Honours Project Proposal

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Full time video game live streamers on twitch.tv stream to thousands of viewers for 8+ hours a day, 5 days a week. Viewers that catch these streams live can consume this content as intended, but for many viewers, a streamers schedule can be incompatible with theirs, and generally viewers look to youtube content for stream "highlights" which condense these long form streams into shorter, easier to watch content. Many streamers hire editors to do this work, but it is slow, repetitive work, and costly; for many small time streamers, hiring an editor isn't a viable option due to the prohibitive cost. As such, there is a need for this work to automated. I intend to leverage the opencv Python package's Hough line transformation functionality to create a metric by which we can compare change from frame to frame in a video, and to compare this change in order to create coherent scenes.

The main objectives of this project are to leverage data from the video in order to create cohesive 'scenes', or blocks of video that are consistent. As such, an essential aspect is finding an appropriate data structure which can maintain the approximate difference in video from frame to frame. In this project, I will find the ideal data structure for this task and justify this decision using comparative analysis, and will thus create a project which can intake a video of arbitrary length, and return timestamps which indicate a break in a scene.

Something I may do is using the data structure found previously, investigate audio to find consistent low points, creating "active sentences" and "silent downtime" in the audio, to enhance our idea of a consistent scene.

Bi-Weekly Schedule

By **January 19th**: conduct preliminary research on opencv and hough line transformations.

By **February 2nd**: create demo project which takes either two images or a two frame video and compares the two's hough lines.

By **February 16th**: Investigate extrapolation of two frame video to video of arbitrary length, and store each frame's hough line's in a data structure.

By **March 1st**: Investigate optimal data structures for comparison from frame to frame, or to hold 'similar' images in buckets, where each bucket is a scene.

By **March 15th**: Continue research from previous two weeks. Conduct big- O analysis of promising candidates. Do "nice to haves" with additional time i.e. audio analysis.

By **March 29th**: be close to completing or done the project report.

By **April 12th**: submit project report.