UDACITY

PROJECT

Predicting Boston Housing Prices

A part of the Machine Learning Engineer Nanodegree Program

PROJECT REVIEW

CODE REVIEW

NOTES

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Requires Changes

8 SPECIFICATIONS REQUIRE CHANGES

Quality of Code

Student's code runs successfully and produces results similar to those in the report. No modifications are made to the template code beyond what is requested without justification.

Statistical Analysis & Data Exploration

All requested statistics for the Boston Housing dataset are accurately calculated. Student correctly leverages NumPy functionality to obtain these results.

The statistics that you calculated for the Boston housing data set are accurate.

Student adequately describes three separate features of the dataset. The corresponding values in the client's feature set are correctly identified for the chosen features.

Evaluating Model Performance

An appropriate performance metric is chosen with thorough justification. The metric is correctly implemented in code.

You are correct, Mean Squared Error (MSE) is an appropriate metric for this case, because the problem requires the use of a regression error metric.

Please note that for this question you are expected to provide a thorough justification for choosing either MAE or MSE. You can compare the two metrics or at least adequately describe particular features about that metric.
For example, the error weights in MSE is proportional to the square size of the error, while in MAE the weights are proportional to the size of the error. How that might benefit the "Predicting Boston Housing Prices" problem?

Student provides a valid reason for why a dataset is split into training and testing subsets for a model. Training and testing split is correctly implemented in code.

You are correct, the testing set is use to measure the performance of the model . It is also important to mentiones here that the test set simulate unseen data. Reasons for splitting the data

Student correctly describes the grid search algorithm and briefly discusses its application. GridSearchCV is properly implemented in code.

You are correct, Grid search perform hyper-parameter optimization or model selection simply by exhaustive searching through a manually specified subset of the hyperparameter space.

Please expand the answer to explain also "When Grid search is applicable?"

Important : When using an error metrics with grid search it is important to use the "greater_is_better = False" flag in the "make_scorer" function. That will make sure that the gridsearch will look for the minimum.

Student correctly describes how cross-validation is performed on a model, and why it is helpful

when using grid search.
Modifications beyond the default 3-fold cross-validation for GridSearchCV are reasonably justified.

The provided answer is not specifically referring to cross validation but seems the same one that you would have provided for justifying a train test split. This question requires you to describe what cross validation is and why it is useful when combined with grid search. You might find these links useful,
https://en.wikipedia.org/wiki/Cross-validation_(statistics)
http://www.anc.ed.ac.uk/rbf/intro/node16.html

Analyzing Model Performance

Student correctly identifies significant qualities of the training and testing errors as the training set size increases.

Student provides analysis for both a max depth of 1 and a max depth of 10. Reasonable justification is given for each graph if the model suffers from high bias or high variance.

You are correct that the 'max depth' 1 model suffer from high bias. However, the justification is not acurate. please note the high error value that the two curves converge into. In addition please note the quick convergence of the training error towards the testing error. What this high error indicate about the model?

For the 'max depth' 10 model, please indicate if the model suffer from high bias or high variance, please justify your insight using feature from the relevant chart. please note the low error for the training curve and the difference between the training and high testing curves. What this indicate about the model?

Student identifies how the training and error curves relate to increasing the model's complexity.

The description for the training error is clear "As max depth increases training errors seems to reduce". However the description for the testing error is not clear. Can you identify minimum error? at which 'max depth' value? Can you identify 'max depth' range where the performance increase/decrease?

Student picks a best-guess optimal model with reasonable justification using the model complexity graph.

You are correct that the model is optimal for 'max depth' ~ 8, but the justification is not acurate. Please

note that we measure the performance of the model with unseen data (testing set). What in the testing error might indicate about model optimization? Another factor that you might want to consider is the model simplicity, https://en.wikipedia.org/wiki/Occam%27s_razor

Model Prediction

Student determines the optimal model from parameter tuning and compares this model to the one they chose.

'max depth' 1 is too low, please see my comment about the proper way of using the score function with error matrix.

Student's model produces a valid result. The predicted selling price is adequately justified by the calculated descriptive statistics.

Student thoroughly discusses justification for or against using their model for predicting future selling prices.

Please answer this question after you perform the gridsearch appropriately.

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