**CSE377 Spring 2023 Homework 4 (7 pts)**

**Due March 10 2023 11:59PM via Brightspace.**

**Implement the histogram equalization. Don’t use any off-the-shelf histogram equalization function.**

1. (2 pt) Load the input X-ray image ‘xray.jpg’ from NIH website, calculate its normalized intensity histogram . Show the image and plot its intensity histogram;
2. (2 pt) Calculate the cumulative distribution function (*cdf*) of , i.e., , and plot it;
3. (2 pt) Applying the intensity transformation function: , where , to the input image, we will obtain the histogram-equalized output image. Visualize the output image.
4. (1 pt) Calculate the normalized intensity histogram of the output image , plot it.

Note, the math notations are consistent with the lecture slides.