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Index Point Detection for Text Summarization using Cosine Similarity in Educational Videos

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Index Point Detection for Text Summarization using Cosine Similarity in Educational Videos

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Abstract. Explosive growth in digital content creates a trend of video-based learning and knowledge sharing. Several educational videos are shared by various trainers/ bloggers/ instructors daily. It is now evident that even during emergencies like the recent ongoing CoVid-19 outbreak, video lectures are the saviors when the whole world comes to rest. This rapid and expansive growth has encouraged the researchers to efficiently and automatically index, browse, and retrieve video data. This research aims to process videos and precisely identify the index points which are discussed within the video. Experimental results show a good performance of the topic detection model in finding keywords and reducing dimensionality.
Keywords: Cosine Similarity, Key-frame Identification, Optical Character Recognition,Text Extraction ,Text Recognition,Video Frames

1. Introduction
Segmentation splits a video stream into different camera-takes/scenes or shots.These are nothing but the correlated sets of a contiguous picture frame sequence taken by a camera from the moment it begins to capturing the moment it finishes. [1][2]. Content-wise, shots are homogeneous and possess a degree of visual uniformity. The idea is to extract the video content and analyze it for information and knowledge retrieval. This paper intends to offer a framework that assists in the video summarization technique by extracting keywords as and when they occur in the video. Shot Boundary Detection is done through key-frame identification using Cosine Similarity with a static threshold value.

1.1. Textual content in a Video
Text in a video sequence can exists in one of the two forms viz.

- Scene Text: It is also called graphic text and is displayed in a video sequence during the video making, for example, text written on boards, banners, and hoardings.
- Artificial text: is the text that is introduced explicitly into the video through editing. It is always displayed at a specific position in the video. Examples are names, data about the video, or interpretation of discoursed in video film, captions in a video.