Exercise Digital Image Processing

SS 2008

Exercise 6
Submit by June, 2\textsuperscript{nd}, 10:00AM, for exercise on June, 4\textsuperscript{th}

Notes:

- You have a choice: Solutions to text exercises that do not involve programming can be in English or German, at your choice. Submission to text exercises can be made on paper or by email (scanned documents, PDFs, or Word/OpenOffice) to Eva.Hoerster@informatik.uni-augsburg.de before the above due date.
- Solutions to programming exercises must be submitted by email to eva.hoerster@informatik.uni-augsburg.de before the above due date. Only submit your source code (*.h and *.cpp files). Do not submit any executables, binary or object files, project or solution files, nor any other input data that can be downloaded from the course website (i.e. image or video data provided as part of the assignment). DO NOT COMPRESS YOUR SOURCE CODE FILES (.rar, .zip, etc. is not allowed)! Your code must compile and run; if your code fails to compile, you will receive zero points for the exercise.

6.1 (100 points)
In this exercise you should write a program that implements the conversion of a three channel, color image into a one channel, grayscale image.

a) Write a function that converts a three channel RBG image into a one channel image where each pixel in the grayscale image contains its luminance $Y$ value.
b) Write a function that converts a one channel $Y$ image into a one channel L* image.
c) Write a main function that reads a color image and displays the original color image as well as its conversions into the $Y$ and L* space.