Project Synopsis

1. Project Title

YouTube Video Transcription and Summarization Using Gemini API

2. Introduction

This project aims to develop an AI-based system capable of transcribing and summarizing YouTube videos. With the vast amount of content available on YouTube, users often face challenges in efficiently consuming lengthy videos. The goal is to enhance the accessibility and usability of video content by transforming it into easily digestible text summaries.

3. Objectives

- Integrate the Gemini API for accurate transcription of YouTube videos.
- Develop an algorithm to generate concise summaries from the transcribed text.
- Provide a user-friendly interface for easy access to transcriptions and summaries.

4. Background

With the exponential growth of video content on YouTube, users often face difficulties in extracting useful information from lengthy videos. Existing solutions offer either transcription or summarization, but few provide an integrated approach. Automatic transcription and summarization tools can greatly enhance content accessibility, aiding in educational, informational, and entertainment contexts.

5. Methodology

- **Data Collection:** The primary data source will be YouTube videos. Transcripts will be extracted using the youtube-transcript-api.
- **Model Selection**: For transcript summarization, the gemini-pro model will be used due to its advanced natural language processing capabilities.
- **Training and Evaluation**: Performance will be evaluated on a diverse set of YouTube videos to ensure accuracy and relevance in summarization.

6. Tools and Technologies

- **Software:** Python
- **Libraries:** youtube-transcript-api, streamlit, google-generative-ai
- **API:** Google API for authentication and data access
- **Platform:** Streamlit for building the user interface

7. Expected Outcomes

- A fully functional tool that can transcribe and summarize YouTube videos.
- An easy-to-use interface for users to input YouTube video URLs and receive summaries.
- Enhanced accessibility to video content through concise text summaries.

8. Timeline

- **Day 1-2:** Setup environment and required libraries.
- **Day 3-5:** Implement YouTube transcript extraction using youtube-transcript-api.
- **Day 6-7:** Integrate the gemini-pro model for transcript summarization.
- **Day 8-9:** Develop the user interface using Streamlit.
- **Day 10-11:** Test the complete pipeline with various YouTube videos.
- **Day 12-13:** Gather user feedback and make necessary adjustments.
- **Day 14:** Final review and project submission.

9. References

- YouTube Transcript API Documentation: youtube-transcript-api
- Google API Documentation: Google APIs
- Streamlit Documentation: Streamlit
- Gemini-pro Model Information: Gemini-pro Model

10. Team Members

- Garima Rana (221001360034)
- Gaurav Gulati (221001360035)