

Homework 1: Basic Image Manipulation

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GO GREEN. AVOID PRINTING, OR PRINT 2-SIDED MULTIPAGE ;)

In this homework you will practice some basic image manipulations such as color model transformations, color channel separation, and scaling.

- (a) Load the `brain.png` image into Matlab. You can download it from <https://danielpimentel.github.io/teaching.html>. Display its size. Use Matlab's `subplot` function to display the image along with its RGB channels.
- (b) Transform the image from RGB color values (default) into NTSC color space. How many components does the NTSC image have (in other words, what is its size)? Use `subplot` to display its components.
- (c) Write your own function to transform an RGB image into grayscale (you cannot use any built in or downloaded Matlab function). Apply your function to our brain image. Use `subplot` to display it alongside the result of Matlab's built in function `rgb2gray` and alongside the Y component in NTSC color space. Are they similar at all?
- (d) Write your own function to scale an image (you cannot use any built in or downloaded Matlab function). Apply your function to scale our brain image by $1/2$ and by 2. Display your results.