

B657 - Assignment 2

Due: Tuesday January 21 before class.

The purpose of this assignment is to get familiar with Matlab. There are several reasons why I think it is worthwhile using Matlab in this class: First of all, Matlab will most likely save you quite a bit of time, although it may not seem like it initially. Also, Matlab is a standard software tool that's used in research and in industry, so it's a good thing to know it.

The image you should work with can be accessed here: <http://www.indiana.edu/~dll/B657/horse.jpg>

You can use `imread()` to load an image and use `size()` to find the size of matrix. You are to implement the following three functions:

1. `[pixelList] = find_pixel(imageFile, [R G B])`. The inputs are an image file name and (R,G,B) values. The output is a $D \times 2$ matrix of (x,y) coordinates in the image that match the same R, G, B values.
2. `disp_pixel(imageFile, pixelList, [R G B])` which highlights those pixels in the list with the color specified by the vector [R G B].
3. `[pixelList] = find_neighbor_pixel(imageFile, K,[x y])` which finds the k nearest neighbors of (x,y) in the color space. The output is a sorted list ($D \times 2$) based on the distance to the target point. If there are multiple neighbors that have the same distance to the target point, then pick ones spatially close to (x,y).

You will hand in your Matlab code, which is supposed to show all your results. You will also hand in any text or explanations electronically. They should either be in plain text format or in PDF. You will need to zip/tar/rar all the files into one with the name B657_(hw #)_(your last name).zip(or tgz/rar), and send it to chenyu@indiana.edu.

General Remarks.

- You may use built-in Matlab routines.
- There's an abundance of information and Matlab tutorials on the Web. You can easily go to Google and you'll surely find something useful.