Executive Summary

This project focuses on developing an automated video grading system designed to assess the quality and relevance of uploaded videos for video-related tasks of social activities. The primary goal is to streamline the evaluation process, reducing the need for manual review and significantly saving both time and human effort, not only for us but also for customer users and business owners.

One of the main challenges in this project was determining how to select representative frames that effectively capture the relevant content and context of an entire uploaded video on the topic of the event. Choosing the right frames is essential to ensure that the automated analysis accurately reflects both the quality and intent of the video. Another significant challenge involved selecting the most suitable computer vision and large language models to detect relevant objects or branding, and providing meaningful insights for grading. The accuracy of these models is critical, as it directly impacts the user experience. An unreliable model could result in incorrect scores and undermine the credibility of the grading system. Ensuring that the automated evaluation is precise and consistent is therefore a main priority for us to deliver a trustworthy and effective service.

To address these challenges, I implemented a self-contained microservice using Node.js, which handles video uploads, extracts key frames, performs automated analysis, and generates a structured grading report. This system not only provides a scalable solution for video evaluation but also lays the groundwork for integrating more advanced AI-driven analytics in the future.

Architecture Diagram & Workflow

-node.js backend endpoint /grade to upload the video
-process the video to get the frames
-choose frames and feed them into the model
-grade and feedback
-sending back the formatted JSON response

Frame-Selection Strategy

-Choosing frames every 5 seconds
-Choosing the middle frame
-Choosing the starting, middle, and ending frames
-Choosing frames whenever there is a huge scene change

Model Selection & Experimentation (methodology, metrics)

Results (table & graphs of grades per video)

Discussion & Limitations

Future Improvements

Setup & Usage Guide (summarised)

Appendix (links to repo)