6.815/6.865 Digital & Computational Photography
http://stellar.mit.edu/S/course/6/sp08/6.815/

Problem Set 0: MATLAB Warmup
Due **Tuesday, February 12 7:00pm**

The goal of this assignment is to get you familiar with MATLAB. You'll be looking at some very simple image manipulations which will highlight the basic functionality of the programming language. Don't panic about the Tuesday due date! This is a very simple assignment. The main goal is to get you familiar with MATLAB and make sure that the homework submission system is working.

First, make sure that you can run MATLAB. It's available on Athena. If you want to run it at home, you can download it from MIT: `http://web.mit.edu/matlab/www/`.

If you're already familiar with MATLAB, that's great. If not, don't worry, because the assignments won't rely too much on extensive knowledge of the language. It might be beneficial to browse through some basic tutorials, such as the one provided by The MathWorks: `http://www.mathworks.com/academia/student_center/tutorials/launchpad.html`.

Now go ahead and grab the starter code from the homework page. The zip file contains an image (`image.jpg`), several functions (`ps0grayscale.m`, `ps0threshold.m`), and a script that runs everything (`ps0main.m`). Open MATLAB, `cd` to the directory with the files, and type `ps0main` at the prompt to run everything.

You should see a bunch of images. Take a look at the `m`-files to see what's going on. The comments walk you through each step in detail.

Okay, now that we're done with the introductory stuff, here's what you should do:

Color Threshold Images. Right now, `ps0threshold` will produce an threshold image with only black and white, as shown in the third image on this page. Write a new threshold function that allows users to specify RGB colors in place of black and white. You should be able to call it as follows: `mythreshold(Igray, 80, [10 0 178], [255 252 0])`, which should produce the fourth image on this page.

Simple Rotation. Write a function `myrotate` that rotates an RGB image by some multiple of 90 degrees (negative values should be allowed as well). There are tons of ways to do this! Try to do it without loops; in general, MATLAB code with loops is very slow.

Submission. Create a zip file named `login.zip` (using your Athena login) that includes `mythreshold.m` and `myrotate.m` and submit on the Stellar website by **Tuesday, February 12** at **7:00pm**.