfortunately, it appears that Python 3.10 doesn't allow you to install it with pip. Here are some workaround steps.

1. Go to: https://www.lfd.uci.edu/~gohlke/pythonlibs/#pyaudio
2. Download PyAudio-0.2.11-cp310-cp310-win_amd64.whl
   (I downloaded it to c:\temp so it was easy to get to from and command prompt.)
3. Open a command prompt →
   pip install PyAudio-0.2.11-cp310-cp310-win_amd64.whl
4. It should install successfully as shown below.



Tutorial Part 1

With all the JARVIS tutorials, we will start from the bare bones, and build to an OOP version. This code is based on sample code from the SpeechRecognition library GitHub.

https://github.com/Uberi/speech_recognition/blob/master/examples/microphone_recognition.py

```python
"""
    Name: jarvis_speech_recognition1.py
    Author:
    Created:
    Purpose: Voice recognition from Google
    Sample code using Google Speech Recognition
    from the SpeechRecognition library sample code.
"""

# pip install SpeechRecognition
# install pyaudio from whl in directions
import speech_recognition as sr

# Create SpeechRecognition recognizer object
r = sr.Recognizer()

# With your local microphone as the source
with sr.Microphone() as source:
    print('Listening . . . .')
    audio = r.listen(source)

    try:
        print('Recognizing . . .')
        # Capture the recognized word in a variable
        print(f"You may have said: {r.recognize_google(audio)}")

    except sr.UnknownValueError:
        print("Google Speech Recognition could not understand audio")

    except sr.RequestError as e:
        # If there was an error communicating with Google Speech
        print(f"Google Speech did not respond: {e}")
```

Tutorial Part 2

We can recognize speech. Time to start controlling our computer with our voice. This is an OOP example that allows you to quit the program by saying quit. This leads to many possibilities for a voice-controlled AI Python program.

```python
"""
    Name: jarvis_speech_recognition2.py
    Author:
    Created:
    Purpose: Voice recognition from Google
"""

# pip install SpeechRecognition
# install pyaudio
from sys import exit
import speech_recognition as sr


class Jarvis:
    def __init__(self) -> None:
        # Create SpeechRecognition recognizer object
        self.r = sr.Recognizer()

    def take_user_input(self):
        """
            Recognizes user voice input using
            Speech Recognition module, converts it to text
        """
        # with your local microphone as the source
        with sr.Microphone() as source:
            print('Listening....')
            self.r.pause_threshold = 1
            # Start listening for speech
            audio = self.r.listen(source)

            try:
                print('Recognizing . . .')
                # Capture the recognized word in a string variable
                self.query = self.r.recognize_google(audio, language='en-in')
                print(self.query)
                # If you say quit, the program will exit

            except sr.UnknownValueError:
                print("Google Speech Recognition could not understand audio")

            except sr.RequestError as e:
                # If there was an error communicating with Google Speech
                print(f"Google Speech did not respond: {e}")

```

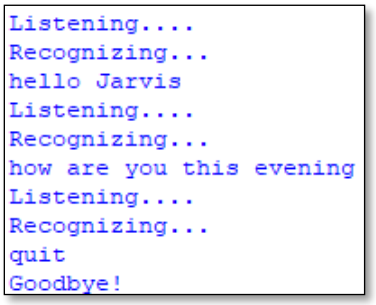
```python
    def voice_commands(self):
        if self.query == "quit":
            print("Goodbye!")
            exit()


# Create a jarvis program object
jarvis = Jarvis()
while True:
    jarvis.take_user_input()
    jarvis.voice_commands()
```

Assignment: The JARVIS Project

It is now up to you. The world is under attack, aliens are everywhere, the space time continuum is falling apart, where is Iron Man?

Combine the text to speech and the speech recognition program into a program named **jarvis.py**

1. When the words you are speaking are recognized:
    a. They are displayed on the screen.
    b. JARVIS repeats the words.
    c. Add another command for JARVIS to do something. For example, you could have Jarvis print your name.



Assignment Submission

This ongoing project will be submitted the Jarvis Project assignment in our GitHub Classroom.

https://classroom.github.com/a/ZvHoxr6p

Attach a screenshot of your completed GitHub repository to let me know you have completed the assignment.