Optimal Alpha Values for Ridge and Lasso Regression

- **Question:** 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?

- **Optimal Values:** Ridge Regression: 0.9 Lasso Regression: 0.0001
- **Doubling Alpha Impact:** Increases regularization effect Slight decrease in training R^2 Test R^2 remains almost same
- **Most Important Predictors:** Unchanged for both Ridge and Lasso Due to their significant predictive power

Choosing Between Ridge and Lasso Regression

- **Question:** 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?

- **Model Preference:** Lasso Regression
- **Reason:** Feature selection Simplifies model Reduces complexity Improves robustness
- **Outcome:** Eliminates insignificant features Similar accuracy to Ridge

Adjusting Model for New Predictor Variables

- **Question:** After building the model, you realized 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?

- **Initial Top Predictors:** 1. GrLivArea 2. OverallQual_Rating9 3. Neighborhood_Crawfor 4. OverallCond_Rating3 5. PropertyAge

- **Adjusted Top Predictors:** 1. 1stFlrSF 2. 2ndFlrSF 3. HouseStyle_SFoyer 4. OverallCond_Rating4 5. HouseStyle_SLvl

Ensuring Robust and Generalizable Models

- **Question:** 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?
- **Techniques:** Regularization Cross-Validation Hyperparameter Tuning
- **Benefits:** Prevents overfitting Ensures consistent performance
- **Implications:** Decreased training accuracy Bias-Variance trade-off