**PUCIT**

**Computer Vision Fall 2012**

**Home Work 3**

**Dead-line for MS = Wednesday 28 Nov 2012 in LAB**

**Dead-line for BIT = Thursday 29 Nov 2012 in LAB**

**NOTE: *Homework 2 and Homework 3 will be evaluated on 28th Nov for MS and 29th Nov for BIT. If the code is not running, you will get a straight zero (Both MS and BIT), however if the code is running properly, then I will evaluate the code by asking you some modifications and taking viva. If you have any problems in the code, get help at least 2 days before the deadline. Help is not guaranteed to be available if you arrive very near the deadline, get your problems solved early.***

Q-1 [Marks 50]

1. Implement edge detector by applying uniform smoothing filter and [-1 1] type of derivative filter
2. Try on several images on your own and suggest some better strategy to come up with a “good” threshold
3. Implement Canny edge detector completely.
4. Test Canny edge detector by varying “sigma” in the Gaussian filter
5. Compare the results of simple edge detector and canny edge detector by applying different levels of smoothing

Q-2 [MS only][Marks 100]

Card data set is available in the HomeWork\_3 folder.

In this part of the homework, you are required to design and implement an algorithm to extract business cards from the images. The output should be a series of sequentially numbered files, each one of which should contain only one card in an axis aligned configuration. Each output file should have the same width (170 pixels), though the height of each output file can vary based, based on the aspect ratio of each card. The aspect ratio of the card in the scanned image and in the output file should not change.

You have to device a detection algorithm which will find all the cards in an image, and then use an appropriate transformation to transform the misaligned card into a card of required size. For transforming the image, you may use the code written in Homework 2, or use MATLAB’s imtransform function (requires Image Processing Toolbox to be installed). However, you have to specify what transformation you are using and why.