

Assignment 3

1. Consider the given attached datasets. You will find the only one independent variable (Income in thousand dollars) and one target variable (Card Balance in hundred dollars). Train the polynomial regression model with $M = 1, 2, 5, 7$ and 8 without using the library. and note down the training and testing RMSEs and list them into the table. Write your observations. Also, obtain the plots of predictions upon training set and test in each cases.
2. Train the regularized polynomial regression model with $M = 8$ (also called ridge regression) using the regularization parameter $\lambda = 0.25$ and check the training and testing RMSEs. Also, obtain the plots of predictions upon training set and test sets.
3. Study the effect of regularization parameter λ upon the training RMSE and flexibility of the obtained curve. For $\lambda = 0, 0.25, 1, 1.5, 2$ and 10 , plot the estimated function on train set.
4. Write down all of your observations and inference you have obtained from your experiments.

Note: - Do not use any machine learning library.