The Fundas images are available in the open access database: http://cecas.clemson.edu/~ahoover/stare/

Input image shall be taken according to the roll number mapping mentioned at the last of this document.

Use the assigned image for all the tasks in this assignment.

Part 1: Geometric transforms

For target to source mapping, use bilinear interpolation.

1. Translate the image by tx = 4.5 and ty= 3.4 pixels
2. In plane rotate the image about the image centre with an angle of 35° and -125°
3. Scale the image by a factor of 0.4 and 1.4

Summarize your observations.

Part 2: Histograms

1. Use the input image assigned to your roll number and try to enhance the contrast of the image using histogram equalization technique.
2. Summarize your observations.

Part 3: Understanding of various types of noise and filters

Use the input image assigned to your roll number and with reference to the paper attached,

1. i. Introduce salt and pepper noise with two different noise variance and
   ii. Apply
       a. Mean filter
       b. Median filter
       c. Gaussian filter

   with CLAHE technique to denoise.

   iii. Evaluate the performance of the filter using the metric Peak Signal to Noise Ratio (PSNR)
2. i. Introduce Gaussian noise with two different noise variance and
   ii. Apply
       a. Mean filter
       b. Median filter
       c. Gaussian filter

   with CLAHE technique to denoise.

   iii. Evaluate the performance of the filter using the metric Peak Signal to Noise Ratio (PSNR)

Tabulate the performance of various types of filters with CLAHE technique for both types of noise.

Visualize the input and the contrast enhanced image using histograms.

Note: For all parts code in MATLAB and summarize your observations and results in a document and submit the code and summary document as one zip file. For part 2, describe the process with the help of flow chart, write a Pseudo code.

Roll No.	Image name(.ppm)
AM19D042	1
AM19M031	2
ED16B010	3
ED16B046	4
ED17B009	5
ED17B018	6
ED17B019	7
ED17B020	8
ED17B021	9
ED17B022	10
ED17B023	11
ED17B028	12
ED17B031	13
ED17B034	14
ED17B040	15
ED17B044	16
ED17B046	17
ED17B047	18
ED17B050	19
ED17B051	20
ED17B056	21
ED19D700	22
EE16B142	23
EE19D422	24
EE19S019	25
EE19S020	26
EE19S042	27
ME17B168	28
ME17B179	29
ED17B006	30
AM19D037	31
ED20S010	32