

DMET 901: Assignment #1
Due: Sunday, November 9th, 2008 (11:59 PM)

Important:

☞ The assignment is to be solved **individually**. You may discuss your work with your colleagues but you have to submit your own copy. Cheating cases will be dealt with firmly.

Question 1:

As a dialog-based application, implement an Image Converter using OpenCV and C/C++. Your program should be able to accept at least 2 image formats and save at least to 2 others. You may use the built-in functions from OpenCV to make the process easier.

Question 2:

Add a button to the previous dialog that when pushed, it negates the opened image. Test it on **cameraman.bmp**.

Question 3:

Add a button to the previous dialog that when pushed, it rotates the opened image about a specified pixel through a specified angle. Use text fields to accept numeric values from the user. Test the operation on **cameraman.bmp** as it rotates about the pixel $[150, 150]^T$ through an angle -40° .

Question 4:

Add a button to the previous dialog that when pushed, it upsamples the opened image through a specified scaling factor using:

- a) replication
- b) interpolation

Use text fields to accept a value for the scaling factor from the user. Test the operation on **cameraman.bmp** with a factor of 4.

Question 5:

Add a button to the previous dialog that when pushed, it scales the opened image such that its size reaches specific dimensions entered by the user in text fields. Test it on **cameraman.bmp** such that the final size would be 200X200 pixels.

Submission:

Submit a typed report, written as an MS Word file (or in LaTeX), including:

1. All results along with applicable theory and discussion including sample images and snapshots for the dialog at each question.
2. A listing of your code completed with useful comments.