



EXTRACT TEXT FROM VIDEOS

Python Programming (INT 213)



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1.ABSTRACT:

Now a days, we may prefer to watch a film in OTT, but we may not understand foreign languages and for that film we may feel bored to see if the film doesn't present subtitles. Suppose one would love to watch a Hollywood movie or any other film rather than our mother tongue, which we don't understand that we definitely prefer subtitles to know what they speak so, as result here I have made a simple speech extractor from video which will recognize "English" language and converts it into text.

2.INTRODUCTION:

Speech recognition is an interesting task that allows you to improve the quality of your life. In this never ending Covid period, I need to watch many videos of lessons, and it's so easy to lose concentration. At the same time, the possibility to have all registrations available on my university's website made me become a perfectionist, so I would like to take every word in my notes. But it's costly because it needs a lot of work and steals time.

3.RELATED WORK:

S.N	NAME	USE	URL
1.	TOWARDS AI	Speech recognition	https://towardsai.net/p/nlp/extract-the-text-from-long-videos-with-python
2.	GeekForGeeks	YouTube video download	https://www.geeksforgeeks.org/how-to-extract-youtube-data-in-python/
3.	The Python Code	Speech recognition	https://www.thepythoncode.com/article/using-speech-recognition-to-convert-speech-to-text-python

4.	GeekForGeeks	GUI	https://www.geeksforgeeks.org/python-gui-tkinter/
5.	javatpoint	GUI	https://www.javatpoint.com/python-tkinter
6.	tutorialspoint	GUI	https://www.tutorialspoint.com/gui_programming_with_python_tkinter_and_java_swing/index.asp
8.	Stack Overflow	YouTube video download	https://stackoverflow.com/questions/40713268/download-youtube-video-using-python-to-a-certain-directory/54163735

These are some websites which I have used to make my project differently .

I have created a Graphical User Interface in my program so a normal person can interact with my code easily.

Some Libraries which are used in project:

Speech Recognition:

If we have an audio file that we want to translate to text, we simply have to replace the source with the audio file instead of a microphone.

Place the audio file and the program in the same folder for convenience. This works for WAV, AIFF, or FLAC files.

MoviePy:

MoviePy is a Python library for video editing: cutting, concatenations, title insertions, video compositing (a.k.a. non-linear editing), video processing, and creation of custom effects.

MoviePy can read and write all the most common audio and video formats, including GIF, and runs on Windows/Mac/Linux, with Python 2.7+ and 3 (or only Python 3.4+ from v.1.0).

Pydub:

Audio files are a widespread means of transferring information. So, let's see how to work with audio files using Python. Python provides a module called **pydub** to work with audio files. **pydub** is a Python library to work

with **only .wav** files. By using this library, we can play, split, merge, edit our .wav audio files.

4.METHODOLOGY:

Step 1:

```
pip install SpeechRecognition pydub
```

Step 2:

```
Import speech_recognition as sr
```

The nice thing about this library is it supports several recognition engines:

- [CMU Sphinx](#) (offline)
- Google Speech Recognition
- [Google Cloud Speech API](#)
- [Wit.ai](#)
- [Microsoft Bing Voice Recognition](#)
- [Houndify API](#)
- [IBM Speech To Text](#)
- [Snowboy Hotword Detection](#) (offline)

Here in this project we used Google Speech Recognition as it is straight forward and doesn't

Require any API key

Step 3:

```
filename= " example.wav"
```

Step 4:

```
R=sr.Recognizer()
```

Step 5:

```
with sr.AudioFile(filename) as source  
    audio_data = r.record(source)  
    text = r.recognize_google(audio_data)  
    print(text)
```

“This will work only for only very small video sizes so to make is work for larger videos the below code will make the video into smaller chunks using pydub library”

```
import speech_recognition as sr
import os
from pydub import AudioSegment
from pydub.silence import split_on_silence
r = sr.Recognizer()

def get_large_audio_transcription(path)

    sound = AudioSegment.from_wav(path)

    chunks = split_on_silence(sound,
        min_silence_len = 500,
        silence_thresh = sound.dBFS-14,
        keep_silence=500,
    )

    folder_name = "audio-chunks"

    if not os.path.isdir(folder_name):
        os.mkdir(folder_name)

    whole_text = ""

    for i, audio_chunk in enumerate(chunks, start=1):

        chunk_filename = os.path.join(folder_name, f"chunk{i}.wav")
        audio_chunk.export(chunk_filename, format="wav")

        with sr.AudioFile(chunk_filename) as source:

            audio_listened = r.record(source)

            try:

                text = r.recognize_google(audio_listened)

            except sr.UnknownValueError as e:

                print("Error:", str(e))

            else:

                text = f"{text.capitalize()}. "

                print(chunk_filename, ":", text)

                whole_text += text

    return whole_text

path="example.wav"

print("\n Full text:",get_large_audio_transcription(path))
```

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In addition to this project has user friendly graphical user Interface which has process of

Step 1: pasting URL of the YouTube video , pasting directory to be installed and name of video to be stored in system with or without extension

Step 2: On clicking submit button

Process: After, clicking submit button the video is downloaded and stored in specified directory and name

After that it is converted into .wav file in same directory and name

Then, this wav file is divided into chunks and speech in this chunks are recognized the whole text is pasted in text box .

The complete code :

<https://github.com/vamsivarada3008/extract-text-from-videos/blob/branch-1/extractTextFromVideo>

```
In [*]: import tkinter as tk
import pytube
import moviepy.editor as mp
import speech_recognition as sr
from pydub import AudioSegment
from pydub.silence import split_on_silence
from tkinter import *
import os

# function declarations.
r = sr.Recognizer()
def rgb_hack(rgb):
    return "%02x%02x%02x" % rgb

def get_large_audio_transcription(path):
    sound = AudioSegment.from_wav(path)
    chunks = split_on_silence(sound,
        min_silence_len = 500,
        silence_thresh = sound.dBFS-14,
        keep_silence=500,
    )
    folder_name = "audio-chunks"
    if not os.path.isdir(folder_name):
        os.mkdir(folder_name)
    whole_text = ""
    for i, audio_chunk in enumerate(chunks, start=1):
        chunk_filename = os.path.join(folder_name, f"chunk{i}.wav")
        audio_chunk.export(chunk_filename, format="wav")
        with sr.AudioFile(chunk_filename) as source:
            audio_listened = r.record(source)
            try:
                text = r.recognize_google(audio_listened)
            except sr.UnknownValueError as e:
```

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```
        except sr.UnknownValueError as e:
            print("Error:", str(e))
        else:
            text = f"{text.capitalize()}. "
            print(chunk_filename, ":", text)
            whole_text += text
    return whole_text

def wavConversion():
    dire=var1.get()+"\\"+var2.get()
    print(dire)
    clip = mp.VideoFileClip(dire)
    direC=var1.get()+"\\"+var2.get().split('.')[0]+' .wav'
    clip.audio.write_audiofile(direC)

    lb2=tk.Label(root,text='video downloaded and converted sucessfully to wav file').place(x=100,y=200)
    text=get_large_audio_transcription(direC)

    lb3=tk.Text(root,height=30,width=100)
    lb3.place(x=500,y=50)
    lb3.insert(END,text)

def textCommand():
    link=var.get()
    try:
        yt = pytube.YouTube(link)
    except:
        lb5=tk.Label(root,text='error in connection').place(x=100,y=150)
    try:
        video=yt.streams.filter(progressive=True, file_extension='mp4').order_by('resolution')[-1]
        video.download(var1.get(),var2.get())
        lb1=tk.Label(root,text='download completed').place(x=100,y=200)
    except:
        print('file not found')
    wavConversion()

# gui code start.

root=tk.Tk()
root.geometry('400x600')
root.title('download a youtube video using link')
root.config(bg=rgb_hack((253, 203, 169)))

var=tk.StringVar()
var1=tk.StringVar()
var2=tk.StringVar()
var3=tk.StringVar()

lb1=tk.Label(root,bg=rgb_hack((253,203,169)),text='paste your url here:').place(x = 30,y = 50)

lb2=tk.Label(root,
text='NOTE:paste your url as this format \nhttps://www.youtube.com/watch?v=(n06H70cPd-g)\nin your link last part has to be used'
).place(x=30,y=300)

e1=tk.Entry(root,textvariable=var).place(x=200,y=50)

lb2=tk.Label(root,bg=rgb_hack((253,203,169)),text="Directory to be installed:").place(x=30,y=75)

e2=tk.Entry(root,textvariable=var1).place(x=200,y=75)

lb3=tk.Label(root,bg=rgb_hack((253,203,169)),text='name including extension:').place(x=30,y=100)

e3=tk.Entry(root,textvariable=var2).place(x=200,y=100)

bt=tk.Button(root,
text='submit',fg='black',
bg=rgb_hack((171, 199, 204)),
activebackground='green',
activeforeground='white',command=textCommand).place(x=30,y=150)

root.mainloop()

#sample youtube video URL
#link = "https://www.youtube.com/watch?v=mpjREfvZiDs"
```

RESULT ANALYSIS:

Assume the you tube is URL is

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https://www.youtube.com/watch?v=kOmPAFJKUso&ab_channel=BeInspired , directory is “c:\users\91966\Desktop” and name of video is “vamsi2.mp4”

Result:

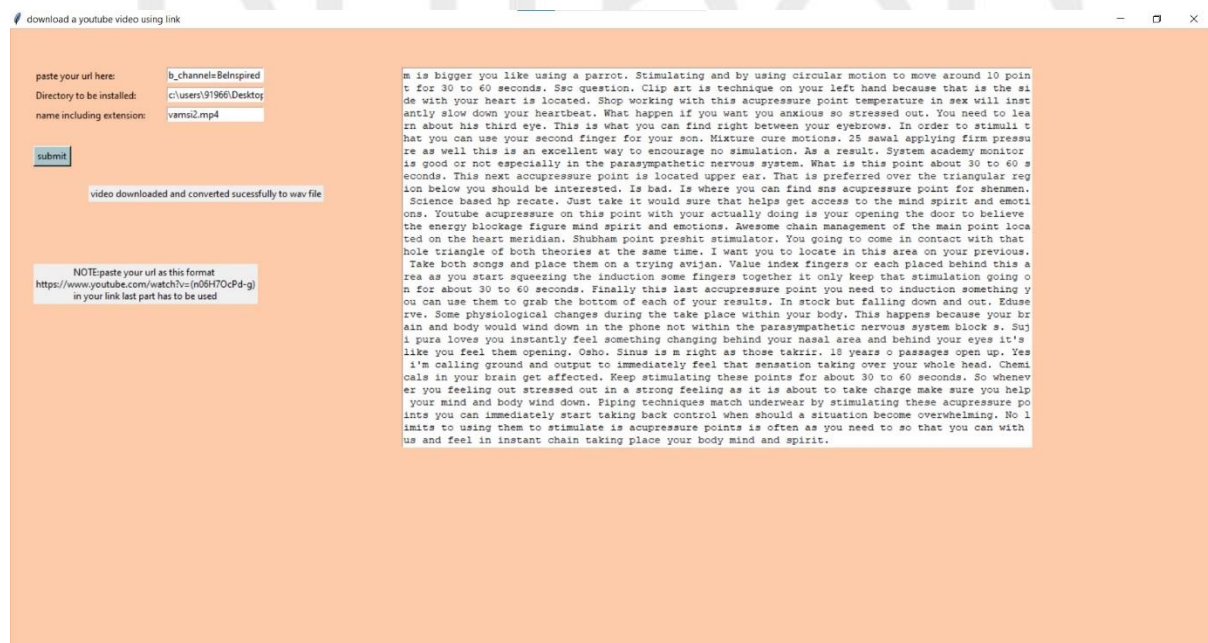


The screenshot shows a window titled "download a youtube video using link". It contains three input fields: "paste your url here:" with the value "b_channel=BeInspired", "Directory to be installed:" with the value "c:\users\91966\Desktop", and "name including extension:" with the value "vamsi2.mp4". Below these fields is a "submit" button. A note at the bottom states: "NOTE: paste your url as this format https://www.youtube.com/watch?v=(n06H70cPd-g) in your link last part has to be used".

Before download

After a click on “SUBMIT” button it will take some time depends upon size of video.

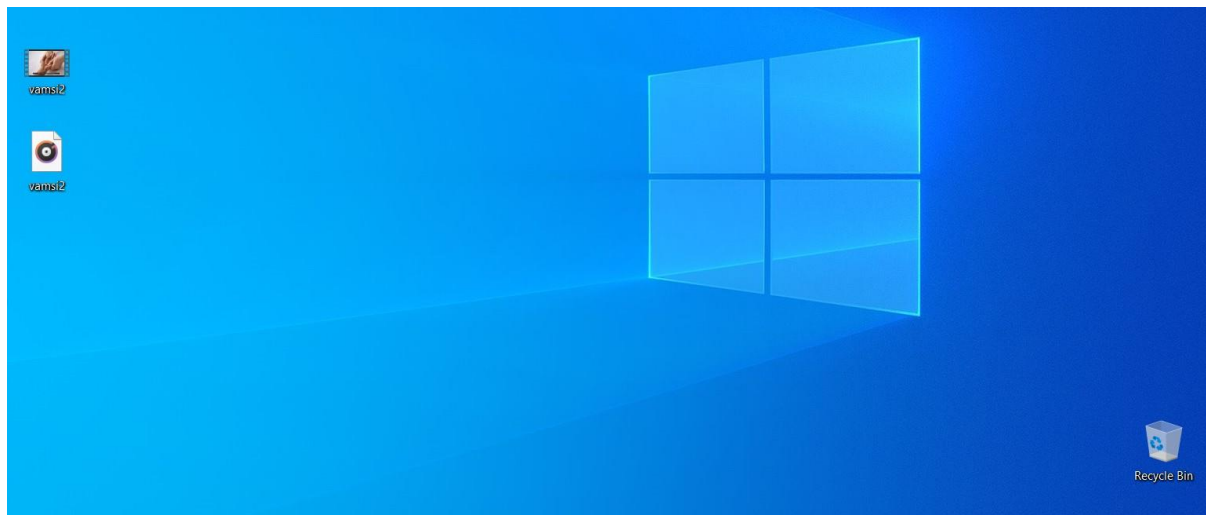
Output of GUI:



The screenshot shows the same window after the "submit" button has been clicked. The input fields now contain the full URL "https://www.youtube.com/watch?v=kOmPAFJKUso&ab_channel=BeInspired", the directory "c:\users\91966\Desktop", and the filename "vamsi2.mp4". A message below the fields states: "video downloaded and converted sucessfully to wav file". The note at the bottom remains the same. A large text area on the right side of the window displays a long, repetitive paragraph of text, which appears to be a placeholder or a filler text.

After video download.

We can also check existing file name in directory two files are present video file and .wav file



In this example I have used desktop as directory and name as vams2 so respective .mp4 and .wav files are created.

Output :

```
c:\users\91966\Desktop\vams12.mp4
chunk: 0%| | 0/7685 [00:00<?, ?it/s, now=None]
MoviePy - Writing audio in c:\users\91966\Desktop\vams12.wav

MoviePy - Done.
audio-chunks\chunk1.wav : Pacifica acupressure points which you can stimulate you can prevent his father of stress hormones dra
cula dream these techniques for bartholin for something you can do on your own at no expense in the intimacy of your own home.
audio-chunks\chunk2.wav : Self atomicity.
audio-chunks\chunk3.wav : 60 seconds angle.
audio-chunks\chunk4.wav : Can you waiting 20 acupressure point is a great way to help balance the brain chemistry any clarity p
arasymphathetic system dikshit in and make your brain waves.
audio-chunks\chunk5.wav : Jab tu kahan it a few good or not.
audio-chunks\chunk6.wav : Dopamine and endorphins production.
audio-chunks\chunk7.wav : Concept of acupressure point was originally applied all the way back to ancient china.
audio-chunks\chunk8.wav : The time were people but quit after 22 acupressure which is the name of the technique of working with
this point it is believed to have a great deal of therapeutic potential against the life of the existing disease conditions in
the us time.
audio-chunks\chunk9.wav : Back then it was believed that energy flows to the radius within the human body and serve.
audio-chunks\chunk10.wav : Find special specific helpful if the energy blockages is it is still valid even now it is because wa
nts to apply pressure to be specific regions on your body you releasing that worked energy within the librarians.
audio-chunks\chunk11.wav : Another benefit of this technique is that it can produce a neurostimulation as well.
audio-chunks\chunk12.wav : One touch point.
audio-chunks\chunk13.wav : Parrot harden sex.
audio-chunks\chunk14.wav : This is a very powerful one that once you start stimulating.
audio-chunks\chunk15.wav : You can see few more relaxed and instant.
audio-chunks\chunk16.wav : It located reefing reliance polo victory sahyog rest.
audio-chunks\chunk17.wav : Society index miro and ring finger and put them in line right with actress.
audio-chunks\chunk18.wav : Anunama the ring finger in the centre.
```

CONCLUSION:

Hence, with the help of pydub, moviepy and speech recognizer we make this project without this using speech recognition engines like CMU Sphinx (offline) , Google Cloud Speech API, Wit.ai , Microsoft Bing Voice Recognition, Houndify API, IBM Speech To Text, Snowboy

Hotword Detection (offline) etc these are very helpful APIs which makes our job so easier and unlike all google cloud speech API is very powerful API and using this we not only recognize speech but also we can make subtitle folder i.e. .srt file and insert it in required video and also we can convert the recognized speech into other language and use it in our project.

REFERENCES:

- <https://towardsai.net/p/nlp/extract-the-text-from-long-videos-with-python>
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