Alexandria University
Faculty of Engineering
Computer and Communications Program

Due : Sunday 21/4/2019
Assigned :
CCE :Pattern Recognition

Sheet#7 Ensemble+NeuralNets+ Linear Regression

A. Given the data below

x1	1	2	2	2	3	3	4	4	4	5
x2	5	6	10	12	17	12	6	5	7	10
y	10	40	50	60	70	50	30	20	40	70

1. How many parameter to find to solve a linear regression problem on the data? **[No python]**
2. Use Normal equations to find the equation of the line produced using linear regression algorithm. Specify the dimensionality of each matrix carefully. Assume no regularization**[No python]**
   Use Scikit-learn package for
   a. Finding the linear regression solution.
      Then compare to the normal solution in 2 **[No python]**
   b. We want to add L-2 regularization to the obtained solution. We use Ridge regression from Scikit-learn to do so. Set alpha to [0.1,1,10,100]. **[python]**
3. Use the 5 regressor coefficients and intercepts you learned in 3.a,3.b to predict **y** for the following samples **[No python]**
   - p1=(3,16)
   - p2=(2,4)
   - p3=(5,4)

B. Design a neural net to produce the majority function of three binary inputs. [No python]

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