CSE/ECE 478: Digital Image Processing

Assignment # 1

Due: Before 5:00pm on 28/08/2017

General Instructions:

- Assignment can be implemented in Matlab/Octave or any other language/platform agreeable to TA's.
- Ensure that submitted assignment is your original work. Please do not copy any part from any source including your friends, seniors and/or the internet. If any such attempt is caught then serious actions including an **F grade in the course** is possible.
- A single pdf file needs to be uploaded to the Courses Portal. The file should contain your results as well as the code you have written and its output.
- Include the assignment number, your name and roll number at the top-left of the first page of your submission.

Problem 1 Pointillism: Implement following pixel-level transforms and show results on at least four appropriately chosen images (two images already attached)

A. **Histogram Matching**
B. **Local Histogram Equalization**

Problem 2 Spatial Filtering: Implement following spatial filters of size 3,5 and 8 and show filtering results with varying parameter values (e.g., variance in Gaussian) on attached images.

A. **Gaussian Filtering**
B. **Median Filtering**
C. **High-boost Filtering**
D. **Bilateral Filtering**

Problem 3 Geometric Transformations: Implement following geometric transformations and show results with 5 set of varying parameters on three randomly chosen images. Prepare gif animations with images generated from varying parameters.

A. **Ripple Transform**
B. **Spherical Transform**

Problem 4 Homography Estimation: Estimate 2D projective transformation between pair of stereo images attached. (Hint: use point correspondence pairs).