

Pixel Power!!



Computational Photography 15-463 Fall 2010

The goal of this worksheet is to get you familiar with some of the various ways you can manipulate images in Matlab. A secondary goal is to have fun: we're going to grade this fail/pass/über-pass. Choose fun images, generate cool (or useful) results, and show them off to your friends. Feel free to work together.

Please create a webpage of your results and place them in your proj0 directory. Something like a 4-column table should work nicely, with (1) the question, (2) your comments, (3) original image, and (4) modified image.

1. What are two ways to remove the high frequencies from an image? Remove the high frequencies from an image, trying out both ways.

1a. For the first way, you can use the functions `ifft2` and `fft2`.

(Further hint: Once you've performed `fft2` on your image, use dot-multiply, `.*`, to multiply it by an image like the one to the left. Then apply `ifft2`. Explain why this works.). Also show a picture of the `fft` transform of your image, using `fftshift`.

1b. For the second way, you can use `fspecial` to get a gaussian mask and then apply it with `conv2`.

2. Sharpen an image using `fspecial('unsharp')` and `imfilter`

3. Insert a ghost into an image, however you'd like.

4. Reveal hidden nightlife in a dark image, using either `histeq` or a gamma transformation.