Image Processing – HW2 (04/27/2020)

Instructions – Follow these carefully:

1. Please upload your work as a zip file attachment to Moodle. In the zip file, it must have the source code and a PDF report where you explain and display the outputs for each problem.
2. You can use either Python or Matlab to do the work.
3. Please feel free to read related materials available in the official Matlab/Python documentation.
4. The due date is 5/18 before 11:59pm. Any late submission will result in 20% point deduction for the 1st week and 50% for the 2nd week. No point is given after the 2nd week.

Assignment:

1. (20%) Use binary morphological operations to 1) fix the image shown below (“text-broken.tif”) and 2) find the boundaries of each characters like ‘**Historically**.’

D:\NCCU\Courses\1072\Image Processing\Pic\text-broken.tif

1. (20%) Please use linear stretching to enhance the contrast of the image “aerialview-washedout.tif.”
2. (20%) Following Q.2, please use gamma stretching instead.
3. (30%) Please divide the histogram of “einstein-low-contrast.tif” into two sub-histograms using the mean μ of the image and apply HE to two sub-histograms separately (one ranging from 0~μ and the other from (μ+1)~255). You should implement it by yourself without using built-in APIs.
4. (10%) Following Question 3, please implement the contrast enhancement method proposed in the paper “Two-dimensional histogram equalization and contrast enhancement (T. Celik 2012),” which was also taught in class as CVCE version 1. The paper can be found in the HW2.zip. The window size could be set to 7x7.