An Overall Video Summarizer

line 1: 1st Given Name Surname   
line 2: *dept. name of organization   
(of Affiliation)*  
line 3: *name of organization   
(of Affiliation)*line 4: City, Country  
line 5: email address or ORCID

line 1: 2nd Given Name Surname  
line 2: *dept. name of organization   
(of Affiliation)*  
line 3: *name of organization   
(of Affiliation)*line 4: City, Country  
line 5: email address or ORCID

line 1: 3rd Given Name Surname  
line 2: *dept. name of organization   
(of Affiliation)*  
line 3: *name of organization   
(of Affiliation)*line 4: City, Country  
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*Abstract*—This electronic document is a “live” template and already defines the components of your paper [title, text, heads, etc.] in its style sheet. *\*CRITICAL: Do Not Use Symbols, Special Characters, Footnotes, or Math in Paper Title or Abstract*. (*Abstract*)

Keywords—component, formatting, style, styling, insert (key words)

# Introduction

The ever-increasing rate of videos surfacing on the internet has been astonishing. YouTube, With the ease it offers, has been the best and a popular platform for people all across the globe to upload their videos online on diverse and versatile topics. More than 500 hours of video were uploaded to YouTube per minute as of June 2022. This comes up to almost 30,000 hours of fresh information uploaded per hour.

A vast array of videos is available on the internet on a wide spectrum of topics from education and entertainment to self-help guides and social activism. Videos are one of the most effective means to convey and comprehend information. It can be considered as one of the most effective tools for learning as they can visually and audibly convey concepts and ideas.

The covid-19 pandemic has boosted the growth of such online contents to the next level. Videos had become the major source of information across domains during the pandemic period allowing people to know things happening world-wide staying at home. Videos played major role especially in the field of education not hindering the learning of students.

While Videos play extremely important roles in our life these days, it is even important that the user gets access to the best video in search for without wasting much of their time. Often the videos available can waste our precious time as they may not necessarily contain the information we are looking for.

Often, students may waste enormous time in searching for the best lecturing videos. The video thumbnails may sometimes be misleading and may waste our time making us watch it without extracting the required information which makes it necessary to adopt a methodology which can help people knowing the context of the videos before watching the videos so that the viewer has an idea and understanding of the video before devoting his precious time into it. Beyond the realm of education, video summarizing has a number of advantages and is frequently used in industries like media, law, and business, where it may be used to glean important information from voluminous video material.

A concise video summary aids users in aligning their needs with the content, benefiting individuals with diverse preferences. An audio version of the summary is valuable for those who prefer not to read, ensuring accessibility for individuals with visual or auditory impairments.

So, a method is imposed that provides a concise summary of the input video. Video’s Audio transcript is summarized also the content extracted from the video frames is summarized and an overall summary is obtained. Our proposed approach delas mainly with three parts i.e., obtaining the audio transcript of the video, extracting the text present in the images of video’s (video frames) at regular intervals ,obtaining the overall summary of both transcripts both as text and as audio .

Although there may be many existing models for the problem there is less focus on the overall summary of the video i.e., an approach that summarizes not just the audio transcript but also the video frames i.e., images of the video. It is very important to even extract the useful, significant information from images of videos along with the audio part of the video.

Our Proposed approach concentrates on this part. The video id/URL is fed as input and inbuilt python modules such as YouTube-Transcript API for videos with subtitles otherwise the videos’ audio is downloaded and is converted to wav format (using ffmpeg) and Automatic Speech Recognition (ASR) is used for audio to text conversion.

For Summarization, which has two types extractive and abstractive. The texts extracted from images and audio is summarized by both the methods.

The Summarized part is evaluated Using ROUGE ((Recall-oriented understudy for Gisting evaluation)

# Literature Survey

Many researches have been made in the field of videos. Although, still it remains a research topic as it is still challenging to obtain a precise summary. Earlier approaches show Machine learning and Natural Language Processing techniques can be best used for summarizing the Videos

*A. Audio Extraction from the video and its transcript*

Researches in the field of audio to text have focused on developing models that can accurately transcribe the audio using various methods such as Speech recognition and Natural Language Processing (NLP). In few of the Earlier Approaches the Audio Transcript was obtained by YouTube Transcript API which is a python API used to obtain the transcript for the given YouTube Video. While, in some other approaches the transcript was obtained by downloading the audio of the Video and converting it into wav (mp3 or any other format to wav) format and then speech to text conversion could be done with the help of a Transformers’ such as Hugging face Transformers’ Automatic speech Recognition (ASR). Automatic Speech Recognition (ASR) converts speech signals to text by mapping a sequence of Audio inputs to text outputs.

*B. Text extraction from video frames(image)*

The previous researches in the field of image to text have tried developing a model to accurately transcribe the text present in the audio using techniques such as Optical Character Recognition (OCR). Optical Character Recognition is a technology used to convert scanned images of text or handwritten documents into editable and searchable text. It automates the process of extracting characters and words from images. Also, some

*C. Text (Transcript) Summarization*

From the earlier researches made it is known that there are two types of summarization methods i.e., extractive and abstractive. While, Extractive summarization deals with extracting the important parts of the given text to be summarized to create a condensed version of the original text. It tokenizes the input text into sentences or phrases, calculates features for each which may include metrics like Term Frequency- Inverse Document Frequency (TF-IDF), word frequency, position in text etc. It then assigns the scores to each sentence based on the computed features using approaches such as TF-IDF scores, cosine similarity, graph-based algorithms or many other machine learning models. It the selects the top-ranking sentences and arrange them in a coherent and meaningful way to form an extractive summary. Whereas, Abstractive summary is a method of summarization which summarizes a given piece of text in a way that is not constrained to selecting existing sentences or phrases from the original text. Instead, it may also contain new phrases and sentences to convey the main ideas present in the text. Similar to extractive summarization input text is tokenised converting the words, phrases or sentences into a numerical representation suitable for the model which may include word embeddings such as Word2Vec,GloVe which are components of Natural language Processing(NLP).

Before you begin to format your paper, first write and save the content as a separate text file. Complete all content and organizational editing before formatting. Please note sections A-D below for more information on proofreading, spelling and grammar.

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Identify applicable funding agency here. If none, delete this text box.

* Use a zero before decimal points: “0.25”, not “.25”. Use “cm3”, not “cc”. (*bullet list*)

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*a**b* 

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## Some Common Mistakes

* The word “data” is plural, not singular.
* The subscript for the permeability of vacuum **0, and other common scientific constants, is zero with subscript formatting, not a lowercase letter “o”.
* In American English, commas, semicolons, periods, question and exclamation marks are located within quotation marks only when a complete thought or name is cited, such as a title or full quotation. When quotation marks are used, instead of a bold or italic typeface, to highlight a word or phrase, punctuation should appear outside of the quotation marks. A parenthetical phrase or statement at the end of a sentence is punctuated outside of the closing parenthesis (like this). (A parenthetical sentence is punctuated within the parentheses.)
* A graph within a graph is an “inset”, not an “insert”. The word alternatively is preferred to the word “alternately” (unless you really mean something that alternates).
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* Be aware of the different meanings of the homophones “affect” and “effect”, “complement” and “compliment”, “discreet” and “discrete”, “principal” and “principle”.
* Do not confuse “imply” and “infer”.
* The prefix “non” is not a word; it should be joined to the word it modifies, usually without a hyphen.
* There is no period after the “et” in the Latin abbreviation “et al.”.
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An excellent style manual for science writers is [7].

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**The template is designed for, but not limited to, six authors.** A minimum of one author is required for all conference articles. Author names should be listed starting from left to right and then moving down to the next line. This is the author sequence that will be used in future citations and by indexing services. Names should not be listed in columns nor group by affiliation. Please keep your affiliations as succinct as possible (for example, do not differentiate among departments of the same organization).

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Component heads identify the different components of your paper and are not topically subordinate to each other. Examples include Acknowledgments and References and, for these, the correct style to use is “Heading 5”. Use “figure caption” for your Figure captions, and “table head” for your table title. Run-in heads, such as “Abstract”, will require you to apply a style (in this case, italic) in addition to the style provided by the drop down menu to differentiate the head from the text.

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1. Table Type Styles

| Table Head | Table Column Head | | |
| --- | --- | --- | --- |
| Table column subhead | Subhead | Subhead |
| copy | More table copya |  |  |

1. Sample of a Table footnote. (*Table footnote*)
2. Example of a figure caption. (*figure caption*)

Figure Labels: Use 8 point Times New Roman for Figure labels. Use words rather than symbols or abbreviations when writing Figure axis labels to avoid confusing the reader. As an example, write the quantity “Magnetization”, or “Magnetization, M”, not just “M”. If including units in the label, present them within parentheses. Do not label axes only with units. In the example, write “Magnetization (A/m)” or “Magnetization {A[m(1)]}”, not just “A/m”. Do not label axes with a ratio of quantities and units. For example, write “Temperature (K)”, not “Temperature/K”.

##### Acknowledgment *(Heading 5)*

The preferred spelling of the word “acknowledgment” in America is without an “e” after the “g”. Avoid the stilted expression “one of us (R. B. G.) thanks ...”. Instead, try “R. B. G. thanks...”. Put sponsor acknowledgments in the unnumbered footnote on the first page.

##### References

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For papers published in translation journals, please give the English citation first, followed by the original foreign-language citation [6].

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7. M. Young, The Technical Writer’s Handbook. Mill Valley, CA: University Science, 1989.

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