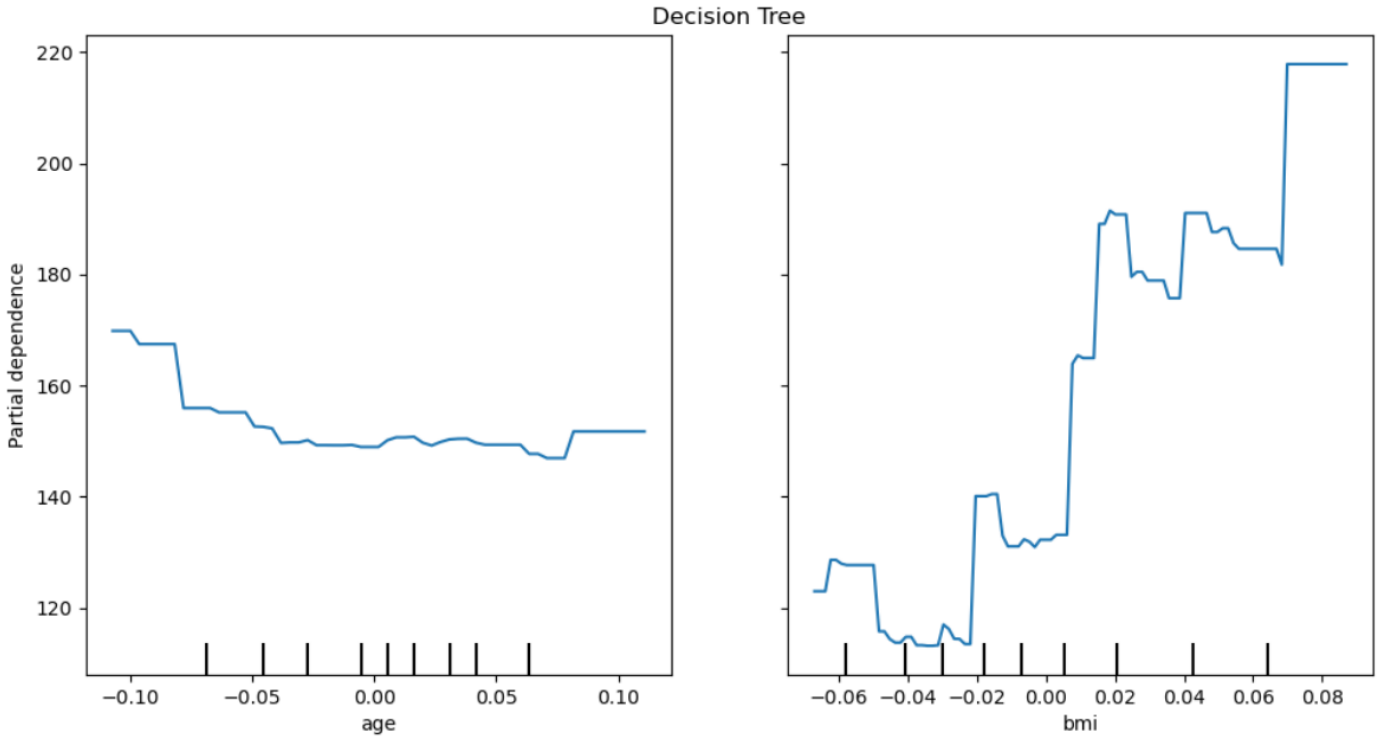
PDP Mechanism

PDP is a visual tool

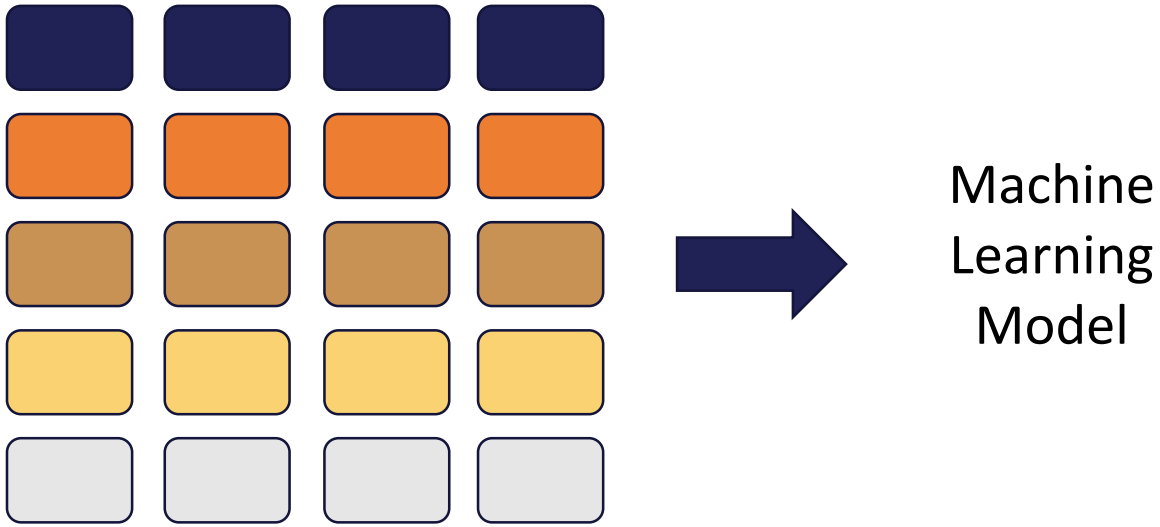


https://scikit-learn.org/stable/auto_examples/miscellaneous/plot_partial_dependence_visualization_api.html

Plots the **average prediction** value, given the values of a predictor.

PDP mechanism

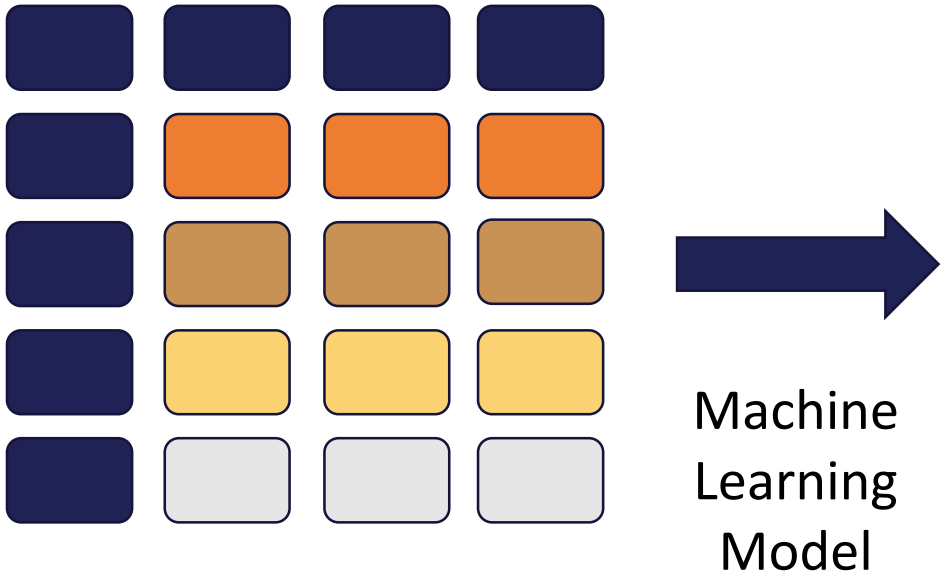
Step 1: train a ML model.



Machine Learning Model

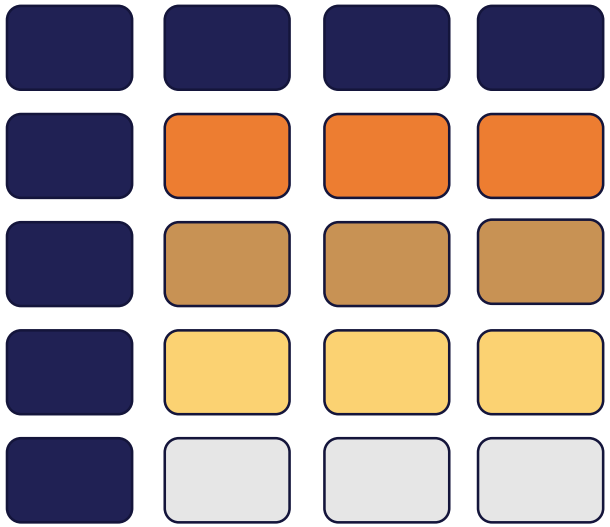
PDP mechanism

Step 2:
Choose a feature
Set all values to the same number / category



PDP mechanism

Step 2:
Choose a feature
Set all values to the same number / category
Obtain the predictions



Machine Learning Model

Prediction

Prediction

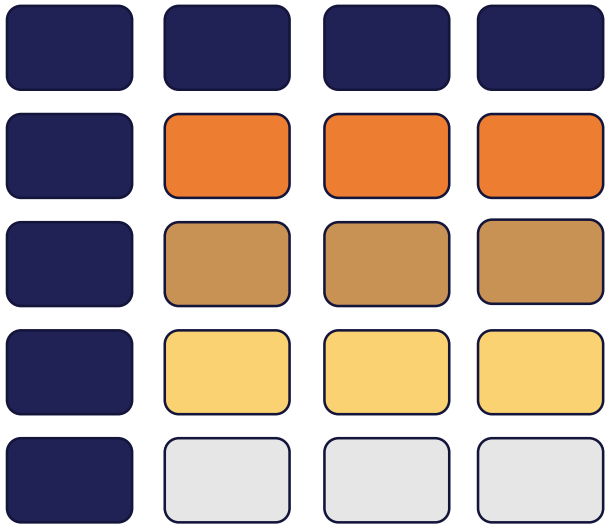
Prediction

Prediction

Prediction

PDP mechanism

Step 2:
Choose a feature
Set all values to the same number / category
Obtain the predictions



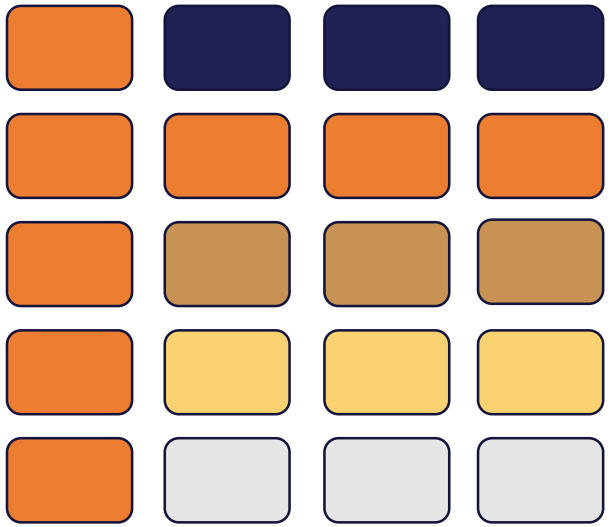
Machine Learning Model

Prediction
Prediction
Prediction
Prediction
Prediction

Average prediction

PDP mechanism

Step 3:
Repeat for other values of the feature



Machine Learning Model

Prediction

Prediction

Prediction

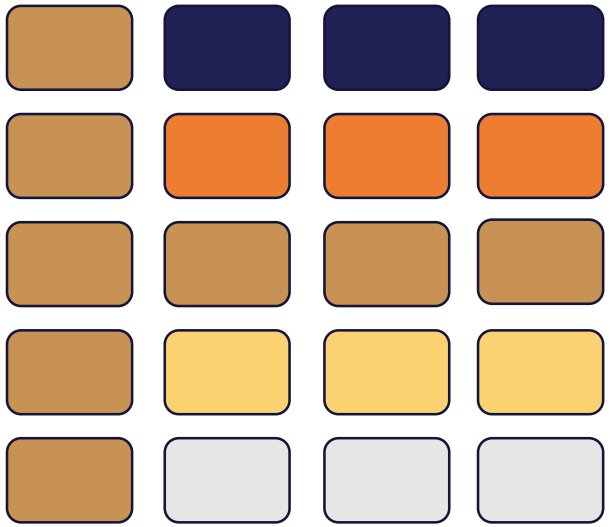
Prediction

Prediction

Average prediction

PDP mechanism

Step 3:
Repeat for other values of the feature



Machine Learning Model

Prediction

Prediction

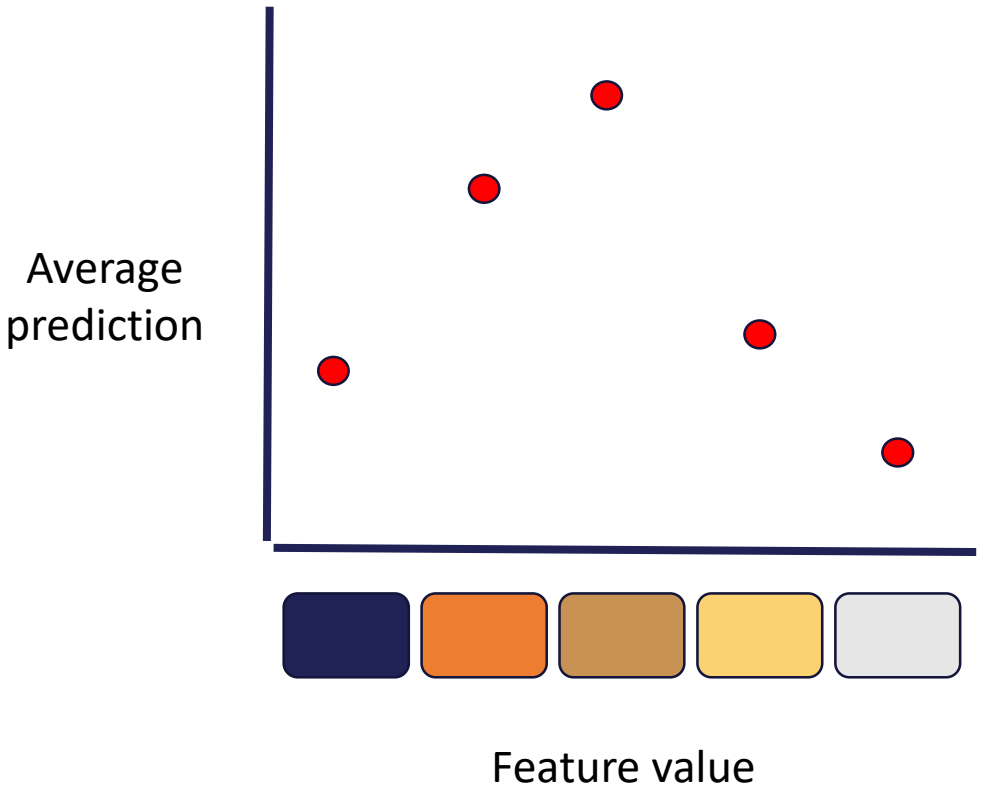
Prediction

Prediction

Prediction

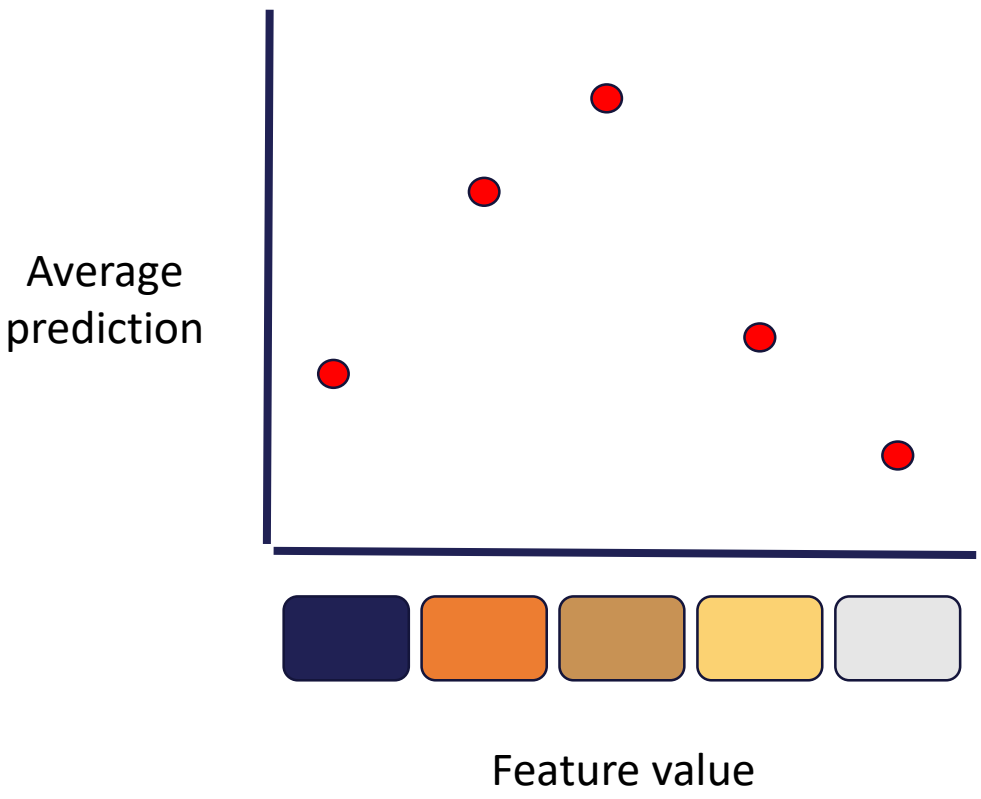
Average prediction

PDP mechanism



Plot:
average prediction vs feature value.

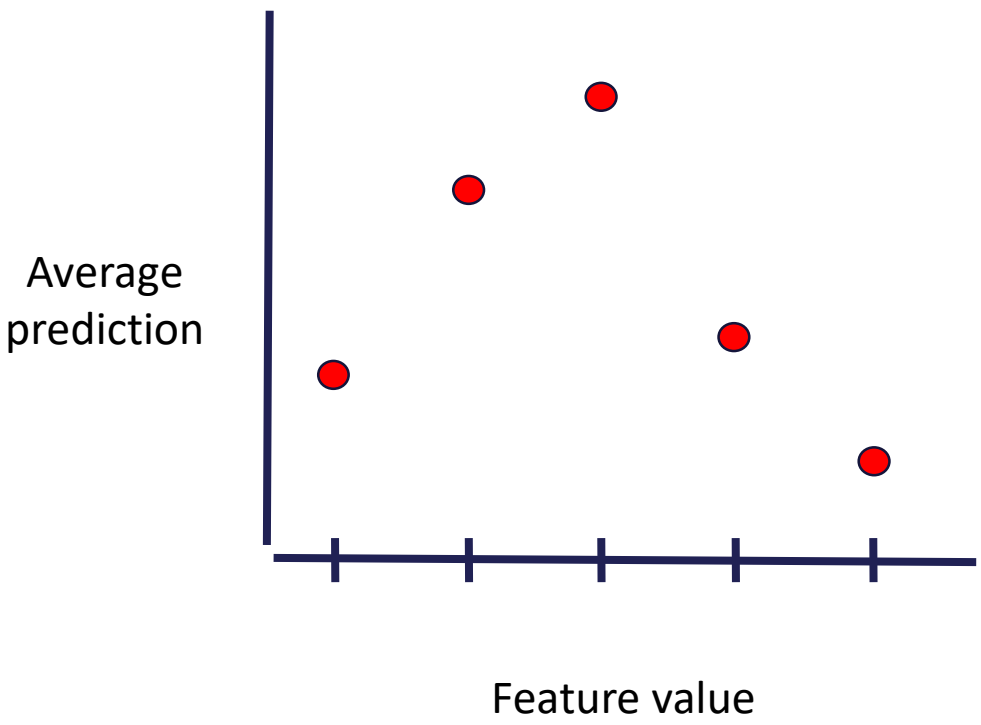
Categorical features



Plot:
average prediction vs feature value.

If the feature is categorical, we'd obtain an average prediction for each category.

Numerical features

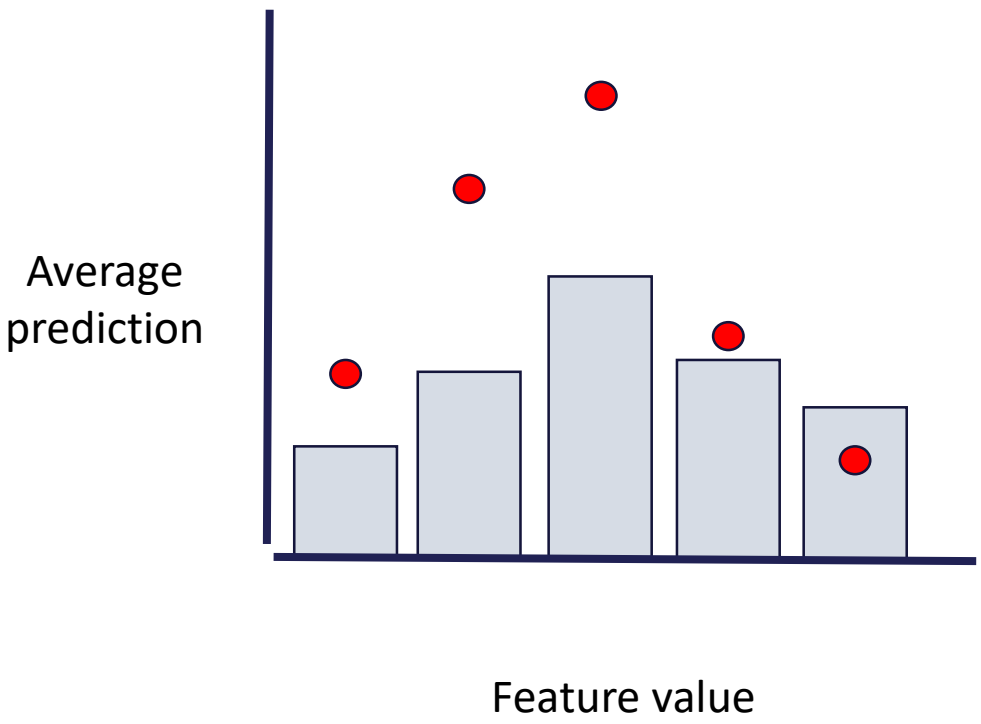


The feature values are equidistant within the variable range.

For example, if the variable range is 0-100, the values examined could be 10, 20, 30, and so on.

Scikit-learn

Numerical features



Sort feature values into intervals.

Pick interval middle point as input for the PDP.

Plot the mean prediction for each input value.

Overlay the number of observations per interval.

Train In Data

THANK YOU

www.trainindata.com