

# EE 625 Assignment # A

Last Date of submission: 12.02.2018

## Instructions:

Write Matlab programs for the following assignments. Put comment lines in the program to show your implementation steps. **Make suitable assumptions if required.** Again, I would like see your understandings/concepts. You have to demonstrate all the programs. My TA will call all of you randomly by sending emails to explain your codes. So, don't directly download your codes from internet. **The programs should directly run in the Matlab platform without any modifications.**

Send your codes and the associated images to  
[computervisionee625@gmail.com](mailto:computervisionee625@gmail.com)

**The assignments submitted after the due date will not be evaluated.**

For submission of your files, follow the following file name format:

CVRollNo\_A\_Assignment.mat

Assignments are 1, 2 and 3.

For Example: CV140102005\_A\_1.mat  
CV140102005\_A\_2.mat  
CV140102005\_A\_3.mat

For images, strictly follow the following file name format:

## For input images:

Assignment\_IN\_No.JPEG

For Example: 1\_IN\_1.JPEG  
1\_IN\_2.JPEG  
2\_IN\_1.JPEG

## For output images:

Assignment\_OUT\_No.JPEG

For Example: 1\_OUT\_1.JPEG  
1\_OUT\_2.JPEG

Put all the assignments in a single folder and send it (only one mail).

**Assignments:**

1. Consider an image containing one arbitrary object. Apply Affine Transformation to show all the following cases.
  - (a) Rotation
  - (b) Translation
  - (c) Shearing
  - (d) Scaling
  - (e) Combined Translation, rotation and Scaling.
2. Write a Matlab Program to show Prospective, Weak Prospective and Orthographic Projections of an object in an image. Make suitable assumptions if required.
3. Write a Matlab Program to determine depth map by using the concept of Photometric Stereo. Show: a) random surface generation, 2) its virtual illumination, 3) Vector Gradient Field determination with Photometric Stereo, 4) 3D surface reconstruction