CSC443 Sprint 4 Report - Max Figura - 2025/05/02
Group 7 Semester Project - Computer Vision

Tasks Completed

- Color Picker Clean-Up: Restructured picker into individual color with numerical input, sampling, and preview; range selection adds a second color with identical controls, along with button to render range map. Fixed an error with range map rendering.
- Formalise UI Tests: Wrote four tests to verify window behavior, color picker functionality, general functionalities, and input bounds across operating systems.

Tasks In Progress

- Video Displaying and Processing - Successfully implemented video file selection and single-frame display. Future steps include an integrated multimedia player to view whole video files within application.

Tasks Pending

- Contour Point Selection Clean-Up: Future steps include bug fixes and improved interface for choosing/viewing selected point.

Challenges

- While I managed to get the Qt media player tool to open and play a video, I was unable to figure out how to add that widget into the application so videos could be displayed natively. More time could be spent amending this, but the current workaround is to cache as an image the first frame of the video, displaying only that in the UI.
- Without specific animation/video editing software, it can be frustratingly difficult to construct a short, simple animation that can be used for video analysis testing. The test file that I created was generated with FFmpeg and is actually a test card, with all colors but that of a moving object being keyed out and replaced with white.
- In the HSV color model, shades of pure grey are defined only by saturation and value, with hue being irrelevant. When converting RGB to HSV, Qt handles this by passing a hue value of -1, but this is incompatible with the OpenCV representation of hue. This problem was difficult to identify, but it was then simple to check for an intercept negative values.

Outcomes

- Restructuring in `gui_colorpicker.py`, including adding full selection options for second color.
- Minor changes to `user_interface.py`, including renabling of kernel size option for contours and and incorporating changes to `gui_colorpicker.py`.
- Minor changes to `main.py` and contribution to `read_video`, including retrieval of single video frames and integration of video processing.
- Creation of `video_simple.mp4` in images folder.
- Creation of GUI tests in project testing document.

Resource Allocation

- 4 hours restructuring color picker and other GUI features
- 3 hours integrating video analysis interface
- 1 hour consulting resource documentation
- 3 hours writing and running tests

Team Assessment

- Ariana - Implemented video processing, including file reading, frame-by-frame detection, and file writing.
- Jason - Added functionality to allow object detection along edges. Created functionality tests.