Home Assignment - 3

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Due on or before: 02.09.2023

Samples of solid rocket propellants will be used if their shear strengths are adequate. Shear strength is found to be a function of propellant age, as shown below.

Test	Propellant age (Weeks) x	Shear strength (MPa) y
1	15.5	14.88
2	23.75	11.57
3	8	15.97
4	17	14.21
5	5.5	15.22
6	19	11.78
7	24	12.31
8	2.5	17.78
9	7.5	16.26
10	11	15.56

(a) Write a computer program to compute and plot a regression line $\hat{y} = w_0 + w_1 x + w_2 x^2$. Use ridge regularization with $\lambda = 0, 10^{-4}, 10^{-2}$. Show all 3 lines in same plot.

(b) Write a computer program to compute and plot a regression line $\hat{y} = w_0 + w_1 x + w_2 x^2$. Use lasso regularization with $\lambda = 0, 10^{-4}, 10^{-2}$. Show all 3 lines in same plot.

(c) Write pseudocode for the above cases.

Put all documents (code, plot, pseudocode) in a folder. Zip the folder and submit in mookit.