

ComS 401: Projects in Computing

Lab Assignment 2

Submit a web page and a tar.gz file with your code and images.

This part requires you to use matlab to perform some simple imaging and plotting operations.

Please refer to the matlab tutorial from last week (or google) if you have any problems.

1. Edge Detection

Find a JPEG image. Load it in matlab. Perform edge detection on it using your favorite edge detection operator. Save the resulting edges image. Create a web page and post your original image, your edges image, and your matlab code on the web.

2. Try Some Other Functions

Pick your favorite function from matlab's image processing toolkit. Perform the same procedure as in 1 but replace the edge detection function with your new function. Now choose two more functions and do the same. Post your original image, your three resulting images, and your code on the web page.

3. Plotting a Gaussian

Write a short matlab program that plots the probability density function of a 1D Gaussian function with mean $\mu = 5$ and standard deviation $\sigma = 2$.

Write another matlab program that plots the probability density function of a 2D Gaussian function with mean $\mu = (\mu_x, \mu_y) = (0, 0)$ and a diagonal covariance matrix Σ as shown below:

$$\Sigma = \begin{bmatrix} \sigma_x^2 & 0 \\ 0 & \sigma_y^2 \end{bmatrix}$$

where $\sigma_x^2 = 1$ and $\sigma_y^2 = 2$. Hint: In this case the result should be a surface.

When you are done post your two programs and your resulting plots (matlab can save them for you; check the figure window menu) on the web page.