🎬 Subtitle Generator – Documentation

# 🧑‍🤝‍🧑 Group Members

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# 📌 Project Overview

The Subtitle Generator is a Python-based desktop application that allows users to automatically generate subtitles for any given video. It supports transcription, translation, and subtitle embedding using an easy-to-use graphical user interface powered by CustomTkinter. The tool is ideal for content creators, educators, or anyone who wants to enhance their videos with accurate subtitles.

# 💡 Key Features

* 🎞️ Video File Input: Select and load .mp4, .avi, or .mov video files.
* 🧠 Speech Recognition: Uses OpenAI's whisper model to transcribe audio into text.
* 🌍 Language Support: Original, English translation, Urdu translation (via Google Translate).
* 💾 SRT Export: Allows users to save subtitles in .srt format.
* 🖼️ Subtitle Embedding: Uses FFmpeg to burn subtitles directly into the video.
* 🎨 Customization Options: Change font, font size, and subtitle color.
* 🖥️ Modern GUI: Built with CustomTkinter and animated splash screen.
* 📽️ Instant Playback: Automatically opens the video with embedded subtitles.

# 🛠️ Technologies Used

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| Technology | Purpose |
| Python 3.x | Core programming language |
| whisper | Transcription and speech-to-text |
| googletrans | Translation (English ↔ Urdu) |
| FFmpeg | Embedding subtitles into videos |
| CustomTkinter (ctk) | Modern and themeable GUI |
| threading | To prevent GUI freezing during tasks |
| tempfile & os | Temporary file and path management |

# 🖼️ UI Screens

* Splash Screen
* Main Menu
* Subtitle Page

# 🔄 Workflow

1. Select a video via file dialog.
2. Choose subtitle language (Original / English / Urdu).
3. Generate subtitles: Transcribe using Whisper, Translate (optional), Generate .srt file.
4. Save SRT or Embed into video using FFmpeg.
5. Playback with embedded subtitles.

# 📂 Project Structure

SubtitleGenerator/  
├── subtitle\_generator.py # Main application script  
├── assets/ # (Optional) Images or fonts  
├── requirements.txt # List of required packages  
├── README.md # Project overview and instructions  
└── output/ # Temporary and output files

# 🧪 Setup Instructions

* 🔧 Requirements
* Install dependencies using:

pip install -r requirements.txt

requirements.txt should contain:

whisper  
googletrans==4.0.0rc1  
customtkinter  
ffmpeg-python

* ▶️ Run the Application

python subtitle\_generator.py

Make sure FFmpeg is installed and added to your system path:

https://ffmpeg.org/download.html

# 🧠 Notes & Limitations

* Urdu translations depend on Google Translate and may not always be 100% accurate.
* Transcription speed depends on the selected Whisper model and video length.
* FFmpeg must be correctly installed to enable subtitle embedding.

# 📌 Future Improvements

* Support for more languages (Arabic, French, etc.)
* Real-time subtitle preview before saving
* Batch processing of multiple videos
* Export subtitles in other formats like .vtt or .ass