Project 1

Colour identification and tracking

12 points total

Program 1

Find the red ball in the picture `red_ball.jpg`.
Mark the area identified as a "red ball" and its centre of gravity.
Draw text "Red ball" near the centre of gravity.

Figure 1: Example output of Program 1

Grading

1 point each for the following:

- Correct import of required libraries.
- Correct import of the image file.
- Handling of edge cases related to file import.
- Conversion to HSV colour space.
- Tuning of colour masks to identify the ball.
- Use of binary operations to combine masks (at least 2 masks).
- De-noising using morphological operations.
- Correct centre of gravity and text placement.

8 points total.

Program 2

Use the algorithm from Program 1 to identify the red ball in the video `rbg_ball_720.mp4`.
The position should update every frame, and the video should play continuously inside the same window.
If the ball is not in view of the camera, display the last position where it was seen (with some modification to the marker to indicate that the ball is not there).

Grading

- 1 point - Correct import of the video file and handling of the edge cases.
- 2 points - Application of the algorithm from Program 1 to each frame of the video.
- 1 point - Handling of edge cases when the ball is not in view.

4 points total.