Alpha 2 writeup

**Introduction:**

The current alpha 2 is run mainly from the GUI which has the functionality of movitto and basecode. With the alpha 2, the drawing quality has improved while also have a fully functional unique feature.

**Logic:**

Currently, the function just uses imread to read the picture and then converts the picture into grayscale using rgb2gray. Once the picture is in the program, it scales the image to a 600 by 800 in the x and y direction respectively. Then, the image is broken up into pixels whose size are being determined by the user. They can pick the height of the pixel from a size of 2, 4, or 6 to help speed up the drawing of the image. The width of the pixel can also be user picked from the following 3 sizes: 5, 8, and 10. The pixels are then given a shade value between 1 to the max amount of shade values that the user wants and pixels that are completely white are skipped over entirely until a pixel with a shade is found. The code runs in a snake like fashion in the y direction to make sure that the entire image has been drawn. There is also a preview of the picture shown to the user to ensure that it satisfies their needs.

**GUI Functionality**:

The GUI currently allows the user to load an image and produces a preview of how the image would look on the etch-a-sketch itself. On the GUI, there are currently 3 buttons which are the load image button, clear rectangle button, and draw button. The user is also able to select the size of the pixel height which is designed to speed up the drawing process. They can select sizes that are 2, 4, and 6. Another image alteration is the pixel width which can change the quality of the image and also lower the drawing time on the etch-a-sketch. The pixel width sizes can be 5, 8, and 10.

Load Button: Allows the user to select the image to be drawn on etch-a-sketch and draws the preview of how the image looks on the etch-a-sketch.

Clear rectangle button: This clears the rectangle that can be drawn to change drawing style which is our unique feature.

Draw button: Preprocess the image, Loads the program on arduino and starts drawing on etch a sketch and also shows a preview to the user.

**Unique Idea**:

Our current unique idea allows the user to change the drawing algorithm used in a specific part of the image. To start the feature, the user clicks on 2 points of the preview image. The 2 clicks are the 2 corners of the rectangle where the drawing algorithm changes from the snake like drawing method to a nearest point drawing method. If the user does not like the placement of the rectangle, they can press the clear rectangle button and click 2 points of the image again for an updated rectangle. This feature is fully functional but still requires some optimization like making the nearest point finder uses smarter logic to go from one end of the rectangle to the other.