

CSCE 145: Homework 5

Creative Image Processing

Objectives

In this lab you will learn more about

Processing Image Data

Program Specification

Construct a program that will combine two pictures (each encoded as .jpg) in two ways.

Design Details

Create a new Java project for this homework.

Find a color .jpg image on the Web that shows the face of a person and load it into your project folder. (It should be at the same level as your src and bin folders, not inside the src folder.) You might use the same one that you used for lab 5.

Find a second color image (.jpg) that shows outdoor scenery and load it into your project folder. Import the file <http://www.cse.sc.edu/~carrollh/CSCE145/lib/DrawingKit.java> into your project. This has the methods needed for manipulating an image.

Similar to what you did for the lab 5, find the coordinates of a rectangle that bounds the head of the person in the person image. It might again be helpful to import either the file <http://www.cse.sc.edu/~carrollh/CSCE145/lib/PixelColorDemo.java> into your project or the file you developed for lab 5.

Create a new Java class that (1) displays the .jpg images you chose and (2) places the rectangle with the head of the person in the corresponding location in the scenery image. The result should be the head from image 1 surrounded by the background scenery from image 2.

Create a black-and-white version of this image by replacing the red, green, and blue values for a pixel by the average of the red, green, and blue values. That is, at each (x, y) pixel, $R = (R + G + B)/3$, $G = (R + G + B)/3$, and $B = (R + G + B)/3$.

Add the two original images as follows. At each pixel location, add the corresponding red, green, and blue pixel values from the two images, weighted by 0.9 for the person image and 0.1 for the scenery image. That is, at each (x, y) pixel, $\text{newRed}(x, y) = 0.9 * \text{redPerson}(x, y) + 0.1 * \text{redScenery}(x, y)$. Do the same for the blue and green values.

The result of all the image processing should be the two original images and three processed images.

Upload your source code and the five images to the dropbox at <https://dropbox.cse.sc.edu>.