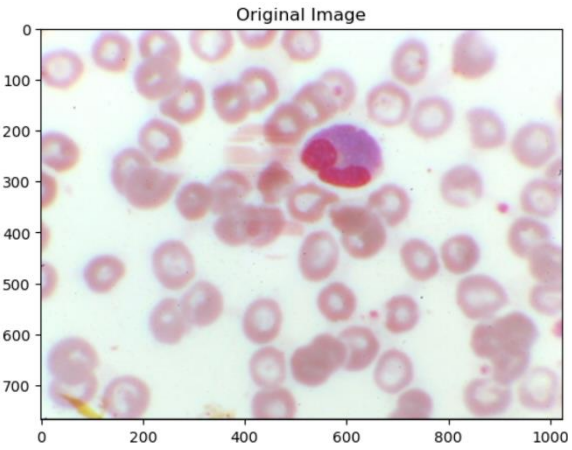
White Blood Cell (Leukocyte) Counting

Blood smear images have the nuclei of cells pigmented in a darker shade, the only stage necessary to complete this task is to preprocess the image such that only the nucleus of the image is outlined and counted. To enhance the nucleus shade, using code, I first increase the contrast to intensify the shade of the nucleus which is darker, this whitens out the image, making only the nucleus slightly visible. This is followed by enhancing the color balance of the remaining image, making the nucleus darker. Finally, I use adaptive mean thresholding to make the edges of the nucleus more detectable. Since images are an array of numbers at the backend of a computer, I dynamically hard code number changes to the image array such that the borders are easily detectable by a computer. The final stage then, draws the edges (outline) of the nucleus with ease and calculates the area enclosed within the outline and if the area is higher than a 1000 pixels it, is counted as 1. Visually, the following happens.



Increase Contrast + Colour Balance
+Adaptive Mean Thresholding
+ Number Changes + Edge Drawing
and Counting