

1. What is the optimal value of alpha for ridge and lasso regression? What will be the changes in the model if you choose double the value of alpha for both ridge and lasso? What will be the most important predictor variables after the change is implemented?

A: 1<sup>st</sup> part:

Optimal value for ridge comes at 2 and lasso regression is 1

2<sup>nd</sup> Part:

Features which are normalised, doubling the value of alpha will result in getting their coefficients halved however, others remains constant.

3<sup>rd</sup> Part:

The coefficients are basically mean change in response with 1 unit change in predictor. Thus, comparing and concluding about predictor is not feasible.

2. You have determined the optimal value of lambda for ridge and lasso regression during the assignment. Now, which one will you choose to apply and why?

A: We will go with lambda as it takes care of the feature elimination and thus proving to be very helpful when the number of features are more. At the same time it also regularizes the model by imposing penalty.

3. After building the model, you realised that the five most important predictor variables in the lasso model are not available in the incoming data. You will now have to create another model excluding the five most important predictor variables. Which are the five most important predictor variables now?

A: The 5 most important variables are -

1. GrLivArea
2. OverallQual
3. OverallCond
4. TotalBsmtSF
5. GarageArea

4. How can you make sure that a model is robust and generalisable? What are the implications of the same for the accuracy of the model and why?

A: 1<sup>st</sup> part:

When any unforeseen data is fed to the model its variance almost remains unchanged. This is achieved by Bias-Variance trade off so that the model accuracy speaks same for both training and test data.

2<sup>nd</sup> Part:

Visualising the model from accuracy angle, too much accuracy will only render the model too complex. So to avoid this we have to compromise on variance and infuse some bias which yields a more generalised model. This can be achieved by regularization with Ridge or Lasso.