1 !pip install torch

1

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```
Looking in indexes: <a href="https://pypi.org/simple">https://us-python.pkg.dev/colab-wheels/public/simple/</a>
Requirement already satisfied: torch in /usr/local/lib/python3.10/dist-packages (2.0.1+cu118)
Requirement already satisfied: filelock in /usr/local/lib/python3.10/dist-packages (from torch) (3.12.0)
Requirement already satisfied: typing-extensions in /usr/local/lib/python3.10/dist-packages (from torch) (4.5.0)
Requirement already satisfied: sympy in /usr/local/lib/python3.10/dist-packages (from torch) (1.11.1)
Requirement already satisfied: networkx in /usr/local/lib/python3.10/dist-packages (from torch) (3.1)
Requirement already satisfied: jinja2 in /usr/local/lib/python3.10/dist-packages (from torch) (3.1.2)
Requirement already satisfied: triton==2.0.0 in /usr/local/lib/python3.10/dist-packages (from torch) (2.0.0)
Requirement already satisfied: cmake in /usr/local/lib/python3.10/dist-packages (from triton==2.0.0->torch) (3.25.2)
Requirement already satisfied: lit in /usr/local/lib/python3.10/dist-packages (from triton==2.0.0->torch) (16.0.5)
Requirement already satisfied: MarkupSafe>=2.0 in /usr/local/lib/python3.10/dist-packages (from jinja2->torch) (2.1.2)
Requirement already satisfied: mpmath>=0.19 in /usr/local/lib/python3.10/dist-packages (from sympy->torch) (1.3.0)
!pip install --upgrade torch
Looking in indexes: <a href="https://pypi.org/simple">https://us-python.pkg.dev/colab-wheels/public/simple/</a>
Requirement already satisfied: torch in /usr/local/lib/python3.10/dist-packages (2.0.1+cu118)
Requirement already satisfied: filelock in /usr/local/lib/python3.10/dist-packages (from torch) (3.12.0)
Requirement already satisfied: typing-extensions in /usr/local/lib/python3.10/dist-packages (from torch) (4.5.0)
Requirement already satisfied: sympy in /usr/local/lib/python3.10/dist-packages (from torch) (1.11.1)
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Requirement already satisfied: networkx in /usr/local/lib/python3.10/dist-packages (from torch) (3.1) Requirement already satisfied: jinja2 in /usr/local/lib/python3.10/dist-packages (from torch) (3.1.2) Requirement already satisfied: triton==2.0.0 in /usr/local/lib/python3.10/dist-packages (from torch) (2.0.0) Requirement already satisfied: cmake in /usr/local/lib/python3.10/dist-packages (from triton==2.0.0->torch) (3.25.2) Requirement already satisfied: lit in /usr/local/lib/python3.10/dist-packages (from triton==2.0.0->torch) (16.0.5) Requirement already satisfied: MarkupSafe>=2.0 in /usr/local/lib/python3.10/dist-packages (from jinja2->torch) (2.1.2) Requirement already satisfied: mpmath>=0.19 in /usr/local/lib/python3.10/dist-packages (from sympy->torch) (1.3.0)

1 !pip install pytube

> Looking in indexes: https://us-python.pkg.dev/colab-wheels/public/simple/ Collecting pytube Downloading pytube-15.0.0-py3-none-any.whl (57 kB) - 57.6/57.6 kB 2.2 MB/s eta 0:00:00

1 !pip install git+https://github.com/openai/whisper.git

Looking in indexes: https://us-python.pkg.dev/colab-wheels/public/simple/ Collecting git+https://github.com/openai/whisper.git

Cloning https://github.com/openai/whisper.git to /tmp/pip-req-build-z7m_jtv8

Running command git clone --filter=blob:none --quiet https://github.com/openai/whisper.git /tmp/pip-req-build-z7m_jt Resolved https://github.com/openai/whisper.git to commit 248b6cb124225dd263bb9bd32d060b6517e067f8

Installing build dependencies ... done

Getting requirements to build wheel ... done

Preparing metadata (pyproject.toml) ... done

Building wheel for openai-whisper (pyproject.toml) ... done

Requirement already satisfied: triton==2.0.0 in /usr/local/lib/python3.10/dist-packages (from openai-whisper==20230314) Requirement already satisfied: numba in /usr/local/lib/python3.10/dist-packages (from openai-whisper==20230314) (0.56. Requirement already satisfied: numpy in /usr/local/lib/python3.10/dist-packages (from openai-whisper==20230314) (1.22. Requirement already satisfied: torch in /usr/local/lib/python3.10/dist-packages (from openai-whisper==20230314) (2.0.1 Requirement already satisfied: tqdm in /usr/local/lib/python3.10/dist-packages (from openai-whisper==20230314) (4.65.0 Requirement already satisfied: more-itertools in /usr/local/lib/python3.10/dist-packages (from openai-whisper==20230314) Collecting tiktoken==0.3.3 (from openai-whisper==20230314)

 $Downloading \ tiktoken-0.3.3-cp310-cp310-manylinux_2_17_x86_64.manylinux2014_x86_64.whl \ (1.7\ MB)$

- 1.7/1.7 MB 18.6 MB/s eta 0:00:00

Requirement already satisfied: regex>=2022.1.18 in /usr/local/lib/python3.10/dist-packages (from tiktoken==0.3.3->open Requirement already satisfied: requests>=2.26.0 in /usr/local/lib/python3.10/dist-packages (from tiktoken==0.3.3->open Requirement already satisfied: cmake in /usr/local/lib/python3.10/dist-packages (from triton==2.0.0->openai-whisper==2 Requirement already satisfied: filelock in /usr/local/lib/python3.10/dist-packages (from triton==2.0.0->openai-whisper Requirement already satisfied: lit in /usr/local/lib/python3.10/dist-packages (from triton==2.0.0->openai-whisper==202 Requirement already satisfied: llvmlite<0.40,>=0.39.0dev0 in /usr/local/lib/python3.10/dist-packages (from numba->open Requirement already satisfied: setuptools in /usr/local/lib/python3.10/dist-packages (from numba->openai-whisper==2023 Requirement already satisfied: typing-extensions in /usr/local/lib/python3.10/dist-packages (from torch->openai-whispe Requirement already satisfied: sympy in /usr/local/lib/python3.10/dist-packages (from torch->openai-whisper==20230314) Requirement already satisfied: networkx in /usr/local/lib/python3.10/dist-packages (from torch->openai-whisper==202303 Requirement already satisfied: jinja2 in /usr/local/lib/python3.10/dist-packages (from torch->openai-whisper==20230314 Requirement already satisfied: urllib3<1.27,>=1.21.1 in /usr/local/lib/python3.10/dist-packages (from requests>=2.26.0 Requirement already satisfied: certifi>=2017.4.17 in /usr/local/lib/python3.10/dist-packages (from requests>=2.26.0->t Requirement already satisfied: charset-normalizer~=2.0.0 in /usr/local/lib/python3.10/dist-packages (from requests>=2. Requirement already satisfied: idna<4,>=2.5 in /usr/local/lib/python3.10/dist-packages (from requests>=2.26.0->tiktoke Requirement already satisfied: MarkupSafe>=2.0 in /usr/local/lib/python3.10/dist-packages (from jinja2->torch->openai-Requirement already satisfied: mpmath>=0.19 in /usr/local/lib/python3.10/dist-packages (from sympy->torch->openai-whis Building wheels for collected packages: openai-whisper

Created wheel for openai-whisper: filename=openai_whisper-20230314-py3-none-any.whl size=798075 sha256=204e84bccadff Stored in directory: /tmp/pip-ephem-wheel-cache-bhx57h5v/wheels/8b/6c/d0/622666868c179f156cf595c8b6f06f88bc5d80c4b31 Successfully built openai-whisper Installing collected packages: tiktoken, openai-whisper Successfully installed openai-whisper-20230314 tiktoken-0.3.3

1 !pip install git+https://github.com/librosa/librosa

Looking in indexes: https://pvpi.org/simple. https://us-pvthon.pkg.dev/colab-wheels/public/simple/ Collecting git+https://github.com/librosa/librosa Cloning https://github.com/librosa/librosa to /tmp/pip-req-build-mcdru2y2 Running command git clone --filter=blob:none --quiet https://github.com/librosa/librosa/tmp/pip-req-build-mcdru2y2 Resolved https://github.com/librosa/librosa to commit f21bda6b9fd7d9f1276749862247a6daf59e792d Running command git submodule update --init --recursive -q Installing build dependencies ... done Getting requirements to build wheel ... done Preparing metadata (pyproject.toml) ... done Requirement already satisfied: audioread>=2.1.9 in /usr/local/lib/python3.10/dist-packages (from librosa==0.10.1.dev0) Requirement already satisfied: numpy!=1.22.0,!=1.22.1,!=1.22.2,>=1.20.3 in /usr/local/lib/python3.10/dist-packages (fr Requirement already satisfied: scipy>=1.2.0 in /usr/local/lib/python3.10/dist-packages (from librosa==0.10.1.dev0) (1. Requirement already satisfied: scikit-learn>=0.20.0 in /usr/local/lib/python3.10/dist-packages (from librosa==0.10.1.d Requirement already satisfied: joblib>=0.14 in /usr/local/lib/python3.10/dist-packages (from librosa==0.10.1.dev0) (1. Requirement already satisfied: decorator>=4.3.0 in /usr/local/lib/python3.10/dist-packages (from librosa==0.10.1.dev0) Requirement already satisfied: numba>=0.51.0 in /usr/local/lib/python3.10/dist-packages (from librosa==0.10.1.dev0) (0 Requirement already satisfied: soundfile>=0.12.1 in /usr/local/lib/python3.10/dist-packages (from librosa==0.10.1.dev0 Requirement already satisfied: pooch<1.7,>=1.0 in /usr/local/lib/python3.10/dist-packages (from librosa==0.10.1.dev0) Requirement already satisfied: soxr>=0.3.2 in /usr/local/lib/python3.10/dist-packages (from librosa==0.10.1.dev0) (0.3 Requirement already satisfied: typing-extensions>=4.1.1 in /usr/local/lib/python3.10/dist-packages (from librosa==0.10 Requirement already satisfied: lazy-loader>=0.1 in /usr/local/lib/python3.10/dist-packages (from librosa==0.10.1.dev0) Requirement already satisfied: msgpack>=1.0 in /usr/local/lib/python3.10/dist-packages (from librosa==0.10.1.dev0) (1. Requirement already satisfied: llvmlite<0.40,>=0.39.0dev0 in /usr/local/lib/python3.10/dist-packages (from numba>=0.51 Requirement already satisfied: setuptools in /usr/local/lib/python3.10/dist-packages (from numba>=0.51.0->librosa==0.1 Requirement already satisfied: appdirs>=1.3.0 in /usr/local/lib/python3.10/dist-packages (from pooch<1.7,>=1.0->libros Requirement already satisfied: packaging>=20.0 in /usr/local/lib/python3.10/dist-packages (from pooch<1.7,>=1.0->libro Requirement already satisfied: requests>=2.19.0 in /usr/local/lib/python3.10/dist-packages (from pooch<1.7,>=1.0->libr Requirement already satisfied: threadpoolctl>=2.0.0 in /usr/local/lib/python3.10/dist-packages (from scikit-learn>=0.2 Requirement already satisfied: cffi>=1.0 in /usr/local/lib/python3.10/dist-packages (from soundfile>=0.12.1->librosa== Requirement already satisfied: pycparser in /usr/local/lib/python3.10/dist-packages (from cffi>=1.0->soundfile>=0.12.1 Requirement already satisfied: urllib3<1.27,>=1.21.1 in /usr/local/lib/python3.10/dist-packages (from requests>=2.19.0 Requirement already satisfied: certifi>=2017.4.17 in /usr/local/lib/python3.10/dist-packages (from requests>=2.19.0->p

```
Requirement already satisfied: charset-normalizer~=2.0.0 in /usr/local/lib/python3.10/dist-packages (from requests>=2.
   Requirement already satisfied: idna<4,>=2.5 in /usr/local/lib/python3.10/dist-packages (from requests>=2.19.0->pooch<1
    Building wheels for collected packages: librosa
     Building wheel for librosa (pyproject.toml) ... done
     Created wheel for librosa: filename=librosa-0.10.1.dev0-py3-none-any.whl size=253639 sha256=bc35091ad22e59dfb173ad33
     Stored in directory: /tmp/pip-ephem-wheel-cache-wjlbv99t/wheels/5c/43/66/f66524e75e492d320bfa038662c2fcc9e8aeddaccb4
    Successfully built librosa
   Installing collected packages: librosa
     Attempting uninstall: librosa
       Found existing installation: librosa 0.10.0.post2
       Uninstalling librosa-0.10.0.post2:
         Successfully uninstalled librosa-0.10.0.post2
    Successfully installed librosa-0.10.1.dev0
1 !pip install ibm watson
   Looking in indexes: https://pypi.org/simple, https://us-python.pkg.dev/colab-wheels/public/simple/
   Collecting ibm watson
     Downloading ibm-watson-7.0.0.tar.gz (389 kB)
                                             -- 389.1/389.1 kB 5.6 MB/s eta 0:00:00
     Installing build dependencies ... done
     Getting requirements to build wheel ... done
     Preparing metadata (pyproject.toml) ... done
   Requirement already satisfied: requests<3.0,>=2.0 in /usr/local/lib/python3.10/dist-packages (from ibm watson) (2.27.1
   Requirement already satisfied: python-dateutil>=2.5.3 in /usr/local/lib/python3.10/dist-packages (from ibm watson) (2.
    Collecting websocket-client==1.1.0 (from ibm watson)
     Downloading websocket client-1.1.0-py2.py3-none-any.whl (68 kB)
                                      68.7/68.7 kB 7.9 MB/s eta 0:00:00
   Collecting ibm-cloud-sdk-core==3.*,>=3.3.6 (from ibm watson)
     Downloading ibm-cloud-sdk-core-3.16.6.tar.gz (52 kB)
                                             --- 52.3/52.3 kB 5.3 MB/s eta 0:00:00
     Installing build dependencies ... done
     Getting requirements to build wheel ... done
     Preparing metadata (pyproject.toml) ... done
   Collecting requests<3.0,>=2.0 (from ibm watson)
     Downloading requests-2.31.0-py3-none-any.whl (62 kB)
                                     62.6/62.6 kB 7.0 MB/s eta 0:00:00
    Requirement already satisfied: urllib3<2.0.0,>=1.26.0 in /usr/local/lib/python3.10/dist-packages (from ibm-cloud-sdk-c
    Collecting PyJWT<3.0.0,>=2.4.0 (from ibm-cloud-sdk-core==3.*,>=3.3.6->ibm watson)
     Downloading PyJWT-2.7.0-py3-none-any.whl (22 kB)
```

```
Requirement already satisfied: six>=1.5 in /usr/local/lib/python3.10/dist-packages (from python-dateutil>=2.5.3->ibm w
    Requirement already satisfied: charset-normalizer<4,>=2 in /usr/local/lib/python3.10/dist-packages (from requests<3.0,
    Requirement already satisfied: idna<4,>=2.5 in /usr/local/lib/python3.10/dist-packages (from requests<3.0,>=2.0->ibm w
    Requirement already satisfied: certifi>=2017.4.17 in /usr/local/lib/python3.10/dist-packages (from requests<3.0,>=2.0-
    Building wheels for collected packages: ibm_watson, ibm-cloud-sdk-core
      Building wheel for ibm watson (pyproject.toml) ... done
     Created wheel for ibm watson: filename=ibm watson-7.0.0-py3-none-any.whl size=389778 sha256=0608088881899697add2207b
     Stored in directory: /root/.cache/pip/wheels/b8/c3/c1/0e35cd88e7305131fabfc503b615b0675ad255a639a5b49a79
      Building wheel for ibm-cloud-sdk-core (pyproject.toml) ... done
     Created wheel for ibm-cloud-sdk-core: filename=ibm_cloud_sdk_core-3.16.6-py3-none-any.whl size=85617 sha256=86328d86
      Stored in directory: /root/.cache/pip/wheels/f6/e0/86/3c208de335284083a8c026fa723660e772a2dfc83cc2c6213a
    Successfully built ibm watson ibm-cloud-sdk-core
    Installing collected packages: websocket-client, requests, PyJWT, ibm-cloud-sdk-core, ibm watson
      Attempting uninstall: websocket-client
        Found existing installation: websocket-client 1.5.1
       Uninstalling websocket-client-1.5.1:
          Successfully uninstalled websocket-client-1.5.1
     Attempting uninstall: requests
        Found existing installation: requests 2.27.1
       Uninstalling requests-2.27.1:
          Successfully uninstalled requests-2.27.1
    ERROR: pip's dependency resolver does not currently take into account all the packages that are installed. This behavi
    google-colab 1.0.0 requires requests==2.27.1, but you have requests 2.31.0 which is incompatible.
    Successfully installed PyJWT-2.7.0 ibm-cloud-sdk-core-3.16.6 ibm watson-7.0.0 requests-2.31.0 websocket-client-1.1.0
1 #Importing required libraries
1 import torch
2 import whisper
```

1

1 import pytube

1 import librosa

```
1 import matplotlib.pvplot as plt
1 import numpy as np
1 !pip install Ipython
   Looking in indexes: <a href="https://pypi.org/simple">https://us-python.pkg.dev/colab-wheels/public/simple/</a>
   Requirement already satisfied: Ipython in /usr/local/lib/python3.10/dist-packages (7.34.0)
   Requirement already satisfied: setuptools>=18.5 in /usr/local/lib/python3.10/dist-packages (from Ipython) (67.7.2)
   Collecting jedi>=0.16 (from Ipython)
     Downloading jedi-0.18.2-py2.py3-none-any.whl (1.6 MB)
                                                 - 1.6/1.6 MB 18.2 MB/s eta 0:00:00
   Requirement already satisfied: decorator in /usr/local/lib/python3.10/dist-packages (from Ipython) (4.4.2)
   Requirement already satisfied: pickleshare in /usr/local/lib/python3.10/dist-packages (from Ipython) (0.7.5)
   Requirement already satisfied: traitlets>=4.2 in /usr/local/lib/python3.10/dist-packages (from Ipython) (5.7.1)
   Requirement already satisfied: prompt-toolkit!=3.0.0,!=3.0.1,<3.1.0,>=2.0.0 in /usr/local/lib/python3.10/dist-packages
   Requirement already satisfied: pygments in /usr/local/lib/python3.10/dist-packages (from Ipython) (2.14.0)
   Requirement already satisfied: backcall in /usr/local/lib/python3.10/dist-packages (from Ipython) (0.2.0)
   Requirement already satisfied: matplotlib-inline in /usr/local/lib/python3.10/dist-packages (from Ipython) (0.1.6)
   Requirement already satisfied: pexpect>4.3 in /usr/local/lib/python3.10/dist-packages (from Ipython) (4.8.0)
    Requirement already satisfied: parso<0.9.0,>=0.8.0 in /usr/local/lib/python3.10/dist-packages (from jedi>=0.16->Ipytho
    Requirement already satisfied: ptyprocess>=0.5 in /usr/local/lib/python3.10/dist-packages (from pexpect>4.3->Ipython)
   Requirement already satisfied: wcwidth in /usr/local/lib/python3.10/dist-packages (from prompt-toolkit!=3.0.0,!=3.0.1,
   Installing collected packages: jedi
   Successfully installed jedi-0.18.2
1 import IPython.display as ipd
1 from ibm watson import SpeechToTextV1
1 import json
1 from ibm cloud sdk core.authenticators import IAMAuthenticator
```

```
CalledProcessError
                                              Traceback (most recent call last)
    /usr/local/lib/python3.10/dist-packages/whisper/audio.py in load audio(file, sr)
         58
    ---> 59
                    out = run(cmd, capture output=True, check=True).stdout
                except CalledProcessError as e:
         60
                                     🙎 2 frames
    CalledProcessError: Command '['ffmpeg', '-nostdin', '-threads', '0', '-i', 'https://www.youtube.com/watch?
    <u>v=MyNSOu-Fl-k</u>', '-f', 's16le', '-ac', '1', '-acodec', 'pcm_s16le', '-ar', '16000', '-']' returned non-zero exit
    status 1.
    The above exception was the direct cause of the following exception:
1 file path = 'https://cf-courses-data.s3.us.cloud-object-storage.appdomain.cloud/IBM-GPXX0EPMEN/20220627 140242.mp4'
    /usr/local/lib/python3.10/dist-packages/whisper/audio.py in load audio(file, sr)
1 audio 1 = whisper.load audio(file path)
2 audio 1
    array([ 0. , 0. , 0. , ..., 0.01696777,
           -0.01504517, 0.01229858], dtype=float32)
    RuntimeError: Failed to load audio: ffmpeg version 4.2.7-0ubuntu0.1 Copyright (c) 2000-2022 the FFmpeg
1 T = 35
      configuration: --prefix=/usr --extra-version=0ubuntu0.1 --toolchain=hardened --libdir=/usr/lib/x86 64-linux-
1 n samples = audio 1.shape[0]
2 n samples
    559445
    libpulse --enable-librsvg --enable-librubberband --enable-libshine --enable-libsnappy --enable-libsoxr --enable-
1 \text{ delta} = T/n \text{ samples}
2 delta
    6.25620034140979e-05
      libavutil
                 56. 31.100 / 56. 31.100
1 Fs = 1/delta
2 Fs
```

15984.142857142857

5 plt.show()

Signal

Signal

```
1 # A mel spectogram
                  A TRAIL MEDITE IN BARY BEING
1 mel = whisper.log_mel_spectrogram(audio).to(model_m.device)
                                  44 544
1 fig, (ax1, ax2) = plt.subplots(2)
2 fig.tight_layout(pad=5.0)
3 ax1.plot(time,audio)
4 ax1.set_title('Signal')
5 ax1.set_xlabel('Time, seconds')
6 ax1.set_ylabel('Amplitude')
7 ax2.imshow((mel.numpy())*mel.numpy())**(1/2),interpolation='nearest', aspect='auto')
8 ax2.set title('Mel Spectrogram of a Signal')
 9 ax2.set_xlabel('Time, seconds')
10 ax2.set_ylabel('Mel Scale')
```

```
Text(42.7222222222214, 0.5, 'Mel Scale')
                                    Signal
1 # Language detection
    O
1 \text{ sr} = 22050
    A
1 ipd.Audio(audio, rate= sr)
         0:00 / 0:21
1 probs = model_m.detect_language(mel)
     1 print(item for item in probs.items()[0:10])
   AttributeError
                                           Traceback (most recent call last)
   <ipython-input-60-05ae93d15fc1> in <cell line: 1>()
   ----> 1 print(item for item in probs.items()[0:10])
   AttributeError: 'tuple' object has no attribute 'items'
     SEARCH STACK OVERFLOW
1 options = whisper.DecodingOptions(fp16 = False)
2 result = whisper.decode(model_m, mel, options)
1 print(result.text)
   Question number five. Machine learning technologies are constantly evolving and advancing. Does this affect me day to
```

```
1 #transcription
1 translation = model_m.transcribe(file_path, language = 'fr', fp16 = False)["text"]
1 transcription = model_m.transcribe(file_path, fp16 = False)["text"]
1
1 video_url = "https://www.youtube.com/watch?v=MyNSOu-Fl-k"
2 data = pytube.YouTube(video_url)
1
1 speech = data.streams.get_audio_only()
2 audio_file=speech.download()
3 print("audio file path:",audio_file)
    audio file path: /content/Sri Ramachandra Kripalu Vande Guru Paramparaam Sooryagayathri.mp4
1
1
1
```

