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INTERNATIONAL JOURNAL OF PROGRESSIVE RESEARCH IN ENGINEERING MANAGEMENT AND SCIENCE (IJPREMS)
(Int Peer Reviewed Journal)
Vol. 04, Issue 11, November 2024, pp : 526-529

e-ISSN : 2583-1062
Impact Factor : 7.001

YOUTUBE TRANSCRIPT SUMMARIZER

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ABSTRACT

Currently in today's world andgeneration we use a lot of YouTube videos for knowledge, referenceand learnings. There is ample ofmaterial available on YouTube for every topic that we can search. When we hit search for a particular topic multiple results dropdowns relating to our search. But our main challenge is to find the right video with correctcontext. We have to browse through a lot of videos before findingthe correct video, and this can be time consuming and unproductive effort. To avoid this, I would like to propose a YouTube Transcript Summarizer that couldsummarize and provide the key points from a videowhich would help the user understand what this video will cover and if the topic doesn't interest the user, thenthe user can view other videos. Here I, will be convertingspeech to text. For this I will be using NLP processing for extracting text and BERT Summarizer to summarize the context, Also I will be using Machine learning algorithms to derive correct output from the speech and obtain maximum perfect result. This will provide a text description and abstract summary for thesearched YouTube video. This will help the users to decide between relevant andirrelevant information thatis being displayed. Hence further, my research can alsobe used to interpret text or summaries from different data sources like calls, meetings, zoom calls or online lectures.

Keywords- NLP, Bert Summarizer, Machinelearning algorithms, speech to text generation, AI algorithms

1. INTRODUCTION

NLP is a subset of Machine Learning. Thistechnology gives computers or machines to interpret human language.It will help the machine to comprehendhuman language. Itsprimary usage is to convert human speech to text. Anotherbranch of NLP is video summarization. This will summarize contents from the video and convert it. Here wehave to capture the key summary from video. Video summarization will involve a combination of techniquessuch as text extraction, audio analysis, and image processing, among others. Our main idea is to able to find the short summary of YouTube video and present it in a textual format. This will be very helpful to the users as it will help them to find concise text in very short time. In thefield of NLP we generate summaries of transcripts andproduce human readable outputs

OBJECTIVE:

This YouTube transcript summarizer aims to condenseand simplify the content of a YouTube video's transcript into a concise summary. The main objectiveof my researchis stated below:

Saving User's time: By providing a summarized transcript of the searched videos,users can quickly grasp the highlights and keypoints of a video without having to watch the entire video or content.

Information reuse or retrieval: This summarized content can help users find specific information withinthe video moreefficiently.

Accessibility: For people with some hearing impairments or limited time, a summary canmake the video's content more accessible.

Education and learning of students as well as professionals: Summaries can be used as study aids or to get the key concepts from educational videos.

Content analysis and data study or Contentcategory allocation: These summaries can be used for content analysis, such as identifying common themes or trends orpatterns in a collection of videos.

Overall, my research on YouTube transcript summarizer will aim to improve the efficiency and accessibility of YouTube video content.

IMPORTANCE OF THE STUDY:

This Research Paper will help the users to generate summarized and short concise summary from YouTube content using Machine learning, Bert Summarizer and NLP-Natural Language Processing.

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2. LITERATURE REVIEW

The research paper introduced Dr. T. Bala Murali Krishna talks about Abstractive Multi-Document Summarization via Phrase Selection and Merging. This paper proposed an abstraction-based multi- document summarization framework that can constructnew sentences by exploring more fine-grained syntactic units than sentences, namely, noun/verb phrases. Different from existing abstraction-based approaches, our method first constructs a pool of concepts and facts represented by phrases from the input documents. Thennew sentences are generated by selecting and merging informative phrases tomaximize the salience of phrasesand mean while satisfy thesentence construction constraints. Here they employed integer linear optimization for conducting phrase selection

and merging simultaneously in order to achieve the global optimal solution for a summary. Experimental results on benchmark data set TAC 2011 show that our framework outperforms the state-of-the-art models under automated pyramid evaluation metric, and achieves reasonably well results on manual linguistic model.

3. PROPOSED METHODOLOGY

My paper mainly focusses on getting input from theYouTube video and providing a clear and crisp summarized output.

Getting URL

A Uniform Resource Locator (URL) is a referenceto an internet resource that provides the location ofthat resource on a computer network. It serves as ameans to retrieve information from the internet. Theuser willenter a YouTube URL in the search box and click enter, then the system processes the URLin the background to obtain the necessary information. Thencheck whether it is valid URL orNOT, if it is valid URL then shortened the link process will happened in the backend. Then the required YouTube video will get from the link. It will process for the Video to Text Extraction. In this user will enter the URL, we will check whether theURL is valid or not. If the entered URL is not validthen the user will get an error message saying the entered URL is invalid or incorrect. If the URL is valid, then the correct URL will go forward in nextstep and it will pass the URL toNLP model.

Video to text extraction

After the required YouTube video is attained, then Iwill pass the URL from NLP model file to utubeextract.py file. Then by using the YouTube transcript API I can get the transcript for required YouTube video.

NLP processing

This Process is for Text Summarization. NLP contains many methods for text summarization. Here I will talk about the text summarization is process of shortening thebig paragraph into short summary. If the paragraph contains lots of lines, it will need more time to cover thecontent. We will be able to convert the large text into small text by removing unimportant information. The process of cutting down huge chunks of text and data intounderstandable paragraphs is known as NLP Text processing or summarization.

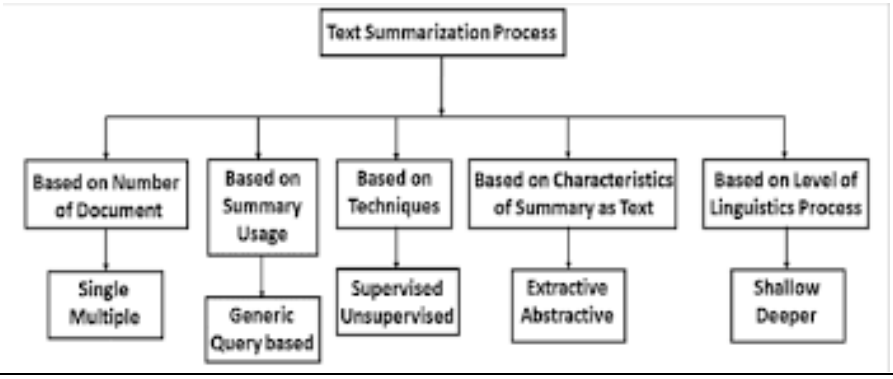
BERT summarizer

BERT is Bidirectional Encoder Representations from Transformers. This BERT introduces new advanced approach to deliver NLP tasks. BERT is one of the important algorithms of Natural Language Processing Models. The important information can be retained and

extracting the relevant information by Extractive Text Summarization. This extractive Summarization is more challenging. In this progress I will be using superior embedding's that provided by encoder models like BERT. By taking two supervised approaches and use the BERT sentence embedding's to build an extractivesummarizer.

Language translation

The main objective is to create a Language Translator which would help us translate a word, sentence or evenaparagraph to another language. I will try to incorporate as many languages as possible. Can use T-kinter Moduleto build our GUI for the project andgoogle-trans libraryto present us with a number of languages.



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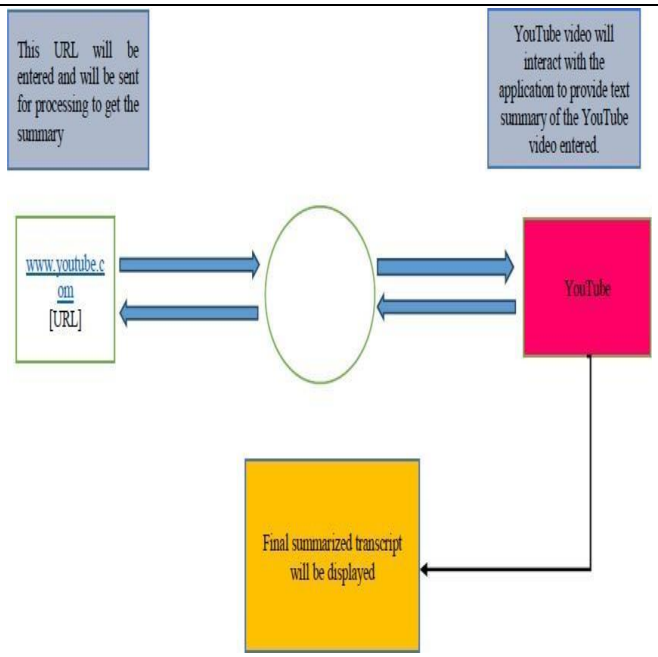

TESTING

Accuracy table:

Testing	Algorithm	Accuracy
Black box testing	Latent Semantic Analysis (LSA)	96%
Black box testing	Transformer Model	96.66%
Black box testing	Text Rank Algorithm	97.3%
Black box testing	Frequency Based Approach	96.95%
Black box testing	Bert Text Summarizer	98.2%

Currently the limitation of this model are

Accuracy: The accuracy of a summary depends on the video's complexity and the algorithm used by the tool. For example, YouTube's automatic captions are only about 60- 70% accurate, and the accuracy can be worse in videos with background noise, accents, or multi-syllable words.

Data quality: The quality of the data fed into the summarizer can be an issue. For example, many YouTube uploaders don't include captions, and auto-generated translations aren't always perfect.

Bert Text Summarizer will provide with maximum accuracy.

4. POTENTIAL APPLICATIONS

Educational environment: Summarizers canbe usedto create study material for students, helping them efficiently review and understand key concepts fromlectures, tutorials, and other educational videos.

Content Creators: Content creators can use this summarizer to generate summaries of their videos, making it easier for viewers to find and consume theircontent.

Research and Analysis: My Summarizers canbe usedfor large-scale content analysis, enabling researchers to identify trends, patterns, and emerging topics withinvast datasets of YouTube videos.

Office Meetings or Client calls: From thistool professionals can get key points or highlights ofthe meeting at the end of the meeting **Accessibility:** Summarizers can enhance theaccessibility of YouTube content for individualswith hearing impairments or limited time, providinga valuable tool for inclusive content consumption.

5. CONCLUSION

In conclusion I can saymy model can be used to savetime of students or other professionals. Instead of watching an entire video they can glance through the video and get a summary of a particular video. My model will provide multi language summarization andwill contribute in saving time or a lot of people. Professionals can use this model in future during meetings as well to get the minutes of the meeting. I amconfident that this paper will contribute in betterment isalready published papers. This summarizer also represents a significant advancement in information processing and accessibility. By automating the task of condensing orshortening lengthy transcripts into short precise summaries, my tool will offer numerous benefits to users, including time-saving, improved information retrieval, and increased accessibility for individuals with disabilities, students or working professionals.

6. FUTURE SCOPE

In future my research can also be used to interpret text or summaries from different data sources like calls,meetings, zoom calls or online lectures etc. It can alsobe used as browser extensions in the future to increaseefficiency.

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