

YouTube Transcript Summarizer

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ABSTRACT

Video transcript summarizer has got a lot of scope in today's world. It highlights the important topics from the video. People spend a noticeable amount of time binge watching YouTube videos, be it for entertainment, education purposes, or getting some important information or exploring their interests. If you wish to find a video to get any important information about a topic, it is a very difficult task to achieve as most of the videos are filled with insignificant buffer material. In most of the cases, the overall intent is to obtain some form of quality information from the video. This project brings forward a video summarization system based on Natural Language Processing and Machine Learning to generalize YouTube video transcripts for abstractive text summarization without losing the main elements and content. This project focuses on to reducing the length of the script for the videos.

Keywords:- Natural Language Processing, Machine Learning, Abstractive Text Summarization

1. INTRODUCTION

YouTube is a video sharing platform, the second-most visited website, the second most used search engine, and is stronger than ever after more than 17 years of being online. YouTube uploads about 720,000 hours of fresh video content per day. The number of videos available on the web platform is steadily growing. It has become increasing easy to

watch videos on YouTube for anything, from cooking videos to dance videos to motivational videos and other bizarre stuff as well. The content is available worldwide primarily for educational purposes. The biggest challenge while extracting information from a video is that the viewer has to watch the entire video to understand the context, unlike images, where data can be gathered from a

single frame. If a viewer has low network speed or any other device limitation can lead to watch video with a low resolution that makes it blurry and hectic to watch. Also, in between advertisements are too frustrating. So, removing the junk at the start and end of the concerned video as well as skipping advertisements, and getting is summary to directly jump to your part of interest is valuable and time efficient.

This project focuses on to reducing the length of the script for the videos. Summarizing transcripts of such videos automatically allows one to quickly lookout for the important patterns in the video and helps to save time and effort to go through the whole content of the video. The most important part of this project will be its ability to string together all the necessary information and concentrate it into a small paragraph. Video summarization is the process of identifying the significant segments of the video and produce output video whose content represents the entire input video. It has advantages like reducing the storage space used for the video. This project will give an opportunity to have hands-on experience with state-of-the-art NLP technique for abstractive text summarization and implement an interesting idea suitable for intermediates and a refreshing hobby project for professionals.

2. LITERATURE SURVEY

NLP or Natural Language Processing is one of the fastest-growing tech fields right now. From message spam filter to medical diagnosis with a chatbot, NLP is everywhere. Some of the hot use cases of NLP right now are text summarization, chatbot, machine translation, text generation, etc. Have you ever imagined getting a short summary of a big YouTube tutorial or video for quick reading before watching the video, definitely this will help you to save a lot of your time by getting a quick understanding or summarization about the video in a short time? This project is about discussing a mini NLP project, a YouTube Transcript Summarizer which will summarize the content of the YouTube video. For many videos, the main content of the videos is only 50-60% of the total length, so the YouTube summarizer will summarize the content of the video by keeping all the important points and making it short and easily understandable. This will be useful in getting the summary of several lecture videos easily.

3. OPPORTUNITIES

A lot of technical and educational applications involving generation of large amounts of video and multimedia are top contender of using video summarization technique. These include film industry, advertisement creation, data visualization, match highlights of sports match thus removing

redundancy, reducing computational time and storage requirements.

I. Research/Patents:- This application can be used to extract important vital claims across patents or research papers thus saving time and effort.

II. Crash Course:- Students who wants to watch YouTube videos for their study can easily get a quick idea of the topic and concisely will get a quick read of the video and can easily check whether the video is relevant for them or not.

III. Quick Notes:- Students who don't want to attend the boring lectures or somehow, they have missed the classes, they can use this application to build the notes from the summary of the video. Most students browse on YouTube a day before their exams and watch the video on double speed, but in reducing the watch time by half, it doubles the confusion about a totally new topic. Thus, making things way worse than they originally were. So, removing the junk at the start and end of the concerned video as well as skipping advertisements, and getting is summary to directly jump to your part of interest is valuable and time efficient

IV. Customer feedback:- Most of the time getting long feedback from the customers for any particular product, this application helps to summarize their long feedback and can easily predict whether the feedback is positive or negative.

V. Hearing Impaired Person:- This application is beneficial for hearing impaired persons as they can

see the whole summary of video in minutes without hearing it. This provides a text-based video description and abstractive summary, enabling them to discriminate between relevant and irrelevant information according to their needs.

4. Methodology

This project basically aims at providing clean and concise summary of the YouTube videos that the user don't want to waste their time at. This project uses popular python libraries like Flask, YouTube transcript api, Hugging-face libraries of Transformers, Speechrecognitionapi, google translate api, Pytube , ffmpeg and many more which can be used in many real world applications.

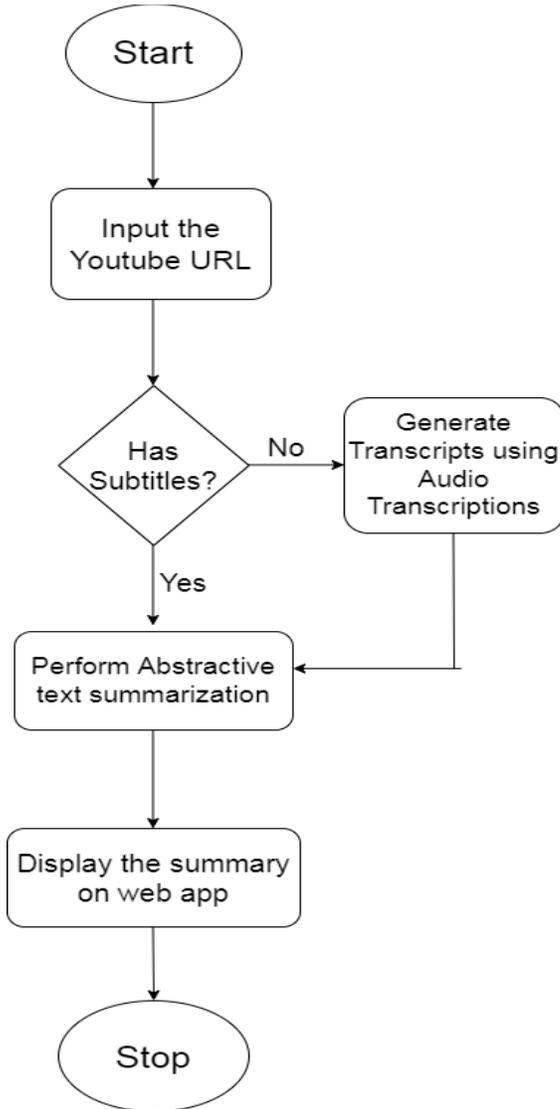


Figure-1

The project is divided into 3 modules:-

1. Input the valid YouTube video URL from the user.

The First step is to getting the video link from the user which user wants to summarize. The video should be Recorded, it should

have a valid video id and it should be available on YouTube. These are some of the things that user should keep in mind before using this web application.

2. Getting the transcripts from that video.

After taking the video link from the user, the next part is to get the transcripts on video. Now it will check whether the given video has subtitles available or not. If the Given video has subtitles in it then we can simply use the python library called YouTube_Transcript_Api which is used to extract the transcripts from the given video. Now what if the given video doesn't have subtitles in it so in this case we will first convert the video into audio format like .mp3 or .mp4 format using python library called pytube and then download that audio file. After downloading the audio file, there is a need to convert it into .wav file using ffmpeg and then doing its audio Transcription using Speech Recognition Library and Hugging sound Library. It will basically convert that audio file into text file which contains the Transcription of the video. This is how to get the Transcription of any video.

3. Passing the Generated transcripts to the text summarizer.

Now this is the main phase of the project where the whole project depends upon. This phase basically

includes the text summarization. Now there are mainly two types of summarization techniques:-

Extractive Summarization:- This is a text summarization technique which basically extracts the important patterns like phrases and sentences from the video, group together and form a concise summary of the YouTube video. It will not produce any new sentence. Some of them are:- TextRank, LexRank, LSA, Luhn etc.

Abstractive Summarization:- This is another text summarization technique which is a new start of art method because it generates the sentences in a newly formed way. It will basically reproduce the sentence which is more clean and concise than the original sentence and in a most human readable form. This is better than extractive summarization techniques. This can be easily implemented by using Bert Transformers or pipeline api.

In this phase, implementation will be there of the abstractive summarization using pipeline api. User can also change the language of the generated summary according to his/her requirements. For this purpose, googletransapi is used to do the language translation of text. It supports 108 languages to translate.

Finally converting the whole project into a web application using Flask Framework and one can

easily deploy it on cloud platforms like Heroku, AWS, etc.

5. Conclusion

Recently, video summarization has attracted considerable interest from researchers and as a result, various algorithms and techniques have been proposed. This project is to provide a web app or a chrome extension that can be used to summarize the YouTube video content and extract important information from those patterns by using state-of-the-art Natural Language Processing methods for abstractive text summarization and Machine Learning for classification.

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7. REFERENCES

1. Hank Liao, Erik McDermott, Andrew Senior "Large scale deep neural network acoustic modeling with semi-supervised training data for YouTube video transcription" December 2013.

2. Gaurav Sharma, Shaba Parveen Khan, Shivanshu Sharma, Syed Ubed Ali “Summarizer For Easy Video Assessment”
Volume: 3 Issue:04-April-2021
3. Atluri Naga, Laggiseti Valli, JahnaviDuvru “Video Transcript Summarizer”
Issue: 11 March 2022
4. Krishna Kulkarni, RushikeshPadaki “Video Based Transcript Summarizer for Online Courses using Natural Language Processing”
Issue: 18 December 2021
5. EvalampoiosApostolidis, Eleni Adamantidou, Vasileios Mezaris “Video Summarization Using Deep Neural Networks: A Survey”
Pages 1838-1863 Issue: 13 November 2021
6. G. PRIYANKA, M. PRASHA MEENA “Survey and Evaluation on Video Summarization Techniques”
Issue: 28 May 2020
7. A. Workie, R. Sharma, Y. N. Chung “Digital Video Summarization Techniques” Volume 09 Issue: 01
January 2020
8. A. Dilawari, M. Usman Khan, “ASoVS: Abstractive Summarization of Video Sequences” Pages 29253-29263 Issue: 11 March 2019
9. Cüneyt M. Taskiran, Arnon Amir, Dulce B. Ponceleon, Edward J. Delp. “AutomatedVideo Summarization Using Speech Transcripts”.
10. AniquaDilawari, Muhammad usmanghani khan. “Abstractive Summarization of Video Sequences” IEEE Access, 2019.