Report of Assignment-1(Linear Regression)

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Learnings and Outcomes-

1. Ridge and Lasso regression are some of the simple techniques to reduce model complexity and prevent over-fitting which may result from simple linear regression.

2. Ridge regression shrinks the coefficients and it helps to reduce the model complexity and multi-collinearity.

3. One can see that when lambda is tending to 0 , the cost function becomes similar to the linear regression cost function. So lower the constraint (low) on the features, the model will resemble linear regression model.

4. Increasing lambda in case of Ridge Regression leads to gradual increase in error which can be observed in scatter plots

5. Increasing Lambda in case of Lasso regression lead to rapid increase in error as observed in scatter plots

6. Lasso regression not only helps in reducing over-fitting but it can help us in feature selection.

6. The default value of regularization parameter in Lasso regression (given by) is 1.

7. The best Regression technique in this assignment according to training and testing errors was Ridge Regression when lambda=10 and OLS is not which proves that simple OLS may lead to over-fitting