

DEPARTMENT OF COMPUTER SCIENCE ENGINEERING

Rajiv Gandhi University of Knowledge Technologies– Nuzvid,

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Youtube Transcript Summarizer

using NLP

A Project Report

Submitted in partial fulfillment for the degree of

BACHELOR OF TECHNOLOGY

in

COMPUTER SCIENCE AND ENGINEERING

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CERTIFICATE OF COMPLETION

This is to certify that the work entitled, “Youtube Transcript Summarizer using NLP” is the bonafide Work of **K.JyothiSai (IDNo:N19o375) ; B.Vemesh (IDNo:N190370); A.V.Vamsi (IDNo: N190245); S.Sravani (IDNo:N191035) ;Sk.Jasmin(IDNo: N190495)** ; carried out Under my guidance and supervision for 3rd year minor project of Bachelor of Technology in the department of Computer Science and Engineering under RGUKT IIIT , Nuzvid. This work is done during the academic session February 2024 – June 2024, under our guidance.

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CERTIFICATE OF EXAMINATION

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DECLARATION

We **K.JyothiSai (IDNo:N190375) ; B.Vemesh (IDNo:N190370); A.V.Vamsi (IDNo: N190245); S.Sravani (IDNo:N191035) ;Sk.Jasmin(IDNo: N190495)** ; hereby declare that the project report entitled “**Youtube Transcript Summarizer using NLP**”\done by us under the guidance of Mrs.D.Srilakshmi , Assistant Professor, is submitted for the fulfillment of a minor project during the academic session February 2024-June 2024 at RGUKT-Nuzvid.

We also declare that this project is a result of our own effort and has not been copied or imitated from any source. Citations from any websites are mentioned in the references.The results embodied in this project report have not been submitted to any other university or institute for the award of any degree or diploma.

Date: 30-06-2024

Place: Nuzvid

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I'm extremely grateful for the confidence bestowed in me and entrusting our project entitled **“Youtube Transcript Summarizer using NLP”**.

We express gratitude to Mrs. D. Srilakshmi (Ass.Professor) and other faculty members for being source of inspiration and constant encouragement which helped us in completing the project successfully.

Our sincere thanks to all the batch mates of 2019 CSE, who have made our stay at RGUKT-NUZVID, a memorable one.

Finally, yet importantly, we would like to express our heartfelt thanks to our beloved God and parents for their blessings, our friends for their help and wishes for the successful completion of this project

ABSTRACT

This project involves creating a YouTube transcript summarizer using Google Gemini Pro and Streamlit. The application extracts transcripts from YouTube videos and generates concise summaries using the Google Gemini Pro model. Users can input a YouTube video URL, and the app displays the video's thumbnail. The summary can be translated into multiple languages using the Google Translate API, catering to a diverse audience. The summarized content is available for download in the chosen language, making it convenient for users to save and share the information. This tool provides an efficient way to obtain and disseminate key points from YouTube videos.

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CHAPTER 1

Introduction

1.1 MOTIVATION FOR THE WORK

- This project aims to simplify the process of extracting and summarizing YouTube video content, making it accessible and comprehensible for diverse audiences. By integrating advanced AI models for summarization and translation, users can quickly obtain key insights from videos in their preferred language and complexity level. This tool is particularly useful for students, researchers, and professionals who need to efficiently digest large amounts of video content.

1.2 Real-World Applications of Placement Prediction

- Education: Helps students and educators quickly grasp key concepts from educational videos, such as summarizing a physics lecture into key formulas and principles.
- Content Creation: Aids content creators in generating concise summaries for video descriptions or social media posts. For instance, summarizing a cooking tutorial video into key steps and ingredients for a recipe post.
- Research: Facilitates researchers in extracting relevant information from academic or instructional videos efficiently. For example, summarizing a scientific conference presentation into key findings and methodologies for research papers.

CHAPTER 2

2.1 Technologies and Libraries used

- Python: The primary programming language used for the entire application.
- Streamlit: Streamlit is used to create the web application interface for interacting with the user. It simplifies the process of building interactive web apps for data science and machine learning.
- dotenv: The dotenv library is used to load environment variables from a .env file. This is typically used to store sensitive information like API keys securely.
- googletrans: This library provides a Python wrapper around Google Translate API. It allows for language translation, which in this case, is used to translate the summary text into different languages based on user selection.
- youtube_transcript_api: This library allows fetching transcripts of YouTube videos. It's used to extract the transcript text from a YouTube video URL provided by the user.
- google.generativeai (presumably GenAI): This library seems to be part of a service (possibly GenAI) that provides access to generative models like Gemini Pro. It is used for generating summaries or content based on given prompts and input text.

2.2NLP Techniques Used:

- Text Summarization: Using a generative model (Gemini Pro) to summarize video transcripts.
- Machine Translation: Translating the summary into different languages using Google Translate API.
- Text Extraction: Extracting textual data (transcripts) from YouTube videos.
- Content Generation: Generating textual content based on a prompt using a deep learning model.
- Environment Management: Securely managing and accessing API keys and other sensitive information.

API Key Generation:

Google AI for Developers

Gemini API

Gemma

Google AI Edge

Tools

Community

Docs

API Reference

Cookbook

Google AI Studio

Prompt gallery

Pricing

Filter

Overview

Get started

Get an API key

Gemini API quickstart

Google AI Studio quickstart

Getting started tutorials

Models

About generative models

Gemini

Gemini API

API overview

API reference

API versions

Release notes

Home > Gemini API > Docs

Was this helpful?

Get an API key

To use the Gemini API, you need an API key. You can create a key with one click in Google AI Studio.

Get an API key

Important: Remember to use your API keys securely. Review [Keep your API key secure](#) and then check out the [API quickstarts](#) to learn language-specific best practices for securing your API key.

Verify your API key with a curl command

You can use a curl command to verify your setup. You can pass the API key either in the URL:

On this page

Verify your API key with a curl command

Keep your API key secure

Next steps

Google AI Studio

Get API key

Create new prompt

New tuned model

My library

Allow Drive access

Getting started

Documentation

Prompt gallery

Gemini cookbook

Discourse forum

Build with Vertex AI on Google Cloud

Settings

Get API key

API keys

You can create a new project if you don't have one already or add API keys to an existing project. All projects are subject to the Google Cloud Platform Terms of Service, which you agree to when creating a new project, while use of the Gemini API and Google AI Studio is subject to the Gemini API Terms of Service.

API key generated

Use your API keys securely. Do not share them or embed them in code the public can view.

AlzaSyAQIOYJ85_SBH4WnXgitg8vYa1TPjnWriY

Copy

Your API keys are listed below. You can also view and manage your project and API keys in Google Cloud.

Project number	Project ID	API key	Created	Plan
...6578	Generative Language Client	...WriY	Jun 20, 2024	Free of charge Set up Billing

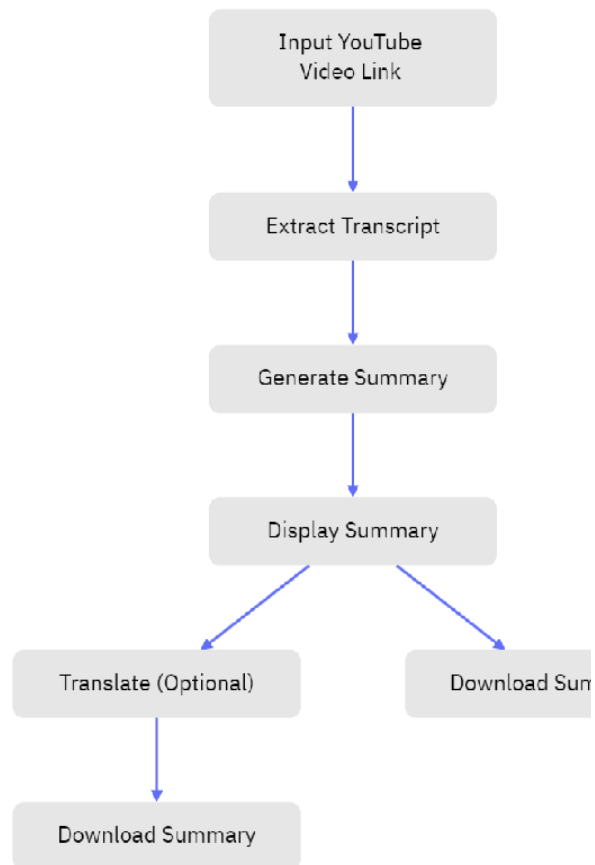
Quickly test the API by running a cURL command

CHAPTER 3

3.1 Proposed Method

- Users input a YouTube video link in a Streamlit interface.
- YouTubeTranscriptApi extracts the video's transcript.
- Google's Gemini Pro model generates a brief summary based on a predefined prompt.
- Users can view the summary in the original language or translate it using Google Translate API.
- Summarized content can be downloaded for offline use, ensuring convenient access to distilled information from YouTube videos.

3.2 WORK FLOW OF THE SYSTEM:



4. IMPLEMENTATION

4.1 REQUIRED LIBRARIES AND PACKAGES:

```
≡ requirements.txt
1  youtube_transcript_api
2  streamlit
3  google-generativeai
4  python-dotenv
5  pathlib
6  googletrans==4.0.0-rc1
7  google-cloud-translate
```

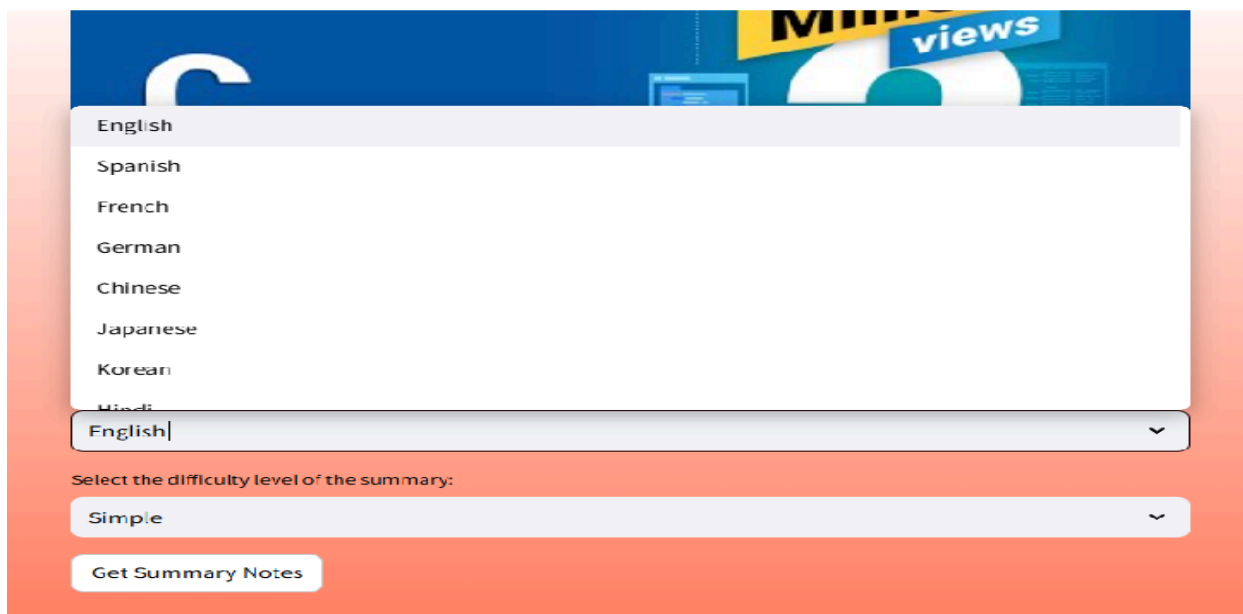
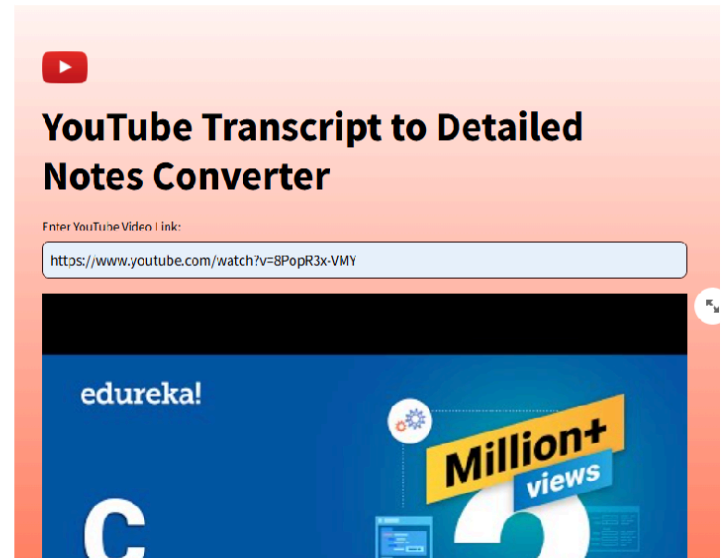
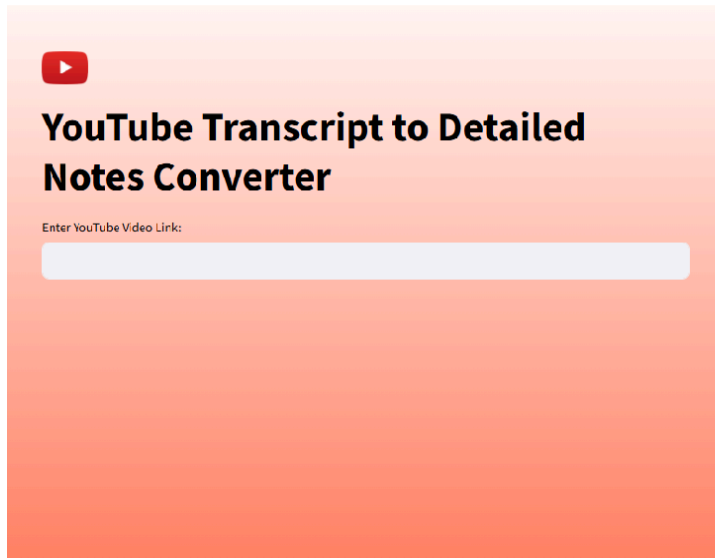
```
▼ venv
> conda-meta
> DLLs
> etc
> include
> Lib
> Library
> libs
> Scripts
> share
> Tools
≡ api-ms-win-core-console-l1-1-0.dll
≡ api-ms-win-core-datetime-l1-1-0.dll
≡ api-ms-win-core-debug-l1-1-0.dll
≡ api-ms-win-core-errorhandling-l1-1-0.dll
≡ api-ms-win-core-file-l1-1-0.dll
≡ api-ms-win-core-file-l1-2-0.dll
≡ api-ms-win-core-file-l2-1-0.dll
≡ api-ms-win-core-handle-l1-1-0.dll
≡ api-ms-win-core-heap-l1-1-0.dll
```

```
venv
├─ api-ms-win-core-heap-l1-1-0.dll
├─ api-ms-win-core-interlocked-l1-1-0.dll
├─ api-ms-win-core-libraryloader-l1-1-0.dll
├─ api-ms-win-core-localization-l1-2-0.dll
├─ api-ms-win-core-memory-l1-1-0.dll
├─ api-ms-win-core-namedpipe-l1-1-0.dll
├─ api-ms-win-core-processenvironment-l1-1-0.dll
├─ api-ms-win-core-processthreads-l1-1-0.dll
├─ api-ms-win-core-processthreads-l1-1-1.dll
├─ api-ms-win-core-profile-l1-1-0.dll
├─ api-ms-win-core-rtlsupport-l1-1-0.dll
├─ api-ms-win-core-string-l1-1-0.dll
├─ api-ms-win-core-synch-l1-1-0.dll
├─ api-ms-win-core-synch-l1-2-0.dll
├─ api-ms-win-core-sysinfo-l1-1-0.dll
├─ api-ms-win-core-timezone-l1-1-0.dll
├─ api-ms-win-core-util-l1-1-0.dll
├─ api-ms-win-crt-conio-l1-1-0.dll
└─ api-ms-win-crt-convert-l1-1-0.dll
```

Google API Key

```
1  GOOGLE_API_KEY="AIzaSyAYnCbsLjnasNcvU3N02-hUMSrMNAwc6PA"
```

4.4 WORKING OF STREAMLIT WEB INTERFACE



C PROGRAMMING TUTORIAL



Simple

Medium

Hard

Simple|



Get Summary Notes

CHAPTER 5

1.1 Conclusion

- In conclusion, This Streamlit application efficiently integrates APIs to offer users a streamlined experience for summarizing and translating YouTube video transcripts. It combines YouTubeTranscriptApi for fetching transcripts, Google's Gemini Pro for generating summaries, and Google Translate for translating summaries into multiple languages. With a user-friendly interface and a downloadable summary feature, the application simplifies the process of accessing concise video summaries changed to user preferences.

1.2 Future Scope

- Implement speech-to-text for video summarization instead of using transcribers.
- Develop it as a website accessible to all users.
- Add a feature that allows users to find videos by searching keywords or video titles.
- Enable customization of our user interface by allowing users to define their preferred languages.

1.3 REFERENCES

- GitHub Repository YTtranscriber (GitHub)
- Video summarization: A conceptual framework and survey of the state of the art. Journal of Visual Communication and Image Representation. Volume 19, Issue 2,2008. Pages 121 Arthur G. Money. Harry Agios. 143. ISSN 1047-3203.
- Youtube Video :End To End Youtube Video Transcribe Summarizer LLM App With Google Gemini Pro