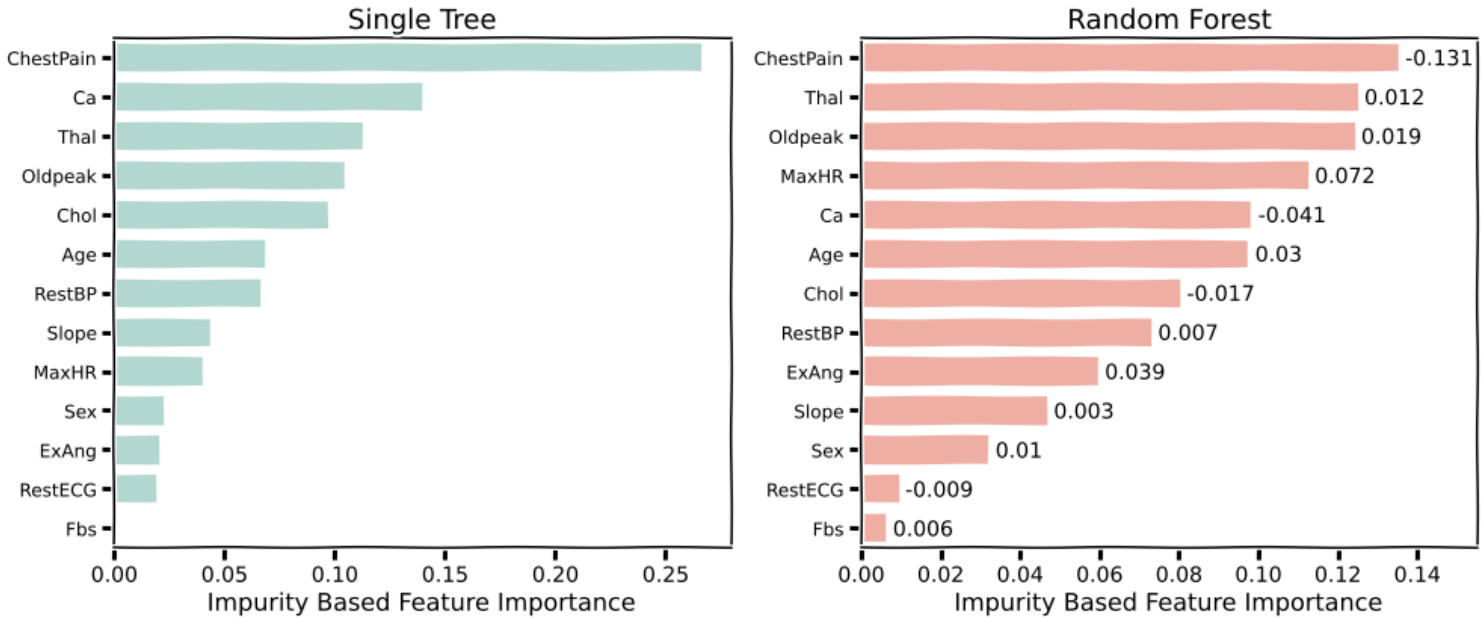
Exercise 4.3: Feature Importance

□□□ Feature Importance

The goal of this exercise is to compare two feature importance methods; MDI, and Permutation Importance. For a discussion on the merits of each go to this link.



Instructions:

- Read the dataset `heart.csv` as a pandas dataframe, and take a quick look at the data.
- Assign the predictor and response variables as per the instructions given in the scaffold.
- Set a max_depth value.
- Define a `DecisionTreeClassifier` and fit on the entire data.
- Define a `RandomForestClassifier` and fit on the entire data.
- Calculate Permutation Importance for each of the two models. Remember that the MDI is automatically computed by sklearn when you call the classifiers.
- Use the routines provided to display the feature importance of bar plots. The plots will look similar to the one given above.

Hints:

```
forest.feature_importances_
```

Calculate the impurity-based feature importance.

```
sklearn.inspection.permutation_importance()
```

Calculate the permutation-based feature importance.

```
sklearn.RandomForestClassifier()
```

Returns a random forest classifier object.

```
sklearn.DecisionTreeClassifier()
```

Returns a decision tree classifier object.

NOTE - MDI is automatically computed by sklearn by calling RandomForestClassifier and/or DecisionTreeClassifier.