Exercise 3.1: Regression with Bagging

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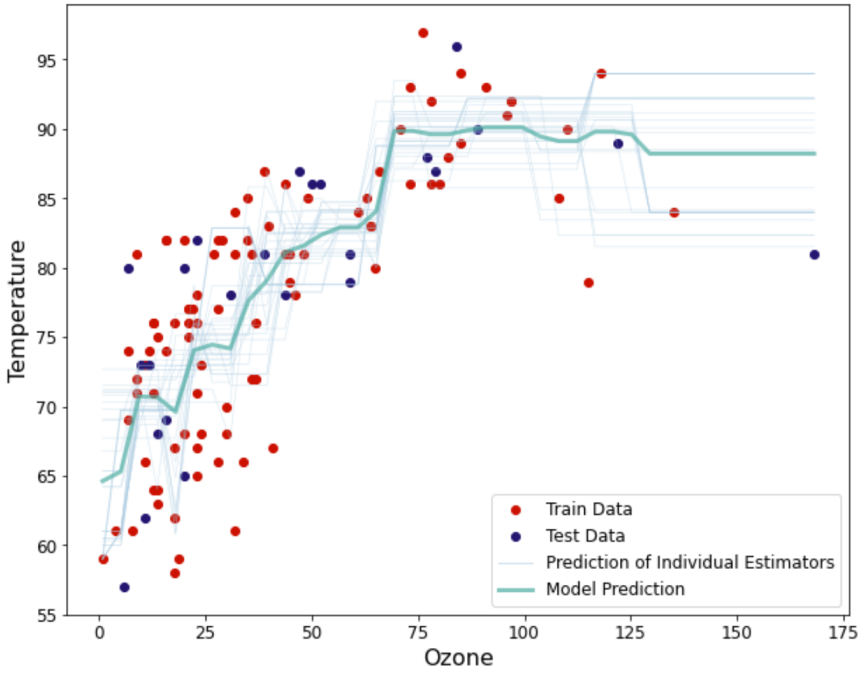
The aim of this exercise is to understand regression using Bagging.



Instructions:

- Read the dataset `airquality.csv` as a Pandas dataframe.
- Take a quick look at the dataset.
- Split the data into train and test sets.
- Specify the number of bootstraps as 30 and a maximum depth of 3.
- Define a Bagging Regression model that uses Decision Tree as its base estimator.
- Fit the model on the train data.
- Use the helper code to predict using the mean model and individual estimators. The plot will look similar to the one given above.
- Predict on the test data using the first estimator and the mean model.
- Compute and display the test MSEs.

Hints:

```
sklearn.train_test_split()
```

Split arrays or matrices into random train and test subsets.

```
BaggingRegressor()
```

Returns a Bagging regressor instance.

```
DecisionTreeRegressor()
```

A decision tree regressor.

```
DecisionTreeRegressor.fit()
```

Build a decision tree regressor from the training set (X, y).

```
DecisionTreeRegressor.predict()
```

Build a decision tree regressor from the training set (X, y).

```
DecisionTreeRegressor().estimators_
```

A list of estimators. Use this to access any of the estimators.

```
sklearn.mean_squared_error()
```

Mean squared error regression loss.