

CS552 Homework

Due Thursday Jan 27, 2005

Problem 1

Text p. 145: Problem 3.18.

Problem 2

Text p. 145: Problem 3.20.

Problem 3

Text p. 146: Problem 3.24.

Problem 4

Use Matlab and the Image Toolbox to corrupt and clean up an image:

1. Load and display the image `~jgregor/cs552/images/saturn.img` using `fopen` and `fread`. The image size dimensions are 328 x 438 x 8.
2. Add salt and pepper noise. Create three new images corresponding to noise levels 0.10, 0.20, and 0.30. Use `imnoise` to do this. Display the results.
3. Use a median filter to clean the corrupted images up. Try different kernel sizes. Use `medfilt2` to do this. Display the results. histograms. Use `imshow` and `imhist` to do the work.
4. Go back to the original image. This time add different amounts of Gaussian noise. Use `imnoise` to do this. Look at the resulting images.
5. Use an averaging kernel to clean the corrupted images up. Try different kernel sizes. Use `fspecial` and `imfilter` to do this. Display the results.
6. Again, go back to the original image. This time add its Laplacian to sharpen it up. Display the result.

Don't turn in all your output. Instead summarize your findings such as how much salt and pepper noise can you remove with what size median filter, when does it not work, what are some side-effects, etc. Do include a couple of images to support your claims. Be terse.