**Automated Video Dubbing with Lip Syncing**

**Overview**

This project provides an automated pipeline to dub videos into different languages while ensuring that the new audio is lip-synced with the video. By using tools like **Wav2Lip**, **Whisper**, **TTS models**, and **FFmpeg**, it handles the following steps:

1. **Audio extraction** from the video.
2. **Transcription** of the original speech using Whisper.
3. **Translation** of the transcription into a target language using Google Translate API.
4. **Text-to-Speech (TTS) synthesis** for the translated text.
5. **Lip-syncing** the new speech with the original video using Wav2Lip.

**Features**

* **Multi-language support** for transcription, translation, and synthesis.
* **Choice of face detection methods** for improved lip-syncing: MTCNN, DLIB, or basic Wav2Lip detection.
* **Complete end-to-end solution** from input video to final dubbed and lip-synced output.
* **High-quality audio processing** using FFmpeg.

**Prerequisites**

Before proceeding, ensure that you have the following installed:

* **Python 3.8+**
* **FFmpeg** (installed and added to the system path)
* **CUDA** (for GPU acceleration if available, optional but recommended for faster processing)
* **Git** (optional, but recommended for version control)

**Python Libraries**

You can install the required Python libraries by running:

**pip install -r requirements.txt**

**requirements.txt contains:**

torch

transformers

TTS

whisper

googletrans==4.0.0-rc1

tqdm

opencv-python

dlib

facenet-pytorch

ffmpeg-python

**Installation**

**1. Clone the Repository**

git clone https://github.com/your-username/video-dubbing-lip-sync.git

cd video-dubbing-lip-sync

**2. Install FFmpeg**

FFmpeg is required to extract audio from videos and handle various audio/video processing tasks. Follow the installation instructions on FFmpeg's [official website](https://ffmpeg.org/download.html).

After installation, ensure ffmpeg is added to your system path.

**Usage**

**1. Prepare Your Video**

Place the video you want to process in the videos folder. The video should be in .mp4 format (other formats supported by FFmpeg are also allowed).

**2. Run the Script**

Run the script using the following command:

***python test.py c:/ dubbing/videos/inputVideo.mp4***

The script will prompt you to choose:

* The **source language** (language spoken in the video).
* The **target language** (language you want to translate and dub the video into).
* The **face detection method** to use for lip-syncing.

**3. Output**

Once the process completes, the dubbed and lip-synced video will be saved in the videos folder as output\_video.mp4.

**Example**

To dub an English video to German with MTCNN face detection:

bash

Copy code

python test.py

* Select **English** as the source language.
* Select **German** as the target language.
* Choose **MTCNN** for face detection.

**Customization**

You can expand language support by adding new language codes and names in the choose\_language() function within the test.py script. You can also modify FFmpeg settings by adjusting the extract\_audio() function.

**Contributing**

Contributions are welcome! You can contribute to the project by submitting pull requests or reporting issues. If you add new features or fix bugs, please provide detailed explanations in your pull requests.

**License**

This project is licensed under the **MIT License**. See the LICENSE file for details.

**Troubleshooting**

* **Error: FFmpeg not found**: Ensure FFmpeg is installed and added to your system path.
* **CUDA-related errors**: If using GPU acceleration, ensure that CUDA is correctly installed.
* **Translation API errors**: Ensure you have a stable internet connection when using the Google Translate API.

LINKS:

<https://github.com/Rudrabha/Wav2Lip>

[Deepfake Audio with Wav2Lip. Step-by-step walkthrough on lip-syncing… | by Chiawei Lim | Becoming Human: Artificial Intelligence Magazine](https://becominghuman.ai/deepfake-audio-with-wav2lip-263f0f0e84bc)

<https://iiitaphyd-my.sharepoint.com/:u:/g/personal/radrabha_m_research_iiit_ac_in/EdjI7bZlgApMqsVoEUUXpLsBxqXbn5z8VTmoxp55YNDcIA?e=n9ljGW>

<https://iiitaphyd-my.sharepoint.com/:u:/g/personal/radrabha_m_research_iiit_ac_in/Eb3LEzbfuKlJiR600lQWRxgBIY27JZg80f7V9jtMfbNDaQ?e=TBFBVW>

To Convert from DOCX to MD:

Install PanDoc:

[Pandoc - Installing pandoc](https://pandoc.org/installing.html)

pandoc README.docx -o README.md

If you have the Dubbed Audio and the original MP4 Video, and want to just combine them, use:

python inference.py --checkpoint\_path checkpoints\wav2lip.pth --face inputVideo.mp4 --audio InputVideoAudioDub.wav --resize\_factor 2 --outfile outputVideo.mp4

To Use this program in CMD:

clear ; python test.py c:/ dubbing/videos/inputVideo.mp4

Make sure you installed all of the following using ( ***pip install -r requirements.txt***) :

Ffmpeg, TTS, googletrans>=4.0.0-rc1, whisper, mtcnn,, dlib, pipx, numba>=0.55.0,

librosa>=0.8.0, ffmpeg-python, torch, torchvision, torchaudio, opencv-python,

openai-whisper, transformers, tqdm, facenet-pytorch