

Assignment 1

Purpose:

The purpose of this assignment is to develop introductory abilities in implementing basic OpenCV functions such as image loading, image writing, and pixel parsing. In addition, we learn slightly more intermediate functions such as use of CvtColor, Resize, getRotationMatrix2D, warpAffine, etc.

Results:

For Part 1, the image was loaded in as a greyscale image by adding a zero to the imread function. It opened to greyscale on loading, which is probably the most efficient way to do so if not wanting to mess with RGB. Once changing the imread function back to it's original format, I used cvtColor to set the color to greyscale, and output the image. The results are below.

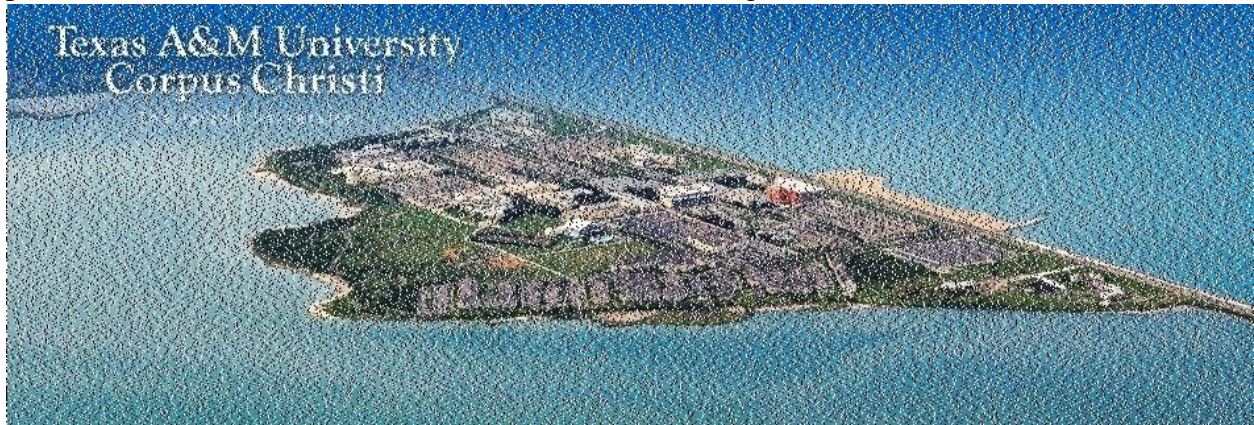


Loading as greyscale



Using cvtColor

For Part 2, I wrote a function of two for loops in order to look at a user-given percentage of pixels (modifier value), and set the color values alternating between white and black.



Salt and Pepper with modifier value = 10

For Part 3, I simply used the resize function to implement nearest neighbor, bilinear, and bicubic interpolation to make the images 3 times larger. The different interpolation techniques each look at a different set of pixels around the main pixel to enlarge the image differently.



Nearest Neighbor



Bilinear Interpolation



Bicubic Interpolation

For Part 4, I used the `getRotationalMatrix2d` and `warpAffine` to get the image to rotate to the prompt-specified 30 degrees.



Rotated Image