

CSCI366 Multimedia Computing

Autumn 2016

Assignment Two (CSCI366 - 15%, MCS9366 – 18%)

Due Date: 11:59pm Sunday 01 May 2016

Tasks

You are required to develop a color image display and enhancement program. The program enhances an image using histogram equalization and displays the enhanced image in a window. The program also provides functions to navigate through the image if the image is larger than the viewing window and to zoom in and out. For the enhancement, you are required to apply histogram equalization to RGB channels separately.

Requirements

1. The program should be named as “**histEqImage**” and shall take a BMP image as the input image.
2. The enhanced image should be displayed in a window and users are able to navigate through it. The window size is fixed at 640 x 480 (width x height) pixels.
3. Your program should take command line options to specify
 - a. the input BMP image file,
 - b. the usage of the program if the option is -help.
4. The keys for zooming and navigation should be
 - Arrow keys: navigate through the image up/down/left/right in the viewing window with step size of 5 pixels.
 - + : zoom-in by a factor of 2
 - : zoom-out by a factor of 2
 - Key ‘r’ or ‘R’: rotate the image anticlockwise by 45° (*MCS9366 only*)
 - Key ‘q’ or ‘Q’: the program exists
5. You **MUST** supply a *Makefile* together with your source code to compile to link your program.
6. No other third-party libraries should be used in the program except SDL. The code has to be in C/C++.
7. ***Bilinear interpolation*** should be used to implement the zoom in and out functions

Marking Scheme

1. Zero marks may be graded if your code is not compliant using the supplied *Makefile*.
2. Program structure, comments and usability (2%)
3. Histogram equalization enhancement (7%)
4. Zooming in and out (3%)
5. Navigation through the image (3%)
6. Rotation (3% - MCS9366 Only)

Submission

- a) Zip all source files (header and C/C++) into a single zip file: ***your_login_name.zip***
- b) Submit the zip file via Moodle.
- c) Submission through email **WILL NOT** be accepted.