Nathan Bunch
Data Science I

Project 3

In this project, I took the example code and set it in a function I called “doWork”. This function enabled me to manipulate some of the variables in the example code to tailor the functions towards finding a rectangle in a specific image. I was able to get the function to recognize rectangles in all the example image data that was given with the example code.

The function I wrote analyzes the rectangles by first getting a path (using the same methods as the example code) and then checks for four vertices. After checking for four vertices, it then proceeds to check the density of points that are between those vertices (this is done by checking the distance between the points). This overall checking process then returns a factor between 0 and 1, whereas a number closer to one indicates a stronger probability that the shape found is a rectangle.

The output of the function is a data frame, containing all the vertices of the rectangle and the “quality factor” of the rectangle (the “quality factor” is the factor that is between 0 and 1).

Overall, for whatever reason, the most difficult image to analyze was the apple cutting board. I could not get the function to realize that the image had one big rectangle. I had to crop some of the image and shift its shape slightly to enable the algorithm to analyze the rectangle properly. Another difficult image to analyze was the daft punk image. That image caused major RAM issues and I nearly crashed my desktop computer (with 16gb RAM) a few times.

Overall, the project was challenging, but in a good way. I learned how to work with images and manipulate the data contained within them. What I had discovered is that image data is not horribly difficult to work with like I had thought before.