ARTIFICIAL INTELLIGENCE AND MACHINE LEARNING
PROJECT REPORT

TITLE: End-to-End YouTube Video Transcribe Summarizer LLM App with Google Gemini Pro

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PROBLEM STATEMENT:

To Develop an end-to-end application that transcribes YouTube videos and summarizes the content using Google Gemini Pro, a Large Language Model (LLM). The application should be user-friendly and allow users to input a YouTube video link, transcribe the video's audio content, and generate a concise summary of the transcript.

EXPLANATION:

With the growing amount of video content on platforms like YouTube, extracting and summarizing key information from videos is becoming increasingly important. Manual transcription and summarization are time-consuming and often impractical given the volume of content available.

This project leverages advanced machine learning and LLM technologies to automate the transcription and summarization process. By integrating YouTube's Transcript API with Google Gemini Pro, the application provides users with a seamless way to convert video content into meaningful text summaries, enhancing information accessibility and productivity.

ALGORITHM:

Step 1: Extracting Transcript from YouTube

- Tools Used: YouTube Transcript API
- Objective: Retrieve the transcript of the audio content from a specified YouTube video.
- Process: The application takes the YouTube video link as input, extracts the video ID, and uses the YouTube Transcript API to fetch the entire transcript text associated with the video.

Step 2: Generating Summary Using Google Gemini Pro

- Tools Used: Google Gemini Pro, Generative AI API
- Objective: Summarize the extracted transcript into concise, informative points.
- Process: After extracting the transcript, the application sends the text to Google Gemini Pro along with a prompt to generate a summary. The prompt ensures that the summary is within 250 words and focuses on the key points of the video.

Step 3: User Interface Implementation:

- Tools Used: Streamlit
- Objective: Create an interactive user interface for input and output.
- Process: Streamlit is used to develop the front end of the application. Users can input the YouTube video link, and upon pressing the "Get Detailed Notes" button, the transcript is extracted and summarized. The summary is then displayed on the same interface.

IMPLEMENTATION:

The project is implemented using the following tools and technologies:

- Python: The primary programming language for the application.
- Streamlit: For building a user-friendly web interface.
- YouTube Transcript API: To extract the transcript from YouTube videos.
- Google Gemini Pro: To generate a concise and accurate summary from the transcript using LLM capabilities.