Chapter 24
AI-Powered Innovative Method for YouTube Education Using Next-Gen Prompt Sheets

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ABSTRACT

These are really important platforms in today's educational setup. However, they come with drawbacks like unstructured content and language barriers most users face. Thus, this research work came up with the idea of coming up with a system powered by artificial intelligence to convert YouTube video transcriptions into structured educational tools for interaction. AI coupled with Natural Language Processing made it possible to carry out summarization, translation, and even sentiment analysis that makes it personalized to accommodate the various learners out there. This can be made possible by using AI-generated prompt sheets to focus on the key concepts, eliminate manual content extraction, and provide scalability for educators. Testing indicates that the system is successful in improving engagement and learning through structured, easy-to-digest materials. Moreover, its multilingual capabilities help overcome language barriers, thus making educational videos accessible to a global audience.

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1. INTRODUCTION

In recent times, video sites, like YouTube, are one of the latest important resources in education: a nearly unlimited amount of video learning material is now at everybody's fingertips. Within the tutorials, lectures, and other educational contents presented, there are those with subject-oriented and learner-tailored approaches. However, the vast number of video materials also creates difficulty in accessing and using the video material as it was meant to be for students and educators alike. Extracting critical points from video files would take hours in case the learners targeted only very specific topics or ideas in them. Also, there is the format missing which would interfere with adding such videos in classroom instructional settings.

Most critical and challenging aspects of the usage of YouTube as a tool of learning are actually associated with the amount of labor invested in searching the content through video transcripts for specific elements of information. Subsequent steps would then involve drawing out relevant information into an articulate summary. This process varies significantly based on individual skills and usually leads to inconsistent results. Another major challenge is the language in which these videos are available. Since most content on YouTube is published in only one language, learners who are not conversant in that language miss out on valuable knowledge. Thus, the global reach of the platform is curtailed. To solve these challenges, our project suggests an AI-powered method that applies advanced techniques in Natural Language Processing (NLP) to transform unstructured video transcripts into structured educational resources (Singh, Y, 2023). Through video summarization and translation automation, our system produces interactive prompt sheets that facilitate a richer learning experience. It guides users in the effective grasp of the key points at hand, making learning accessible and efficient. With the aid of machine translation, the system opens up education for a larger audience as its content is no longer bound by language barriers. This method not only simplifies the process of extracting information from videos but also provides a scalable solution for educators and students all over the world. It makes our system accessible for educational content, saves more time in manual summarization, and enhances the outcomes of learning. This paper discusses the AI models and NLP techniques used to develop the system, evaluates its effectiveness, and underlines its potential impact on the future of digital education (Gurrib I, 2023).

This is a weakness in this project because the project does not emphasize the ability of AI to make video content into interactive tools such as quizzes, flashcards, or simulations. While the chapter focuses on summarization and structuring content, it underutilizes the capability of AI to enhance learner engagement through interactive methods. Interactive tools not only support the learning process but also satisfy different cognitive styles, which makes education both inclusive and effective. Video transcripts, for instance, can be analyzed by AI to highlight key concepts; these key concepts can be turned into quizzes that tailor to the learner's proficiency. Keywords and definitions can similarly be turned into flashcards, thus helping in memorizing. Simulations, more so in STEM education, turn abstract concepts into interactive and real-life experiences. To bridge this gap, the chapter must present implementing these AI-based features within the system, thereby engaging learners with an active role in learning.