AMES RENOVATION GURU

Using Machine Learning to rank renovation projects on added value

Introduction

Predicting the final sale price of real estate is an effort often undertaken for the sake of investment, timing the market, or otherwise attempting to measure and extract the value of particular properties.

Thanks to the incredibly robust Ames Iowa Housing Dataset, our model is able to incorporate over 80 features to predict housing prices. In doing so, we've gain crucial information about the types of features that help and hurt the final sale price of these properties, enabling us to make inferences about the best types of projects for increasing the value of a property presale.

Methodology

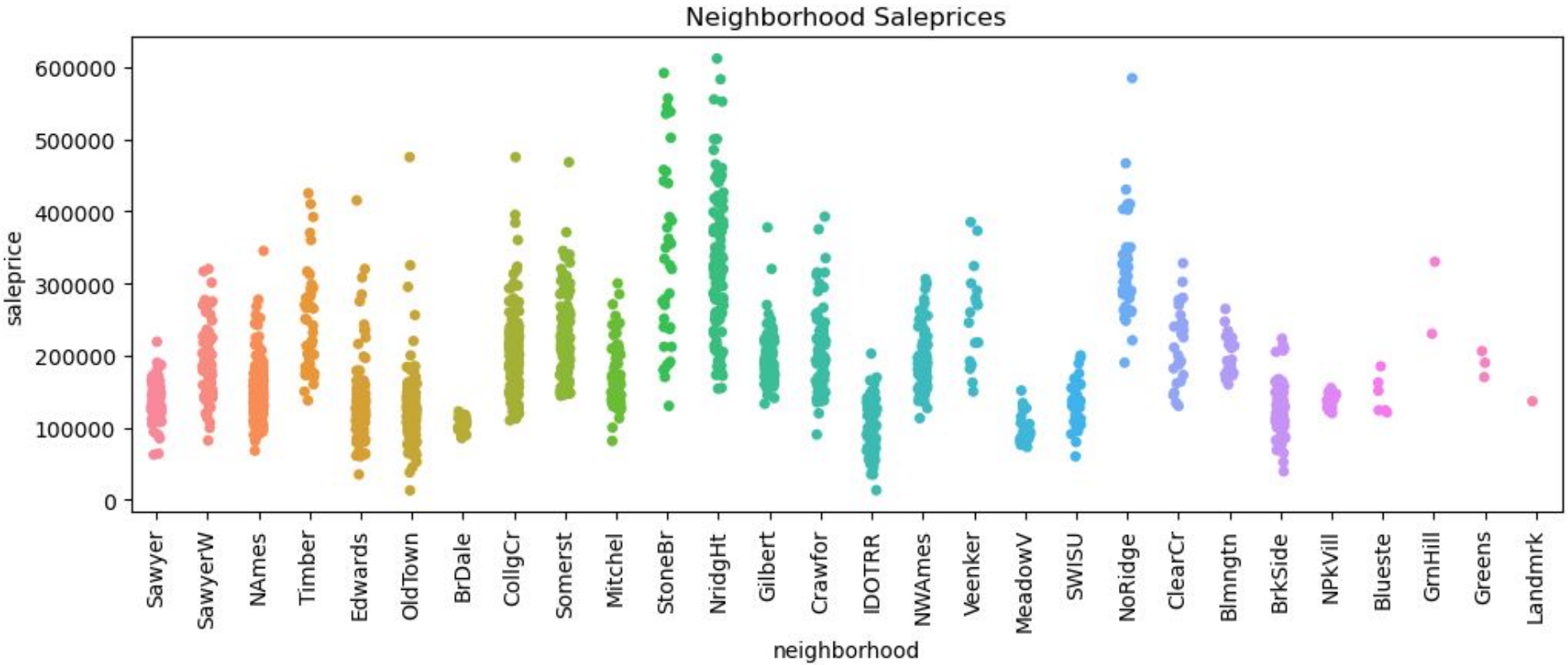
Missing value mean imputation

Train-Test Split

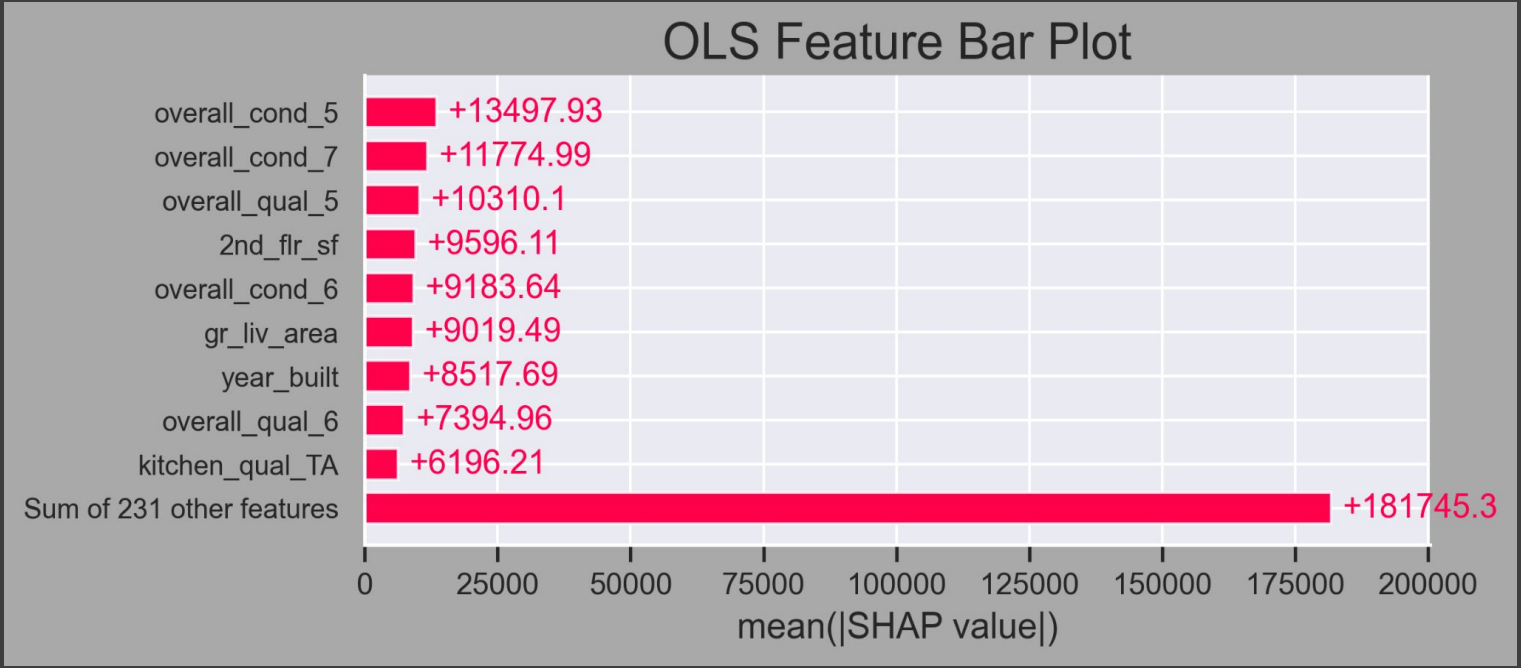
Feature engineering

- > Age
- > Bathrooms
- > Location Score
- > etc.

Location, location, location...?



What's in a price?



Conclusions and Recommendations

To make accurate recommendations about which features add the most value to a property, we have to look to the SHAP scores of our Ridge and LASSO models, as these indicate features that are able to be changed rather than summary quantities like overall condition and overall quality. From those plots (seen in the Model Evaluation section of the Production Model notebook), one derives the following top 5 feature recommendations:

Feature	Mean SHAP Value Added
fireplaces	3568.73
brick exterior	3241.27
bathrooms	3212.06
garage cars	2227.77
screen porch	2111.96

> For each feature, we can expect the value of an individual prediction to increase by the magnitude of the corresponding SHAP value, all else held equal.