

# Matlab Image Processing Exercises

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## 1 Basic Image Processing

- \* Download an image from somewhere on the web (call this `img1`).
- \* Read the image into matlab – see `imread` command and `im2double` commands to convert to double precision numbers.
- \* Display the image on your screen – see `imagesc` and `imshow` commands.
- \* Play around with converting the image into different formats, e.g. grayscale, or `hsv` (use “help images” for a list of useful functions).
- \* Resize your image to be 0.5 its original size. Now resize your image to be size 32x32 pixels – see `imresize` command. What are the `r,g`, and `b` values of the pixel in row 22, column 29? What is its hue?

## 2 Image Manipulation

- \* Download a second image (call this `img2`) from somewhere on the web.
- \* Use the `ginput` command to get 2 user clicks specifying a rectangle in the image (top left corner, and lower right corner). These will specify a rectangle in `img1` where you want to insert `img2`. Round the locations returned by `ginput` to get integer pixel values and calculate the size of this user specified rectangle.
- \* Extract the rectangular sub-image from `img1` that the user clicked on and display it.
- \* Resize `img2` so that it is the size specified by the user clicks.
- \* Insert `img2` into `img1` into the rectangle specified by `ginput`.

### **3 Computing image representations**

- \* Convert img1 to the HSV color space.
- \* Calculate an image representation that is the average hue computed over all pixels in the image.
- \* Calculate an image representation that is the average hue computed over a spatial grid in the image (where grid regions are size 50x50 pixels).