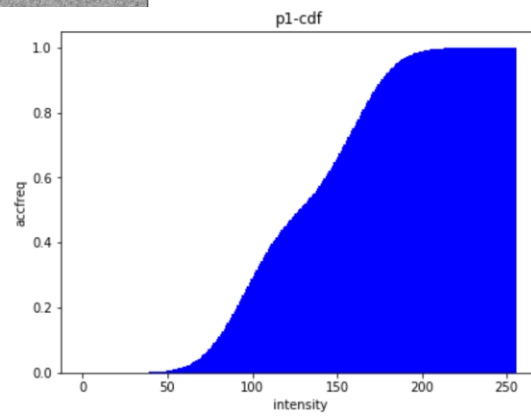
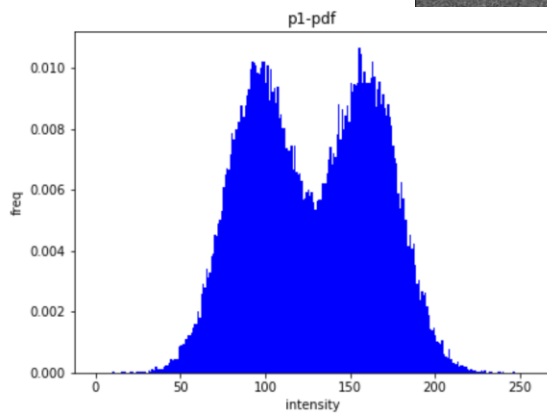
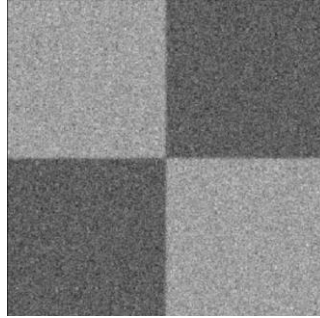


## cv-HW1

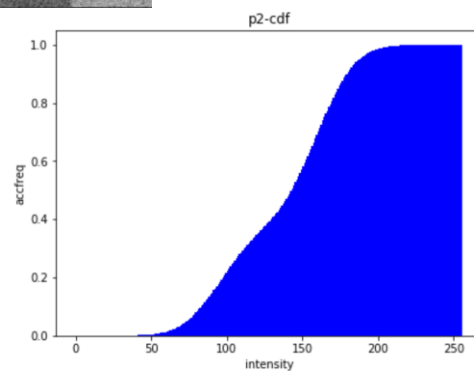
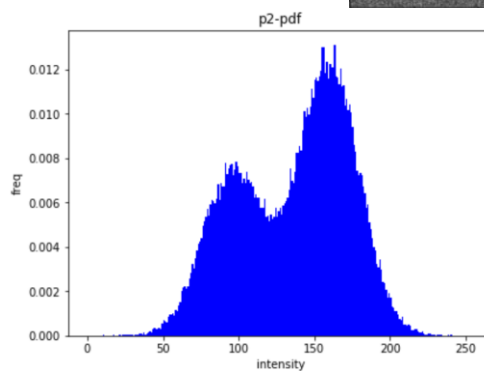
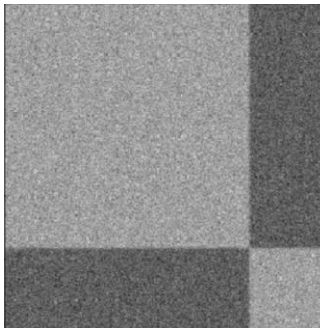
Lifan Wang    N14854019    lw2435

### B1) Compute a Histogram and CDF

Original image:



New image:

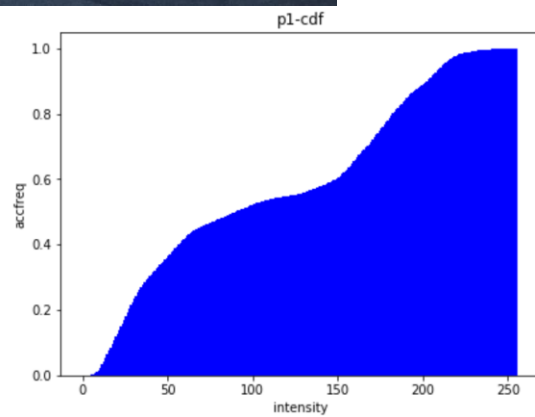
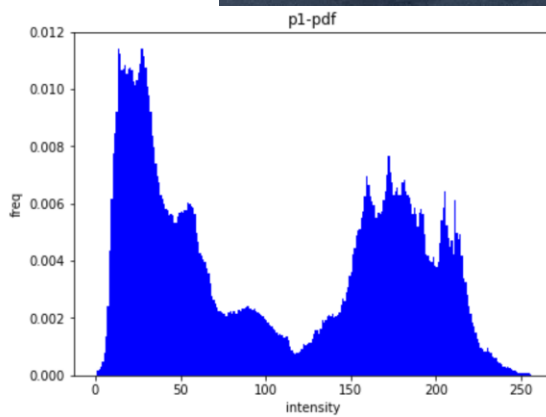


Discussion:

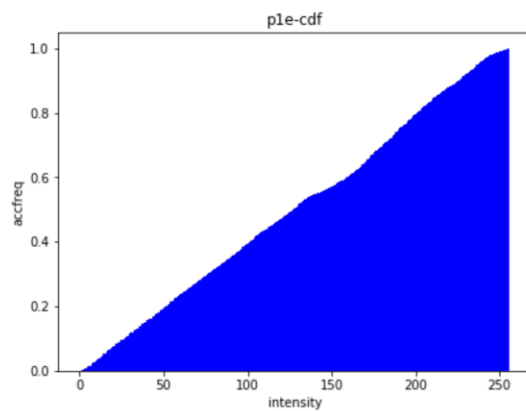
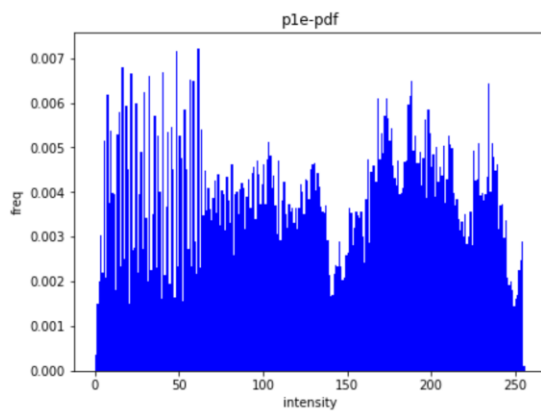
1. If the distribution of intensity is related to the image shape, then histogram reflects the image shape ;if not, then histogram is not a great reflection of the image shape.
2. A histogram can only reflect the intensity pattern, Eg.we cannot tell the shape of circle or a square from the histogram.

## B2) Histogram Equalization

Original image:



New image:

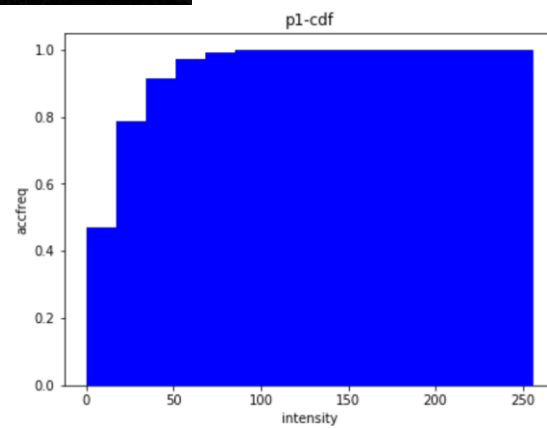
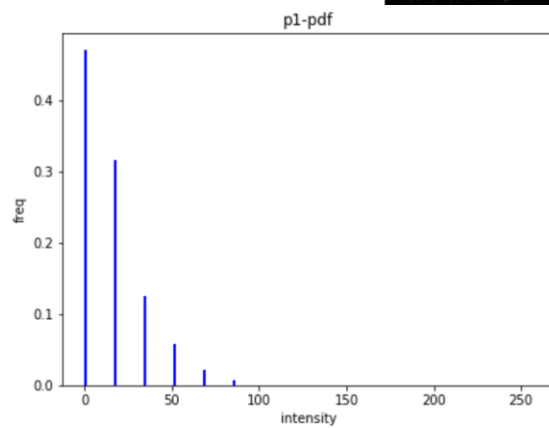


Discussion:

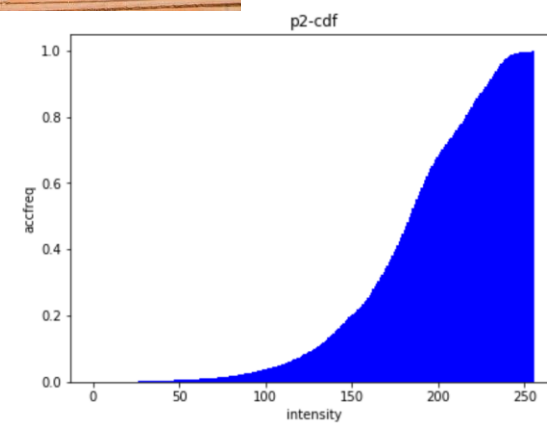
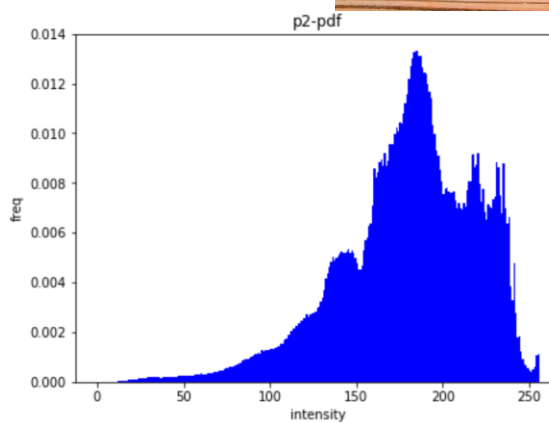
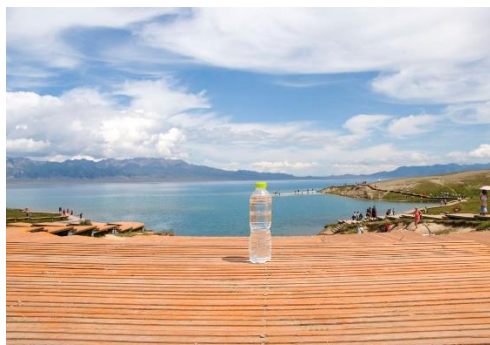
1. I saw equalization could make a dark image much lighter and acquire better image quality!
2. I saw for grey level picture the histogram equalization performs well, while for RGB equalization, there is some sort of non linear on the cdf graph, as is shown above. This is because the grey level transformation from RGB is linear, while the mapping is non-linear. In this case if you map intensity in each of RGB channels directly, the grey level would be non-linearly interpolated from RGB. So produce some non-linear local performance on cdf.

### B3) Histogram Matching

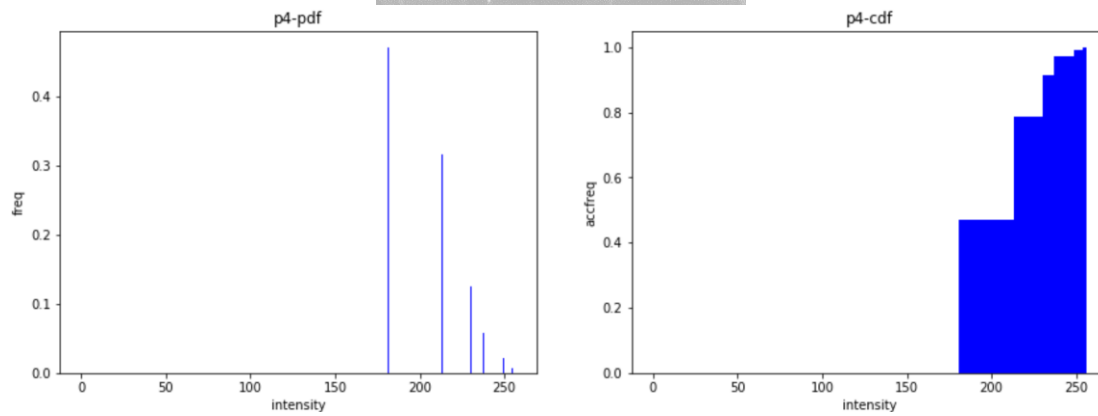
Original image:



Target image:



New image:



Discussion:

1. The dark image becomes brighter, and could show more details.
2. Some picture has better adjustment by applying histogram equalization than matching.