

## Digital Image Processing – Spring 2017

Assignment No. 2- Image Histogram and Equalization

Due date: May 6

**Keyword:** Image Histogram, Histogram Equalization, Histogram Matching.

**Programming Language:** C++/Python with OpenCV

In this assignment you are required to provide functions that compute the histogram, compute histogram equalization, or apply histogram matching of a given **gray scale** image. Toward this task you are required to implement the following functions:

**void ComputeImageHistogram(Mat img, int histogram[]);**

This function computes the histogram of a gray scale image, **img**, which is stored in the 256 items array, **histogram**.

**void HistogramEqualization(int in\_hist [], int eq\_hist[], int trans[]);**

This function computes the equalized histogram, **eq\_hist**, and the intensity transfer mapping, **trans**, of a given histogram, **in\_hist**.

**void MatchHistogram(int src\_hist [], int dst\_hist[], int trans[]);**

This function computes the intensity transfer mapping, **trans**, that matches the **src\_hist** histogram to a given destination histogram, **dst\_hist**.

**void EqualizeHistogram(Mat src\_img, Mat dst\_img);**

This function equalizes the histogram of a given image **src\_img** and stores the resulting image into **dst\_img**.

**void MatchHistogram(Mat src\_img, int hist[], Mat dst\_img);**

This function matches the histogram **hist** to a given image **src\_img** and returns the resulting image into the Mat **dst\_img**.

### Submission:

You are required to submit one file that includes these functions.