QUiZ 2

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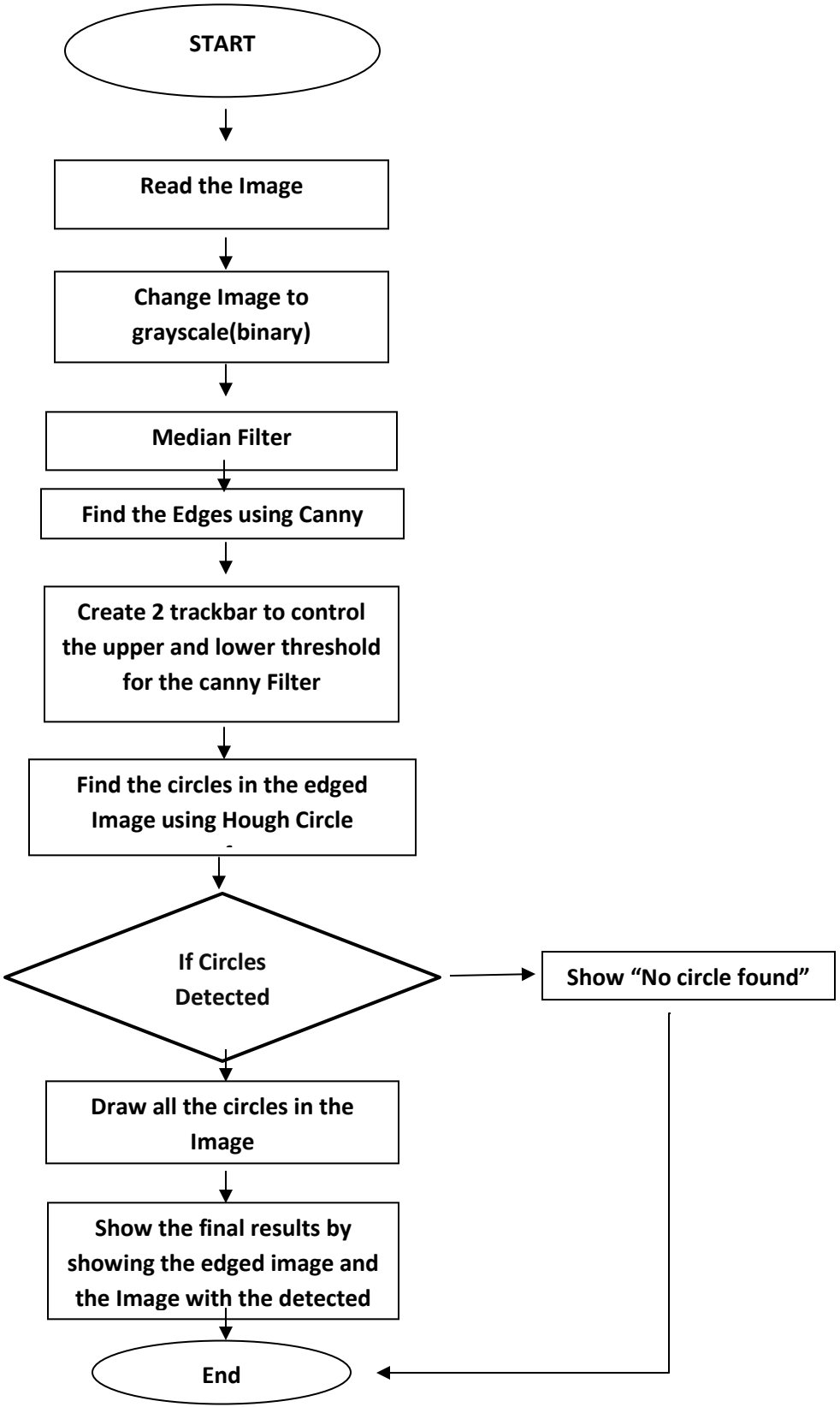
Flow Chart:



Steps:

Quiz 2A:

- Firstly, we take the read the image, and pass the image through a median Filter to reduce the noise
- We get the gray image by converting the RBG image to Binary
- Using Canny to detect edge as Canny Edge Detection is one of the most popular edge detection algorithms
- For the Edge detection minVal and maxVal arguments will be controlled by two trackbar with maximum length of 500
- To find the circles in the image we use {cv2.HoughCircles} with **Hough Gradient Method** which uses the gradient information of edges.
- Cv2.hough circle will produce and array with three columns which are the X and Y coordinates of the centre and the radius.
- To draw the circle, we require to break it into parts the first to draw the centre of the circle and secondly the circumference of the circle by getting the reading of the radius of that specific circle
- If there are no circles found it will print “No circles found”
- By using the {Imshow} we will be showing the results in 2 windows, the first will be the edge image with the 2 trackbars and the second will be the original (RBG) image with circles detected.
- By tuning the upper and lower threshold of the edge the number of circles can be altered.

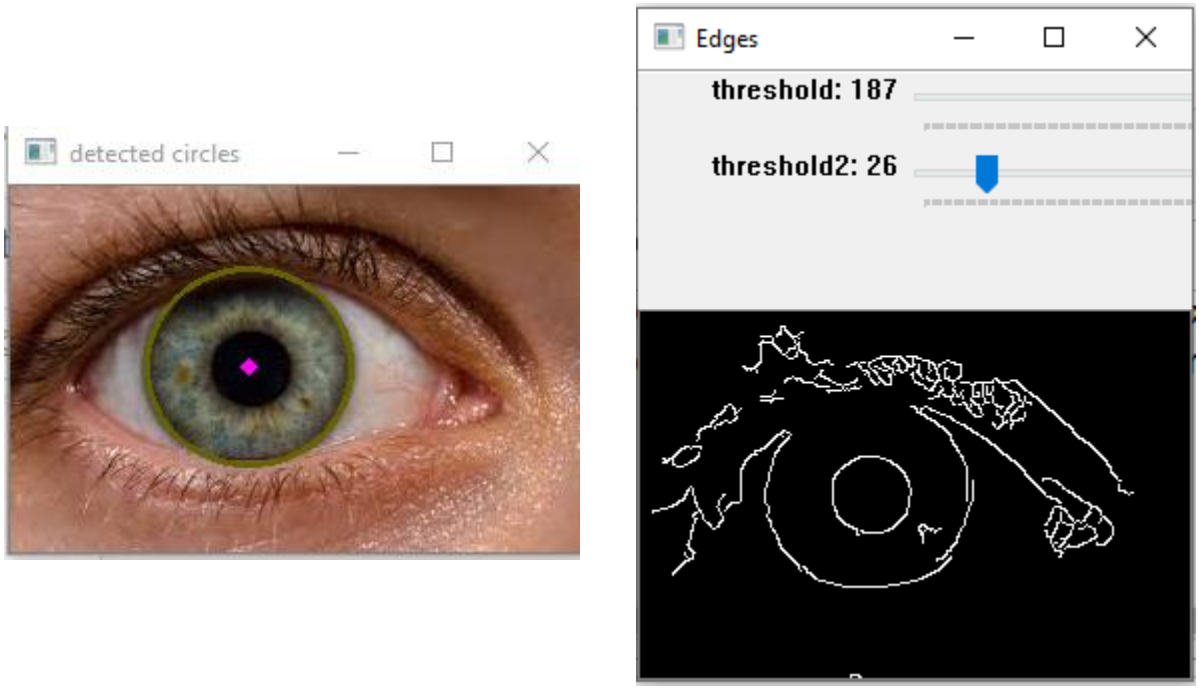


Figure1: Show Result of the outer eye Circle

Figure2: Show Result of the inner eye Circle

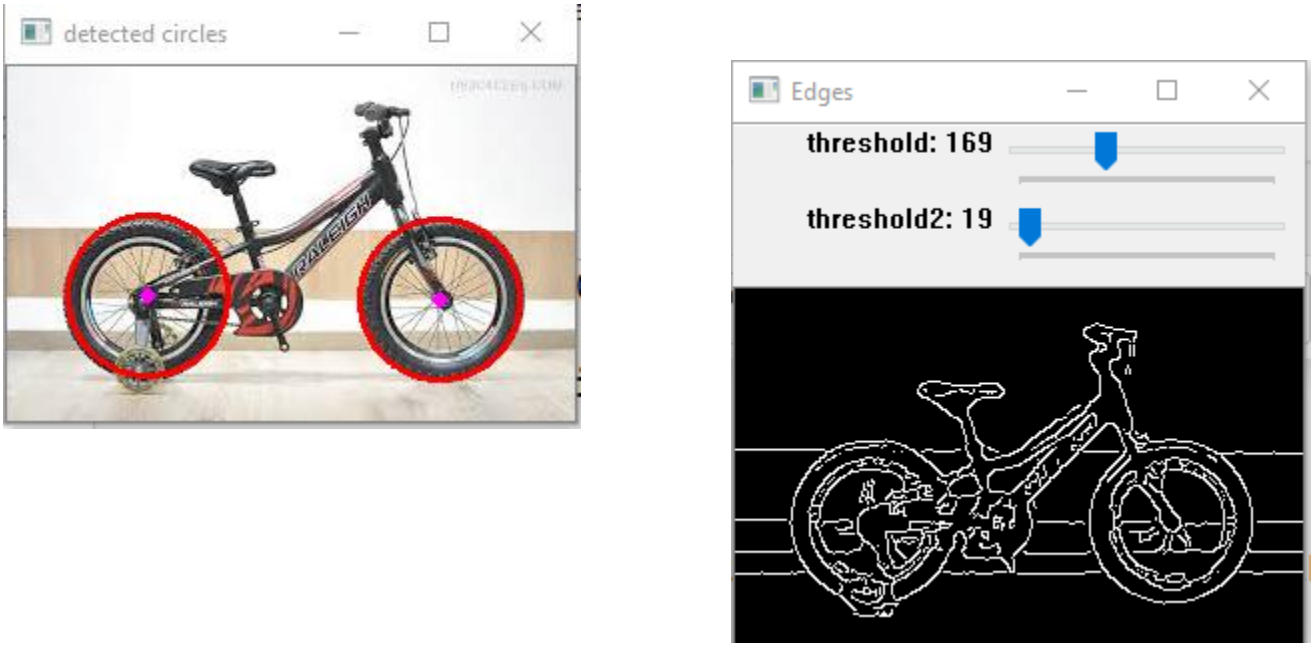


Figure3: Show Result of the circles found in a bicycle image

Quiz 2B: Circle detection +GUI

- In this code Tkinter library have been used, Tkinter is a Python binding to the Tk GUI toolkit. It is the standard Python interface to the Tk GUI toolkit.
- A GUI is used to find the circles in the image
- To find the circle {cv2.HoughCircles} have been used but with cv2.HOUGH_GRADIENT_ALT as the method, this method is a similar method as the method used in my previous code but it selects the most optimum parameters automatically to get better accuracy.

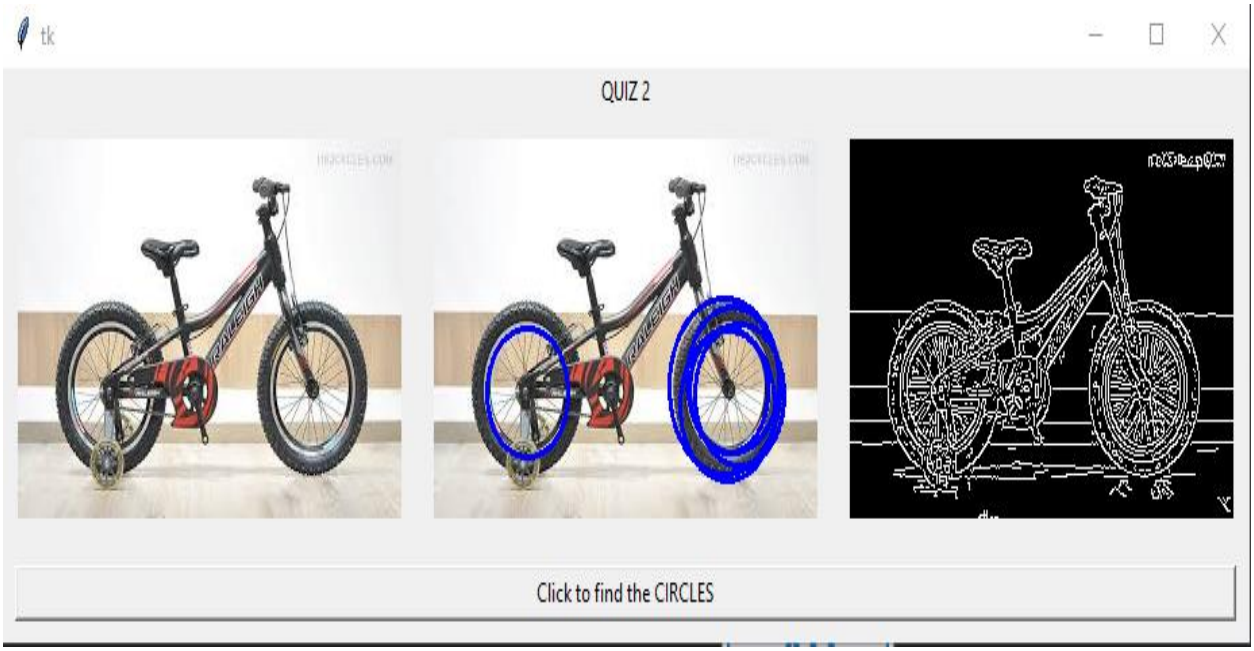


Figure4: Shows the result image for the bicycle picture with GUI

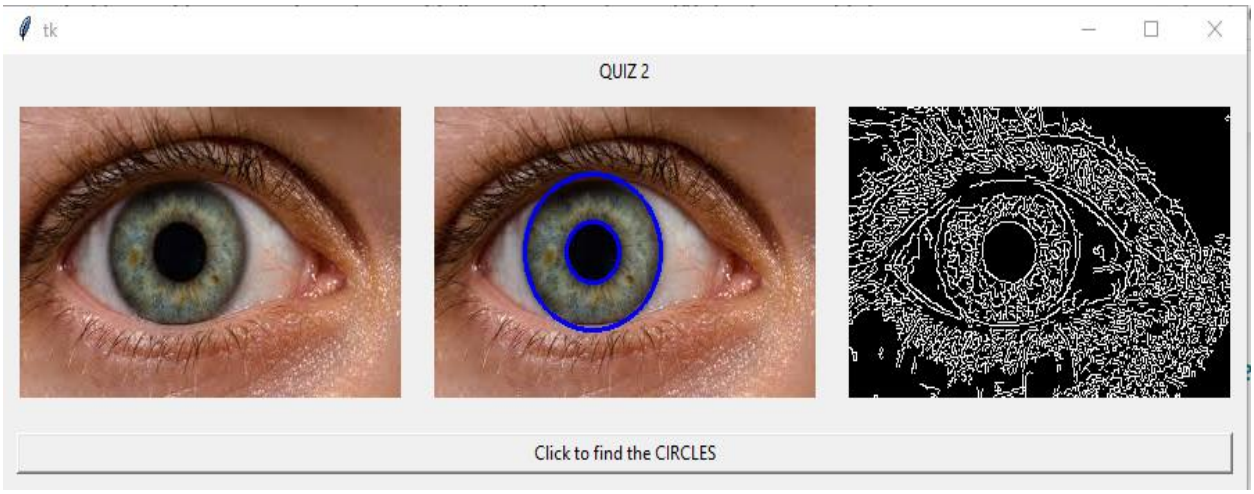


Figure5: Shows the result image for the bicycle picture with GUI