CSC443 Sprint 3 Team Report - Max Figura - 2025/04/17
Group 7 Semester Project - Computer Vision

Sprint Backlog

- **Process for Analysing an Individual Image**
  - **Export Object/Color Detection Metadata** - New, Jason
    No change
  - **Add Black Border to Blob Detection Transformation** - New, Jason
    Task created with intent to add margin for detection of objects on edge of image.
- **Contour Analysis**
  - **Centroid of Object** - Closed, Ariana
    Task closed with successful calculation of a contour-detected object's centroid.
  - **Selecting Shape From Coordinates** - In Progress, Ariana
    Task created and started with intent to match a given image location to a detected object centroid.
  - **Convex Hull Contour Option** - New, Ariana
    Task created.
  - **User Shape Selection** - Ready for Test, Max
    Task created and implemented, allowing user to select a position on input image for contour detection.
- **Color Selection in Video**
  User story added with intent to process and detect objects within video files.
  - **Reading In Video from Video File** - In Progress, Ariana
    Task created and started with intent to read video files for processing
  - **Frame Reading Method** - New, Ariana
    Task created with intent to convert video file to individual frames
  - **Analysis of Frames with Color Detection Method** - New, Ariana
    Task created with intent to process video frames successively
- **User File Saving**
  - **Save Raw Processed Image to Cache** - Ready For Test, Jason
    Task tested and closed with more intentional file-saving methods.
  - **Cache Folder Management** - New, Unassigned
    No change
  - **Save Images to Results Folder** - New, Unassigned
    No change
- **User Color Selection** User story now closed with completion of primary and secondary color selection tasks
  - **Improve Color Picker** - Closed, Max
    Task closed with successful slimming-down of color picker widget.
  - **Add RGB/HSV Input Toggling** - Closed, Max
    Task created, tested, and closed, with the option for the user to enter RGB or HSV numerical input implemented.

  - **Implement a Method of Displaying a Range of Colors** - Closed, Jason
    Task closed with successful 3D plot creation of HSV colorspace.
  - **Implement a Method of Selecting a Range of Colors** - Ready For Test, Jason
    Task assigned to Max and marked In Progress with the addition of a second range of numerical inputs.
    Task reassigned to Jason and closed with ensuring of proper connection between user color range input and processing engine.
- [**Uncategorised**]
  - **Create Method of Processing Unordered Color Values** - New, Jason
    Task created with intent to allow for variation in color space input representation.
  - **Fix Color Range Input** - New, Max
    Task created with intent to improve interface and display of range input.
  - **Fix Interface Contour Point Suggestion** - New, Max
    Task created with intent to improve interface and display of point selection for contour detection.
  - **Formalise UI Tests** - New, Max
    Task created with intent to create formal test procedures for the UI across platforms.

Current state of functionality

Opening the program, the user is met with a GUI, with options to import an image file, select an image detection option color, and kernel size. Within the color selection, the user has the option to enter numerical RGB or HSV values, or sample a color from the screen, as well as the ability to choose a second color to define a range. Once an image and a color are selected, the user can 'analyse' the image, generating an output that marks detected objects within the provided color range. With the use of a color range, one can use the program to detect a brightly-colored object from a photograph, and contour detection allows for a more sophisticated tracing of the object in the output. The user is then able to use the interface to save the output to a specified file, including the ability to scale it.

Challenges

The biggest challenge faced was in each team member being able to work an appropriate amount on the project during this sprint. Notable factors include Max being gone 04/05 - 04/06, Max and Ariana both attending a conference 04/11 - 04/12, and Jason having National Guard drill the weekend of 04/11. My response moving forward would be to double-down on using the time that we have, but also setting realistic expectations for what else we can accomplish.

A secondary challenge faced is the increased interaction between different apsects of the software, requiring more immediate communication and collaboration. The best response here is to keep up regular meetings, be present digitally for IM communications, and maintain stricter version control for sharing of developments.