Homework #5

Due Feb 21, 2022, 11:59pm

Problem 5.1.

Fit a linear relationship to the data in the files *`fit.csv`. Use an iPython notebook for the fitting (`bfit.csv, cfit.csv, dfit.csv, efit.csv`). Next, use robust fitting (Siegel's method) to repeat the same task.

Problem 5.2.

A die is rolled 24 times. Use the Central Limit Theorem analytically to estimate the probability that

 a. The sum is greater than 84
 b. The sum is equal to 84
 c. Perform 10,000 numerical realizations to illustrate the result

Problem 5.3.

The image `dots.png` contains an 8-bit image with about 4,000 single pixel points. Most of the points are random, but there are some which are on straight lines. How many line segments are there buried in the noise? Find the approximate equation of the line segments and plot them on top of the image. (Hint: use the Hough transform to find the equations of these lines).