A0111513B\_SoonWeiMinBenjamin\_Lab1

import numpy as np

import numpy.linalg as la

file = open("data.txt")

data = np.genfromtxt(file, delimiter=",")

file.close()

print "Data matrix\n"

print data

M = np.zeros([len(data[:,0])\*2,6])

b = np.zeros([len(data[:,0])\*2,1])

for i in range(len(data[:,0])):

M[(2\*i)][0] = data[i,2]

M[(2\*i)][1] = data[i,3]

M[(2\*i)][2] = 1

M[(2\*i)+1][3] = data[i,2]

M[(2\*i)+1][4] = data[i,3]

M[(2\*i)+1][5] = 1

b[(2\*i)][0] = data[i,0]

b[(2\*i)+1][0] = data[i,1]

M = np.matrix(M)

b = np.matrix(b)

print "\nM matrix\n"

print M

print "\nb matrix\n"

print b

a, e, r, s = la.lstsq(M, b)

print "\na\n"

print a

print "\nM\*a\n"

print M\*a

norm\_of\_difference = la.norm(M\*a-b)

sum\_squared\_error = norm\_of\_difference\*\*2

print "\nSum-squared error\n"

print sum\_squared\_error

print "\nSum-squared error from la.lstsq\n"

print e