Statistical Methods in AI

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1 Problem 4

1.1 Lasso(L1)

The hyperparameter alpha was varied to obtain best results. For various values of alpha, the accuracy for testing data were obtained as:

- alpha=1, accuracy=0.64

- alpha=0.1, accuracy=0.68

- alpha=0.001, accuracy=0.70

- alpha=0.0001, accuracy=0.72

- alpha=0.00000001, accuracy=0.73

1.2 Ridge(L2)

The hyperparameter alpha was varied to obtain best results. For various values of alpha, the accuracy for testing data were obtained as:

- alpha=1, accuracy=0.70

- alpha=0.1, accuracy=0.716

- alpha=0.0001, accuracy=0.721

- alpha=0.000001, accuracy=0.726

- alpha=0.00000001, accuracy=0.73

1.3 Elastic Net

The hyperparameter alpha was varied to obtain best results. For various values of alpha, the accuracy for testing data were obtained as:

- alpha=1, accuracy=0.64

- alpha=0.1, accuracy=0.69

- alpha=0.001, accuracy=0.70

- alpha=0.0001, accuracy=0.72

- alpha=0.00000001, accuracy=0.726

- alpha=0.000000001, accuracy=0.73

1.4 No Regularization

The required Linear Regression without regularisation has been implemented and tested to obtain 0.73 accuracy for the given testinf data.