**Homework 2**

Due, Monday, December 11, 2017

1. Linear discriminant analysis

(1) (20 points) Implement your own LDA algorithm in Python based on the theory presented in class.

(2) (10 points) Apply your own LDA algorithm to the cell line data in

`SCLC_study_output_filtered_2.csv`

and compare your results with results from

`sklearn.discriminant_analysis.LinearDiscriminantAnalysis`.

2. (70 points) Implement your own neural network for regression in Python. The neural network has two input units, one hidden layer with two units, and two output units. Implement your algorithm based on the theory presented in class. Use mean squared error as your cost function. Plot the total cost vs the iterations as well as every parameter $\theta$ vs the iterations.