Car Classification Tuning Hyper Parameters, Max Depth, Minimum Split, and Minimum Gain

```python
# Pruning Tuning Cross Validation
depthTuning = [x for x in range(2, 12, 2)]
splitTuning = [x for x in range(2, 12, 2)]
gainTuning = [x/10 for x in range(2, 12, 2)]

carParameters = []
carAccuracy = []
carTuningResults = []
for depth in depthTuning:
    for split in splitTuning:
        for gain in gainTuning:
            parameters = (depth,split,gain)
            accuracy = CrossValidation(carTuningDF, 5, ID3_algo,
maxDepth=depth, minSplit=split, minGain=gain)
            averageAccuracy = sum(accuracy)/len(accuracy)
            carAccuracy.append(averageAccuracy)
            carParameters.append(tuple)
            result = (depth,split,gain, averageAccuracy)
            carTuningResults.append(result)
            print(f'Hyper-parameters (Max Depth, Minimum Split, Minimum Gain
: {parameters}\n')
            print(f'The average accuracy given these Hyper-parameters :
{averageAccuracy}%\n')

# Table
carResultsDF = pd.DataFrame(carTuningResults, columns=['Depth', 'Split',
'Gain', 'Average Accuracy'])
carX = carResultsDF['Depth']
carY = carResultsDF['Split']
carZ = carResultsDF['Gain']
carV = carResultsDF['Average Accuracy']

carTable = go.Figure(data=[go.Table(header=dict(values=['Max Depth',
'Minimum Split', 'Minimum Gain', 'Accuracy']),
                                    cells =dict(values=[carX, carY, carZ,
carV]))])
carTable.update_layout(width = 1600, height = 1400)
carTable.show()

# Figure
carTrace = go.Scatter3d(
  x = carX, y= carY, z = carV, mode = 'markers', marker = dict(
     size = 12,
     color = carZ,
```

```
        colorscale = 'Agsunset'
        )
    )
layout = go.Layout(title ='Car Pruning Hyper Parameter 3D Scatter Plot')
carFig = go.Figure(data =[carTrace], layout = layout)
carFig.update_layout(scene = dict(
                        xaxis_title='Max Depth',
                        yaxis_title='Minimum Split',
                        zaxis_title='Accuracy'))
carFig.show()
```

Outputs:
Tuning Pruning Values

Hyper-parameters (Max Depth, Minimum Split, Minimum Gain) : (2, 2, 0.2)
5 Fold Cross Validation Average Accuracy : 71.11387163561076%

Hyper-parameters (Max Depth, Minimum Split, Minimum Gain) : (2, 2, 0.4)
5 Fold Cross Validation Average Accuracy : 71.11387163561076%

Hyper-parameters (Max Depth, Minimum Split, Minimum Gain) : (2, 2, 0.6)
5 Fold Cross Validation Average Accuracy : 71.08902691511388%

Hyper-parameters (Max Depth, Minimum Split, Minimum Gain) : (2, 2, 0.8)
5 Fold Cross Validation Average Accuracy : 71.10973084886129%

Hyper-parameters (Max Depth, Minimum Split, Minimum Gain) : (2, 2, 1.0)
5 Fold Cross Validation Average Accuracy : 71.09730848861284%

Hyper-parameters (Max Depth, Minimum Split, Minimum Gain) : (2, 4, 0.2)
5 Fold Cross Validation Average Accuracy : 71.10144927536233%

Hyper-parameters (Max Depth, Minimum Split, Minimum Gain) : (2, 4, 0.4)
5 Fold Cross Validation Average Accuracy : 71.09730848861284%

Hyper-parameters (Max Depth, Minimum Split, Minimum Gain) : (2, 4, 0.6)
5 Fold Cross Validation Average Accuracy : 71.1055900621118%

Hyper-parameters (Max Depth, Minimum Split, Minimum Gain) : (2, 4, 0.8)
5 Fold Cross Validation Average Accuracy : 71.10144927536233%

Hyper-parameters (Max Depth, Minimum Split, Minimum Gain) : (2, 4, 1.0)
5 Fold Cross Validation Average Accuracy : 71.10559006211182%

Hyper-parameters (Max Depth, Minimum Split, Minimum Gain) : (2, 6, 0.2)
5 Fold Cross Validation Average Accuracy : 71.09730848861284%

Hyper-parameters (Max Depth, Minimum Split, Minimum Gain) : (2, 6, 0.4)
5 Fold Cross Validation Average Accuracy : 71.12629399585921%

```
Hyper-parameters (Max Depth, Minimum Split, Minimum Gain) : (2, 6, 0.6)
5 Fold Cross Validation Average Accuracy : 71.09316770186335%

Hyper-parameters (Max Depth, Minimum Split, Minimum Gain) : (2, 6, 0.8)
5 Fold Cross Validation Average Accuracy : 71.10144927536231%

Hyper-parameters (Max Depth, Minimum Split, Minimum Gain) : (2, 6, 1.0)
5 Fold Cross Validation Average Accuracy : 71.08902691511386%

Hyper-parameters (Max Depth, Minimum Split, Minimum Gain) : (2, 8, 0.2)
5 Fold Cross Validation Average Accuracy : 71.11387163561076%

Hyper-parameters (Max Depth, Minimum Split, Minimum Gain) : (2, 8, 0.4)
5 Fold Cross Validation Average Accuracy : 71.10144927536233%

Hyper-parameters (Max Depth, Minimum Split, Minimum Gain) : (2, 8, 0.6)
5 Fold Cross Validation Average Accuracy : 71.11387163561076%

Hyper-parameters (Max Depth, Minimum Split, Minimum Gain) : (2, 8, 0.8)
5 Fold Cross Validation Average Accuracy : 71.08488612836439%

Hyper-parameters (Max Depth, Minimum Split, Minimum Gain) : (2, 8, 1.0)
5 Fold Cross Validation Average Accuracy : 71.12215320910973%

Hyper-parameters (Max Depth, Minimum Split, Minimum Gain) : (2, 10, 0.2)
5 Fold Cross Validation Average Accuracy : 71.1055900621118%

Hyper-parameters (Max Depth, Minimum Split, Minimum Gain) : (2, 10, 0.4)
5 Fold Cross Validation Average Accuracy : 71.10144927536231%

Hyper-parameters (Max Depth, Minimum Split, Minimum Gain) : (2, 10, 0.6)
5 Fold Cross Validation Average Accuracy : 71.10144927536233%

Hyper-parameters (Max Depth, Minimum Split, Minimum Gain) : (2, 10, 0.8)
5 Fold Cross Validation Average Accuracy : 71.08902691511386%

Hyper-parameters (Max Depth, Minimum Split, Minimum Gain) : (2, 10, 1.0)
5 Fold Cross Validation Average Accuracy : 71.12629399585921%

Hyper-parameters (Max Depth, Minimum Split, Minimum Gain) : (4, 2, 0.2)
5 Fold Cross Validation Average Accuracy : 71.12629399585921%

Hyper-parameters (Max Depth, Minimum Split, Minimum Gain) : (4, 2, 0.4)
5 Fold Cross Validation Average Accuracy : 71.10559006211182%

Hyper-parameters (Max Depth, Minimum Split, Minimum Gain) : (4, 2, 0.6)
5 Fold Cross Validation Average Accuracy : 71.09730848861282%
```

Hyper-parameters (Max Depth, Minimum Split, Minimum Gain) : (4, 2, 0.8)
5 Fold Cross Validation Average Accuracy : 71.0848861283644%

Hyper-parameters (Max Depth, Minimum Split, Minimum Gain) : (4, 2, 1.0)
5 Fold Cross Validation Average Accuracy : 71.09730848861284%

Hyper-parameters (Max Depth, Minimum Split, Minimum Gain) : (4, 4, 0.2)
5 Fold Cross Validation Average Accuracy : 71.10144927536233%

Hyper-parameters (Max Depth, Minimum Split, Minimum Gain) : (4, 4, 0.4)
5 Fold Cross Validation Average Accuracy : 71.10559006211182%

Hyper-parameters (Max Depth, Minimum Split, Minimum Gain) : (4, 4, 0.6)
5 Fold Cross Validation Average Accuracy : 71.1055900621118%

Hyper-parameters (Max Depth, Minimum Split, Minimum Gain) : (4, 4, 0.8)
5 Fold Cross Validation Average Accuracy : 71.08902691511386%

Hyper-parameters (Max Depth, Minimum Split, Minimum Gain) : (4, 4, 1.0)
5 Fold Cross Validation Average Accuracy : 71.10559006211182%

Hyper-parameters (Max Depth, Minimum Split, Minimum Gain) : (4, 6, 0.2)
5 Fold Cross Validation Average Accuracy : 71.08488612836439%

Hyper-parameters (Max Depth, Minimum Split, Minimum Gain) : (4, 6, 0.4)
5 Fold Cross Validation Average Accuracy : 71.08902691511386%

Hyper-parameters (Max Depth, Minimum Split, Minimum Gain) : (4, 6, 0.6)
5 Fold Cross Validation Average Accuracy : 71.07246376811595%

Hyper-parameters (Max Depth, Minimum Split, Minimum Gain) : (4, 6, 0.8)
5 Fold Cross Validation Average Accuracy : 71.11387163561076%

Hyper-parameters (Max Depth, Minimum Split, Minimum Gain) : (4, 6, 1.0)
5 Fold Cross Validation Average Accuracy : 71.08488612836439%

Hyper-parameters (Max Depth, Minimum Split, Minimum Gain) : (4, 8, 0.2)
5 Fold Cross Validation Average Accuracy : 71.09730848861284%

Hyper-parameters (Max Depth, Minimum Split, Minimum Gain) : (4, 8, 0.4)
5 Fold Cross Validation Average Accuracy : 71.08902691511386%

Hyper-parameters (Max Depth, Minimum Split, Minimum Gain) : (4, 8, 0.6)
5 Fold Cross Validation Average Accuracy : 71.10144927536233%

Hyper-parameters (Max Depth, Minimum Split, Minimum Gain) : (4, 8, 0.8)
5 Fold Cross Validation Average Accuracy : 71.08488612836439%

Hyper-parameters (Max Depth, Minimum Split, Minimum Gain) : (4, 8, 1.0)

```
5 Fold Cross Validation Average Accuracy : 71.10144927536233%

Hyper-parameters (Max Depth, Minimum Split, Minimum Gain) : (4, 10, 0.2)
5 Fold Cross Validation Average Accuracy : 71.09730848861284%

Hyper-parameters (Max Depth, Minimum Split, Minimum Gain) : (4, 10, 0.4)
5 Fold Cross Validation Average Accuracy : 71.09730848861284%

Hyper-parameters (Max Depth, Minimum Split, Minimum Gain) : (4, 10, 0.6)
5 Fold Cross Validation Average Accuracy : 71.08902691511386%

Hyper-parameters (Max Depth, Minimum Split, Minimum Gain) : (4, 10, 0.8)
5 Fold Cross Validation Average Accuracy : 71.08074534161491%

Hyper-parameters (Max Depth, Minimum Split, Minimum Gain) : (4, 10, 1.0)
5 Fold Cross Validation Average Accuracy : 71.09316770186335%

Hyper-parameters (Max Depth, Minimum Split, Minimum Gain) : (6, 2, 0.2)
5 Fold Cross Validation Average Accuracy : 71.08902691511386%

Hyper-parameters (Max Depth, Minimum Split, Minimum Gain) : (6, 2, 0.4)
5 Fold Cross Validation Average Accuracy : 71.05590062111801%

Hyper-parameters (Max Depth, Minimum Split, Minimum Gain) : (6, 2, 0.6)
5 Fold Cross Validation Average Accuracy : 71.11801242236024%

Hyper-parameters (Max Depth, Minimum Split, Minimum Gain) : (6, 2, 0.8)
5 Fold Cross Validation Average Accuracy : 71.09730848861284%

Hyper-parameters (Max Depth, Minimum Split, Minimum Gain) : (6, 2, 1.0)
5 Fold Cross Validation Average Accuracy : 71.11801242236024%

Hyper-parameters (Max Depth, Minimum Split, Minimum Gain) : (6, 4, 0.2)
5 Fold Cross Validation Average Accuracy : 71.1304347826087%

Hyper-parameters (Max Depth, Minimum Split, Minimum Gain) : (6, 4, 0.4)
5 Fold Cross Validation Average Accuracy : 71.10973084886128%

Hyper-parameters (Max Depth, Minimum Split, Minimum Gain) : (6, 4, 0.6)
5 Fold Cross Validation Average Accuracy : 71.11387163561076%

Hyper-parameters (Max Depth, Minimum Split, Minimum Gain) : (6, 4, 0.8)
5 Fold Cross Validation Average Accuracy : 71.09730848861284%

Hyper-parameters (Max Depth, Minimum Split, Minimum Gain) : (6, 4, 1.0)
5 Fold Cross Validation Average Accuracy : 71.10973084886129%

Hyper-parameters (Max Depth, Minimum Split, Minimum Gain) : (6, 6, 0.2)
5 Fold Cross Validation Average Accuracy : 71.10559006211182%
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```
Hyper-parameters (Max Depth, Minimum Split, Minimum Gain) : (6, 6, 0.4)
5 Fold Cross Validation Average Accuracy : 71.06832298136646%

Hyper-parameters (Max Depth, Minimum Split, Minimum Gain) : (6, 6, 0.6)
5 Fold Cross Validation Average Accuracy : 71.10144927536233%

Hyper-parameters (Max Depth, Minimum Split, Minimum Gain) : (6, 6, 0.8)
5 Fold Cross Validation Average Accuracy : 71.08902691511386%

Hyper-parameters (Max Depth, Minimum Split, Minimum Gain) : (6, 6, 1.0)
5 Fold Cross Validation Average Accuracy : 71.09316770186335%

Hyper-parameters (Max Depth, Minimum Split, Minimum Gain) : (6, 8, 0.2)
5 Fold Cross Validation Average Accuracy : 71.08902691511388%

Hyper-parameters (Max Depth, Minimum Split, Minimum Gain) : (6, 8, 0.4)
5 Fold Cross Validation Average Accuracy : 71.10559006211182%

Hyper-parameters (Max Depth, Minimum Split, Minimum Gain) : (6, 8, 0.6)
5 Fold Cross Validation Average Accuracy : 71.10144927536231%

Hyper-parameters (Max Depth, Minimum Split, Minimum Gain) : (6, 8, 0.8)
5 Fold Cross Validation Average Accuracy : 71.12215320910973%

Hyper-parameters (Max Depth, Minimum Split, Minimum Gain) : (6, 8, 1.0)
5 Fold Cross Validation Average Accuracy : 71.10973084886129%

Hyper-parameters (Max Depth, Minimum Split, Minimum Gain) : (6, 10, 0.2)
5 Fold Cross Validation Average Accuracy : 71.11387163561076%

Hyper-parameters (Max Depth, Minimum Split, Minimum Gain) : (6, 10, 0.4)
5 Fold Cross Validation Average Accuracy : 71.10559006211182%

Hyper-parameters (Max Depth, Minimum Split, Minimum Gain) : (6, 10, 0.6)
5 Fold Cross Validation Average Accuracy : 71.09730848861284%

Hyper-parameters (Max Depth, Minimum Split, Minimum Gain) : (6, 10, 0.8)
5 Fold Cross Validation Average Accuracy : 71.07660455486541%

Hyper-parameters (Max Depth, Minimum Split, Minimum Gain) : (6, 10, 1.0)
5 Fold Cross Validation Average Accuracy : 71.09316770186335%

Hyper-parameters (Max Depth, Minimum Split, Minimum Gain) : (8, 2, 0.2)
5 Fold Cross Validation Average Accuracy : 71.11801242236024%

Hyper-parameters (Max Depth, Minimum Split, Minimum Gain) : (8, 2, 0.4)
5 Fold Cross Validation Average Accuracy : 71.10144927536233%
```

```
Hyper-parameters (Max Depth, Minimum Split, Minimum Gain) : (8, 2, 0.6)
5 Fold Cross Validation Average Accuracy : 71.08902691511386%

Hyper-parameters (Max Depth, Minimum Split, Minimum Gain) : (8, 2, 0.8)
5 Fold Cross Validation Average Accuracy : 71.1304347826087%

Hyper-parameters (Max Depth, Minimum Split, Minimum Gain) : (8, 2, 1.0)
5 Fold Cross Validation Average Accuracy : 71.11801242236024%

Hyper-parameters (Max Depth, Minimum Split, Minimum Gain) : (8, 4, 0.2)
5 Fold Cross Validation Average Accuracy : 71.09730848861284%

Hyper-parameters (Max Depth, Minimum Split, Minimum Gain) : (8, 4, 0.4)
5 Fold Cross Validation Average Accuracy : 71.09730848861284%

Hyper-parameters (Max Depth, Minimum Split, Minimum Gain) : (8, 4, 0.6)
5 Fold Cross Validation Average Accuracy : 71.10559006211182%

Hyper-parameters (Max Depth, Minimum Split, Minimum Gain) : (8, 4, 0.8)
5 Fold Cross Validation Average Accuracy : 71.10144927536233%

Hyper-parameters (Max Depth, Minimum Split, Minimum Gain) : (8, 4, 1.0)
5 Fold Cross Validation Average Accuracy : 71.11801242236024%

Hyper-parameters (Max Depth, Minimum Split, Minimum Gain) : (8, 6, 0.2)
5 Fold Cross Validation Average Accuracy : 71.10144927536233%

Hyper-parameters (Max Depth, Minimum Split, Minimum Gain) : (8, 6, 0.4)
5 Fold Cross Validation Average Accuracy : 71.09730848861284%

Hyper-parameters (Max Depth, Minimum Split, Minimum Gain) : (8, 6, 0.6)
5 Fold Cross Validation Average Accuracy : 71.12215320910973%

Hyper-parameters (Max Depth, Minimum Split, Minimum Gain) : (8, 6, 0.8)
5 Fold Cross Validation Average Accuracy : 71.11387163561076%

Hyper-parameters (Max Depth, Minimum Split, Minimum Gain) : (8, 6, 1.0)
5 Fold Cross Validation Average Accuracy : 71.11387163561076%

Hyper-parameters (Max Depth, Minimum Split, Minimum Gain) : (8, 8, 0.2)
5 Fold Cross Validation Average Accuracy : 71.10144927536233%

Hyper-parameters (Max Depth, Minimum Split, Minimum Gain) : (8, 8, 0.4)
5 Fold Cross Validation Average Accuracy : 71.09316770186335%

Hyper-parameters (Max Depth, Minimum Split, Minimum Gain) : (8, 8, 0.6)
5 Fold Cross Validation Average Accuracy : 71.08902691511388%

Hyper-parameters (Max Depth, Minimum Split, Minimum Gain) : (8, 8, 0.8)
```

5 Fold Cross Validation Average Accuracy : 71.09316770186335%

Hyper-parameters (Max Depth, Minimum Split, Minimum Gain) : (8, 8, 1.0)
5 Fold Cross Validation Average Accuracy : 71.1055900621118%

Hyper-parameters (Max Depth, Minimum Split, Minimum Gain) : (8, 10, 0.2)
5 Fold Cross Validation Average Accuracy : 71.08488612836439%

Hyper-parameters (Max Depth, Minimum Split, Minimum Gain) : (8, 10, 0.4)
5 Fold Cross Validation Average Accuracy : 71.10144927536233%

Hyper-parameters (Max Depth, Minimum Split, Minimum Gain) : (8, 10, 0.6)
5 Fold Cross Validation Average Accuracy : 71.10973084886128%

Hyper-parameters (Max Depth, Minimum Split, Minimum Gain) : (8, 10, 0.8)
5 Fold Cross Validation Average Accuracy : 71.1014492753623%

Hyper-parameters (Max Depth, Minimum Split, Minimum Gain) : (8, 10, 1.0)
5 Fold Cross Validation Average Accuracy : 71.1055900621118%

Hyper-parameters (Max Depth, Minimum Split, Minimum Gain) : (10, 2, 0.2)
5 Fold Cross Validation Average Accuracy : 71.10559006211182%

Hyper-parameters (Max Depth, Minimum Split, Minimum Gain) : (10, 2, 0.4)
5 Fold Cross Validation Average Accuracy : 71.1055900621118%

Hyper-parameters (Max Depth, Minimum Split, Minimum Gain) : (10, 2, 0.6)
5 Fold Cross Validation Average Accuracy : 71.10973084886128%

Hyper-parameters (Max Depth, Minimum Split, Minimum Gain) : (10, 2, 0.8)
5 Fold Cross Validation Average Accuracy : 71.11387163561076%

Hyper-parameters (Max Depth, Minimum Split, Minimum Gain) : (10, 2, 1.0)
5 Fold Cross Validation Average Accuracy : 71.08488612836439%

Hyper-parameters (Max Depth, Minimum Split, Minimum Gain) : (10, 4, 0.2)
5 Fold Cross Validation Average Accuracy : 71.10559006211182%

Hyper-parameters (Max Depth, Minimum Split, Minimum Gain) : (10, 4, 0.4)
5 Fold Cross Validation Average Accuracy : 71.09730848861284%

Hyper-parameters (Max Depth, Minimum Split, Minimum Gain) : (10, 4, 0.6)
5 Fold Cross Validation Average Accuracy : 71.08074534161491%

Hyper-parameters (Max Depth, Minimum Split, Minimum Gain) : (10, 4, 0.8)
5 Fold Cross Validation Average Accuracy : 71.10559006211182%

Hyper-parameters (Max Depth, Minimum Split, Minimum Gain) : (10, 4, 1.0)
5 Fold Cross Validation Average Accuracy : 71.07660455486543%

```
Hyper-parameters (Max Depth, Minimum Split, Minimum Gain) : (10, 6, 0.2)
5 Fold Cross Validation Average Accuracy : 71.08488612836439%

Hyper-parameters (Max Depth, Minimum Split, Minimum Gain) : (10, 6, 0.4)
5 Fold Cross Validation Average Accuracy : 71.12215320910974%

Hyper-parameters (Max Depth, Minimum Split, Minimum Gain) : (10, 6, 0.6)
5 Fold Cross Validation Average Accuracy : 71.07660455486543%

Hyper-parameters (Max Depth, Minimum Split, Minimum Gain) : (10, 6, 0.8)
5 Fold Cross Validation Average Accuracy : 71.06418219461698%

Hyper-parameters (Max Depth, Minimum Split, Minimum Gain) : (10, 6, 1.0)
5 Fold Cross Validation Average Accuracy : 71.08074534161491%

Hyper-parameters (Max Depth, Minimum Split, Minimum Gain) : (10, 8, 0.2)
5 Fold Cross Validation Average Accuracy : 71.09316770186335%

Hyper-parameters (Max Depth, Minimum Split, Minimum Gain) : (10, 8, 0.4)
5 Fold Cross Validation Average Accuracy : 71.10144927536233%

Hyper-parameters (Max Depth, Minimum Split, Minimum Gain) : (10, 8, 0.6)
5 Fold Cross Validation Average Accuracy : 71.10144927536233%

Hyper-parameters (Max Depth, Minimum Split, Minimum Gain) : (10, 8, 0.8)
5 Fold Cross Validation Average Accuracy : 71.09316770186335%

Hyper-parameters (Max Depth, Minimum Split, Minimum Gain) : (10, 8, 1.0)
5 Fold Cross Validation Average Accuracy : 71.10559006211182%

Hyper-parameters (Max Depth, Minimum Split, Minimum Gain) : (10, 10, 0.2)
5 Fold Cross Validation Average Accuracy : 71.07246376811595%

Hyper-parameters (Max Depth, Minimum Split, Minimum Gain) : (10, 10, 0.4)
5 Fold Cross Validation Average Accuracy : 71.10144927536233%

Hyper-parameters (Max Depth, Minimum Split, Minimum Gain) : (10, 10, 0.6)
5 Fold Cross Validation Average Accuracy : 71.10973084886128%

Hyper-parameters (Max Depth, Minimum Split, Minimum Gain) : (10, 10, 0.8)
5 Fold Cross Validation Average Accuracy : 71.09316770186335%

Hyper-parameters (Max Depth, Minimum Split, Minimum Gain) : (10, 10, 1.0)
5 Fold Cross Validation Average Accuracy : 71.08902691511386%
```

Tuning Non-Pruning Values:

Hyper-parameters (Max Depth, Minimum Split, Minimum Gain : (0, 0, 0.2)

The average accuracy given these Hyper-parameters : 70.48861283643892%

Hyper-parameters (Max Depth, Minimum Split, Minimum Gain : (0, 0, 0.4)

The average accuracy given these Hyper-parameters : 70.53416149068323%

Hyper-parameters (Max Depth, Minimum Split, Minimum Gain : (0, 0, 0.6)

The average accuracy given these Hyper-parameters : 70.53416149068323%

Hyper-parameters (Max Depth, Minimum Split, Minimum Gain : (0, 0, 0.8)

The average accuracy given these Hyper-parameters : 70.50931677018635%

Hyper-parameters (Max Depth, Minimum Split, Minimum Gain : (0, 0, 1.0)

The average accuracy given these Hyper-parameters : 70.51345755693583%

Testing Data Results:

```python
# Testing Pruned and NonPruned Trees
numFolds = [1,2,3,4,5]

print('Pruned Tree Results')
carTestingPrunedResults = CrossValidation(carDF_80, 5, ID3_algo,
maxDepth= 6, minSplit=6, minGain= 0.4)

print('Unpruned Tree Results')
carTestingNPResults = CrossValidation(carDF_80, 5, ID3_algo,
maxDepth=0, minSplit=0, minGain= 0.4)

carDict = {'Folds': numFolds, 'Pruned':carTestingPrunedResults,'Non-
Pruned':carTestingNPResults}
finalCarResults = pd.DataFrame(carDict)

carFinalFig = px.scatter(finalCarResults, x='Folds', y=['Pruned',
'Non-Pruned'] , title="K-Fold vs. Accuracy", width=800, height=600)
carFinalFig.update_traces(marker_size = 15)
carFinalFig.update_yaxes(title_text = 'Accuracy %')
carFinalFig.show()
```

Car Testing Results:

```
Pruned Tree Results
5 Fold Cross Validation Average Accuracy : 70.40234395437662%

Unpruned Tree Results
5 Fold Cross Validation Average Accuracy : 70.40757599539582%
```

K-Fold vs. Accuracy
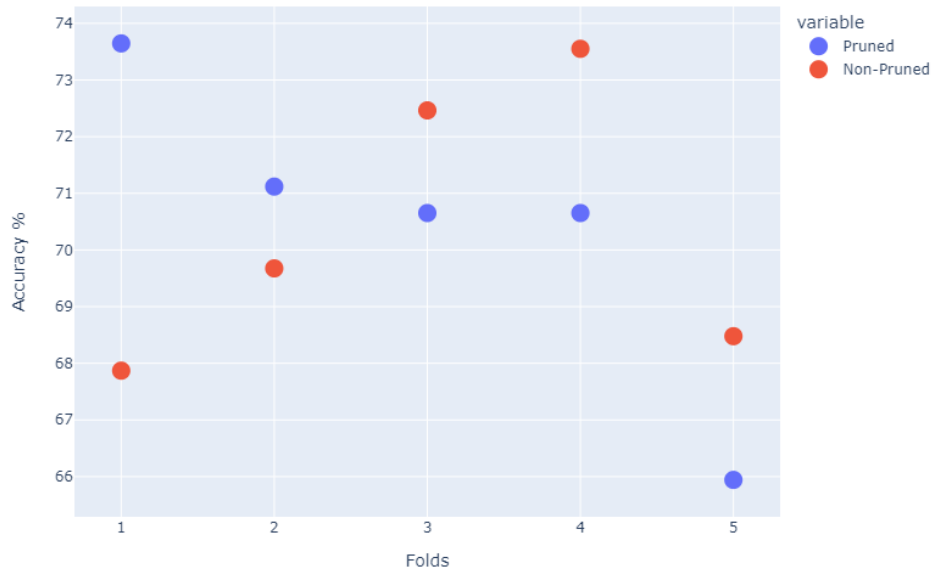
House Vote Classification

Tuning HyperParameters

```
HouseTuningDF = HouseTuningDF.reset_index(drop=True)
HouseDF_80 = HouseDF_80.reset_index(drop=True)

HouseParameters = []
HouseAccuracy = []
HouseTuningResults = []
for depth in depthTuning:
    for split in splitTuning:
        for gain in gainTuning:
            parameters = (depth,split,gain)
            accuracy = CrossValidation(HouseTuningDF, 5, ID3_algo,
maxDepth=depth, minSplit=split, minGain=gain)
            averageAccuracy = sum(accuracy)/len(accuracy)
```

```python
            HouseAccuracy.append(averageAccuracy)
            HouseParameters.append(parameters)
            result = (depth,split,gain, averageAccuracy)
            HouseTuningResults.append(result)
            print(f'Hyper-parameters (Max Depth, Minimum Split,
Minimum Gain) : {parameters}')

HouseOP = max(HouseTuningResults, key=itemgetter(3))
print('These are the Optimal Parameters')
print(HouseOP)

# Table
HouseResultsDF = pd.DataFrame(HouseTuningResults, columns=['Depth',
'Split', 'Gain', 'Average Accuracy'])
HouseX = HouseResultsDF['Depth']
HouseY = HouseResultsDF['Split']
HouseZ = HouseResultsDF['Gain']
HouseV = HouseResultsDF['Average Accuracy']

HouseTable = go.Figure(data=[go.Table(header=dict(values=['Max
Depth', 'Minimum Split', 'Minimum Gain', 'Accuracy']),
                                cells =dict(values=[HouseX, HouseY,
HouseZ, HouseV]))])
HouseTable.update_layout(width = 800, height = 2900)
HouseTable.show()

# Figure
HouseTrace = go.Scatter3d(
  x = HouseX, y= HouseY, z = HouseV, mode = 'markers', marker = dict(
    size = 12,
    color = HouseZ,
    colorscale = 'Agsunset'
    )
  )
layout = go.Layout(title ='House Pruning Hyper Parameter 3D Scatter
Plot')
HouseFig = go.Figure(data =[HouseTrace], layout = layout)
HouseFig.update_layout(scene = dict(
                xaxis_title='Max Depth',
                yaxis_title='Minimum Split',
                zaxis_title='Accuracy'))
HouseFig.show()

# No Pruning Cross validation
HouseResultsNP = []
```

```python
HouseAccuracyNP = []
HouseParametersNP = []
for gain in gainTuning:
    parametersNP = (0,0,gain)
    accuracyNP = CrossValidation(HouseTuningDF, 5, ID3_algo,
maxDepth=0, minSplit=0, minGain=gain)
    averageAccuracyNP = sum(accuracyNP)/len(accuracyNP)
    HouseAccuracyNP.append(averageAccuracyNP)
    HouseParametersNP.append(parametersNP)
    resultNP = (0, 0, gain, averageAccuracyNP)
    HouseResultsNP.append(resultNP)
    print(f'Hyper-parameters (Max Depth, Minimum Split, Minimum Gain :
{parametersNP}\n')
    print(f'The average accuracy given these Hyper-parameters :
{averageAccuracyNP}%\n')

# Table
HouseResultsNPDF = pd.DataFrame(HouseResultsNP, columns=['Depth',
'Split', 'Gain', 'Average Accuracy'])
HouseNPX = HouseResultsNPDF['Depth']
HouseNPY = HouseResultsNPDF['Split']
HouseNPZ = HouseResultsNPDF['Gain']
HouseNPV = HouseResultsNPDF['Average Accuracy']

HouseTableNP = go.Figure(data=[go.Table(header=dict(values=['Max
Depth', 'Minimum Split', 'Minimum Gain', 'Accuracy']),
                                cells =dict(values=[HouseNPX, HouseNPY,
HouseNPZ, HouseNPV]))])
HouseTableNP.update_layout(width = 800, height = 2900)
HouseTableNP.show()

# Figure
HouseTraceNP = go.Scatter3d(
  x = HouseNPX, y= HouseNPZ, z = HouseNPV, mode = 'markers', marker =
dict(
    size = 12,
    color = HouseNPV,
    colorscale = 'Agsunset'
    )
  )
layoutNP = go.Layout(title ='House No Pruning Hyper Parameter 3D
Scatter Plot')
HouseFigNP = go.Figure(data =[HouseTraceNP], layout = layoutNP)
HouseFigNP.update_layout(scene = dict(
                xaxis_title='Max Depth',
```

```
                    yaxis_title='Minimum Gain',
                    zaxis_title='Accuracy'))
HouseFigNP.show()
```

Output from Tuning HyperParameters in Pruned Tree:

```
5 Fold Cross Validation Average Accuracy : 95.29411764705883%

Hyper-parameters (Max Depth, Minimum Split, Minimum Gain) : (2, 2, 0.2)
5 Fold Cross Validation Average Accuracy : 95.35947712418302%

Hyper-parameters (Max Depth, Minimum Split, Minimum Gain) : (2, 2, 0.4)
5 Fold Cross Validation Average Accuracy : 65.42483660130719%

Hyper-parameters (Max Depth, Minimum Split, Minimum Gain) : (2, 2, 0.6)
5 Fold Cross Validation Average Accuracy : 65.42483660130718%

Hyper-parameters (Max Depth, Minimum Split, Minimum Gain) : (2, 2, 0.8)
5 Fold Cross Validation Average Accuracy : 65.29411764705881%

Hyper-parameters (Max Depth, Minimum Split, Minimum Gain) : (2, 2, 1.0)
5 Fold Cross Validation Average Accuracy : 95.29411764705883%

Hyper-parameters (Max Depth, Minimum Split, Minimum Gain) : (2, 4, 0.2)
5 Fold Cross Validation Average Accuracy : 95.42483660130719%

Hyper-parameters (Max Depth, Minimum Split, Minimum Gain) : (2, 4, 0.4)
5 Fold Cross Validation Average Accuracy : 65.42483660130719%

Hyper-parameters (Max Depth, Minimum Split, Minimum Gain) : (2, 4, 0.6)
5 Fold Cross Validation Average Accuracy : 65.29411764705883%

Hyper-parameters (Max Depth, Minimum Split, Minimum Gain) : (2, 4, 0.8)
5 Fold Cross Validation Average Accuracy : 65.42483660130718%

Hyper-parameters (Max Depth, Minimum Split, Minimum Gain) : (2, 4, 1.0)
5 Fold Cross Validation Average Accuracy : 95.35947712418302%

Hyper-parameters (Max Depth, Minimum Split, Minimum Gain) : (2, 6, 0.2)
5 Fold Cross Validation Average Accuracy : 95.35947712418302%

Hyper-parameters (Max Depth, Minimum Split, Minimum Gain) : (2, 6, 0.4)
5 Fold Cross Validation Average Accuracy : 65.68627450980392%

Hyper-parameters (Max Depth, Minimum Split, Minimum Gain) : (2, 6, 0.6)
5 Fold Cross Validation Average Accuracy : 65.81699346405229%

Hyper-parameters (Max Depth, Minimum Split, Minimum Gain) : (2, 6, 0.8)
```

```
5 Fold Cross Validation Average Accuracy : 65.62091503267973%

Hyper-parameters (Max Depth, Minimum Split, Minimum Gain) : (2, 6, 1.0)
5 Fold Cross Validation Average Accuracy : 95.42483660130719%

Hyper-parameters (Max Depth, Minimum Split, Minimum Gain) : (2, 8, 0.2)
5 Fold Cross Validation Average Accuracy : 95.42483660130719%

Hyper-parameters (Max Depth, Minimum Split, Minimum Gain) : (2, 8, 0.4)
5 Fold Cross Validation Average Accuracy : 65.29411764705881%

Hyper-parameters (Max Depth, Minimum Split, Minimum Gain) : (2, 8, 0.6)
5 Fold Cross Validation Average Accuracy : 65.75163398692811%

Hyper-parameters (Max Depth, Minimum Split, Minimum Gain) : (2, 8, 0.8)
5 Fold Cross Validation Average Accuracy : 65.68627450980392%

Hyper-parameters (Max Depth, Minimum Split, Minimum Gain) : (2, 8, 1.0)
5 Fold Cross Validation Average Accuracy : 95.42483660130719%

Hyper-parameters (Max Depth, Minimum Split, Minimum Gain) : (2, 10, 0.2)
5 Fold Cross Validation Average Accuracy : 95.42483660130719%

Hyper-parameters (Max Depth, Minimum Split, Minimum Gain) : (2, 10, 0.4)
5 Fold Cross Validation Average Accuracy : 65.62091503267973%

Hyper-parameters (Max Depth, Minimum Split, Minimum Gain) : (2, 10, 0.6)
5 Fold Cross Validation Average Accuracy : 65.68627450980392%

Hyper-parameters (Max Depth, Minimum Split, Minimum Gain) : (2, 10, 0.8)
5 Fold Cross Validation Average Accuracy : 65.42483660130719%

Hyper-parameters (Max Depth, Minimum Split, Minimum Gain) : (2, 10, 1.0)
5 Fold Cross Validation Average Accuracy : 95.42483660130719%

Hyper-parameters (Max Depth, Minimum Split, Minimum Gain) : (4, 2, 0.2)
5 Fold Cross Validation Average Accuracy : 95.49019607843137%

Hyper-parameters (Max Depth, Minimum Split, Minimum Gain) : (4, 2, 0.4)
5 Fold Cross Validation Average Accuracy : 65.55555555555556%

Hyper-parameters (Max Depth, Minimum Split, Minimum Gain) : (4, 2, 0.6)
5 Fold Cross Validation Average Accuracy : 65.55555555555556%

Hyper-parameters (Max Depth, Minimum Split, Minimum Gain) : (4, 2, 0.8)
5 Fold Cross Validation Average Accuracy : 65.359477124183%

Hyper-parameters (Max Depth, Minimum Split, Minimum Gain) : (4, 2, 1.0)
5 Fold Cross Validation Average Accuracy : 95.42483660130719%
```

```
Hyper-parameters (Max Depth, Minimum Split, Minimum Gain) : (4, 4, 0.2)
5 Fold Cross Validation Average Accuracy : 95.49019607843137%

Hyper-parameters (Max Depth, Minimum Split, Minimum Gain) : (4, 4, 0.4)
5 Fold Cross Validation Average Accuracy : 65.68627450980394%

Hyper-parameters (Max Depth, Minimum Split, Minimum Gain) : (4, 4, 0.6)
5 Fold Cross Validation Average Accuracy : 65.55555555555557%

Hyper-parameters (Max Depth, Minimum Split, Minimum Gain) : (4, 4, 0.8)
5 Fold Cross Validation Average Accuracy : 65.75163398692811%

Hyper-parameters (Max Depth, Minimum Split, Minimum Gain) : (4, 4, 1.0)
5 Fold Cross Validation Average Accuracy : 95.49019607843137%

Hyper-parameters (Max Depth, Minimum Split, Minimum Gain) : (4, 6, 0.2)
5 Fold Cross Validation Average Accuracy : 95.42483660130719%

Hyper-parameters (Max Depth, Minimum Split, Minimum Gain) : (4, 6, 0.4)
5 Fold Cross Validation Average Accuracy : 65.62091503267975%

Hyper-parameters (Max Depth, Minimum Split, Minimum Gain) : (4, 6, 0.6)
5 Fold Cross Validation Average Accuracy : 65.42483660130718%

Hyper-parameters (Max Depth, Minimum Split, Minimum Gain) : (4, 6, 0.8)
5 Fold Cross Validation Average Accuracy : 65.35947712418302%

Hyper-parameters (Max Depth, Minimum Split, Minimum Gain) : (4, 6, 1.0)
5 Fold Cross Validation Average Accuracy : 95.29411764705883%

Hyper-parameters (Max Depth, Minimum Split, Minimum Gain) : (4, 8, 0.2)
5 Fold Cross Validation Average Accuracy : 95.49019607843137%

Hyper-parameters (Max Depth, Minimum Split, Minimum Gain) : (4, 8, 0.4)
5 Fold Cross Validation Average Accuracy : 65.68627450980392%

Hyper-parameters (Max Depth, Minimum Split, Minimum Gain) : (4, 8, 0.6)
5 Fold Cross Validation Average Accuracy : 65.55555555555556%

Hyper-parameters (Max Depth, Minimum Split, Minimum Gain) : (4, 8, 0.8)
5 Fold Cross Validation Average Accuracy : 65.62091503267973%

Hyper-parameters (Max Depth, Minimum Split, Minimum Gain) : (4, 8, 1.0)
5 Fold Cross Validation Average Accuracy : 95.42483660130719%

Hyper-parameters (Max Depth, Minimum Split, Minimum Gain) : (4, 10, 0.2)
5 Fold Cross Validation Average Accuracy : 95.42483660130719%
```

Hyper-parameters (Max Depth, Minimum Split, Minimum Gain) : (4, 10, 0.4)
5 Fold Cross Validation Average Accuracy : 65.29411764705883%

Hyper-parameters (Max Depth, Minimum Split, Minimum Gain) : (4, 10, 0.6)
5 Fold Cross Validation Average Accuracy : 65.49019607843135%

Hyper-parameters (Max Depth, Minimum Split, Minimum Gain) : (4, 10, 0.8)
5 Fold Cross Validation Average Accuracy : 65.29411764705883%

Hyper-parameters (Max Depth, Minimum Split, Minimum Gain) : (4, 10, 1.0)
5 Fold Cross Validation Average Accuracy : 95.49019607843138%

Hyper-parameters (Max Depth, Minimum Split, Minimum Gain) : (6, 2, 0.2)
5 Fold Cross Validation Average Accuracy : 95.35947712418302%

Hyper-parameters (Max Depth, Minimum Split, Minimum Gain) : (6, 2, 0.4)
5 Fold Cross Validation Average Accuracy : 65.29411764705881%

Hyper-parameters (Max Depth, Minimum Split, Minimum Gain) : (6, 2, 0.6)
5 Fold Cross Validation Average Accuracy : 65.49019607843137%

Hyper-parameters (Max Depth, Minimum Split, Minimum Gain) : (6, 2, 0.8)
5 Fold Cross Validation Average Accuracy : 65.81699346405229%

Hyper-parameters (Max Depth, Minimum Split, Minimum Gain) : (6, 2, 1.0)
5 Fold Cross Validation Average Accuracy : 95.35947712418302%

Hyper-parameters (Max Depth, Minimum Split, Minimum Gain) : (6, 4, 0.2)
5 Fold Cross Validation Average Accuracy : 95.35947712418302%

Hyper-parameters (Max Depth, Minimum Split, Minimum Gain) : (6, 4, 0.4)
5 Fold Cross Validation Average Accuracy : 66.47058823529412%

Hyper-parameters (Max Depth, Minimum Split, Minimum Gain) : (6, 4, 0.6)
5 Fold Cross Validation Average Accuracy : 65.49019607843137%

Hyper-parameters (Max Depth, Minimum Split, Minimum Gain) : (6, 4, 0.8)
5 Fold Cross Validation Average Accuracy : 65.55555555555554%

Hyper-parameters (Max Depth, Minimum Split, Minimum Gain) : (6, 4, 1.0)
5 Fold Cross Validation Average Accuracy : 95.35947712418302%

Hyper-parameters (Max Depth, Minimum Split, Minimum Gain) : (6, 6, 0.2)
5 Fold Cross Validation Average Accuracy : 95.42483660130719%

Hyper-parameters (Max Depth, Minimum Split, Minimum Gain) : (6, 6, 0.4)
5 Fold Cross Validation Average Accuracy : 65.75163398692811%

Hyper-parameters (Max Depth, Minimum Split, Minimum Gain) : (6, 6, 0.6)

```
5 Fold Cross Validation Average Accuracy : 65.359477124183%

Hyper-parameters (Max Depth, Minimum Split, Minimum Gain) : (6, 6, 0.8)
5 Fold Cross Validation Average Accuracy : 65.81699346405229%

Hyper-parameters (Max Depth, Minimum Split, Minimum Gain) : (6, 6, 1.0)
5 Fold Cross Validation Average Accuracy : 95.35947712418302%

Hyper-parameters (Max Depth, Minimum Split, Minimum Gain) : (6, 8, 0.2)
5 Fold Cross Validation Average Accuracy : 95.29411764705883%

Hyper-parameters (Max Depth, Minimum Split, Minimum Gain) : (6, 8, 0.4)
5 Fold Cross Validation Average Accuracy : 65.55555555555556%

Hyper-parameters (Max Depth, Minimum Split, Minimum Gain) : (6, 8, 0.6)
5 Fold Cross Validation Average Accuracy : 65.42483660130719%

Hyper-parameters (Max Depth, Minimum Split, Minimum Gain) : (6, 8, 0.8)
5 Fold Cross Validation Average Accuracy : 65.55555555555556%

Hyper-parameters (Max Depth, Minimum Split, Minimum Gain) : (6, 8, 1.0)
5 Fold Cross Validation Average Accuracy : 95.29411764705883%

Hyper-parameters (Max Depth, Minimum Split, Minimum Gain) : (6, 10, 0.2)
5 Fold Cross Validation Average Accuracy : 95.29411764705883%

Hyper-parameters (Max Depth, Minimum Split, Minimum Gain) : (6, 10, 0.4)
5 Fold Cross Validation Average Accuracy : 65.68627450980391%

Hyper-parameters (Max Depth, Minimum Split, Minimum Gain) : (6, 10, 0.6)
5 Fold Cross Validation Average Accuracy : 65.29411764705881%

Hyper-parameters (Max Depth, Minimum Split, Minimum Gain) : (6, 10, 0.8)
5 Fold Cross Validation Average Accuracy : 65.68627450980394%

Hyper-parameters (Max Depth, Minimum Split, Minimum Gain) : (6, 10, 1.0)
5 Fold Cross Validation Average Accuracy : 95.42483660130719%

Hyper-parameters (Max Depth, Minimum Split, Minimum Gain) : (8, 2, 0.2)
5 Fold Cross Validation Average Accuracy : 95.35947712418302%

Hyper-parameters (Max Depth, Minimum Split, Minimum Gain) : (8, 2, 0.4)
5 Fold Cross Validation Average Accuracy : 65.62091503267973%

Hyper-parameters (Max Depth, Minimum Split, Minimum Gain) : (8, 2, 0.6)
5 Fold Cross Validation Average Accuracy : 65.55555555555556%

Hyper-parameters (Max Depth, Minimum Split, Minimum Gain) : (8, 2, 0.8)
5 Fold Cross Validation Average Accuracy : 65.55555555555556%
```

```
Hyper-parameters (Max Depth, Minimum Split, Minimum Gain) : (8, 2, 1.0)
5 Fold Cross Validation Average Accuracy : 95.42483660130719%

Hyper-parameters (Max Depth, Minimum Split, Minimum Gain) : (8, 4, 0.2)
5 Fold Cross Validation Average Accuracy : 95.35947712418302%

Hyper-parameters (Max Depth, Minimum Split, Minimum Gain) : (8, 4, 0.4)
5 Fold Cross Validation Average Accuracy : 65.16339869281045%

Hyper-parameters (Max Depth, Minimum Split, Minimum Gain) : (8, 4, 0.6)
5 Fold Cross Validation Average Accuracy : 65.49019607843137%

Hyper-parameters (Max Depth, Minimum Split, Minimum Gain) : (8, 4, 0.8)
5 Fold Cross Validation Average Accuracy : 65.49019607843137%

Hyper-parameters (Max Depth, Minimum Split, Minimum Gain) : (8, 4, 1.0)
5 Fold Cross Validation Average Accuracy : 95.35947712418302%

Hyper-parameters (Max Depth, Minimum Split, Minimum Gain) : (8, 6, 0.2)
5 Fold Cross Validation Average Accuracy : 95.42483660130719%

Hyper-parameters (Max Depth, Minimum Split, Minimum Gain) : (8, 6, 0.4)
5 Fold Cross Validation Average Accuracy : 65.62091503267973%

Hyper-parameters (Max Depth, Minimum Split, Minimum Gain) : (8, 6, 0.6)
5 Fold Cross Validation Average Accuracy : 65.359477124183%

Hyper-parameters (Max Depth, Minimum Split, Minimum Gain) : (8, 6, 0.8)
5 Fold Cross Validation Average Accuracy : 65.359477124183%

Hyper-parameters (Max Depth, Minimum Split, Minimum Gain) : (8, 6, 1.0)
5 Fold Cross Validation Average Accuracy : 95.35947712418302%

Hyper-parameters (Max Depth, Minimum Split, Minimum Gain) : (8, 8, 0.2)
5 Fold Cross Validation Average Accuracy : 95.42483660130719%

Hyper-parameters (Max Depth, Minimum Split, Minimum Gain) : (8, 8, 0.4)
5 Fold Cross Validation Average Accuracy : 65.42483660130719%

Hyper-parameters (Max Depth, Minimum Split, Minimum Gain) : (8, 8, 0.6)
5 Fold Cross Validation Average Accuracy : 65.49019607843138%

Hyper-parameters (Max Depth, Minimum Split, Minimum Gain) : (8, 8, 0.8)
5 Fold Cross Validation Average Accuracy : 65.42483660130718%

Hyper-parameters (Max Depth, Minimum Split, Minimum Gain) : (8, 8, 1.0)
5 Fold Cross Validation Average Accuracy : 95.49019607843138%
```

Hyper-parameters (Max Depth, Minimum Split, Minimum Gain) : (8, 10, 0.2)
5 Fold Cross Validation Average Accuracy : 95.49019607843137%

Hyper-parameters (Max Depth, Minimum Split, Minimum Gain) : (8, 10, 0.4)
5 Fold Cross Validation Average Accuracy : 65.42483660130719%

Hyper-parameters (Max Depth, Minimum Split, Minimum Gain) : (8, 10, 0.6)
5 Fold Cross Validation Average Accuracy : 65.62091503267973%

Hyper-parameters (Max Depth, Minimum Split, Minimum Gain) : (8, 10, 0.8)
5 Fold Cross Validation Average Accuracy : 65.88235294117646%

Hyper-parameters (Max Depth, Minimum Split, Minimum Gain) : (8, 10, 1.0)
5 Fold Cross Validation Average Accuracy : 95.49019607843137%

Hyper-parameters (Max Depth, Minimum Split, Minimum Gain) : (10, 2, 0.2)
5 Fold Cross Validation Average Accuracy : 95.35947712418302%

Hyper-parameters (Max Depth, Minimum Split, Minimum Gain) : (10, 2, 0.4)
5 Fold Cross Validation Average Accuracy : 65.55555555555556%

Hyper-parameters (Max Depth, Minimum Split, Minimum Gain) : (10, 2, 0.6)
5 Fold Cross Validation Average Accuracy : 65.55555555555557%

Hyper-parameters (Max Depth, Minimum Split, Minimum Gain) : (10, 2, 0.8)
5 Fold Cross Validation Average Accuracy : 65.49019607843137%

Hyper-parameters (Max Depth, Minimum Split, Minimum Gain) : (10, 2, 1.0)
5 Fold Cross Validation Average Accuracy : 95.42483660130719%

Hyper-parameters (Max Depth, Minimum Split, Minimum Gain) : (10, 4, 0.2)
5 Fold Cross Validation Average Accuracy : 95.49019607843137%

Hyper-parameters (Max Depth, Minimum Split, Minimum Gain) : (10, 4, 0.4)
5 Fold Cross Validation Average Accuracy : 65.49019607843135%

Hyper-parameters (Max Depth, Minimum Split, Minimum Gain) : (10, 4, 0.6)
5 Fold Cross Validation Average Accuracy : 65.35947712418302%

Hyper-parameters (Max Depth, Minimum Split, Minimum Gain) : (10, 4, 0.8)
5 Fold Cross Validation Average Accuracy : 65.68627450980391%

Hyper-parameters (Max Depth, Minimum Split, Minimum Gain) : (10, 4, 1.0)
5 Fold Cross Validation Average Accuracy : 94.24836601307189%

Hyper-parameters (Max Depth, Minimum Split, Minimum Gain) : (10, 6, 0.2)
5 Fold Cross Validation Average Accuracy : 95.49019607843137%

Hyper-parameters (Max Depth, Minimum Split, Minimum Gain) : (10, 6, 0.4)

```
5 Fold Cross Validation Average Accuracy : 65.62091503267973%

Hyper-parameters (Max Depth, Minimum Split, Minimum Gain) : (10, 6, 0.6)
5 Fold Cross Validation Average Accuracy : 65.359477124183%

Hyper-parameters (Max Depth, Minimum Split, Minimum Gain) : (10, 6, 0.8)
5 Fold Cross Validation Average Accuracy : 65.42483660130719%

Hyper-parameters (Max Depth, Minimum Split, Minimum Gain) : (10, 6, 1.0)
5 Fold Cross Validation Average Accuracy : 95.42483660130719%

Hyper-parameters (Max Depth, Minimum Split, Minimum Gain) : (10, 8, 0.2)
5 Fold Cross Validation Average Accuracy : 95.35947712418302%

Hyper-parameters (Max Depth, Minimum Split, Minimum Gain) : (10, 8, 0.4)
5 Fold Cross Validation Average Accuracy : 65.42483660130719%

Hyper-parameters (Max Depth, Minimum Split, Minimum Gain) : (10, 8, 0.6)
5 Fold Cross Validation Average Accuracy : 65.62091503267975%

Hyper-parameters (Max Depth, Minimum Split, Minimum Gain) : (10, 8, 0.8)
5 Fold Cross Validation Average Accuracy : 65.16339869281046%

Hyper-parameters (Max Depth, Minimum Split, Minimum Gain) : (10, 8, 1.0)
5 Fold Cross Validation Average Accuracy : 95.42483660130719%

Hyper-parameters (Max Depth, Minimum Split, Minimum Gain) : (10, 10, 0.2)
5 Fold Cross Validation Average Accuracy : 95.49019607843137%

Hyper-parameters (Max Depth, Minimum Split, Minimum Gain) : (10, 10, 0.4)
5 Fold Cross Validation Average Accuracy : 65.55555555555557%

Hyper-parameters (Max Depth, Minimum Split, Minimum Gain) : (10, 10, 0.6)
5 Fold Cross Validation Average Accuracy : 65.55555555555556%

Hyper-parameters (Max Depth, Minimum Split, Minimum Gain) : (10, 10, 0.8)
5 Fold Cross Validation Average Accuracy : 65.35947712418302%

Hyper-parameters (Max Depth, Minimum Split, Minimum Gain) : (10, 10, 1.0)
These are the Optimal Parameters
(6, 2, 0.2, 95.49019607843138)
```

Output from Tuning HyperParameters in Unpruned Tree:

```
5 Fold Cross Validation Average Accuracy : 65.55555555555556%

Hyper-parameters (Max Depth, Minimum Split, Minimum Gain : (0, 0, 0.2)
```

```
The average accuracy given these Hyper-parameters : 65.55555555555556%

5 Fold Cross Validation Average Accuracy : 65.42483660130719%

Hyper-parameters (Max Depth, Minimum Split, Minimum Gain : (0, 0, 0.4)

The average accuracy given these Hyper-parameters : 65.42483660130719%

5 Fold Cross Validation Average Accuracy : 65.42483660130718%

Hyper-parameters (Max Depth, Minimum Split, Minimum Gain : (0, 0, 0.6)

The average accuracy given these Hyper-parameters : 65.42483660130718%

5 Fold Cross Validation Average Accuracy : 65.29411764705883%

Hyper-parameters (Max Depth, Minimum Split, Minimum Gain : (0, 0, 0.8)

The average accuracy given these Hyper-parameters : 65.29411764705883%

5 Fold Cross Validation Average Accuracy : 65.42483660130719%

Hyper-parameters (Max Depth, Minimum Split, Minimum Gain : (0, 0, 1.0)

The average accuracy given these Hyper-parameters : 65.42483660130719%

These are the Optimal Parameters
(0, 0, 0.2, 65.55555555555556)


Process finished with exit code 0
```

House Testing Pruned and Unpruned

```
print('Pruned Tree Results')
HouseTestingPrunedResults = CrossValidation(HouseDF_80, 5, ID3_algo,
maxDepth= 6, minSplit=2, minGain= 0.2)

print('Unpruned Tree Results')
HouseTestingNPResults = CrossValidation(carDF_80, 5, ID3_algo,
maxDepth=0, minSplit=0, minGain= 0.2)

HouseDict = {'Folds': numFolds,
'Pruned':HouseTestingPrunedResults,'Non-
Pruned':HouseTestingNPResults}
```

```
finalCarResults = pd.DataFrame(HouseDict)

HouseFinalFig = px.scatter(finalCarResults, x='Folds', y=['Pruned',
'Non-Pruned'] , title="K-Fold vs. Accuracy", width=800, height=600)
HouseFinalFig.update_traces(marker_size = 15)
HouseFinalFig.update_yaxes(title_text = 'Accuracy %')
HouseFinalFig.show()
```

Output:

```
Pruned Tree Results
5 Fold Cross Validation Average Accuracy : 95.12215320910974%

Unpruned Tree Results
5 Fold Cross Validation Average Accuracy : 69.2497253178465%
```
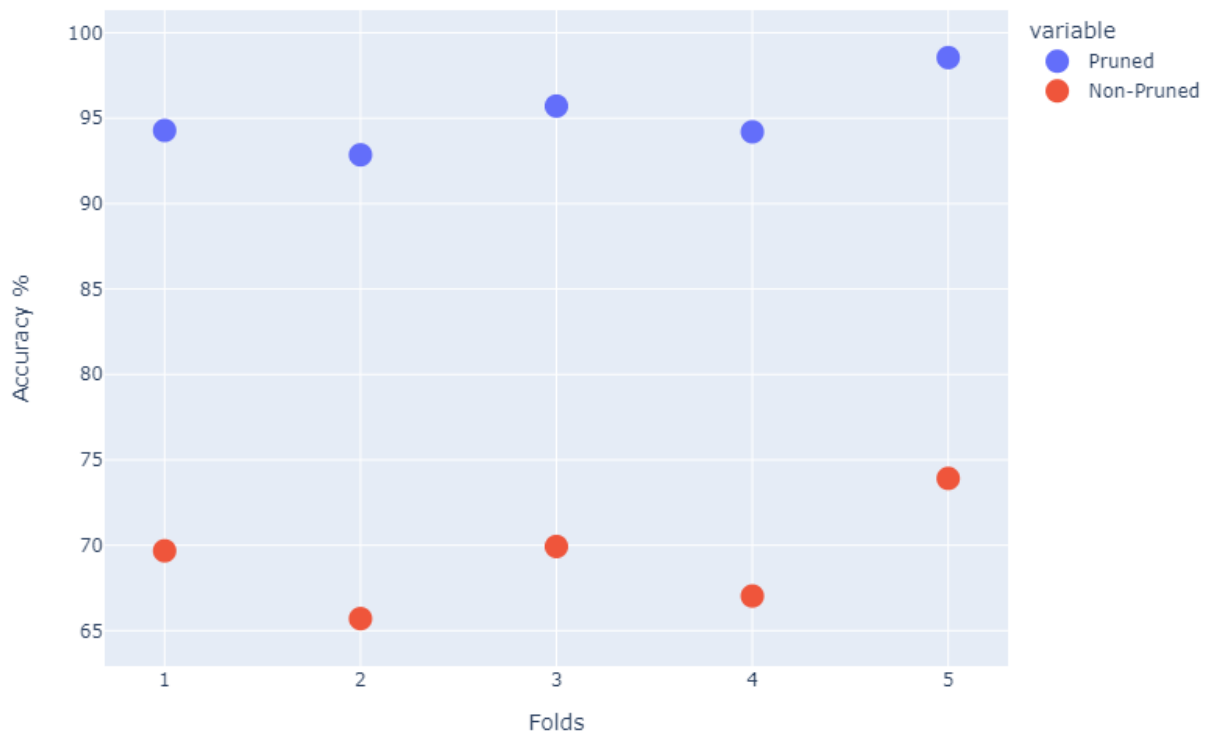

Cancer Classification

```
for depth in depthTuning2:
    for split in splitTuning2:
```

```python
        for gain in gainTuning2:
            parameters = (depth,split,gain)
            accuracy = CrossValidation(cancerTuningDF, 5, ID3_algo,
maxDepth=depth, minSplit=split, minGain=gain)
            averageAccuracy = sum(accuracy)/len(accuracy)
            cancerAccuracy.append(averageAccuracy)
            cancerParameters.append(parameters)
            result = (depth,split,gain, averageAccuracy)
            cancerTuningResults.append(result)
            print(f'Hyper-parameters (Max Depth, Minimum Split,
Minimum Gain) : {parameters}')

cancerOP = max(cancerTuningResults, key=itemgetter(3))
print('These are the Optimal Parameters')
print(cancerOP)

# Table
cancerResultsDF = pd.DataFrame(cancerTuningResults, columns=['Depth',
'Split', 'Gain', 'Average Accuracy'])
cancerX = cancerResultsDF['Depth']
cancerY = cancerResultsDF['Split']
cancerZ = cancerResultsDF['Gain']
cancerV = cancerResultsDF['Average Accuracy']

cancerTable = go.Figure(data=[go.Table(header=dict(values=['Max
Depth', 'Minimum Split', 'Minimum Gain', 'Accuracy']),
                                 cells =dict(values=[cancerX, cancerY,
cancerZ, cancerV]))])
cancerTable.update_layout(width = 800, height = 2900)
cancerTable.show()

# Figure
cancerTrace = go.Scatter3d(
  x=cancerX, y=cancerY, z=cancerV, mode='markers', marker = dict(
    size = 12,
    color = cancerZ,
    colorscale = 'Agsunset'
    )
  )
layout = go.Layout(title ='Breast Cancer Pruning Hyper Parameter 3D
Scatter Plot')
cancerFig = go.Figure(data =[cancerTrace], layout = layout)
cancerFig.update_layout(scene = dict(
                xaxis_title='Max Depth',
                yaxis_title='Minimum Split',
```

```python
                        zaxis_title='Accuracy'))
cancerFig.show()

# No Pruning Cross validation
cancerResultsNP = []
cancerAccuracyNP = []
cancerParametersNP = []
for gain in gainTuning:
    parametersNP = (0,0, gain)
    accuracyNP = CrossValidation(cancerTuningDF, 5, ID3_algo,
maxDepth=0, minSplit=0, minGain=gain)
    averageAccuracyNP = sum(accuracyNP)/len(accuracyNP)
    cancerAccuracyNP.append(averageAccuracyNP)
    cancerParametersNP.append(parametersNP)
    resultNP = (0, 0, gain, averageAccuracyNP)
    cancerResultsNP.append(resultNP)
    print(f'Hyper-parameters (Max Depth, Minimum Split, Minimum Gain :
{parametersNP}\n')
    print(f'The average accuracy given these Hyper-parameters :
{averageAccuracyNP}%\n')

# Table
cancerResultsNPDF =pd.DataFrame(cancerResultsNP, columns=['Depth',
'Split', 'Gain', 'Average Accuracy'])
cancerNPX = cancerResultsNPDF['Depth']
cancerNPY = cancerResultsNPDF['Split']
cancerNPZ = cancerResultsNPDF['Gain']
cancerNPV = cancerResultsNPDF['Average Accuracy']

cancerTableNP = go.Figure(data=[go.Table(header=dict(values=['Max
Depth', 'Minimum Split', 'Minimum Gain', 'Accuracy']),
                                cells =dict(values=[cancerNPX,
cancerNPY, cancerNPZ, cancerNPV]))])
cancerTableNP.update_layout(width = 800, height = 2900)
cancerTableNP.show()

# Figure
cancerTraceNP = go.Scatter3d(
  x=cancerNPX, y=cancerNPZ, z=cancerNPV, mode='markers', marker=dict(
    size=12,
    color=cancerNPV,
    colorscale='Agsunset'
    )
  )
cancerlayoutNP = go.Layout(title='Breast Cancer No Pruning Hyper
```

```
Parameter 3D Scatter Plot')
cancerFigNP = go.Figure(data=[cancerTraceNP], layout=cancerlayoutNP)
cancerFigNP.update_layout(scene=dict(
                    xaxis_title='Max Depth',
                    yaxis_title='Minimum Gain',
                    zaxis_title='Accuracy'))
cancerFigNP.show()
```

Tuning Output:

```
5 Fold Cross Validation Average Accuracy : 95.71428571428572%

Hyper-parameters (Max Depth, Minimum Split, Minimum Gain) : (11, 3, 0.2)
5 Fold Cross Validation Average Accuracy : 89.28571428571429%

Hyper-parameters (Max Depth, Minimum Split, Minimum Gain) : (11, 3, 0.3)
5 Fold Cross Validation Average Accuracy : 92.85714285714285%

Hyper-parameters (Max Depth, Minimum Split, Minimum Gain) : (11, 3, 0.4)
5 Fold Cross Validation Average Accuracy : 75.0%

Hyper-parameters (Max Depth, Minimum Split, Minimum Gain) : (11, 4, 0.2)
5 Fold Cross Validation Average Accuracy : 81.42857142857142%

Hyper-parameters (Max Depth, Minimum Split, Minimum Gain) : (11, 4, 0.3)
5 Fold Cross Validation Average Accuracy : 76.42857142857144%

Hyper-parameters (Max Depth, Minimum Split, Minimum Gain) : (11, 4, 0.4)
5 Fold Cross Validation Average Accuracy : 94.28571428571429%

Hyper-parameters (Max Depth, Minimum Split, Minimum Gain) : (12, 3, 0.2)
5 Fold Cross Validation Average Accuracy : 87.85714285714286%

Hyper-parameters (Max Depth, Minimum Split, Minimum Gain) : (12, 3, 0.3)
5 Fold Cross Validation Average Accuracy : 90.00000000000001%

Hyper-parameters (Max Depth, Minimum Split, Minimum Gain) : (12, 3, 0.4)
5 Fold Cross Validation Average Accuracy : 75.71428571428571%

Hyper-parameters (Max Depth, Minimum Split, Minimum Gain) : (12, 4, 0.2)
5 Fold Cross Validation Average Accuracy : 75.0%

Hyper-parameters (Max Depth, Minimum Split, Minimum Gain) : (12, 4, 0.3)
5 Fold Cross Validation Average Accuracy : 77.14285714285714%

Hyper-parameters (Max Depth, Minimum Split, Minimum Gain) : (12, 4, 0.4)
5 Fold Cross Validation Average Accuracy : 87.85714285714286%
```

Hyper-parameters (Max Depth, Minimum Split, Minimum Gain) : (13, 3, 0.2)
5 Fold Cross Validation Average Accuracy : 91.42857142857144%

Hyper-parameters (Max Depth, Minimum Split, Minimum Gain) : (13, 3, 0.3)
5 Fold Cross Validation Average Accuracy : 82.14285714285715%

Hyper-parameters (Max Depth, Minimum Split, Minimum Gain) : (13, 3, 0.4)
5 Fold Cross Validation Average Accuracy : 80.71428571428571%

Hyper-parameters (Max Depth, Minimum Split, Minimum Gain) : (13, 4, 0.2)
5 Fold Cross Validation Average Accuracy : 75.71428571428571%

Hyper-parameters (Max Depth, Minimum Split, Minimum Gain) : (13, 4, 0.3)
5 Fold Cross Validation Average Accuracy : 71.42857142857143%

Hyper-parameters (Max Depth, Minimum Split, Minimum Gain) : (13, 4, 0.4)
These are the Optimal Parameters
(11, 3, 0.2, 95.71428571428572)
5 Fold Cross Validation Average Accuracy : 70.71428571428572%

Hyper-parameters (Max Depth, Minimum Split, Minimum Gain : (0, 0, 0.2)

The average accuracy given these Hyper-parameters : 70.71428571428572%

5 Fold Cross Validation Average Accuracy : 70.71428571428572%

Hyper-parameters (Max Depth, Minimum Split, Minimum Gain : (0, 0, 0.4)

The average accuracy given these Hyper-parameters : 70.71428571428572%

5 Fold Cross Validation Average Accuracy : 70.71428571428571%

Hyper-parameters (Max Depth, Minimum Split, Minimum Gain : (0, 0, 0.6)

The average accuracy given these Hyper-parameters : 70.71428571428571%

5 Fold Cross Validation Average Accuracy : 70.71428571428571%

Hyper-parameters (Max Depth, Minimum Split, Minimum Gain : (0, 0, 0.8)

The average accuracy given these Hyper-parameters : 70.71428571428571%

5 Fold Cross Validation Average Accuracy : 70.71428571428571%

Hyper-parameters (Max Depth, Minimum Split, Minimum Gain : (0, 0, 1.0)

The average accuracy given these Hyper-parameters : 70.71428571428571%

```
Process finished with exit code 0
```

Breast Cancer Testing:

```python
# Testing Pruned and NonPruned Trees

print('Pruned Tree Results')
CancerTestingPrunedResults = CrossValidation(cancerDF_80, 5,
ID3_algo, maxDepth= 11, minSplit=3, minGain= 0.2)

print('Unpruned Tree Results')
CancerTestingNPResults = CrossValidation(carDF_80, 5, ID3_algo,
maxDepth=0, minSplit=0, minGain= 0.2)

CancerDict = {'Folds': numFolds,
'Pruned':CancerTestingPrunedResults,'Non-
Pruned':CancerTestingNPResults}
finalCancerResults = pd.DataFrame(CancerDict)

CancerFinalFig = px.scatter(finalCancerResults, x='Folds',
y=['Pruned', 'Non-Pruned'] , title="K-Fold vs. Accuracy",
width=800, height=600)
CancerFinalFig.update_traces(marker_size = 15)
CancerFinalFig.update_yaxes(title_text = 'Accuracy %')
CancerFinalFig.show()
```

Output:

```
5 Fold Cross Validation Average Accuracy : 91.23552123552125%

Unpruned Tree Results
5 Fold Cross Validation Average Accuracy : 69.90111442473709%
```

K-Fold vs. Accuracy
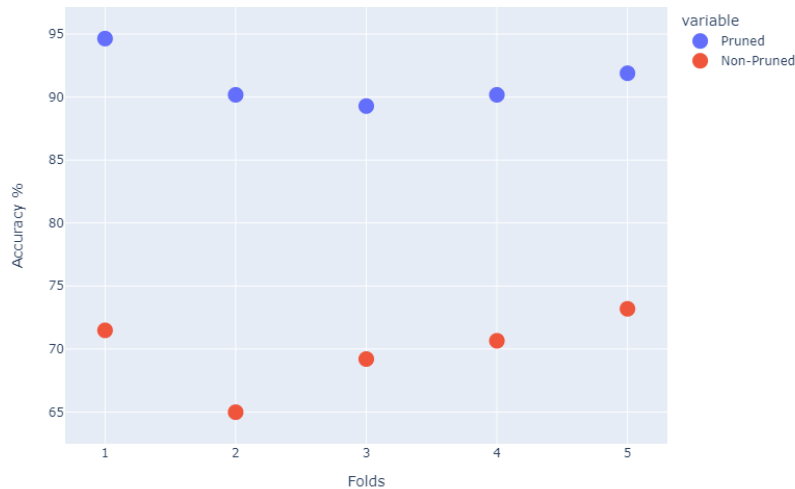
Abalone Regression Task
Tuning pruned and unpruned tree:

```python
# Cross Validation for the tuning on mse criterion
AbaloneTuningDepth = [x for x in range(1,11,2)]
AbaloneTuningMin = [x/100 for x in range(5,30,5)]

AbaloneTuningResults = []
for depth in AbaloneTuningDepth:
    for min in AbaloneTuningMin:
        print(f'For These Hyper-Parameters: {depth} and {min}')
        mse = CrossValidation(abaloneTuningNP, 5, CART_algo,
tree='reg', criterion='mse', prune='criterion', maxDepth=depth,
minCriterion=min)
        instance = (depth, min, mse)
        AbaloneTuningResults.append(instance)

AbaloneResultsDF = pd.DataFrame(AbaloneTuningResults, columns=['Max
Depth', 'Minimum Criterion', 'MSE'])
AbaloneX = AbaloneResultsDF['Max Depth']
AbaloneY = AbaloneResultsDF['Minimum Criterion']
AbaloneZ = AbaloneResultsDF['MSE']


AbaloneTable = go.Figure(data=[go.Table(header=dict(values=['Max
Depth', 'Minimum Criterion', 'MSE']),
                                cells =dict(values=[AbaloneX, AbaloneY,
AbaloneZ]))])
```

```python
AbaloneTable.update_layout(width=800, height = 2900)
AbaloneTable.show()

# Figure
AbaloneTrace = go.Scatter3d(
  x = AbaloneX, y= AbaloneY, z = AbaloneZ, mode = 'markers', marker =
dict(
    size = 12,
    color = AbaloneZ,
    colorscale = 'Magma'
    )
  )
layout = go.Layout(title ='Abalone Pruned Tree Hyper Parameter 3D
Scatter Plot')
AbaloneFig = go.Figure(data =[AbaloneTrace], layout = layout)
AbaloneFig.update_layout(scene = dict(
                xaxis_title='Max Depth',
                yaxis_title='Minimum Criterion',
                zaxis_title='MSE'))
AbaloneFig.show()

# No Pruning Cross validation

AbaloneTuningNPResults = []
for min in AbaloneTuningMin:
    mse = CrossValidation(abaloneTuningNP, 5, CART_algo, tree='reg',
criterion='mse', prune='criterion', maxDepth=0, minCriterion=min)
    instance = (0,min,mse)
    AbaloneTuningNPResults.append(instance)
# Table
AbaloneResultsNPDF = pd.DataFrame(AbaloneTuningNPResults,
columns=['Max Depth', 'Minimum Criterion', 'MSE'])
AbaloneNPX = AbaloneResultsNPDF['Max Depth']
AbaloneNPY = AbaloneResultsNPDF['Minimum Criterion']
AbaloneNPZ = AbaloneResultsNPDF['MSE']

AbaloneTableNP = go.Figure(data=[go.Table(header=dict(values=['Max
Depth', 'Minimum Criterion', 'MSE']),
                        cells =dict(values=[AbaloneNPX,
AbaloneNPY, AbaloneNPZ]))])
AbaloneTableNP.update_layout(width = 800, height = 2900)
AbaloneTableNP.show()

# Figure
AbaloneTraceNP = go.Scatter3d(
```

```python
    x = AbaloneNPX, y= AbaloneNPY, z = AbaloneNPZ, mode = 'markers',
marker = dict(
        size = 12,
        color = AbaloneNPZ,
        colorscale = 'Magma'
        )
    )
AbaloneLayoutNP = go.Layout(title ='Abalone Unpruned Tree Hyper
Parameter 3D Scatter Plot')
AbaloneFigNP = go.Figure(data =[AbaloneTraceNP],
layout=AbaloneLayoutNP)
AbaloneFigNP.update_layout(scene = dict(
                        xaxis_title='Max Depth',
                        yaxis_title='Minimum Criterion',
                        zaxis_title='MSE'))
AbaloneFigNP.show()
```

Output:

This is the size of the original: 4177
This is the size of the 80%: 3342
This is the size of the 20%: 835

For These Hyper-Parameters: 1 and 0.05
Fold 1
Regression Tree:

if X[6] <= 0.17575
  then if X[5] <= 0.03325
    then {value: 5.184210526315789, samples: 38}
    else if X[6] <= 0.11975
      then {value: 7.490384615384615, samples: 104}
      else if X[4] <= 0.1935
        then if X[5] <= 0.1
          then {value: 8.954545454545455, samples: 22}
          else if X[4] <= 0.161
            then {value: 16.0, samples: 2}
            else if X[6] <= 0.16625
              then {value: 9.625, samples: 8}
              else {value: 14.666666666666666, samples: 3}
        else {value: 8.197368421052632, samples: 76}
  else if X[6] <= 0.40874999999999995
    then if X[4] <= 0.307
      then if X[3] <= 0.75675
        then if X[2] <= 0.18
          then if X[0] <= 0.4975
            then if X[3] <= 0.65825
              then {value: 11.166666666666666, samples: 12}
```

else {value: 16.5, samples: 2}
    else {value: 10.071428571428571, samples: 28}
  else {value: 20.0, samples: 1}
else if X[6] <= 0.2625
  then if X[2] <= 0.13
    then {value: 13.5, samples: 2}
    else {value: 21.0, samples: 3}
  else if X[3] <= 0.9655
    then {value: 13.0, samples: 13}
    else {value: 17.0, samples: 3}
else if X[6] <= 0.28925
  then if X[6] <= 0.23475
    then {value: 8.76086956521739, samples: 46}
    else if X[4] <= 0.397
      then {value: 10.852941176470589, samples: 34}
      else {value: 9.348837209302326, samples: 43}
  else if X[4] <= 0.5015000000000001
    then if X[2] <= 0.1625
      then if X[2] <= 0.1275
        then {value: 21.0, samples: 1}
        else if X[1] <= 0.4525
          then {value: 13.0, samples: 6}
          else {value: 9.9, samples: 20}
      else if X[5] <= 0.195
        then if X[0] <= 0.5675
          then {value: 16.0, samples: 1}
          else {value: 26.0, samples: 1}
        else if X[1] <= 0.445
          then {value: 18.333333333333332, samples: 3}
          else if X[0] <= 0.6575
            then if X[0] <= 0.5925
              then {value: 10.666666666666666, samples: 6}
              else if X[5] <= 0.25
                then {value: 14.6, samples: 10}
                else {value: 11.8, samples: 10}
            else {value: 21.0, samples: 1}
    else {value: 10.189473684210526, samples: 95}
else if X[5] <= 0.34425
  then if X[3] <= 1.784
    then if X[3] <= 1.2542499999999999
      then {value: 23.0, samples: 1}
      else if X[2] <= 0.1875
        then if X[2] <= 0.1625
          then {value: 17.5, samples: 2}
          else {value: 11.923076923076923, samples: 13}
        else if X[4] <= 0.6924999999999999
          then {value: 16.0, samples: 9}
          else {value: 12.0, samples: 3}
  else if X[4] <= 0.7545
    then {value: 25.0, samples: 3}
    else {value: 17.5, samples: 2}

else if X[0] <= 0.7875000000000001
    then if X[2] <= 0.2225
        then {value: 11.735294117647058, samples: 34}
        else {value: 14.833333333333334, samples: 6}
    else {value: 23.0, samples: 1}

**This is the evaluation for mse:**
**8.958559498961579**

**Fold 2**
**Regression Tree:**

if X[6] <= 0.1695
  then if X[5] <= 0.03175
    then {value: 5.214285714285714, samples: 42}
    else if X[6] <= 0.13875
      then if X[6] <= 0.06975
        then {value: 6.962962962962963, samples: 27}
        else if X[4] <= 0.101
          then if X[1] <= 0.315
            then {value: 8.722222222222221, samples: 18}
            else {value: 15.0, samples: 1}
          else {value: 7.5, samples: 68}
      else if X[4] <= 0.19425
        then {value: 10.25, samples: 16}
        else {value: 8.369565217391305, samples: 46}
  else if X[6] <= 0.32475
    then if X[4] <= 0.24275
      then if X[3] <= 0.6325000000000001
        then if X[3] <= 0.5785
          then if X[4] <= 0.1965
            then if X[2] <= 0.10250000000000001
              then {value: 8.5, samples: 2}
              else {value: 13.833333333333334, samples: 6}
            else {value: 9.0, samples: 8}
          else {value: 13.333333333333334, samples: 6}
        else if X[1] <= 0.3975
          then {value: 21.0, samples: 3}
          else {value: 13.75, samples: 4}
      else if X[6] <= 0.25825
        then if X[0] <= 0.5225
          then if X[2] <= 0.14250000000000002
            then {value: 9.045454545454545, samples: 22}
            else {value: 11.428571428571429, samples: 14}
          else {value: 9.037037037037036, samples: 81}
        else if X[4] <= 0.31125
          then if X[1] <= 0.4175
            then if X[4] <= 0.2835
              then {value: 13.75, samples: 4}
              else {value: 21.0, samples: 2}

else {value: 12.0, samples: 10}
                else if X[4] <= 0.40075000000000005
                    then if X[4] <= 0.37775000000000003
                        then {value: 10.3125, samples: 16}
                        else {value: 13.0, samples: 9}
                    else {value: 9.746666666666666, samples: 75}
        else if X[4] <= 0.40875
            then if X[2] <= 0.1625
                then if X[2] <= 0.1375
                    then {value: 21.0, samples: 1}
                    else {value: 13.0, samples: 6}
                else if X[1] <= 0.49
                    then if X[5] <= 0.20975
                        then {value: 14.0, samples: 2}
                        else {value: 19.0, samples: 6}
                    else {value: 26.0, samples: 1}
            else if X[6] <= 0.40874999999999995
                then if X[4] <= 0.48875
                    then if X[6] <= 0.38225
                        then if X[0] <= 0.6225
                            then {value: 13.307692307692308, samples: 13}
                            else {value: 10.428571428571429, samples: 7}
                        else {value: 18.666666666666668, samples: 3}
                    else if X[4] <= 0.5567500000000001
                        then if X[0] <= 0.6625000000000001
                            then {value: 10.76, samples: 25}
                            else {value: 18.0, samples: 1}
                        else {value: 10.042553191489361, samples: 47}
                else if X[6] <= 0.6825
                    then if X[0] <= 0.78
                        then if X[4] <= 0.70575
                            then if X[3] <= 1.79025
                                then if X[3] <= 1.3085
                                    then {value: 10.25, samples: 4}
                                    else if X[4] <= 0.593
                                        then if X[3] <= 1.36375
                                            then {value: 12.714285714285714, samples: 7}
                                            else {value: 15.846153846153847, samples: 13}
                                        else if X[3] <= 1.6517499999999998
                                            then {value: 11.785714285714286, samples: 14}
                                            else {value: 14.875, samples: 8}
                                else {value: 29.0, samples: 1}
                            else if X[2] <= 0.225
                                then {value: 11.192307692307692, samples: 26}
                                else {value: 19.0, samples: 1}
                        else {value: 23.0, samples: 1}
                    else {value: 24.0, samples: 1}

This is the evaluation for mse:
6.99175678059244

**Fold 3**
**Regression Tree:**

if X[6] <= 0.18075
  then if X[6] <= 0.06975
    then if X[6] <= 0.029249999999999998
      then {value: 4.352941176470588, samples: 17}
      else {value: 6.509090909090909, samples: 55}
    else if X[2] <= 0.16
      then if X[6] <= 0.10975
        then {value: 7.807017543859649, samples: 57}
        else if X[4] <= 0.1015
          then {value: 15.0, samples: 1}
          else if X[4] <= 0.19425
            then if X[3] <= 0.44775
              then {value: 8.64, samples: 25}
              else if X[3] <= 0.45025000000000004
                then {value: 15.0, samples: 2}
                else {value: 10.222222222222221, samples: 9}
            else {value: 8.324675324675324, samples: 77}
      else {value: 13.0, samples: 2}
  else if X[2] <= 0.1775
    then if X[6] <= 0.53
      then if X[6] <= 0.31925000000000003
        then if X[4] <= 0.3915
          then if X[6] <= 0.2345
            then if X[0] <= 0.4975
              then if X[6] <= 0.1875
                then {value: 10.333333333333334, samples: 6}
                else {value: 13.625, samples: 8}
              else if X[2] <= 0.14250000000000002
                then {value: 9.212121212121213, samples: 33}
                else if X[4] <= 0.277
                  then {value: 13.666666666666666, samples: 3}
                  else {value: 9.857142857142858, samples: 14}
            else if X[1] <= 0.42
              then if X[2] <= 0.14500000000000002
                then if X[0] <= 0.5475000000000001
                  then {value: 14.166666666666666, samples: 6}
                  else {value: 23.0, samples: 1}
                else {value: 11.714285714285714, samples: 7}
              else if X[0] <= 0.585
                then if X[3] <= 0.92325
                  then {value: 11.10344827586207, samples: 29}
                  else {value: 15.5, samples: 2}
                else {value: 9.75, samples: 8}
        else {value: 9.23404255319149, samples: 94}
      else if X[4] <= 0.48875
        then if X[0] <= 0.5675
          then if X[1] <= 0.4575
            then {value: 19.666666666666668, samples: 3}

else {value: 10.0, samples: 1}
else if X[1] <= 0.53
then if X[6] <= 0.346
then if X[4] <= 0.41075
then {value: 17.0, samples: 3}
else {value: 13.1, samples: 10}
else {value: 11.6, samples: 15}
else {value: 21.0, samples: 1}
else if X[6] <= 0.4275
then if X[2] <= 0.1375
then {value: 14.0, samples: 1}
else if X[4] <= 0.5822499999999999
then if X[5] <= 0.34199999999999997
then {value: 10.551724137931034, samples: 29}
else {value: 18.0, samples: 1}
else {value: 9.825, samples: 40}
else {value: 12.25, samples: 8}
else {value: 17.666666666666668, samples: 3}
else if X[4] <= 0.389
then if X[0] <= 0.5925
then if X[0] <= 0.5475000000000001
then {value: 18.6, samples: 5}
else {value: 11.333333333333334, samples: 3}
else {value: 24.5, samples: 2}
else if X[6] <= 0.3895
then {value: 10.791666666666666, samples: 24}
else if X[5] <= 0.34375
then if X[1] <= 0.5825
then if X[2] <= 0.2025
then if X[6] <= 0.4
then {value: 21.0, samples: 1}
else if X[3] <= 1.5785
then if X[3] <= 1.30225
then {value: 10.0, samples: 2}
else {value: 15.090909090909092, samples: 11}
else {value: 11.5, samples: 6}
else {value: 17.333333333333332, samples: 6}
else {value: 29.0, samples: 1}
else if X[0] <= 0.7875000000000001
then if X[2] <= 0.2225
then if X[4] <= 0.73975
then if X[5] <= 0.3955
then {value: 11.4, samples: 10}
else {value: 15.333333333333334, samples: 3}
else {value: 10.875, samples: 16}
else {value: 14.166666666666666, samples: 6}
else {value: 23.0, samples: 1}

**This is the evaluation for mse:**
**7.6857312140223595**

**Fold 4**
**Regression Tree:**

```
if X[6] <= 0.1695
  then if X[6] <= 0.06975
    then if X[0] <= 0.2575
      then {value: 4.166666666666667, samples: 18}
      else {value: 6.346153846153846, samples: 52}
    else if X[2] <= 0.1225
      then if X[4] <= 0.10275
        then if X[1] <= 0.315
          then {value: 8.9375, samples: 16}
          else {value: 15.0, samples: 1}
        else {value: 7.698924731182796, samples: 93}
      else if X[4] <= 0.19025
        then if X[5] <= 0.09475
          then {value: 9.285714285714286, samples: 7}
          else {value: 12.428571428571429, samples: 7}
        else {value: 8.472222222222221, samples: 36}
  else if X[2] <= 0.1775
    then if X[6] <= 0.5215000000000001
      then if X[4] <= 0.30925
        then if X[3] <= 0.7695000000000001
          then if X[4] <= 0.23725
            then if X[1] <= 0.3625
              then {value: 9.75, samples: 4}
              else {value: 13.0, samples: 19}
            else if X[6] <= 0.17575
              then {value: 8.2, samples: 10}
              else {value: 10.594594594594595, samples: 37}
          else if X[1] <= 0.3975
            then {value: 21.0, samples: 2}
            else if X[3] <= 0.77625
              then {value: 23.0, samples: 1}
              else {value: 13.7, samples: 10}
        else if X[6] <= 0.30174999999999996
          then if X[6] <= 0.2395
            then {value: 8.851851851851851, samples: 54}
            else if X[4] <= 0.3985
              then {value: 10.958333333333334, samples: 24}
              else {value: 9.45, samples: 60}
          else if X[4] <= 0.43725
            then if X[1] <= 0.445
              then {value: 17.0, samples: 5}
              else if X[2] <= 0.13
                then {value: 21.0, samples: 1}
                else if X[4] <= 0.39225
                  then {value: 10.875, samples: 8}
                  else {value: 14.0, samples: 6}
            else {value: 10.48, samples: 100}
      else {value: 16.666666666666668, samples: 3}
```

```
else if X[0] <= 0.5325
    then {value: 21.0, samples: 2}
    else if X[6] <= 0.6779999999999999
        then if X[4] <= 0.5157499999999999
            then if X[1] <= 0.4675
                then if X[4] <= 0.32675
                    then {value: 14.0, samples: 4}
                    else {value: 9.666666666666666, samples: 6}
                else if X[4] <= 0.388
                    then {value: 26.0, samples: 1}
                    else if X[4] <= 0.46275
                        then {value: 14.125, samples: 8}
                        else {value: 17.75, samples: 4}
            else if X[6] <= 0.40700000000000003
                then {value: 10.571428571428571, samples: 21}
                else if X[0] <= 0.6675
                    then if X[3] <= 1.8137500000000002
                        then if X[4] <= 0.6815
                            then if X[2] <= 0.1875
                                then {value: 12.0, samples: 4}
                                else {value: 17.0, samples: 4}
                            else {value: 11.833333333333334, samples: 6}
                        else {value: 19.5, samples: 2}
                    else if X[4] <= 0.604
                        then {value: 16.5, samples: 2}
                        else if X[2] <= 0.22
                            then {value: 11.291666666666666, samples: 24}
                            else {value: 14.75, samples: 4}
        else {value: 20.5, samples: 2}

This is the evaluation for mse:
9.097799539113886


Fold 5
Regression Tree:

 if X[6] <= 0.16825
    then if X[6] <= 0.069
        then if X[0] <= 0.2575
            then {value: 4.1875, samples: 16}
            else {value: 6.346153846153846, samples: 52}
        else if X[6] <= 0.11975
            then {value: 7.743243243243243, samples: 74}
            else if X[4] <= 0.1935
                then if X[3] <= 0.44225000000000003
                    then {value: 9.0, samples: 18}
                    else if X[4] <= 0.15975
                        then {value: 16.0, samples: 1}
                        else {value: 9.727272727272727, samples: 11}
                else {value: 8.280701754385966, samples: 57}
```

else if X[2] <= 0.1775
   then if X[6] <= 0.3285
      then if X[4] <= 0.24275
         then if X[3] <= 0.782
            then if X[6] <= 0.21025
               then if X[4] <= 0.18225
                  then {value: 13.0, samples: 5}
                  else {value: 9.8, samples: 15}
               else {value: 13.777777777777779, samples: 9}
            else {value: 23.0, samples: 1}
         else if X[6] <= 0.23475
            then {value: 9.2987012987013, samples: 77}
            else if X[4] <= 0.379
               then if X[4] <= 0.37224999999999997
                  then if X[1] <= 0.4025
                     then {value: 15.0, samples: 3}
                     else {value: 10.5, samples: 32}
                  else {value: 14.166666666666666, samples: 6}
               else {value: 9.77319587628866, samples: 97}
      else if X[4] <= 0.4275
         then {value: 14.625, samples: 8}
         else if X[6] <= 0.5774999999999999
            then if X[1] <= 0.5425
               then if X[4] <= 0.5535000000000001
                  then {value: 11.380952380952381, samples: 42}
                  else if X[6] <= 0.41774999999999995
                     then {value: 9.756756756756756, samples: 37}
                     else {value: 12.5, samples: 6}
               else if X[3] <= 1.2785000000000002
                  then {value: 21.0, samples: 1}
                  else {value: 12.75, samples: 4}
            else {value: 17.0, samples: 2}
   else if X[0] <= 0.545
      then {value: 18.6, samples: 5}
      else if X[6] <= 0.3895
         then {value: 10.576923076923077, samples: 26}
         else if X[5] <= 0.34425
            then if X[3] <= 1.784
               then if X[6] <= 0.45675
                  then if X[0] <= 0.605
                     then {value: 14.0, samples: 3}
                     else if X[1] <= 0.4925
                        then {value: 22.0, samples: 2}
                        else {value: 16.285714285714285, samples: 7}
                  else {value: 12.666666666666666, samples: 9}
               else if X[4] <= 0.84825
                  then {value: 25.0, samples: 3}
                  else {value: 14.5, samples: 2}
            else if X[0] <= 0.7875000000000001
               then if X[2] <= 0.2225
                  then {value: 11.275862068965518, samples: 29}

else {value: 14.857142857142858, samples: 7}
else {value: 23.0, samples: 1}

This is the evaluation for mse:
8.46132335191726

For These Hyper-Parameters: 1 and 0.1
Fold 1
Regression Tree:

if X[6] <= 0.17925
  then if X[6] <= 0.057499999999999996
    then {value: 5.775510204081633, samples: 49}
    else if X[6] <= 0.11975
      then {value: 7.773809523809524, samples: 84}
      else if X[4] <= 0.1935
        then {value: 9.973684210526315, samples: 38}
        else {value: 8.31578947368421, samples: 76}
  else if X[2] <= 0.1775
    then if X[6] <= 0.53
      then if X[4] <= 0.4015
        then if X[6] <= 0.3175
          then if X[6] <= 0.2345
            then {value: 10.04225352112676, samples: 71}
            else if X[0] <= 0.495
              then {value: 23.0, samples: 1}
              else if X[1] <= 0.4175
                then if X[0] <= 0.5225
                  then {value: 11.571428571428571, samples: 7}
                  else if X[4] <= 0.2835
                    then {value: 12.666666666666666, samples: 3}
                    else {value: 21.0, samples: 2}
                else {value: 11.255813953488373, samples: 43}
          else {value: 15.6, samples: 10}
        else if X[6] <= 0.31225
          then {value: 9.273809523809524, samples: 84}
          else {value: 10.752380952380953, samples: 105}
      else {value: 17.666666666666668, samples: 3}
    else if X[4] <= 0.388
      then if X[0] <= 0.59
        then if X[0] <= 0.545
          then {value: 20.0, samples: 3}
          else {value: 12.666666666666666, samples: 3}
        else {value: 24.5, samples: 2}
      else if X[6] <= 0.5845
        then if X[6] <= 0.3895
          then {value: 10.92, samples: 25}
          else if X[4] <= 0.7110000000000001
            then if X[1] <= 0.575
              then {value: 13.84375, samples: 32}

else {value: 29.0, samples: 1}
                else {value: 11.11111111111111, samples: 18}
            else if X[1] <= 0.545
                then {value: 23.0, samples: 2}
                else if X[3] <= 2.07475
                    then {value: 10.666666666666666, samples: 3}
                    else {value: 19.0, samples: 3}

This is the evaluation for mse:
5.953173211687875

Fold 2
Regression Tree:

 if X[6] <= 0.17575
   then if X[5] <= 0.032
     then {value: 5.25, samples: 44}
     else if X[2] <= 0.1125
         then {value: 7.571428571428571, samples: 105}
         else {value: 8.73404255319149, samples: 94}
   else if X[2] <= 0.1775
     then if X[6] <= 0.5075000000000001
         then if X[4] <= 0.30974999999999997
             then if X[3] <= 0.75675
                 then {value: 10.68, samples: 50}
                 else if X[2] <= 0.155
                     then if X[2] <= 0.1325
                         then {value: 13.333333333333334, samples: 3}
                         else {value: 19.4, samples: 5}
                     else {value: 12.714285714285714, samples: 7}
             else if X[6] <= 0.302
                 then {value: 9.567164179104477, samples: 134}
                 else if X[4] <= 0.45575
                     then {value: 12.565217391304348, samples: 23}
                     else {value: 10.427184466019417, samples: 103}
         else {value: 15.75, samples: 4}
     else if X[4] <= 0.5694999999999999
         then if X[6] <= 0.385
             then if X[0] <= 0.545
                 then {value: 17.666666666666668, samples: 3}
                 else {value: 11.571428571428571, samples: 14}
             else {value: 15.823529411764707, samples: 17}
         else if X[6] <= 0.43374999999999997
             then {value: 10.571428571428571, samples: 21}
             else if X[4] <= 0.75275
                 then if X[3] <= 1.784
                     then {value: 12.9375, samples: 16}
                     else {value: 25.5, samples: 2}
                 else if X[2] <= 0.2225
                     then {value: 11.055555555555555, samples: 18}

else {value: 15.2, samples: 5}

This is the evaluation for mse:
8.29081882381659

Fold 3
Regression Tree:

if X[6] <= 0.16825
  then if X[5] <= 0.032
    then {value: 5.17948717948718, samples: 39}
    else if X[6] <= 0.11175
      then {value: 7.440860215053763, samples: 93}
      else {value: 8.6875, samples: 96}
  else if X[2] <= 0.1775
    then if X[6] <= 0.32375
      then if X[4] <= 0.24275
        then if X[3] <= 0.64425
          then {value: 10.909090909090908, samples: 22}
          else {value: 15.857142857142858, samples: 7}
        else if X[6] <= 0.2395
          then {value: 9.25, samples: 88}
          else if X[4] <= 0.397
            then if X[1] <= 0.4125
              then {value: 14.5, samples: 6}
              else {value: 10.894736842105264, samples: 38}
            else {value: 9.675, samples: 80}
      else if X[4] <= 0.42
        then {value: 15.214285714285714, samples: 14}
        else if X[1] <= 0.5375000000000001
          then {value: 10.823529411764707, samples: 85}
          else {value: 14.285714285714286, samples: 7}
    else if X[4] <= 0.40549999999999997
      then if X[1] <= 0.485
        then if X[0] <= 0.6125
          then if X[0] <= 0.5475000000000001
            then {value: 18.25, samples: 4}
            else {value: 12.75, samples: 8}
          else {value: 23.0, samples: 1}
        else {value: 26.0, samples: 1}
      else if X[6] <= 0.598
        then if X[6] <= 0.3895
          then {value: 10.434782608695652, samples: 23}
          else if X[5] <= 0.34425
            then if X[1] <= 0.575
              then {value: 13.75, samples: 16}
              else {value: 29.0, samples: 1}
            else {value: 12.03125, samples: 32}
        else {value: 17.0, samples: 7}

This is the evaluation for mse:
7.796264791639471

Fold 4
Regression Tree:

```
if X[6] <= 0.17575
  then if X[6] <= 0.06975
    then {value: 5.736111111111111, samples: 72}
    else if X[6] <= 0.13975
      then {value: 7.787234042553192, samples: 94}
      else if X[4] <= 0.19425
        then {value: 10.80952380952381, samples: 21}
        else {value: 8.476190476190476, samples: 63}
  else if X[2] <= 0.1775
    then if X[6] <= 0.32375
      then if X[4] <= 0.30925
        then if X[3] <= 0.75675
          then {value: 11.041666666666666, samples: 48}
          else if X[1] <= 0.3975
            then {value: 18.333333333333332, samples: 3}
            else if X[2] <= 0.14500000000000002
              then if X[0] <= 0.535
                then {value: 14.0, samples: 5}
                else {value: 23.0, samples: 1}
              else {value: 12.142857142857142, samples: 7}
        else {value: 9.668789808917197, samples: 157}
      else if X[4] <= 0.42
        then {value: 16.3, samples: 10}
        else if X[6] <= 0.53
          then {value: 11.0875, samples: 80}
          else {value: 16.666666666666668, samples: 3}
    else if X[0] <= 0.545
      then {value: 18.6, samples: 5}
      else if X[6] <= 0.44425000000000003
        then if X[4] <= 0.50075
          then if X[6] <= 0.3675
            then {value: 12.11111111111111, samples: 9}
            else if X[5] <= 0.1925
              then {value: 26.0, samples: 1}
              else {value: 16.4, samples: 5}
          else {value: 10.702702702702704, samples: 37}
        else if X[5] <= 0.329
          then if X[3] <= 1.784
            then {value: 14.2, samples: 10}
            else {value: 25.0, samples: 3}
          else if X[0] <= 0.7875000000000001
            then {value: 12.727272727272727, samples: 33}
            else {value: 23.0, samples: 1}
```

This is the evaluation for mse:
4.8824086628228205

Fold 5
Regression Tree:

```
if X[6] <= 0.1695
  then if X[5] <= 0.032
    then {value: 5.170212765957447, samples: 47}
    else if X[2] <= 0.1125
      then {value: 7.663366336633663, samples: 101}
      else if X[4] <= 0.1745
        then if X[5] <= 0.09425
          then {value: 8.875, samples: 16}
          else {value: 13.2, samples: 5}
        else {value: 8.421052631578947, samples: 57}
  else if X[2] <= 0.1775
    then if X[6] <= 0.31925000000000003
      then if X[4] <= 0.23725
        then {value: 12.727272727272727, samples: 22}
        else if X[6] <= 0.25825
          then {value: 9.34959349593496, samples: 123}
          else if X[3] <= 0.84375
            then if X[2] <= 0.1375
              then {value: 23.0, samples: 1}
              else {value: 13.0, samples: 10}
            else {value: 9.96103896103896, samples: 77}
      else if X[4] <= 0.49024999999999996
        then if X[1] <= 0.4575
          then {value: 16.8, samples: 5}
          else if X[1] <= 0.53
            then {value: 12.44, samples: 25}
            else {value: 21.0, samples: 1}
        else if X[6] <= 0.5075000000000001
          then {value: 10.564102564102564, samples: 78}
          else {value: 16.2, samples: 5}
    else if X[4] <= 0.41625
      then if X[3] <= 1.02675
        then if X[0] <= 0.5475000000000001
          then {value: 18.6, samples: 5}
          else {value: 12.6, samples: 5}
        else {value: 24.5, samples: 2}
      else if X[6] <= 0.3895
        then {value: 10.375, samples: 24}
        else if X[5] <= 0.34425
          then if X[6] <= 0.5575
            then if X[4] <= 0.663
              then {value: 16.285714285714285, samples: 14}
              else {value: 12.181818181818182, samples: 11}
            else {value: 21.0, samples: 3}
          else if X[0] <= 0.78
```

then {value: 12.033333333333333, samples: 30}
else {value: 23.0, samples: 1}

This is the evaluation for mse:
9.67807976078908

For These Hyper-Parameters: 1 and 0.15
Fold 1
Regression Tree:

if X[6] <= 0.17575
  then if X[6] <= 0.06975
    then {value: 5.821917808219178, samples: 73}
    else {value: 8.436046511627907, samples: 172}
  else if X[6] <= 0.41974999999999996
    then if X[2] <= 0.1625
      then if X[4] <= 0.307
        then if X[3] <= 0.7575000000000001
          then {value: 10.720930232558139, samples: 43}
          else {value: 14.666666666666666, samples: 9}
        else if X[6] <= 0.30025
          then {value: 9.425, samples: 120}
          else if X[2] <= 0.14250000000000002
            then {value: 16.666666666666668, samples: 3}
            else {value: 10.490196078431373, samples: 51}
      else if X[4] <= 0.48875
        then if X[3] <= 0.7525
          then {value: 21.0, samples: 2}
          else if X[6] <= 0.2825
            then {value: 10.7, samples: 10}
            else {value: 14.733333333333333, samples: 30}
        else {value: 10.359550561797754, samples: 89}
    else if X[6] <= 0.5845
      then if X[4] <= 0.399
        then {value: 23.0, samples: 1}
        else {value: 12.892857142857142, samples: 56}
      else {value: 17.333333333333332, samples: 9}

This is the evaluation for mse:
7.951711489127868

Fold 2
Regression Tree:

if X[6] <= 0.1695
  then if X[5] <= 0.032
    then {value: 5.076923076923077, samples: 39}
    else {value: 8.052631578947368, samples: 190}
  else if X[2] <= 0.1775
    then if X[6] <= 0.53

then if X[4] <= 0.28725
                    then if X[3] <= 0.75825
                        then {value: 10.979166666666, samples: 48}
                        else {value: 16.11111111111, samples: 9}
                    else if X[6] <= 0.2965
                        then {value: 9.593333333333334, samples: 150}
                        else if X[4] <= 0.5049999999999999
                            then {value: 12.057692307692308, samples: 52}
                            else {value: 10.243589743589743, samples: 78}
                else {value: 16.666666666666668, samples: 3}
            else if X[4] <= 0.40549999999999997
                then if X[3] <= 1.04425
                    then if X[0] <= 0.5475000000000001
                        then {value: 18.6, samples: 5}
                        else {value: 12.571428571428571, samples: 7}
                    else {value: 24.5, samples: 2}
                else if X[6] <= 0.3895
                    then {value: 10.375, samples: 24}
                    else if X[5] <= 0.34425
                        then if X[1] <= 0.58
                            then if X[6] <= 0.5575
                                then {value: 14.363636363636363, samples: 22}
                                else {value: 23.0, samples: 2}
                            else {value: 29.0, samples: 1}
                        else if X[0] <= 0.7875000000000001
                            then {value: 11.857142857142858, samples: 35}
                            else {value: 23.0, samples: 1}

This is the evaluation for mse:
8.065832908600933

Fold 3
Regression Tree:

 if X[6] <= 0.16825
    then if X[5] <= 0.03325
        then {value: 5.4523809523809526, samples: 42}
        else {value: 8.02139037433155, samples: 187}
    else if X[2] <= 0.1875
        then if X[1] <= 0.58
            then if X[4] <= 0.24275
                then if X[3] <= 0.6325000000000001
                    then {value: 11.541666666666666, samples: 24}
                    else {value: 17.142857142857142, samples: 7}
                else if X[6] <= 0.2555
                    then {value: 9.376146788990825, samples: 109}
                    else if X[4] <= 0.32675
                        then {value: 14.166666666666666, samples: 18}
                        else {value: 10.704225352112676, samples: 213}
            else {value: 29.0, samples: 1}

else if X[4] <= 0.388
            then if X[0] <= 0.59
                then {value: 15.333333333333334, samples: 3}
                else {value: 24.5, samples: 2}
            else if X[6] <= 0.5814999999999999
                then {value: 12.703703703703704, samples: 54}
                else {value: 17.125, samples: 8}

This is the evaluation for mse:
7.161229003872838

Fold 4
Regression Tree:

 if X[6] <= 0.17925
    then if X[6] <= 0.06975
        then {value: 5.9411764705882355, samples: 68}
        else {value: 8.422222222222222, samples: 180}
    else if X[2] <= 0.1775
        then if X[6] <= 0.32375
            then if X[4] <= 0.30925
                then if X[3] <= 0.762
                    then {value: 10.795918367346939, samples: 49}
                    else if X[6] <= 0.265
                        then {value: 18.0, samples: 5}
                        else {value: 12.25, samples: 8}
                else {value: 9.720779220779221, samples: 154}
            else if X[4] <= 0.42
                then {value: 15.666666666666666, samples: 12}
                else {value: 11.08695652173913, samples: 92}
        else if X[6] <= 0.6825
            then if X[4] <= 0.5157499999999999
                then {value: 14.931034482758621, samples: 29}
                else if X[6] <= 0.4075
                    then {value: 10.5, samples: 22}
                    else if X[0] <= 0.7875000000000001
                        then if X[5] <= 0.34425
                            then if X[3] <= 1.784
                                then {value: 13.307692307692308, samples: 13}
                                else if X[3] <= 1.8639999999999999
                                    then {value: 25.5, samples: 2}
                                    else {value: 14.5, samples: 2}
                            else {value: 12.033333333333333, samples: 30}
                        else {value: 23.0, samples: 1}
            else {value: 24.0, samples: 1}

This is the evaluation for mse:
6.031308061742784

Fold 5

Regression Tree:

if X[6] <= 0.17575
  then if X[6] <= 0.06875
    then {value: 5.746478873239437, samples: 71}
    else {value: 8.502824858757062, samples: 177}
  else if X[2] <= 0.1775
    then if X[6] <= 0.53
      then if X[4] <= 0.307
        then if X[3] <= 0.7715000000000001
          then {value: 11.142857142857142, samples: 56}
          else {value: 16.444444444444443, samples: 9}
        else if X[6] <= 0.31925000000000003
          then {value: 9.61006289308176, samples: 159}
          else if X[4] <= 0.42
            then {value: 14.88888888888889, samples: 9}
            else {value: 10.967032967032967, samples: 91}
      else {value: 17.666666666666668, samples: 3}
    else if X[4] <= 0.40549999999999997
      then {value: 16.76923076923077, samples: 13}
      else if X[6] <= 0.4075
        then {value: 10.961538461538462, samples: 26}
        else if X[5] <= 0.34325
          then if X[3] <= 1.784
            then {value: 13.85, samples: 20}
            else {value: 23.0, samples: 2}
          else {value: 12.28125, samples: 32}

This is the evaluation for mse:
7.283756713467984

For These Hyper-Parameters: 1 and 0.2
Fold 1
Regression Tree:

if X[6] <= 0.17925
  then if X[6] <= 0.06975
    then {value: 5.918918918918919, samples: 74}
    else {value: 8.28, samples: 175}
  else if X[2] <= 0.1775
    then if X[4] <= 0.30925
      then if X[3] <= 0.7715000000000001
        then {value: 11.27659574468085, samples: 47}
        else {value: 15.583333333333334, samples: 12}
      else if X[6] <= 0.31925000000000003
        then {value: 9.6, samples: 155}
        else {value: 11.38888888888889, samples: 108}
    else if X[4] <= 0.50075
      then {value: 15.863636363636363, samples: 22}
      else if X[6] <= 0.5845

then if X[6] <= 0.4075
         then {value: 10.458333333333334, samples: 24}
         else if X[5] <= 0.34425
            then if X[1] <= 0.58
               then {value: 13.8, samples: 15}
               else if X[0] <= 0.6699999999999999
                  then {value: 12.0, samples: 1}
                  else {value: 29.0, samples: 1}
            else {value: 11.576923076923077, samples: 26}
         else {value: 17.125, samples: 8}

This is the evaluation for mse:
7.829809521979672

Fold 2
Regression Tree:

 if X[6] <= 0.17575
   then if X[5] <= 0.032
      then {value: 5.073170731707317, samples: 41}
      else {value: 8.251207729468598, samples: 207}
   else if X[6] <= 0.41974999999999996
      then if X[4] <= 0.30925
         then if X[3] <= 0.75675
            then if X[2] <= 0.1775
               then {value: 10.692307692307692, samples: 52}
               else {value: 21.0, samples: 2}
            else {value: 14.478260869565217, samples: 23}
         else if X[6] <= 0.2775
            then {value: 9.205882352941176, samples: 102}
            else if X[4] <= 0.48875
               then if X[6] <= 0.37475
                  then {value: 11.849056603773585, samples: 53}
                  else {value: 17.22222222222222, samples: 9}
               else {value: 10.284403669724771, samples: 109}
      else if X[6] <= 0.5845
         then if X[4] <= 0.399
            then {value: 23.0, samples: 1}
            else if X[4] <= 0.70575
               then if X[1] <= 0.58
                  then {value: 13.447368421052632, samples: 38}
                  else {value: 29.0, samples: 1}
               else {value: 11.55, samples: 20}
         else {value: 17.0, samples: 10}

This is the evaluation for mse:
4.490917287672531

Fold 3
Regression Tree:

if X[6] <= 0.16825
  then if X[6] <= 0.069
    then {value: 5.833333333333333, samples: 66}
    else {value: 8.431372549019608, samples: 153}
  else if X[6] <= 0.40874999999999995
    then if X[5] <= 0.11025
      then {value: 15.142857142857142, samples: 7}
      else if X[2] <= 0.1625
        then if X[4] <= 0.3915
          then if X[6] <= 0.2345
            then {value: 9.684931506849315, samples: 73}
            else if X[1] <= 0.42
              then {value: 15.444444444444445, samples: 9}
              else {value: 11.146341463414634, samples: 41}
          else {value: 9.5625, samples: 112}
        else if X[4] <= 0.48624999999999996
          then {value: 13.319148936170214, samples: 47}
          else {value: 10.301204819277109, samples: 83}
    else if X[6] <= 0.616
      then if X[4] <= 0.399
        then {value: 23.0, samples: 1}
        else if X[4] <= 0.70575
          then if X[3] <= 1.79025
            then {value: 13.475, samples: 40}
            else {value: 29.0, samples: 1}
          else {value: 11.7, samples: 30}
      else {value: 18.4, samples: 5}

This is the evaluation for mse:
7.852184700661122

Fold 4
Regression Tree:

if X[6] <= 0.17575
  then if X[6] <= 0.06975
    then {value: 5.985714285714286, samples: 70}
    else {value: 8.311111111111112, samples: 180}
  else if X[6] <= 0.40874999999999995
    then if X[4] <= 0.4015
      then if X[6] <= 0.3225
        then if X[6] <= 0.2395
          then {value: 10.2375, samples: 80}
          else if X[1] <= 0.4175
            then {value: 15.8, samples: 15}
            else {value: 11.204545454545455, samples: 44}
        else {value: 16.76923076923077, samples: 13}
      else {value: 10.081218274111675, samples: 197}
    else if X[5] <= 0.3465

       then if X[3] <= 1.77425
         then {value: 14.233333333333333, samples: 30}
         else {value: 21.0, samples: 5}
      else {value: 12.294117647058824, samples: 34}

This is the evaluation for mse:
6.22816717809129

Fold 5
Regression Tree:

if X[6] <= 0.1695
  then if X[5] <= 0.03325
    then {value: 5.175, samples: 40}
    else {value: 8.105263157894736, samples: 190}
  else if X[2] <= 0.1875
    then if X[6] <= 0.5075000000000001
      then if X[6] <= 0.32375
        then {value: 10.169354838709678, samples: 248}
        else if X[4] <= 0.42
          then {value: 15.357142857142858, samples: 14}
          else {value: 10.783018867924529, samples: 106}
      else {value: 16.2, samples: 5}
    else if X[4] <= 0.388
      then {value: 19.0, samples: 5}
      else {value: 13.05, samples: 60}

This is the evaluation for mse:
11.4438557660621

For These Hyper-Parameters: 1 and 0.25
Fold 1
Regression Tree:

if X[6] <= 0.17575
  then if X[5] <= 0.032
    then {value: 5.190476190476191, samples: 42}
    else {value: 8.185, samples: 200}
  else if X[6] <= 0.41774999999999995
    then if X[4] <= 0.4015
      then if X[6] <= 0.3175
        then {value: 11.12781954887218, samples: 133}
        else {value: 16.6, samples: 15}
      else {value: 10.236966824644549, samples: 211}
    else if X[5] <= 0.34875
      then if X[3] <= 1.784
        then {value: 14.1, samples: 30}
        else {value: 20.333333333333332, samples: 6}
      else {value: 12.258064516129032, samples: 31}

This is the evaluation for mse:
5.735849618000248

Fold 2
Regression Tree:

```
 if X[6] <= 0.1695
   then if X[5] <= 0.032
     then {value: 5.069767441860465, samples: 43}
     else {value: 7.95, samples: 180}
   else if X[6] <= 0.37475
     then if X[4] <= 0.30925
       then if X[3] <= 0.7715000000000001
         then {value: 10.835820895522389, samples: 67}
         else {value: 15.846153846153847, samples: 13}
       else {value: 10.173745173745173, samples: 259}
     else if X[4] <= 0.51225
       then {value: 15.05, samples: 20}
       else if X[6] <= 0.43374999999999997
         then {value: 10.529411764705882, samples: 34}
         else if X[0] <= 0.7875000000000001
           then if X[5] <= 0.34425
             then if X[3] <= 1.784
               then {value: 13.588235294117647, samples: 17}
               else {value: 21.5, samples: 4}
             else {value: 12.2, samples: 30}
           else {value: 23.0, samples: 1}
```

This is the evaluation for mse:
7.179265838297601

Fold 3
Regression Tree:

```
 if X[6] <= 0.18075
   then if X[6] <= 0.063
     then {value: 5.694915254237288, samples: 59}
     else {value: 8.470899470899472, samples: 189}
   else if X[2] <= 0.1775
     then if X[6] <= 0.32375
       then if X[4] <= 0.287
         then {value: 12.08695652173913, samples: 46}
         else {value: 9.647727272727273, samples: 176}
       else if X[4] <= 0.42025
         then {value: 15.5, samples: 10}
         else {value: 11.175824175824175, samples: 91}
     else if X[4] <= 0.40449999999999997
       then {value: 16.53846153846154, samples: 13}
       else {value: 12.488095238095237, samples: 84}
```

This is the evaluation for mse:
8.334280827907767

Fold 4
Regression Tree:

```
if X[6] <= 0.17149999999999999
  then if X[6] <= 0.06975
    then {value: 5.926470588235294, samples: 68}
    else {value: 8.333333333333334, samples: 165}
  else if X[2] <= 0.1775
    then if X[4] <= 0.30925
      then if X[3] <= 0.7695000000000001
        then {value: 10.775862068965518, samples: 58}
        else {value: 15.692307692307692, samples: 13}
      else {value: 10.330798479087452, samples: 263}
    else if X[4] <= 0.5157499999999999
      then {value: 15.444444444444445, samples: 27}
      else if X[6] <= 0.40700000000000003
        then {value: 10.238095238095237, samples: 21}
        else {value: 13.584905660377359, samples: 53}
```

This is the evaluation for mse:
6.629529080497259

Fold 5
Regression Tree:

```
if X[6] <= 0.17575
  then if X[6] <= 0.06975
    then {value: 5.9714285714285715, samples: 70}
    else {value: 8.44973544973545, samples: 189}
  else if X[2] <= 0.1775
    then if X[6] <= 0.31925000000000003
      then {value: 10.170616113744076, samples: 211}
      else if X[4] <= 0.40975
        then {value: 15.454545454545455, samples: 11}
        else {value: 11.061855670103093, samples: 97}
    else if X[6] <= 0.6779999999999999
      then if X[4] <= 0.5157499999999999
        then {value: 14.833333333333334, samples: 24}
        else if X[0] <= 0.7875000000000001
          then if X[6] <= 0.39275000000000004
            then {value: 10.222222222222221, samples: 18}
            else if X[5] <= 0.322
              then if X[1] <= 0.5675
                then {value: 14.333333333333334, samples: 6}
                else {value: 29.0, samples: 1}
              else {value: 12.105263157894736, samples: 38}
          else {value: 23.0, samples: 1}
```

else {value: 20.5, samples: 2}

This is the evaluation for mse:
7.312925860348029

For These Hyper-Parameters: 3 and 0.05
Fold 1
Regression Tree:

 if X[6] <= 0.1695
    then if X[6] <= 0.06975
      then if X[0] <= 0.255
        then {value: 4.125, samples: 16}
        else {value: 6.321428571428571, samples: 56}
      else if X[2] <= 0.1225
        then {value: 7.908256880733945, samples: 109}
        else if X[6] <= 0.14100000000000001
          then {value: 11.714285714285714, samples: 7}
          else {value: 8.837837837837839, samples: 37}
    else if X[6] <= 0.3895
      then if X[4] <= 0.30925
        then if X[3] <= 0.75675
          then if X[2] <= 0.1775
            then if X[0] <= 0.5125
              then if X[4] <= 0.22425
                then if X[1] <= 0.3775
                  then {value: 10.777777777777779, samples: 9}
                  else {value: 14.714285714285714, samples: 7}
                else if X[5] <= 0.11549999999999999
                  then {value: 13.333333333333334, samples: 3}
                  else if X[4] <= 0.258
                    then {value: 8.75, samples: 8}
                    else {value: 11.428571428571429, samples: 14}
              else {value: 9.379310344827585, samples: 29}
            else {value: 21.0, samples: 2}
          else if X[0] <= 0.4925
            then {value: 19.0, samples: 2}
            else if X[0] <= 0.5375000000000001
              then {value: 12.75, samples: 8}
              else if X[2] <= 0.1475
                then {value: 21.0, samples: 2}
                else {value: 13.6, samples: 5}
        else if X[6] <= 0.2495
          then if X[4] <= 0.39175000000000004
            then if X[3] <= 0.84425
              then {value: 9.090909090909092, samples: 33}
              else {value: 14.0, samples: 3}
            else {value: 8.580645161290322, samples: 31}
          else if X[4] <= 0.4015
            then if X[2] <= 0.1675

then {value: 11.214285714285714, samples: 28}
                    else {value: 14.857142857142858, samples: 7}
                else if X[6] <= 0.312
                    then {value: 9.583333333333334, samples: 60}
                    else if X[4] <= 0.5049999999999999
                        then if X[0] <= 0.6225
                            then {value: 12.761904761904763, samples: 21}
                            else {value: 10.125, samples: 8}
                        else if X[4] <= 0.5825
                            then if X[0] <= 0.6625000000000001
                                then {value: 10.4, samples: 30}
                                else {value: 18.0, samples: 1}
                            else {value: 9.794871794871796, samples: 39}
        else if X[5] <= 0.348
            then if X[3] <= 1.77425
                then if X[4] <= 0.5682499999999999
                    then if X[6] <= 0.46
                        then if X[2] <= 0.1875
                            then if X[1] <= 0.54
                                then {value: 12.875, samples: 8}
                                else {value: 17.5, samples: 2}
                            else if X[0] <= 0.6174999999999999
                                then {value: 14.75, samples: 4}
                                else {value: 19.4, samples: 5}
                        else if X[3] <= 1.367
                            then {value: 10.4, samples: 5}
                            else {value: 16.0, samples: 2}
                    else if X[6] <= 0.41774999999999995
                        then {value: 9.88888888888889, samples: 9}
                        else if X[4] <= 0.63925
                            then {value: 16.666666666666668, samples: 3}
                            else {value: 12.375, samples: 8}
                else if X[3] <= 1.8639999999999999
                    then {value: 25.5, samples: 2}
                    else {value: 14.5, samples: 2}
            else if X[2] <= 0.2225
                then if X[4] <= 0.7205
                    then if X[5] <= 0.39375000000000004
                        then {value: 11.363636363636363, samples: 11}
                        else {value: 15.25, samples: 4}
                    else {value: 10.875, samples: 24}
                else {value: 15.0, samples: 4}

This is the evaluation for mse:
8.867849804431295

Fold 2
Regression Tree:

 if X[6] <= 0.18075

then if X[5] <= 0.03225
   then {value: 5.157894736842105, samples: 38}
   else if X[6] <= 0.11975
      then if X[2] <= 0.1125
         then if X[4] <= 0.09575
            then if X[3] <= 0.22575
               then {value: 7.555555555555555, samples: 27}
               else {value: 10.6, samples: 5}
            else {value: 7.25, samples: 48}
         else {value: 8.857142857142858, samples: 14}
      else if X[4] <= 0.19425
         then if X[1] <= 0.3825
            then if X[2] <= 0.1225
               then {value: 8.7, samples: 20}
               else if X[1] <= 0.3575
                  then {value: 12.25, samples: 8}
                  else {value: 9.0, samples: 6}
            else {value: 15.5, samples: 2}
         else {value: 8.3625, samples: 80}
else if X[2] <= 0.1775
   then if X[6] <= 0.53
      then if X[4] <= 0.30974999999999997
         then if X[3] <= 0.7575000000000001
            then if X[4] <= 0.238
               then {value: 12.714285714285714, samples: 14}
               else {value: 10.206896551724139, samples: 29}
            else if X[1] <= 0.4225
               then if X[1] <= 0.4125
                  then {value: 15.0, samples: 9}
                  else {value: 23.0, samples: 1}
               else {value: 12.333333333333334, samples: 6}
         else if X[6] <= 0.302
            then if X[6] <= 0.2345
               then {value: 8.853658536585366, samples: 41}
               else if X[4] <= 0.397
                  then {value: 10.74074074074074, samples: 27}
                  else {value: 9.383333333333333, samples: 60}
            else if X[4] <= 0.42
               then if X[3] <= 0.9325
                  then {value: 11.0, samples: 5}
                  else if X[4] <= 0.381
                     then {value: 19.0, samples: 3}
                     else if X[4] <= 0.39225
                        then {value: 11.75, samples: 4}
                        else {value: 16.0, samples: 5}
               else if X[1] <= 0.5475000000000001
                  then if X[4] <= 0.50675
                     then if X[2] <= 0.1625
                        then {value: 10.142857142857142, samples: 14}
                        else {value: 12.277777777777779, samples: 18}
                     else {value: 10.139240506329115, samples: 79}

else if X[0] <= 0.685
  then {value: 21.0, samples: 1}
  else {value: 12.0, samples: 2}
else {value: 17.666666666666668, samples: 3}
else if X[4] <= 0.5157499999999999
 then if X[0] <= 0.6174999999999999
  then if X[0] <= 0.5325
   then {value: 20.0, samples: 3}
   else if X[1] <= 0.4875
    then if X[0] <= 0.5625
     then {value: 15.25, samples: 4}
     else if X[0] <= 0.59
      then {value: 9.5, samples: 4}
      else {value: 14.0, samples: 5}
    else if X[3] <= 1.0815000000000001
     then {value: 26.0, samples: 1}
     else {value: 14.333333333333334, samples: 3}
   else {value: 19.0, samples: 5}
  else if X[6] <= 0.4325
   then {value: 10.678571428571429, samples: 28}
   else if X[6] <= 0.6825
    then if X[0] <= 0.7875000000000001
     then if X[0] <= 0.7075
      then if X[3] <= 1.784
       then if X[4] <= 0.7050000000000001
        then if X[6] <= 0.4705
         then {value: 14.9, samples: 10}
         else if X[6] <= 0.4925
          then {value: 10.2, samples: 5}
          else {value: 14.666666666666666, samples: 3}
        else {value: 11.428571428571429, samples: 7}
       else if X[0] <= 0.6975
        then {value: 19.333333333333332, samples: 3}
        else {value: 29.0, samples: 1}
      else {value: 11.357142857142858, samples: 14}
     else {value: 23.0, samples: 1}
    else {value: 20.5, samples: 2}

This is the evaluation for mse:
6.755767564657538

Fold 3
Regression Tree:

if X[6] <= 0.17925
 then if X[5] <= 0.032
  then {value: 5.136363636363637, samples: 44}
  else if X[6] <= 0.10975
   then {value: 7.459770114942529, samples: 87}
   else if X[4] <= 0.187

then if X[3] <= 0.44775
  then if X[2] <= 0.15250000000000002
    then if X[1] <= 0.3275
      then {value: 12.666666666666666, samples: 3}
      else {value: 8.565217391304348, samples: 23}
    else {value: 16.0, samples: 1}
  else {value: 13.6, samples: 5}
else {value: 8.206896551724139, samples: 87}
else if X[6] <= 0.37475
  then if X[4] <= 0.32675
    then if X[3] <= 0.75675
      then if X[4] <= 0.238
        then if X[3] <= 0.57725
          then {value: 10.375, samples: 8}
          else {value: 13.666666666666666, samples: 9}
        else {value: 10.085714285714285, samples: 35}
      else if X[1] <= 0.3975
        then {value: 21.0, samples: 2}
        else if X[6] <= 0.24525
          then {value: 11.142857142857142, samples: 7}
          else if X[6] <= 0.2625
            then {value: 18.333333333333332, samples: 3}
            else if X[3] <= 0.95075
              then {value: 13.0, samples: 13}
              else {value: 18.5, samples: 2}
    else if X[6] <= 0.30025
      then if X[4] <= 0.397
        then if X[6] <= 0.226
          then {value: 8.5625, samples: 16}
          else {value: 10.763157894736842, samples: 38}
        else {value: 9.141176470588235, samples: 85}
      else if X[4] <= 0.44425000000000003
        then if X[1] <= 0.445
          then {value: 16.5, samples: 4}
          else {value: 12.0, samples: 15}
        else if X[4] <= 0.5567500000000001
          then if X[0] <= 0.66
            then {value: 10.8, samples: 40}
            else {value: 18.0, samples: 1}
          else {value: 10.024390243902438, samples: 41}
  else if X[3] <= 1.06425
    then {value: 23.5, samples: 2}
    else if X[6] <= 0.5814999999999999
      then if X[4] <= 0.70825
        then if X[1] <= 0.58
          then if X[2] <= 0.1875
            then if X[1] <= 0.5325
              then if X[4] <= 0.52875
                then if X[3] <= 1.40475
                  then {value: 11.454545454545455, samples: 11}
                  else {value: 16.5, samples: 2}

else {value: 10.5, samples: 14}
                else if X[5] <= 0.27249999999999996
                    then {value: 20.0, samples: 2}
                    else {value: 13.166666666666666, samples: 6}
            else if X[4] <= 0.5605
                then if X[2] <= 0.22749999999999998
                    then if X[1] <= 0.49
                        then {value: 20.333333333333332, samples: 3}
                        else {value: 16.0, samples: 6}
                    else {value: 13.666666666666666, samples: 3}
                else {value: 12.941176470588236, samples: 17}
            else {value: 29.0, samples: 1}
        else {value: 10.782608695652174, samples: 23}
    else if X[1] <= 0.5575
        then {value: 21.333333333333332, samples: 3}
        else if X[4] <= 0.93075
            then {value: 11.666666666666666, samples: 3}
            else {value: 19.0, samples: 3}

This is the evaluation for mse:
9.796672403900306

Fold 4
Regression Tree:

 if X[6] <= 0.16825
   then if X[6] <= 0.069
     then if X[6] <= 0.029249999999999998
        then {value: 4.473684210526316, samples: 19}
        else {value: 6.32, samples: 50}
     else if X[6] <= 0.14125
        then if X[4] <= 0.101
            then if X[1] <= 0.315
                then {value: 8.529411764705882, samples: 17}
                else {value: 15.0, samples: 1}
            else {value: 7.647058823529412, samples: 85}
        else {value: 8.883333333333333, samples: 60}
   else if X[6] <= 0.40874999999999995
     then if X[2] <= 0.1775
        then if X[6] <= 0.31925000000000003
            then if X[0] <= 0.4975
                then if X[4] <= 0.30425
                    then if X[3] <= 0.7235
                        then {value: 12.0, samples: 18}
                        else {value: 23.0, samples: 1}
                    else {value: 8.0, samples: 2}
                else if X[6] <= 0.23475
                    then {value: 9.177215189873417, samples: 79}
                    else if X[1] <= 0.4175
                        then if X[0] <= 0.5225

then {value: 11.555555555555555, samples: 9}
else if X[4] <= 0.2835
    then {value: 12.666666666666666, samples: 3}
    else {value: 21.0, samples: 2}
else if X[4] <= 0.397
    then {value: 10.727272727272727, samples: 44}
    else {value: 9.535211267605634, samples: 71}
else if X[4] <= 0.42
  then if X[2] <= 0.1475
    then {value: 20.0, samples: 2}
    else if X[5] <= 0.2175
      then {value: 10.5, samples: 2}
      else {value: 15.833333333333334, samples: 6}
  else if X[4] <= 0.5822499999999999
    then {value: 11.195652173913043, samples: 46}
    else {value: 9.84375, samples: 32}
else if X[4] <= 0.41375
  then if X[1] <= 0.485
    then if X[0] <= 0.5475000000000001
      then {value: 18.6, samples: 5}
      else {value: 13.333333333333334, samples: 6}
    else {value: 26.0, samples: 1}
  else if X[4] <= 0.5015000000000001
    then {value: 12.571428571428571, samples: 7}
    else {value: 10.045454545454545, samples: 22}
else if X[6] <= 0.6825
  then if X[4] <= 0.399
    then {value: 23.0, samples: 1}
    else if X[0] <= 0.7875000000000001
      then if X[5] <= 0.34425
        then if X[1] <= 0.5825
          then if X[6] <= 0.4975
            then if X[2] <= 0.1875
              then {value: 12.058823529411764, samples: 17}
              else if X[0] <= 0.585
                then {value: 8.0, samples: 1}
                else if X[4] <= 0.67575
                  then {value: 16.5, samples: 8}
                  else {value: 12.0, samples: 3}
            else {value: 16.333333333333332, samples: 6}
          else {value: 29.0, samples: 1}
        else if X[2] <= 0.2225
          then {value: 11.59375, samples: 32}
          else {value: 14.6, samples: 5}
      else {value: 23.0, samples: 1}
  else {value: 19.666666666666668, samples: 3}

This is the evaluation for mse:
10.401836592854497

Fold 5

Regression Tree:

if X[6] <= 0.1695
  then if X[6] <= 0.056999999999999995
    then if X[0] <= 0.2575
      then {value: 4.153846153846154, samples: 13}
      else {value: 6.219512195121951, samples: 41}
    else if X[2] <= 0.1125
      then {value: 7.626373626373627, samples: 91}
      else if X[4] <= 0.19425
        then if X[2] <= 0.15250000000000002
          then if X[3] <= 0.40475000000000005
            then if X[4] <= 0.101
              then {value: 12.5, samples: 2}
              else {value: 7.3, samples: 10}
            else {value: 10.055555555555555, samples: 18}
          else {value: 16.0, samples: 1}
        else {value: 8.208333333333334, samples: 48}
  else if X[2] <= 0.1775
    then if X[6] <= 0.32375
      then if X[4] <= 0.24375
        then if X[3] <= 0.649
          then {value: 11.272727272727273, samples: 22}
          else if X[3] <= 0.782
            then {value: 15.5, samples: 4}
            else {value: 23.0, samples: 1}
        else if X[6] <= 0.2555
          then if X[4] <= 0.386
            then if X[3] <= 0.8452500000000001
              then {value: 9.55072463768116, samples: 69}
              else {value: 12.166666666666666, samples: 6}
            else {value: 8.575, samples: 40}
          else if X[3] <= 0.84375
            then {value: 13.363636363636363, samples: 11}
            else {value: 10.127906976744185, samples: 86}
      else if X[4] <= 0.42
        then if X[1] <= 0.4575
          then {value: 17.833333333333332, samples: 6}
          else if X[4] <= 0.38925
            then {value: 10.333333333333334, samples: 3}
            else {value: 15.25, samples: 4}
        else if X[6] <= 0.5774999999999999
          then if X[4] <= 0.48875
            then if X[0] <= 0.6675
              then if X[4] <= 0.478
                then {value: 11.25, samples: 12}
                else {value: 16.0, samples: 2}
              else {value: 21.0, samples: 1}
            else if X[6] <= 0.41774999999999995
              then if X[4] <= 0.5527500000000001
                then if X[0] <= 0.6625000000000001

then {value: 10.777777777777779, samples: 18}
            else {value: 18.0, samples: 1}
          else {value: 9.956521739130435, samples: 46}
        else {value: 12.25, samples: 12}
      else {value: 17.0, samples: 2}
  else if X[0] <= 0.545
    then {value: 19.25, samples: 4}
    else if X[6] <= 0.5845
      then if X[4] <= 0.5157499999999999
        then if X[0] <= 0.5925
          then if X[4] <= 0.31925000000000003
            then {value: 13.5, samples: 4}
            else {value: 9.0, samples: 5}
          else if X[4] <= 0.388
            then {value: 26.0, samples: 1}
            else if X[3] <= 1.2077499999999999
              then {value: 13.4, samples: 5}
              else if X[6] <= 0.52
                then {value: 18.5, samples: 4}
                else {value: 13.0, samples: 2}
        else if X[6] <= 0.39275000000000004
          then {value: 10.277777777777779, samples: 18}
          else if X[4] <= 0.69975
            then if X[3] <= 1.6252499999999999
              then if X[5] <= 0.34425
                then if X[6] <= 0.43525
                  then {value: 18.5, samples: 2}
                  else {value: 13.333333333333334, samples: 9}
                else {value: 11.88888888888889, samples: 9}
              else {value: 15.75, samples: 4}
            else if X[2] <= 0.2225
              then {value: 11.05, samples: 20}
              else {value: 15.0, samples: 3}
      else if X[0] <= 0.7124999999999999
        then {value: 23.0, samples: 2}
        else if X[3] <= 2.5172499999999998
          then {value: 12.0, samples: 4}
          else {value: 20.0, samples: 2}

This is the evaluation for mse:
7.995196890067388

For These Hyper-Parameters: 3 and 0.1
Fold 1
Regression Tree:

 if X[6] <= 0.1695
   then if X[5] <= 0.032
     then {value: 5.216216216216216, samples: 37}
     else if X[6] <= 0.10975

then {value: 7.426966292134831, samples: 89}
else if X[4] <= 0.16
  then if X[3] <= 0.434
    then {value: 9.5, samples: 10}
    else {value: 16.0, samples: 2}
  else {value: 8.232558139534884, samples: 86}
else if X[2] <= 0.1775
  then if X[6] <= 0.2395
    then if X[4] <= 0.219
      then {value: 12.846153846153847, samples: 13}
      else {value: 9.303921568627452, samples: 102}
    else if X[4] <= 0.31125
      then if X[1] <= 0.4175
        then {value: 16.77777777777778, samples: 9}
        else {value: 11.666666666666666, samples: 12}
      else if X[6] <= 0.31925000000000003
        then {value: 10.027777777777779, samples: 108}
        else if X[4] <= 0.42
          then if X[1] <= 0.4575
            then {value: 18.5, samples: 4}
            else {value: 13.142857142857142, samples: 7}
          else if X[6] <= 0.53
            then {value: 10.916666666666666, samples: 96}
            else {value: 16.666666666666668, samples: 3}
  else if X[4] <= 0.5157499999999999
    then if X[0] <= 0.5325
      then {value: 20.0, samples: 3}
      else if X[0] <= 0.5974999999999999
        then {value: 12.636363636363637, samples: 11}
        else if X[4] <= 0.388
          then {value: 24.5, samples: 2}
          else {value: 14.75, samples: 12}
    else if X[0] <= 0.7875000000000001
      then if X[6] <= 0.392
        then {value: 10.352941176470589, samples: 17}
        else if X[5] <= 0.3505
          then if X[2] <= 0.21
            then if X[4] <= 0.663
              then {value: 16.0, samples: 6}
              else {value: 11.6, samples: 10}
            else {value: 22.0, samples: 1}
          else {value: 11.518518518518519, samples: 27}
      else {value: 23.0, samples: 1}

This is the evaluation for mse:
7.77034442437756

Fold 2
Regression Tree:

```
if X[6] <= 0.1695
  then if X[6] <= 0.06975
    then {value: 5.821917808219178, samples: 73}
    else {value: 8.433121019108281, samples: 157}
  else if X[6] <= 0.3895
    then if X[4] <= 0.1615
      then {value: 22.0, samples: 1}
      else if X[4] <= 0.39425
        then if X[3] <= 0.9325
          then if X[2] <= 0.1825
            then if X[6] <= 0.2345
              then if X[0] <= 0.5025
                then {value: 11.551724137931034, samples: 29}
                else {value: 9.363636363636363, samples: 55}
              else {value: 11.666666666666666, samples: 48}
            else {value: 15.5, samples: 4}
          else if X[4] <= 0.381
            then {value: 19.0, samples: 4}
            else {value: 13.166666666666666, samples: 6}
        else if X[6] <= 0.2765
          then {value: 8.913793103448276, samples: 58}
          else if X[4] <= 0.42
            then {value: 15.5, samples: 4}
            else {value: 10.379562043795621, samples: 137}
    else if X[5] <= 0.34375
      then if X[3] <= 1.784
        then if X[2] <= 0.1875
          then {value: 12.481481481481481, samples: 27}
          else if X[6] <= 0.43525
            then {value: 17.857142857142858, samples: 7}
            else {value: 13.454545454545455, samples: 11}
        else {value: 23.0, samples: 4}
      else if X[2] <= 0.2225
        then {value: 11.216216216216216, samples: 37}
        else {value: 15.166666666666666, samples: 6}
```

This is the evaluation for mse:
8.300239015525909

Fold 3
Regression Tree:

```
if X[6] <= 0.17925
  then if X[6] <= 0.06975
    then if X[6] <= 0.029249999999999998
      then {value: 4.315789473684211, samples: 19}
      else {value: 6.528301886792453, samples: 53}
    else {value: 8.456521739130435, samples: 184}
  else if X[2] <= 0.1775
    then if X[6] <= 0.5075000000000001
```

then if X[4] <= 0.307
               then if X[3] <= 0.75825
                  then {value: 11.038461538461538, samples: 52}
                  else {value: 15.846153846153847, samples: 13}
               else if X[6] <= 0.32375
                  then {value: 9.67515923566879, samples: 157}
                  else if X[4] <= 0.51
                     then {value: 12.71875, samples: 32}
                     else {value: 10.383333333333333, samples: 60}
            else {value: 17.0, samples: 4}
         else if X[0] <= 0.545
            then {value: 18.6, samples: 5}
            else if X[6] <= 0.5845
               then if X[6] <= 0.37475
                  then {value: 10.904761904761905, samples: 21}
                  else if X[5] <= 0.198
                     then {value: 26.0, samples: 1}
                     else if X[4] <= 0.7085
                        then if X[1] <= 0.575
                           then {value: 13.65625, samples: 32}
                           else {value: 29.0, samples: 1}
                        else {value: 11.56, samples: 25}
               else if X[1] <= 0.545
                  then {value: 23.0, samples: 2}
                  else if X[0] <= 0.78
                     then {value: 13.666666666666666, samples: 6}
                     else {value: 23.0, samples: 1}

This is the evaluation for mse:
7.3804390575607846

Fold 4
Regression Tree:

 if X[6] <= 0.1695
   then if X[5] <= 0.0325
      then {value: 5.2272727272727275, samples: 44}
      else {value: 8.077777777777778, samples: 180}
   else if X[6] <= 0.40874999999999995
      then if X[6] <= 0.32475
         then if X[4] <= 0.30925
            then if X[3] <= 0.74375
               then {value: 10.525423728813559, samples: 59}
               else if X[1] <= 0.3975
                  then {value: 18.333333333333332, samples: 3}
                  else {value: 12.666666666666666, samples: 15}
            else {value: 9.730538922155688, samples: 167}
         else if X[4] <= 0.42
            then if X[2] <= 0.1625
               then if X[2] <= 0.1475

then {value: 20.0, samples: 2}
                else {value: 12.571428571428571, samples: 7}
            else if X[1] <= 0.49
                then {value: 16.444444444444443, samples: 9}
                else {value: 26.0, samples: 1}
        else if X[4] <= 0.5049999999999999
            then {value: 12.10344827586207, samples: 29}
            else {value: 10.225352112676056, samples: 71}
    else if X[6] <= 0.6825
        then if X[0] <= 0.7875000000000001
            then if X[3] <= 1.2485
                then {value: 23.0, samples: 1}
                else if X[4] <= 0.70575
                    then if X[3] <= 1.79025
                        then {value: 13.377777777777778, samples: 45}
                        else {value: 29.0, samples: 1}
                    else {value: 11.566666666666666, samples: 30}
            else {value: 23.0, samples: 1}
        else {value: 19.666666666666668, samples: 3}

This is the evaluation for mse:
8.4406333885983

Fold 5
Regression Tree:

 if X[6] <= 0.18075
    then if X[6] <= 0.056999999999999995
        then {value: 5.574074074074074, samples: 54}
        else if X[6] <= 0.13875
            then {value: 7.693069306930693, samples: 101}
            else {value: 8.989247311827956, samples: 93}
    else if X[2] <= 0.1775
        then if X[6] <= 0.53
            then if X[4] <= 0.30974999999999997
                then if X[3] <= 0.75525
                    then {value: 10.772727272727273, samples: 44}
                    else if X[1] <= 0.4225
                        then if X[2] <= 0.1325
                            then {value: 12.75, samples: 4}
                            else {value: 18.5, samples: 6}
                        else {value: 12.166666666666666, samples: 6}
                else if X[6] <= 0.302
                    then {value: 9.511111111111111, samples: 135}
                    else if X[4] <= 0.42725
                        then {value: 13.916666666666666, samples: 12}
                        else {value: 10.715596330275229, samples: 109}
            else {value: 16.5, samples: 4}
        else if X[6] <= 0.5845
            then if X[4] <= 0.40549999999999997

then if X[3] <= 1.04425
   then if X[0] <= 0.5475000000000001
      then {value: 18.25, samples: 4}
      else {value: 12.571428571428571, samples: 7}
   else {value: 24.5, samples: 2}
else if X[6] <= 0.3895
   then {value: 10.565217391304348, samples: 23}
   else if X[5] <= 0.34425
      then if X[1] <= 0.58
         then {value: 14.434782608695652, samples: 23}
         else {value: 29.0, samples: 1}
      else {value: 11.9375, samples: 32}
else if X[1] <= 0.56
   then {value: 23.0, samples: 2}
   else {value: 15.833333333333334, samples: 6}

This is the evaluation for mse:
8.279577006652222

For These Hyper-Parameters: 3 and 0.15
Fold 1
Regression Tree:

if X[6] <= 0.17925
   then if X[5] <= 0.032
      then {value: 5.184210526315789, samples: 38}
      else {value: 8.21256038647343, samples: 207}
   else if X[6] <= 0.3895
      then if X[4] <= 0.4015
         then if X[6] <= 0.3225
            then if X[4] <= 0.16275
               then {value: 22.0, samples: 1}
               else if X[6] <= 0.2395
                  then {value: 10.302631578947368, samples: 76}
                  else if X[1] <= 0.4175
                     then {value: 14.583333333333334, samples: 12}
                     else {value: 11.3125, samples: 48}
            else {value: 17.181818181818183, samples: 11}
         else if X[6] <= 0.291
            then {value: 9.0, samples: 58}
            else {value: 10.608, samples: 125}
      else if X[5] <= 0.3465
         then if X[3] <= 1.784
            then if X[2] <= 0.1875
               then {value: 12.620689655172415, samples: 29}
               else {value: 15.88888888888889, samples: 18}
            else {value: 23.666666666666668, samples: 3}
         else {value: 12.0, samples: 42}

This is the evaluation for mse:

5.782386769689291

Fold 2
Regression Tree:

 if X[6] <= 0.18075
   then if X[5] <= 0.04525
     then {value: 5.753846153846154, samples: 65}
     else if X[6] <= 0.11975
       then {value: 7.67948717948718, samples: 78}
       else if X[4] <= 0.1935
         then {value: 10.323529411764707, samples: 34}
         else {value: 8.236842105263158, samples: 76}
   else if X[2] <= 0.1775
     then if X[6] <= 0.31925000000000003
       then if X[4] <= 0.30974999999999997
         then if X[3] <= 0.7715000000000001
           then {value: 10.877551020408163, samples: 49}
           else if X[3] <= 0.79425
             then {value: 20.0, samples: 4}
             else {value: 13.0, samples: 6}
         else {value: 9.611842105263158, samples: 152}
       else if X[4] <= 0.42
         then {value: 15.916666666666666, samples: 12}
         else if X[6] <= 0.53
           then {value: 11.021505376344086, samples: 93}
           else {value: 16.5, samples: 4}
     else if X[0] <= 0.545
       then {value: 18.6, samples: 5}
       else if X[6] <= 0.5845
         then if X[4] <= 0.50075
           then if X[1] <= 0.4675
             then {value: 11.0, samples: 7}
             else if X[4] <= 0.388
               then {value: 26.0, samples: 1}
               else {value: 15.2, samples: 10}
           else if X[6] <= 0.4475
             then {value: 10.742857142857142, samples: 35}
             else if X[5] <= 0.322
               then if X[1] <= 0.575
                 then {value: 15.0, samples: 5}
                 else {value: 29.0, samples: 1}
               else {value: 12.391304347826088, samples: 23}
         else {value: 17.125, samples: 8}

This is the evaluation for mse:
6.188404283778265

Fold 3
Regression Tree:

if X[6] <= 0.1695
  then if X[5] <= 0.032
    then {value: 5.209302325581396, samples: 43}
    else {value: 8.11413043478261, samples: 184}
  else if X[6] <= 0.41974999999999996
    then if X[2] <= 0.1625
      then if X[0] <= 0.4975
        then {value: 12.36, samples: 25}
        else if X[6] <= 0.25825
          then {value: 9.378378378378379, samples: 111}
          else if X[4] <= 0.34524999999999995
            then {value: 13.76923076923077, samples: 13}
            else {value: 10.305263157894737, samples: 95}
      else if X[4] <= 0.489
        then if X[3] <= 0.7525
          then {value: 21.0, samples: 2}
          else {value: 13.488888888888889, samples: 45}
        else {value: 10.333333333333334, samples: 81}
    else if X[5] <= 0.34425
      then if X[3] <= 1.784
        then {value: 14.10344827586207, samples: 29}
        else if X[4] <= 0.7545
          then {value: 25.0, samples: 3}
          else {value: 15.666666666666666, samples: 3}
      else if X[0] <= 0.7875000000000001
        then {value: 11.696969696969697, samples: 33}
        else {value: 23.0, samples: 1}

This is the evaluation for mse:
5.513077190733545

Fold 4
Regression Tree:

if X[6] <= 0.17575
  then if X[6] <= 0.06975
    then {value: 5.8307692307692305, samples: 65}
    else {value: 8.459770114942529, samples: 174}
  else if X[2] <= 0.1875
    then if X[4] <= 0.30925
      then if X[3] <= 0.75675
        then {value: 11.104166666666666, samples: 48}
        else {value: 14.1, samples: 20}
      else if X[6] <= 0.32375
        then {value: 9.697142857142858, samples: 175}
        else if X[4] <= 0.51
          then {value: 13.0, samples: 41}
          else {value: 10.525, samples: 80}
    else if X[4] <= 0.388

then {value: 20.25, samples: 4}
else if X[6] <= 0.3895
then {value: 10.8, samples: 15}
else {value: 13.804347826086957, samples: 46}

This is the evaluation for mse:
9.95625039910573

Fold 5
Regression Tree:

if X[6] <= 0.17575
then if X[6] <= 0.06975
then {value: 5.935064935064935, samples: 77}
else {value: 8.377142857142857, samples: 175}
else if X[2] <= 0.1775
then if X[6] <= 0.53
then if X[4] <= 0.24375
then if X[3] <= 0.782
then {value: 12.1875, samples: 16}
else {value: 23.0, samples: 1}
else if X[6] <= 0.30025
then {value: 9.850574712643677, samples: 174}
else if X[4] <= 0.42
then if X[1] <= 0.445
then {value: 18.333333333333332, samples: 3}
else {value: 11.44444444444445, samples: 9}
else {value: 10.504424778761061, samples: 113}
else {value: 16.5, samples: 4}
else if X[4] <= 0.41625
then if X[1] <= 0.485
then {value: 15.416666666666666, samples: 12}
else {value: 26.0, samples: 1}
else if X[6] <= 0.3895
then {value: 10.619047619047619, samples: 21}
else if X[5] <= 0.34425
then if X[3] <= 1.77425
then {value: 14.4, samples: 20}
else if X[4] <= 0.84825
then {value: 25.0, samples: 3}
else {value: 14.5, samples: 2}
else if X[0] <= 0.78
then {value: 12.11111111111111, samples: 36}
else {value: 23.0, samples: 1}

This is the evaluation for mse:
7.4519792135054175

For These Hyper-Parameters: 3 and 0.2
Fold 1

Regression Tree:

if X[6] <= 0.16825
  then if X[6] <= 0.069
    then {value: 5.739726027397261, samples: 73}
    else {value: 8.25, samples: 156}
  else if X[2] <= 0.1775
    then if X[6] <= 0.32375
      then {value: 10.212244897959184, samples: 245}
      else if X[4] <= 0.42
        then {value: 15.9, samples: 10}
        else {value: 11.191011235955056, samples: 89}
    else if X[0] <= 0.545
      then {value: 19.25, samples: 4}
      else if X[6] <= 0.6825
        then if X[6] <= 0.3895
          then if X[4] <= 0.4395
            then if X[6] <= 0.3675
              then {value: 12.142857142857142, samples: 7}
              else {value: 26.0, samples: 1}
            else {value: 10.45, samples: 20}
          else if X[5] <= 0.34425
            then {value: 15.193548387096774, samples: 31}
            else {value: 11.9, samples: 30}
        else {value: 20.5, samples: 2}

This is the evaluation for mse:
4.889667146846963

Fold 2
Regression Tree:

if X[6] <= 0.1695
  then if X[6] <= 0.056999999999999995
    then {value: 5.703703703703703, samples: 54}
    else {value: 8.25294117647059, samples: 170}
  else if X[6] <= 0.37475
    then if X[4] <= 0.32675
      then if X[3] <= 0.75675
        then {value: 10.442622950819672, samples: 61}
        else {value: 14.285714285714286, samples: 28}
      else {value: 10.097165991902834, samples: 247}
    else if X[3] <= 1.25725
      then if X[6] <= 0.377
        then {value: 23.5, samples: 2}
        else if X[3] <= 1.217
          then {value: 12.666666666666666, samples: 6}
          else {value: 21.666666666666668, samples: 3}
      else if X[6] <= 0.4075
        then {value: 10.217391304347826, samples: 23}

else if X[6] <= 0.6825
                        then if X[0] <= 0.7875000000000001
                            then if X[5] <= 0.34375
                                then if X[3] <= 1.77425
                                    then {value: 13.333333333333334, samples: 33}
                                    else {value: 25.5, samples: 2}
                                else {value: 11.88888888888889, samples: 36}
                            else {value: 23.0, samples: 1}
                        else {value: 21.0, samples: 2}

This is the evaluation for mse:
7.800991088441861

Fold 3
Regression Tree:

 if X[6] <= 0.17575
   then if X[6] <= 0.06975
     then {value: 6.0606060606060606, samples: 66}
     else {value: 8.402234636871508, samples: 179}
   else if X[6] <= 0.40874999999999995
     then if X[4] <= 0.307
       then if X[3] <= 0.73375
         then {value: 10.977272727272727, samples: 44}
         else {value: 14.653846153846153, samples: 26}
       else if X[6] <= 0.24375
         then {value: 8.918032786885245, samples: 61}
         else {value: 10.67741935483871, samples: 217}
     else {value: 13.0, samples: 75}

This is the evaluation for mse:
10.22378958120273

Fold 4
Regression Tree:

 if X[6] <= 0.1695
   then if X[5] <= 0.032
     then {value: 5.225, samples: 40}
     else {value: 7.962765957446808, samples: 188}
   else if X[2] <= 0.1775
     then if X[6] <= 0.32375
       then {value: 10.185950413223141, samples: 242}
       else if X[4] <= 0.42
         then {value: 14.923076923076923, samples: 13}
         else {value: 10.965116279069768, samples: 86}
     else if X[4] <= 0.40549999999999997
       then {value: 16.307692307692307, samples: 13}
       else if X[6] <= 0.3895
         then {value: 10.333333333333334, samples: 21}

        else if X[5] <= 0.3465
          then if X[1] <= 0.5825
            then {value: 15.071428571428571, samples: 28}
            else {value: 29.0, samples: 1}
          else {value: 12.36111111111111, samples: 36}

This is the evaluation for mse:
8.12122229274218

Fold 5
Regression Tree:

 if X[6] <= 0.18475
  then if X[5] <= 0.03325
    then {value: 5.088888888888889, samples: 45}
    else {value: 8.304347826086957, samples: 207}
  else if X[2] <= 0.1775
    then if X[6] <= 0.31925000000000003
      then if X[4] <= 0.31125
        then if X[3] <= 0.75675
          then {value: 10.8, samples: 45}
          else {value: 14.583333333333334, samples: 12}
        else {value: 9.538461538461538, samples: 156}
      else if X[4] <= 0.42
        then {value: 15.2, samples: 10}
        else {value: 11.295918367346939, samples: 98}
    else if X[0] <= 0.545
      then {value: 18.6, samples: 5}
      else if X[6] <= 0.5845
        then if X[4] <= 0.7085
          then if X[1] <= 0.575
            then if X[6] <= 0.37475
              then {value: 11.304347826086957, samples: 23}
              else if X[5] <= 0.1925
                then {value: 26.0, samples: 1}
                else {value: 13.555555555555555, samples: 36}
            else {value: 29.0, samples: 1}
          else {value: 11.0, samples: 21}
        else {value: 17.25, samples: 8}

This is the evaluation for mse:
6.437908537462682

For These Hyper-Parameters: 3 and 0.25
Fold 1
Regression Tree:

 if X[6] <= 0.18075
  then if X[5] <= 0.04475
    then {value: 5.754098360655738, samples: 61}

else {value: 8.244444444444444, samples: 180}
            else if X[6] <= 0.40874999999999995
               then if X[4] <= 0.16275
                  then {value: 22.0, samples: 1}
                  else if X[4] <= 0.402
                     then if X[3] <= 0.9325
                        then {value: 10.702290076335878, samples: 131}
                        else {value: 15.117647058823529, samples: 17}
                     else {value: 10.054455445544555, samples: 202}
               else {value: 13.552631578947368, samples: 76}

This is the evaluation for mse:
7.987918894730644

Fold 2
Regression Tree:

 if X[6] <= 0.1695
   then if X[5] <= 0.032
      then {value: 5.219512195121951, samples: 41}
      else {value: 8.096774193548388, samples: 186}
   else if X[2] <= 0.1775
      then if X[6] <= 0.32375
         then {value: 10.172131147540984, samples: 244}
         else if X[4] <= 0.42
            then {value: 15.214285714285714, samples: 14}
            else {value: 11.011111111111111, samples: 90}
      else if X[4] <= 0.388
         then {value: 18.4, samples: 10}
         else if X[6] <= 0.6825
            then if X[6] <= 0.3895
               then {value: 10.88, samples: 25}
               else if X[5] <= 0.34425
                  then if X[1] <= 0.5825
                     then {value: 14.666666666666666, samples: 21}
                     else {value: 29.0, samples: 1}
                  else {value: 11.794117647058824, samples: 34}
            else {value: 20.5, samples: 2}

This is the evaluation for mse:
8.851239442157569

Fold 3
Regression Tree:

 if X[6] <= 0.17925
   then if X[6] <= 0.06975
      then {value: 5.942857142857143, samples: 70}
      else {value: 8.575418994413408, samples: 179}
   else if X[6] <= 0.4055

then if X[4] <= 0.32475
            then {value: 12.0, samples: 81}
            else if X[6] <= 0.3025
               then {value: 9.589147286821705, samples: 129}
               else if X[4] <= 0.48875
                  then if X[6] <= 0.37475
                     then {value: 12.305555555555555, samples: 36}
                     else {value: 18.8, samples: 5}
                  else {value: 10.188888888888888, samples: 90}
         else {value: 13.576923076923077, samples: 78}

This is the evaluation for mse:
6.280473013404379

Fold 4
Regression Tree:

 if X[6] <= 0.17575
    then if X[6] <= 0.06975
       then {value: 5.826086956521739, samples: 69}
       else {value: 8.371584699453551, samples: 183}
    else if X[6] <= 0.3895
       then if X[4] <= 0.30925
          then if X[3] <= 0.7715000000000001
             then {value: 11.5, samples: 50}
             else {value: 15.76923076923077, samples: 13}
          else {value: 10.240458015267176, samples: 262}
       else if X[6] <= 0.5845
          then if X[4] <= 0.70575
             then if X[1] <= 0.58
                then {value: 13.163636363636364, samples: 55}
                else {value: 29.0, samples: 1}
             else {value: 10.961538461538462, samples: 26}
          else {value: 17.0, samples: 9}

This is the evaluation for mse:
7.73765289159611

Fold 5
Regression Tree:

 if X[6] <= 0.1695
    then if X[5] <= 0.032
       then {value: 5.048780487804878, samples: 41}
       else {value: 8.11340206185567, samples: 194}
    else if X[2] <= 0.1775
       then if X[6] <= 0.53
          then if X[4] <= 0.30974999999999997
             then if X[3] <= 0.75675
                then {value: 10.631578947368421, samples: 57}

else {value: 14.941176470588236, samples: 17}
else {value: 10.305555555555555, samples: 252}
else {value: 16.5, samples: 4}
else if X[4] <= 0.50075
then {value: 15.48, samples: 25}
else if X[6] <= 0.4075
then {value: 10.4, samples: 25}
else if X[0] <= 0.7875000000000001
then if X[5] <= 0.322
then if X[1] <= 0.575
then {value: 14.333333333333334, samples: 9}
else {value: 29.0, samples: 1}
else {value: 12.5, samples: 42}
else {value: 23.0, samples: 1}

This is the evaluation for mse:
6.07849167812727

For These Hyper-Parameters: 5 and 0.05
Fold 1
Regression Tree:

if X[6] <= 0.17575
then if X[6] <= 0.056999999999999995
then if X[0] <= 0.2575
then {value: 4.166666666666667, samples: 18}
else {value: 6.186046511627907, samples: 43}
else if X[2] <= 0.1125
then {value: 7.6477272727272725, samples: 88}
else if X[4] <= 0.194
then if X[3] <= 0.42025
then {value: 8.823529411764707, samples: 17}
else if X[4] <= 0.16
then {value: 14.666666666666666, samples: 3}
else {value: 10.5, samples: 14}
else {value: 8.158730158730158, samples: 63}
else if X[6] <= 0.40874999999999995
then if X[4] <= 0.39275000000000004
then if X[2] <= 0.1775
then if X[3] <= 0.9235
then if X[6] <= 0.2345
then if X[4] <= 0.237
then if X[2] <= 0.1375
then {value: 10.75, samples: 8}
else {value: 14.75, samples: 4}
else {value: 9.714285714285714, samples: 56}
else if X[1] <= 0.4175
then if X[0] <= 0.5475000000000001
then if X[0] <= 0.4925
then {value: 19.0, samples: 2}

else {value: 12.636363636363637, samples: 11}
      else {value: 23.0, samples: 1}
    else {value: 10.923076923076923, samples: 39}
  else if X[4] <= 0.381
    then {value: 19.0, samples: 4}
    else {value: 12.4, samples: 5}
else if X[1] <= 0.4825
  then if X[0] <= 0.5325
    then {value: 21.0, samples: 2}
    else {value: 13.5, samples: 6}
  else {value: 26.0, samples: 1}
else if X[6] <= 0.291
  then {value: 8.953846153846154, samples: 65}
  else if X[4] <= 0.5015000000000001
    then if X[6] <= 0.387
      then if X[4] <= 0.42
        then {value: 15.5, samples: 4}
        else if X[3] <= 1.17425
          then {value: 10.851851851851851, samples: 27}
          else {value: 13.571428571428571, samples: 7}
      else if X[3] <= 1.2535
        then {value: 19.333333333333332, samples: 3}
        else {value: 12.0, samples: 2}
    else {value: 10.09, samples: 100}
else if X[5] <= 0.34425
  then if X[3] <= 1.77425
    then if X[4] <= 0.399
      then {value: 23.0, samples: 1}
      else if X[3] <= 1.36375
        then {value: 11.5, samples: 10}
        else if X[4] <= 0.63925
          then {value: 16.7, samples: 10}
          else if X[5] <= 0.33725000000000005
            then {value: 11.555555555555555, samples: 9}
            else {value: 19.0, samples: 1}
    else if X[4] <= 0.7545
      then {value: 25.0, samples: 3}
      else {value: 15.666666666666666, samples: 3}
  else if X[2] <= 0.2225
    then {value: 11.774193548387096, samples: 31}
    else {value: 14.857142857142858, samples: 7}

This is the evaluation for mse:
6.795525948106053

Fold 2
Regression Tree:

 if X[6] <= 0.1695
  then if X[5] <= 0.032

then {value: 5.230769230769231, samples: 39}
else if X[6] <= 0.10975
    then {value: 7.455555555555556, samples: 90}
    else if X[4] <= 0.194
        then if X[3] <= 0.429
            then if X[3] <= 0.29325
                then {value: 15.0, samples: 1}
                else {value: 8.421052631578947, samples: 19}
            else if X[4] <= 0.16275
                then {value: 14.666666666666666, samples: 3}
                else {value: 9.692307692307692, samples: 13}
        else {value: 8.15625, samples: 64}
else if X[6] <= 0.40874999999999995
    then if X[4] <= 0.30925
        then if X[3] <= 0.7715000000000001
            then if X[2] <= 0.1775
                then if X[4] <= 0.2145
                    then {value: 12.266666666666667, samples: 15}
                    else if X[6] <= 0.18075
                        then {value: 8.571428571428571, samples: 14}
                        else {value: 10.64102564102564, samples: 39}
                else {value: 21.0, samples: 2}
            else if X[6] <= 0.2675
                then if X[5] <= 0.1795
                    then {value: 23.0, samples: 2}
                    else {value: 16.0, samples: 2}
                else if X[3] <= 0.9655
                    then {value: 13.6, samples: 10}
                    else {value: 18.5, samples: 2}
        else if X[6] <= 0.30225
            then if X[2] <= 0.1825
                then if X[6] <= 0.22975
                    then {value: 8.743589743589743, samples: 39}
                    else if X[4] <= 0.397
                        then {value: 10.675675675675675, samples: 37}
                        else {value: 9.266666666666667, samples: 60}
                else {value: 16.0, samples: 1}
            else if X[4] <= 0.5015000000000001
                then if X[6] <= 0.387
                    then if X[2] <= 0.1275
                        then {value: 21.0, samples: 1}
                        else if X[1] <= 0.4425
                            then if X[4] <= 0.4305
                                then {value: 17.0, samples: 4}
                                else {value: 8.0, samples: 1}
                            else {value: 11.702702702702704, samples: 37}
                    else {value: 18.666666666666668, samples: 3}
                else {value: 10.22340425531915, samples: 94}
    else if X[0] <= 0.7875000000000001
        then if X[4] <= 0.399
            then {value: 23.0, samples: 1}

else if X[5] <= 0.34425
            then if X[3] <= 1.784
                then if X[3] <= 1.36375
                    then if X[0] <= 0.6975
                        then {value: 11.1, samples: 10}
                        else {value: 16.0, samples: 2}
                    else if X[4] <= 0.66425
                        then if X[0] <= 0.5925
                            then {value: 10.0, samples: 1}
                            else {value: 16.4, samples: 10}
                        else {value: 12.714285714285714, samples: 7}
                else if X[1] <= 0.5825
                    then {value: 15.666666666666666, samples: 3}
                    else {value: 29.0, samples: 1}
            else if X[2] <= 0.2225
                then if X[3] <= 1.7782499999999999
                    then if X[5] <= 0.43025
                        then {value: 11.823529411764707, samples: 17}
                        else {value: 15.666666666666666, samples: 3}
                    else {value: 10.692307692307692, samples: 13}
                else {value: 14.857142857142858, samples: 7}
        else {value: 23.0, samples: 1}

This is the evaluation for mse:
7.25039331773923

Fold 3
Regression Tree:

 if X[6] <= 0.16825
    then if X[5] <= 0.0325
        then {value: 5.260869565217392, samples: 46}
        else if X[2] <= 0.1125
            then if X[6] <= 0.11975
                then if X[4] <= 0.10275
                    then if X[3] <= 0.22575
                        then {value: 7.454545454545454, samples: 33}
                        else {value: 9.666666666666666, samples: 9}
                    else {value: 7.02, samples: 50}
                else {value: 8.625, samples: 16}
            else if X[4] <= 0.19425
                then if X[3] <= 0.401
                    then if X[4] <= 0.101
                        then {value: 12.5, samples: 2}
                        else {value: 7.666666666666667, samples: 9}
                    else if X[4] <= 0.16
                        then {value: 13.25, samples: 4}
                        else {value: 9.5, samples: 14}
                else {value: 8.26086956521739, samples: 46}
    else if X[2] <= 0.1875

then if X[6] <= 0.5075000000000001
   then if X[4] <= 0.1615
      then {value: 22.0, samples: 1}
      else if X[6] <= 0.32375
         then if X[4] <= 0.307
            then if X[3] <= 0.7362500000000001
               then if X[0] <= 0.4975
                  then if X[3] <= 0.65825
                     then {value: 11.411764705882353, samples: 17}
                     else {value: 16.5, samples: 2}
                  else if X[3] <= 0.51325
                     then {value: 17.0, samples: 1}
                     else if X[5] <= 0.13425
                        then {value: 8.181818181818182, samples: 11}
                        else {value: 10.28, samples: 25}
               else if X[5] <= 0.1585
                  then if X[6] <= 0.255
                     then {value: 21.5, samples: 2}
                     else {value: 15.0, samples: 3}
                  else {value: 12.23076923076923, samples: 13}
            else if X[6] <= 0.24375
               then if X[4] <= 0.39725
                  then if X[3] <= 0.875
                     then {value: 9.0, samples: 39}
                     else {value: 13.5, samples: 2}
                  else {value: 8.615384615384615, samples: 26}
               else if X[4] <= 0.397
                  then {value: 11.225806451612904, samples: 31}
                  else {value: 9.804878048780488, samples: 82}
        else if X[4] <= 0.42
            then if X[2] <= 0.1475
               then {value: 20.0, samples: 2}
               else if X[6] <= 0.3375
                  then {value: 18.0, samples: 3}
                  else {value: 12.875, samples: 8}
            else if X[4] <= 0.5535000000000001
               then {value: 11.581395348837209, samples: 43}
               else {value: 10.267857142857142, samples: 56}
   else {value: 17.0, samples: 4}
else if X[4] <= 0.388
   then if X[0] <= 0.59
      then {value: 15.333333333333334, samples: 3}
      else {value: 24.5, samples: 2}
   else if X[6] <= 0.6825
      then if X[0] <= 0.7875000000000001
         then if X[5] <= 0.34425
            then if X[6] <= 0.3895
               then {value: 11.4, samples: 10}
               else if X[0] <= 0.585
                  then {value: 8.0, samples: 1}
                  else if X[3] <= 1.80225

then if X[4] <= 0.66425
    then {value: 16.454545454545453, samples: 11}
    else {value: 12.8, samples: 5}
  else {value: 22.0, samples: 1}
else if X[3] <= 1.499
  then {value: 10.0, samples: 4}
  else if X[4] <= 0.695
    then {value: 13.875, samples: 8}
    else {value: 11.3, samples: 20}
else {value: 23.0, samples: 1}
else {value: 20.5, samples: 2}

This is the evaluation for mse:
8.394795118350348

Fold 4
Regression Tree:

if X[6] <= 0.2495
  then if X[6] <= 0.06975
    then if X[6] <= 0.029249999999999998
      then {value: 4.277777777777778, samples: 18}
      else {value: 6.415094339622642, samples: 53}
    else if X[6] <= 0.13975
      then {value: 7.929292929292929, samples: 99}
      else if X[4] <= 0.236
        then if X[2] <= 0.1325
          then if X[1] <= 0.3825
            then {value: 8.925925925925926, samples: 27}
            else if X[2] <= 0.1175
              then {value: 15.0, samples: 2}
              else {value: 9.5, samples: 4}
          else if X[3] <= 0.569
            then {value: 11.416666666666666, samples: 12}
            else {value: 14.6, samples: 5}
        else if X[6] <= 0.17675
          then {value: 8.48936170212766, samples: 47}
          else if X[4] <= 0.3185
            then {value: 10.272727272727273, samples: 33}
            else {value: 8.885245901639344, samples: 61}
  else if X[6] <= 0.3895
    then if X[4] <= 0.4015
      then if X[3] <= 0.9722500000000001
        then if X[4] <= 0.32675
          then if X[4] <= 0.27925
            then {value: 12.4, samples: 10}
            else if X[3] <= 0.778
              then {value: 23.0, samples: 1}
              else if X[1] <= 0.4075
                then {value: 17.333333333333332, samples: 3}

else {value: 12.571428571428571, samples: 7}
else {value: 10.88888888888889, samples: 27}
else if X[5] <= 0.195
then {value: 26.0, samples: 1}
else if X[5] <= 0.20174999999999998
then {value: 10.0, samples: 1}
else {value: 17.142857142857142, samples: 7}
else if X[6] <= 0.312
then {value: 9.714285714285714, samples: 56}
else if X[4] <= 0.5049999999999999
then if X[0] <= 0.6225
then {value: 12.571428571428571, samples: 21}
else {value: 9.714285714285714, samples: 7}
else if X[2] <= 0.1375
then {value: 14.0, samples: 1}
else if X[5] <= 0.35624999999999996
then {value: 10.0, samples: 61}
else if X[1] <= 0.52
then {value: 10.0, samples: 6}
else {value: 18.0, samples: 1}
else if X[6] <= 0.579
then if X[5] <= 0.34425
then if X[1] <= 0.58
then if X[2] <= 0.1875
then if X[6] <= 0.53
then if X[4] <= 0.53625
then if X[0] <= 0.65
then {value: 12.25, samples: 8}
else if X[4] <= 0.50875
then {value: 19.5, samples: 2}
else {value: 13.5, samples: 2}
else {value: 11.1875, samples: 16}
else {value: 19.0, samples: 1}
else if X[6] <= 0.43775
then if X[0] <= 0.6174999999999999
then {value: 15.0, samples: 3}
else {value: 19.8, samples: 5}
else {value: 13.0, samples: 10}
else if X[0] <= 0.6699999999999999
then {value: 12.0, samples: 1}
else {value: 29.0, samples: 1}
else if X[2] <= 0.2225
then {value: 11.363636363636363, samples: 33}
else {value: 14.6, samples: 5}
else if X[1] <= 0.545
then {value: 20.666666666666668, samples: 3}
else if X[3] <= 2.07475
then {value: 10.666666666666666, samples: 3}
else if X[0] <= 0.775
then {value: 16.0, samples: 3}
else {value: 23.0, samples: 1}

This is the evaluation for mse:
10.408217498326641

Fold 5
Regression Tree:

```
if X[6] <= 0.1695
  then if X[6] <= 0.06975
    then if X[0] <= 0.26
      then {value: 4.25, samples: 16}
      else {value: 6.390243902439025, samples: 41}
    else if X[2] <= 0.1225
      then {value: 7.954128440366972, samples: 109}
      else if X[4] <= 0.19025
        then {value: 10.454545454545455, samples: 11}
        else {value: 8.432432432432432, samples: 37}
  else if X[2] <= 0.1775
    then if X[6] <= 0.32375
      then if X[4] <= 0.30925
        then if X[3] <= 0.75675
          then if X[4] <= 0.2365
            then if X[2] <= 0.1375
              then {value: 11.133333333333333, samples: 15}
              else {value: 13.75, samples: 8}
            else if X[2] <= 0.14250000000000002
              then if X[0] <= 0.4975
                then if X[0] <= 0.4875
                  then {value: 9.0, samples: 2}
                  else {value: 15.0, samples: 2}
                else {value: 8.72, samples: 25}
              else {value: 11.066666666666666, samples: 15}
          else if X[1] <= 0.3975
            then {value: 21.0, samples: 2}
            else if X[3] <= 0.77925
              then if X[3] <= 0.7695000000000001
                then {value: 13.0, samples: 3}
                else {value: 19.0, samples: 2}
              else {value: 12.0, samples: 7}
        else if X[6] <= 0.23425
          then {value: 8.934782608695652, samples: 46}
          else if X[4] <= 0.397
            then {value: 10.928571428571429, samples: 42}
            else {value: 9.595505617977528, samples: 89}
      else if X[4] <= 0.42
        then if X[2] <= 0.15
          then {value: 20.0, samples: 2}
          else if X[2] <= 0.1625
            then {value: 12.833333333333334, samples: 6}
            else {value: 18.25, samples: 4}
```

else if X[6] <= 0.5774999999999999
  then if X[1] <= 0.5425
    then if X[4] <= 0.5535000000000001
      then {value: 11.28888888888889, samples: 45}
      else if X[6] <= 0.41774999999999995
        then {value: 9.76923076923077, samples: 39}
        else {value: 12.8, samples: 5}
    else if X[3] <= 1.2785000000000002
      then {value: 21.0, samples: 1}
      else {value: 12.2, samples: 5}
  else {value: 17.0, samples: 2}
else if X[0] <= 0.545
  then {value: 18.6, samples: 5}
  else if X[6] <= 0.5845
    then if X[5] <= 0.35
      then if X[6] <= 0.3725
        then {value: 11.473684210526315, samples: 19}
        else if X[5] <= 0.1925
          then {value: 26.0, samples: 1}
          else if X[1] <= 0.58
            then if X[4] <= 0.58875
              then {value: 15.5, samples: 14}
              else {value: 11.916666666666666, samples: 12}
            else if X[0] <= 0.6699999999999999
              then {value: 12.0, samples: 1}
              else {value: 29.0, samples: 1}
      else if X[2] <= 0.225
        then {value: 11.04, samples: 25}
        else {value: 16.0, samples: 2}
    else if X[2] <= 0.2175
      then if X[1] <= 0.56
        then {value: 23.0, samples: 2}
        else if X[0] <= 0.78
          then {value: 15.0, samples: 2}
          else {value: 23.0, samples: 1}
      else {value: 12.0, samples: 2}

This is the evaluation for mse:
6.585459486122514

For These Hyper-Parameters: 5 and 0.1
Fold 1
Regression Tree:

if X[6] <= 0.18075
  then if X[5] <= 0.032
    then {value: 5.166666666666667, samples: 42}
    else if X[6] <= 0.129
      then {value: 7.534653465346534, samples: 101}
      else {value: 8.851485148514852, samples: 101}

else if X[2] <= 0.1775
  then if X[4] <= 0.30925
    then if X[3] <= 0.7715000000000001
      then {value: 11.22, samples: 50}
      else if X[1] <= 0.3975
        then {value: 21.0, samples: 2}
        else if X[3] <= 0.77625
          then {value: 23.0, samples: 1}
          else {value: 13.5, samples: 12}
    else if X[6] <= 0.32825000000000004
      then {value: 9.560975609756097, samples: 164}
      else if X[4] <= 0.4275
        then {value: 14.666666666666666, samples: 9}
        else if X[6] <= 0.53
          then {value: 10.821428571428571, samples: 84}
          else {value: 17.5, samples: 2}
  else if X[4] <= 0.5157499999999999
    then if X[0] <= 0.5974999999999999
      then if X[0] <= 0.545
        then {value: 19.0, samples: 3}
        else {value: 11.222222222222221, samples: 9}
      else if X[4] <= 0.388
        then {value: 24.5, samples: 2}
        else {value: 15.615384615384615, samples: 13}
    else if X[6] <= 0.598
      then if X[6] <= 0.4075
        then {value: 10.333333333333334, samples: 21}
        else if X[5] <= 0.32875
          then if X[1] <= 0.575
            then {value: 13.909090909090908, samples: 11}
            else {value: 29.0, samples: 1}
          else {value: 11.727272727272727, samples: 33}
      else {value: 17.0, samples: 7}

This is the evaluation for mse:
6.730581441483596

Fold 2
Regression Tree:

if X[6] <= 0.17575
  then if X[5] <= 0.032
    then {value: 5.194444444444445, samples: 36}
    else if X[6] <= 0.10975
      then {value: 7.558139534883721, samples: 86}
      else if X[4] <= 0.1935
        then {value: 9.717391304347826, samples: 46}
        else {value: 8.082191780821917, samples: 73}
  else if X[2] <= 0.1625
    then if X[4] <= 0.287

then if X[3] <= 0.78575
            then {value: 11.25, samples: 44}
            else {value: 17.75, samples: 4}
         else if X[6] <= 0.36824999999999997
            then {value: 9.680473372781066, samples: 169}
            else {value: 13.3, samples: 10}
      else if X[4] <= 0.404
         then if X[1] <= 0.49
            then if X[3] <= 0.75475
               then {value: 21.0, samples: 2}
               else if X[6] <= 0.3225
                  then {value: 13.11111111111111, samples: 18}
                  else {value: 17.0, samples: 7}
            else {value: 26.0, samples: 1}
         else if X[6] <= 0.4055
            then if X[4] <= 0.5015000000000001
               then if X[1] <= 0.545
                  then {value: 11.933333333333334, samples: 30}
                  else {value: 21.0, samples: 1}
               else {value: 10.073529411764707, samples: 68}
            else if X[6] <= 0.6825
               then if X[0] <= 0.785
                  then if X[4] <= 0.591
                     then {value: 14.047619047619047, samples: 21}
                     else if X[2] <= 0.2275
                        then if X[0] <= 0.6725000000000001
                           then if X[6] <= 0.58
                              then {value: 12.3125, samples: 16}
                              else {value: 19.5, samples: 2}
                           else {value: 11.482758620689655, samples: 29}
                        else {value: 16.5, samples: 2}
                  else {value: 23.0, samples: 1}
               else {value: 21.0, samples: 2}

This is the evaluation for mse:
8.131359001698165

Fold 3
Regression Tree:

 if X[6] <= 0.1695
   then if X[6] <= 0.06975
     then {value: 5.878378378378378, samples: 74}
     else {value: 8.294871794871796, samples: 156}
   else if X[2] <= 0.1825
     then if X[6] <= 0.32375
       then if X[4] <= 0.3075
         then if X[3] <= 0.75675
           then {value: 10.615384615384615, samples: 65}
           else {value: 14.266666666666667, samples: 15}

else {value: 9.685534591194969, samples: 159}
else if X[4] <= 0.42
then if X[1] <= 0.4575
then {value: 17.25, samples: 8}
else {value: 12.333333333333334, samples: 6}
else if X[6] <= 0.53
then if X[4] <= 0.55225
then if X[3] <= 1.332
then {value: 11.292682926829269, samples: 41}
else {value: 18.0, samples: 2}
else {value: 10.444444444444445, samples: 54}
else {value: 16.5, samples: 4}
else if X[4] <= 0.40449999999999997
then if X[1] <= 0.4825
then {value: 15.777777777777779, samples: 9}
else {value: 26.0, samples: 1}
else if X[6] <= 0.3895
then {value: 10.470588235294118, samples: 17}
else if X[5] <= 0.3465
then if X[1] <= 0.5825
then if X[6] <= 0.5575
then {value: 14.047619047619047, samples: 21}
else {value: 21.0, samples: 3}
else {value: 29.0, samples: 1}
else if X[0] <= 0.7875000000000001
then if X[2] <= 0.2225
then {value: 11.28, samples: 25}
else {value: 15.166666666666666, samples: 6}
else {value: 23.0, samples: 1}

This is the evaluation for mse:
7.604983345707496

Fold 4
Regression Tree:

if X[6] <= 0.1665
then if X[5] <= 0.03125
then {value: 5.214285714285714, samples: 42}
else {value: 8.04812834224599, samples: 187}
else if X[2] <= 0.1775
then if X[6] <= 0.31925000000000003
then if X[0] <= 0.5025
then if X[3] <= 0.6675
then {value: 11.038461538461538, samples: 26}
else if X[4] <= 0.2475
then {value: 17.0, samples: 5}
else {value: 10.25, samples: 4}
else if X[6] <= 0.2555
then {value: 9.225225225225225, samples: 111}

else if X[4] <= 0.31125
   then if X[2] <= 0.14500000000000002
      then {value: 20.0, samples: 2}
      else {value: 12.142857142857142, samples: 7}
   else {value: 10.141176470588235, samples: 85}
else if X[4] <= 0.42
  then {value: 15.272727272727273, samples: 11}
  else if X[6] <= 0.53
   then if X[4] <= 0.48875
     then if X[1] <= 0.5275000000000001
       then {value: 12.133333333333333, samples: 15}
       else {value: 21.0, samples: 1}
     else {value: 10.706666666666667, samples: 75}
   else {value: 16.666666666666668, samples: 3}
else if X[4] <= 0.40549999999999997
  then if X[1] <= 0.485
   then if X[0] <= 0.5325
    then {value: 20.0, samples: 3}
    else if X[0] <= 0.6125
      then {value: 13.5, samples: 8}
      else {value: 23.0, samples: 1}
   else {value: 26.0, samples: 1}
  else if X[6] <= 0.3895
   then {value: 10.869565217391305, samples: 23}
   else if X[5] <= 0.34425
    then if X[3] <= 1.784
     then if X[6] <= 0.43525
       then {value: 17.833333333333332, samples: 6}
       else {value: 12.875, samples: 16}
     else {value: 22.666666666666668, samples: 3}
    else {value: 11.969696969696969, samples: 33}

This is the evaluation for mse:
6.1674505136425

Fold 5
Regression Tree:

if X[6] <= 0.1695
  then if X[6] <= 0.06975
    then {value: 5.838235294117647, samples: 68}
    else {value: 8.26875, samples: 160}
  else if X[6] <= 0.43374999999999997
    then if X[4] <= 0.1615
     then {value: 22.0, samples: 1}
     else if X[2] <= 0.1625
      then if X[4] <= 0.23725
       then {value: 12.26086956521739, samples: 23}
       else if X[6] <= 0.2345
         then {value: 9.21951219512195, samples: 82}

else if X[4] <= 0.39975000000000005
   then if X[2] <= 0.1375
      then if X[0] <= 0.5625
         then if X[0] <= 0.535
           then {value: 12.5, samples: 2}
           else {value: 22.0, samples: 2}
         else {value: 12.0, samples: 6}
      else {value: 11.3, samples: 40}
   else {value: 9.770833333333334, samples: 96}
else if X[4] <= 0.48875
  then if X[3] <= 1.2257500000000001
    then {value: 13.228571428571428, samples: 35}
    else {value: 18.666666666666668, samples: 3}
  else if X[6] <= 0.40800000000000003
    then {value: 10.19277108433735, samples: 83}
    else if X[5] <= 0.293
      then {value: 18.0, samples: 2}
      else {value: 10.88888888888889, samples: 9}
else if X[6] <= 0.6825
  then if X[0] <= 0.7875000000000001
    then if X[4] <= 0.399
      then {value: 23.0, samples: 1}
      else if X[4] <= 0.7562500000000001
        then if X[3] <= 1.79025
          then {value: 13.580645161290322, samples: 31}
          else {value: 25.5, samples: 2}
        else {value: 11.88888888888889, samples: 18}
    else {value: 23.0, samples: 1}
  else {value: 19.666666666666668, samples: 3}

This is the evaluation for mse:
8.867494697756523

For These Hyper-Parameters: 5 and 0.15
Fold 1
Regression Tree:

if X[6] <= 0.1695
  then if X[6] <= 0.056999999999999995
    then {value: 5.533333333333333, samples: 60}
    else {value: 8.220930232558139, samples: 172}
  else if X[2] <= 0.1825
    then if X[6] <= 0.32375
      then if X[4] <= 0.24275
        then if X[3] <= 0.782
          then {value: 12.03448275862069, samples: 29}
          else {value: 23.0, samples: 1}
        else if X[6] <= 0.2555
          then {value: 9.303571428571429, samples: 112}
          else if X[4] <= 0.31125

then {value: 13.75, samples: 12}
                        else {value: 10.11111111111111, samples: 90}
            else if X[4] <= 0.42
                then {value: 15.384615384615385, samples: 13}
                else if X[6] <= 0.53
                    then {value: 10.91304347826087, samples: 92}
                    else {value: 18.5, samples: 2}
        else if X[4] <= 0.40449999999999997
            then {value: 16.666666666666668, samples: 9}
            else if X[6] <= 0.3895
                then {value: 10.6, samples: 15}
                else if X[5] <= 0.34425
                    then if X[3] <= 1.784
                        then {value: 14.238095238095237, samples: 21}
                        else if X[4] <= 0.84825
                            then {value: 25.0, samples: 3}
                            else {value: 14.5, samples: 2}
                    else if X[0] <= 0.7875000000000001
                        then {value: 12.117647058823529, samples: 34}
                        else {value: 23.0, samples: 1}

This is the evaluation for mse:
5.26847563549752

Fold 2
Regression Tree:

 if X[6] <= 0.1695
    then if X[6] <= 0.056999999999999995
        then {value: 5.620689655172414, samples: 58}
        else {value: 8.141242937853107, samples: 177}
    else if X[6] <= 0.41974999999999996
        then if X[2] <= 0.1625
            then if X[4] <= 0.219
                then {value: 12.733333333333333, samples: 15}
                else if X[6] <= 0.30025
                    then {value: 9.668674698795181, samples: 166}
                    else if X[2] <= 0.1275
                        then {value: 21.0, samples: 1}
                        else {value: 10.78, samples: 50}
            else if X[4] <= 0.487
                then if X[6] <= 0.37475
                    then if X[3] <= 0.7525
                        then {value: 21.0, samples: 2}
                        else {value: 12.615384615384615, samples: 39}
                    else {value: 17.625, samples: 8}
                else {value: 10.310344827586206, samples: 87}
        else if X[5] <= 0.34425
            then if X[3] <= 1.77425
                then {value: 14.10344827586207, samples: 29}

else if X[4] <= 0.7545
                then {value: 25.0, samples: 3}
                else {value: 15.666666666666, samples: 3}
        else if X[0] <= 0.7875000000000001
            then {value: 11.96551724137931, samples: 29}
            else {value: 23.0, samples: 1}

This is the evaluation for mse:
6.576728603960209

Fold 3
Regression Tree:

 if X[6] <= 0.1695
    then if X[6] <= 0.06975
        then {value: 5.857142857142857, samples: 63}
        else {value: 8.299363057324841, samples: 157}
    else if X[2] <= 0.1775
        then if X[6] <= 0.53
            then if X[0] <= 0.4975
                then {value: 12.416666666666666, samples: 24}
                else if X[6] <= 0.31225
                    then {value: 9.909952606635072, samples: 211}
                    else if X[4] <= 0.42
                        then {value: 15.666666666666666, samples: 9}
                        else {value: 10.794117647058824, samples: 102}
            else {value: 16.5, samples: 4}
        else if X[0] <= 0.545
            then {value: 19.25, samples: 4}
            else if X[6] <= 0.38825
                then if X[4] <= 0.4395
                    then if X[6] <= 0.3675
                        then {value: 12.5, samples: 8}
                        else {value: 26.0, samples: 1}
                    else {value: 10.26086956521739, samples: 23}
                else if X[5] <= 0.34425
                    then if X[3] <= 1.784
                        then {value: 14.521739130434783, samples: 23}
                        else if X[3] <= 1.8639999999999999
                            then {value: 25.5, samples: 2}
                            else {value: 14.5, samples: 2}
                    else if X[0] <= 0.7875000000000001
                        then {value: 12.088235294117647, samples: 34}
                        else {value: 23.0, samples: 1}

This is the evaluation for mse:
6.450811899605086

Fold 4
Regression Tree:

if X[6] <= 0.17575
  then if X[6] <= 0.069
    then {value: 5.985294117647059, samples: 68}
    else {value: 8.411428571428571, samples: 175}
  else if X[6] <= 0.3895
    then if X[4] <= 0.32475
      then if X[6] <= 0.2375
        then {value: 10.764705882352942, samples: 51}
        else if X[1] <= 0.4175
          then {value: 17.333333333333332, samples: 12}
          else {value: 12.38888888888889, samples: 18}
      else if X[6] <= 0.2495
        then {value: 8.966666666666667, samples: 60}
        else if X[5] <= 0.13924999999999998
          then {value: 21.0, samples: 1}
          else {value: 10.671875, samples: 192}
    else if X[6] <= 0.6779999999999999
      then if X[0] <= 0.785
        then if X[4] <= 0.52875
          then if X[3] <= 1.217
            then {value: 11.75, samples: 4}
            else if X[3] <= 1.2535
              then {value: 21.666666666666668, samples: 3}
              else {value: 14.307692307692308, samples: 13}
          else if X[6] <= 0.41974999999999996
            then {value: 10.722222222222221, samples: 18}
            else if X[5] <= 0.322
              then if X[1] <= 0.575
                then {value: 13.3, samples: 10}
                else {value: 29.0, samples: 1}
              else {value: 12.105263157894736, samples: 38}
        else {value: 23.0, samples: 1}
      else {value: 19.666666666666668, samples: 3}

This is the evaluation for mse:
6.966647064356609

Fold 5
Regression Tree:

if X[6] <= 0.17925
  then if X[5] <= 0.03325
    then {value: 5.15, samples: 40}
    else {value: 8.168316831683168, samples: 202}
  else if X[2] <= 0.1775
    then if X[4] <= 0.30925
      then if X[3] <= 0.75675
        then {value: 10.882352941176471, samples: 51}
        else {value: 14.666666666666666, samples: 18}

else if X[6] <= 0.302
    then {value: 9.417266187050359, samples: 139}
    else {value: 11.204918032786885, samples: 122}
else if X[4] <= 0.515
    then if X[6] <= 0.241
        then {value: 9.0, samples: 2}
        else if X[4] <= 0.388
            then if X[0] <= 0.59
                then {value: 16.142857142857142, samples: 7}
                else {value: 24.5, samples: 2}
            else {value: 14.5, samples: 14}
    else if X[6] <= 0.6825
        then {value: 11.942028985507246, samples: 69}
        else {value: 20.5, samples: 2}

This is the evaluation for mse:
8.695643246747997

For These Hyper-Parameters: 5 and 0.2
Fold 1
Regression Tree:

if X[6] <= 0.18075
    then if X[6] <= 0.06975
        then {value: 5.818181818181818, samples: 77}
        else {value: 8.396825396825397, samples: 189}
    else if X[2] <= 0.1775
        then if X[4] <= 0.30925
            then if X[3] <= 0.75825
                then {value: 11.146341463414634, samples: 41}
                else {value: 15.0, samples: 17}
        else if X[6] <= 0.30174999999999996
            then {value: 9.39516129032258, samples: 124}
            else {value: 11.209677419354838, samples: 124}
    else if X[4] <= 0.40549999999999997
        then {value: 16.46153846153846, samples: 13}
        else if X[6] <= 0.5845
            then if X[6] <= 0.3895
                then {value: 10.666666666666666, samples: 24}
                else if X[5] <= 0.34425
                    then if X[1] <= 0.58
                        then {value: 14.181818181818182, samples: 22}
                        else if X[0] <= 0.6699999999999999
                            then {value: 12.0, samples: 1}
                            else {value: 29.0, samples: 1}
                    else {value: 11.857142857142858, samples: 28}
            else {value: 17.285714285714285, samples: 7}

This is the evaluation for mse:
5.473857847073981

Fold 2
Regression Tree:

 if X[6] <= 0.1775
   then if X[5] <= 0.032
     then {value: 5.05, samples: 40}
     else {value: 8.217821782178218, samples: 202}
   else if X[2] <= 0.1775
     then if X[6] <= 0.32375
       then if X[4] <= 0.30925
         then if X[3] <= 0.7575000000000001
           then {value: 10.755102040816327, samples: 49}
           else {value: 14.642857142857142, samples: 14}
         else {value: 9.74375, samples: 160}
       else if X[4] <= 0.42
         then {value: 15.083333333333334, samples: 12}
         else {value: 11.150537634408602, samples: 93}
     else if X[0] <= 0.545
       then {value: 18.6, samples: 5}
       else if X[1] <= 0.5825
         then {value: 12.305882352941177, samples: 85}
         else if X[2] <= 0.19
           then {value: 29.0, samples: 1}
           else {value: 14.571428571428571, samples: 7}

This is the evaluation for mse:
5.641598151870121

Fold 3
Regression Tree:

 if X[6] <= 0.17575
   then if X[6] <= 0.06875
     then {value: 5.892307692307693, samples: 65}
     else {value: 8.385474860335195, samples: 179}
   else if X[6] <= 0.4055
     then if X[4] <= 0.32675
       then if X[3] <= 0.77675
         then {value: 10.78688524590164, samples: 61}
         else {value: 14.590909090909092, samples: 22}
       else if X[6] <= 0.312
         then {value: 9.623287671232877, samples: 146}
         else if X[4] <= 0.5025
           then {value: 13.027027027027026, samples: 37}
           else {value: 10.308641975308642, samples: 81}
     else if X[5] <= 0.34375
       then if X[3] <= 1.77425
         then {value: 13.787878787878787, samples: 33}
         else {value: 22.0, samples: 5}

else {value: 12.333333333333334, samples: 39}

This is the evaluation for mse:
8.47278922202239

Fold 4
Regression Tree:

if X[6] <= 0.1665
  then if X[5] <= 0.032
    then {value: 5.2439024390243905, samples: 41}
    else {value: 7.983870967741935, samples: 186}
  else if X[2] <= 0.1875
    then if X[6] <= 0.32375
      then if X[4] <= 0.219
        then {value: 13.0, samples: 19}
        else if X[6] <= 0.25825
          then {value: 9.535433070866143, samples: 127}
          else if X[4] <= 0.31925000000000003
            then {value: 13.5, samples: 14}
            else {value: 10.115789473684211, samples: 95}
      else if X[4] <= 0.42
        then {value: 15.5, samples: 12}
        else {value: 11.092592592592593, samples: 108}
    else if X[4] <= 0.50075
      then {value: 16.76923076923077, samples: 13}
      else {value: 12.679245283018869, samples: 53}

This is the evaluation for mse:
9.491661475484094

Fold 5
Regression Tree:

if X[6] <= 0.1695
  then if X[6] <= 0.06975
    then {value: 5.921875, samples: 64}
    else {value: 8.371621621621621, samples: 148}
  else if X[2] <= 0.1775
    then if X[6] <= 0.53
      then if X[4] <= 0.24225
        then {value: 12.464285714285714, samples: 28}
        else if X[6] <= 0.2555
          then {value: 9.394957983193278, samples: 119}
          else if X[4] <= 0.4015
            then {value: 12.547619047619047, samples: 42}
            else {value: 10.358024691358025, samples: 162}
      else {value: 16.5, samples: 4}
    else if X[4] <= 0.388
      then {value: 18.444444444444443, samples: 9}

else if X[6] <= 0.3895
    then {value: 10.923076923076923, samples: 26}
    else if X[5] <= 0.35
      then if X[3] <= 1.784
        then {value: 14.26923076923077, samples: 26}
        else {value: 20.8, samples: 5}
      else {value: 12.085714285714285, samples: 35}

This is the evaluation for mse:
6.141032984851419

For These Hyper-Parameters: 5 and 0.25
Fold 1
Regression Tree:

if X[6] <= 0.17925
  then if X[6] <= 0.06975
    then {value: 6.0625, samples: 64}
    else {value: 8.428571428571429, samples: 189}
  else if X[6] <= 0.40874999999999995
    then if X[4] <= 0.32675
      then if X[6] <= 0.22999999999999998
        then {value: 10.851063829787234, samples: 47}
        else {value: 13.909090909090908, samples: 33}
      else {value: 10.265625, samples: 256}
    else if X[6] <= 0.5845
      then if X[4] <= 0.70575
        then if X[1] <= 0.58
          then {value: 13.534883720930232, samples: 43}
          else {value: 29.0, samples: 1}
        else {value: 11.407407407407407, samples: 27}
      else {value: 17.375, samples: 8}

This is the evaluation for mse:
7.4686408551456935

Fold 2
Regression Tree:

if X[6] <= 0.1695
  then if X[6] <= 0.056999999999999995
    then {value: 5.446428571428571, samples: 56}
    else {value: 8.128654970760234, samples: 171}
  else if X[6] <= 0.37475
    then if X[2] <= 0.1625
      then if X[4] <= 0.28174999999999994
        then if X[3] <= 0.782
          then {value: 11.020408163265307, samples: 49}
          else {value: 19.666666666666668, samples: 3}
        else {value: 9.781420765027322, samples: 183}

else {value: 11.473684210526315, samples: 95}
else if X[4] <= 0.40049999999999997
then {value: 18.0, samples: 6}
else if X[6] <= 0.3895
then {value: 10.272727272727273, samples: 11}
else if X[4] <= 0.76725
then if X[3] <= 1.79025
then {value: 13.129032258064516, samples: 62}
else {value: 23.0, samples: 3}
else {value: 11.413793103448276, samples: 29}

This is the evaluation for mse:
8.467262472008942

Fold 3
Regression Tree:

if X[6] <= 0.169
then if X[5] <= 0.028999999999999998
then {value: 5.026315789473684, samples: 38}
else {value: 8.032608695652174, samples: 184}
else if X[2] <= 0.1775
then if X[6] <= 0.32375
then if X[4] <= 0.23725
then {value: 12.416666666666666, samples: 24}
else if X[6] <= 0.2345
then {value: 9.093023255813954, samples: 86}
else if X[4] <= 0.31125
then {value: 14.076923076923077, samples: 13}
else {value: 9.983471074380166, samples: 121}
else if X[4] <= 0.42
then {value: 15.666666666666666, samples: 12}
else {value: 11.03125, samples: 96}
else if X[4] <= 0.40549999999999997
then {value: 16.615384615384617, samples: 13}
else if X[6] <= 0.3895
then {value: 10.5, samples: 22}
else if X[5] <= 0.322
then if X[3] <= 1.6895
then {value: 14.928571428571429, samples: 14}
else {value: 26.5, samples: 2}
else {value: 12.465116279069768, samples: 43}

This is the evaluation for mse:
5.802559960827109

Fold 4
Regression Tree:

if X[6] <= 0.1695

then if X[5] <= 0.03325
            then {value: 5.181818181818182, samples: 44}
            else {value: 8.05, samples: 180}
        else if X[2] <= 0.1775
            then if X[6] <= 0.53
                then if X[4] <= 0.30925
                    then if X[3] <= 0.74375
                        then {value: 10.444444444444445, samples: 63}
                        else {value: 14.6, samples: 20}
                    else {value: 10.181467181467182, samples: 259}
                else {value: 16.5, samples: 4}
            else if X[4] <= 0.389
                then {value: 18.0, samples: 9}
                else if X[6] <= 0.5845
                    then {value: 12.25, samples: 80}
                    else {value: 16.88888888888889, samples: 9}

This is the evaluation for mse:
8.745308966496513

Fold 5
Regression Tree:

 if X[6] <= 0.18075
    then if X[6] <= 0.06975
        then {value: 5.928571428571429, samples: 70}
        else {value: 8.5, samples: 182}
    else if X[2] <= 0.1775
        then if X[6] <= 0.32375
            then {value: 10.154545454545454, samples: 220}
            else if X[4] <= 0.42
                then {value: 15.25, samples: 12}
                else {value: 11.129032258064516, samples: 93}
        else if X[0] <= 0.5475000000000001
            then {value: 18.6, samples: 5}
            else if X[6] <= 0.47324999999999995
                then {value: 12.365079365079366, samples: 63}
                else if X[6] <= 0.47524999999999995
                    then {value: 29.0, samples: 1}
                    else {value: 14.545454545454545, samples: 22}

This is the evaluation for mse:
6.9990435601255925

For These Hyper-Parameters: 7 and 0.05
Fold 1
Regression Tree:

 if X[6] <= 0.1695
    then if X[5] <= 0.032

```
        then {value: 5.048780487804878, samples: 41}
      else if X[2] <= 0.1225
        then if X[6] <= 0.144
          then if X[6] <= 0.06875
            then {value: 6.9655172413793105, samples: 29}
            else if X[4] <= 0.10275
              then if X[1] <= 0.315
                then {value: 8.75, samples: 20}
                else {value: 15.0, samples: 1}
              else {value: 7.469135802469136, samples: 81}
          else {value: 8.875, samples: 16}
        else if X[4] <= 0.169
          then if X[5] <= 0.09175
            then {value: 8.75, samples: 4}
            else {value: 13.2, samples: 5}
          else {value: 8.7, samples: 40}
  else if X[2] <= 0.1775
    then if X[6] <= 0.32375
      then if X[4] <= 0.307
        then if X[3] <= 0.75675
          then if X[4] <= 0.23725
            then {value: 12.409090909090908, samples: 22}
            else if X[6] <= 0.17575
              then {value: 7.875, samples: 8}
              else {value: 10.4, samples: 30}
          else if X[6] <= 0.265
            then if X[2] <= 0.125
              then {value: 12.0, samples: 1}
              else if X[5] <= 0.1795
                then {value: 23.0, samples: 2}
                else {value: 16.0, samples: 2}
            else {value: 12.777777777777779, samples: 9}
        else if X[6] <= 0.24375
          then if X[0] <= 0.675
            then if X[4] <= 0.3925
              then if X[3] <= 0.876
                then {value: 9.09375, samples: 32}
                else {value: 13.5, samples: 2}
              else {value: 8.48, samples: 25}
            else {value: 12.0, samples: 1}
          else {value: 10.121212121212121, samples: 99}
      else if X[4] <= 0.43725
        then if X[1] <= 0.4575
          then {value: 17.428571428571427, samples: 7}
          else if X[4] <= 0.38925
            then {value: 10.333333333333334, samples: 3}
            else {value: 14.666666666666666, samples: 6}
        else if X[6] <= 0.5075000000000001
          then if X[1] <= 0.5475000000000001
            then if X[4] <= 0.5535000000000001
              then if X[5] <= 0.30374999999999996
```

then {value: 10.942857142857143, samples: 35}
               else {value: 14.666666666666666, samples: 3}
            else {value: 10.255813953488373, samples: 43}
         else if X[0] <= 0.6725000000000001
            then {value: 21.0, samples: 1}
            else {value: 12.0, samples: 4}
      else {value: 16.2, samples: 5}
   else if X[4] <= 0.40549999999999997
      then if X[1] <= 0.485
         then if X[0] <= 0.5325
            then {value: 20.0, samples: 3}
            else if X[0] <= 0.6125
               then if X[3] <= 0.804
                  then {value: 8.0, samples: 1}
                  else {value: 14.11111111111111, samples: 9}
               else {value: 23.0, samples: 1}
         else {value: 26.0, samples: 1}
      else if X[6] <= 0.3895
         then {value: 10.708333333333334, samples: 24}
         else if X[5] <= 0.322
            then if X[3] <= 1.70425
               then if X[0] <= 0.585
                  then {value: 8.0, samples: 1}
                  else {value: 15.125, samples: 16}
               else {value: 26.5, samples: 2}
            else if X[3] <= 2.5172499999999998
               then if X[2] <= 0.22
                  then if X[5] <= 0.34425
                     then {value: 14.166666666666666, samples: 6}
                     else if X[3] <= 1.499
                        then {value: 9.5, samples: 4}
                        else if X[4] <= 0.674
                           then {value: 15.5, samples: 2}
                           else {value: 11.071428571428571, samples: 14}
                  else {value: 15.0, samples: 5}
               else {value: 20.0, samples: 2}

This is the evaluation for mse:
5.495363715374767

Fold 2
Regression Tree:

 if X[6] <= 0.1695
   then if X[5] <= 0.032
      then {value: 5.186046511627907, samples: 43}
      else if X[2] <= 0.1125
         then {value: 7.744897959183674, samples: 98}
         else if X[4] <= 0.187
            then if X[5] <= 0.0985

then {value: 9.0, samples: 19}
else if X[4] <= 0.16375
    then {value: 16.0, samples: 2}
    else {value: 10.5, samples: 4}
else {value: 8.344827586206897, samples: 58}
else if X[6] <= 0.3495
  then if X[4] <= 0.219
    then if X[3] <= 0.6172500000000001
      then if X[6] <= 0.174
        then {value: 15.0, samples: 3}
        else {value: 11.090909090909092, samples: 11}
      else {value: 17.5, samples: 4}
    else if X[6] <= 0.25475000000000003
      then if X[4] <= 0.386
        then if X[6] <= 0.17575
          then {value: 8.4, samples: 15}
          else {value: 10.236842105263158, samples: 76}
        else {value: 8.5, samples: 38}
      else if X[4] <= 0.326
        then if X[3] <= 0.7715000000000001
          then {value: 11.666666666666666, samples: 6}
          else if X[3] <= 0.792
            then {value: 21.0, samples: 2}
            else {value: 14.444444444444445, samples: 9}
        else if X[2] <= 0.1625
          then if X[6] <= 0.30025
            then {value: 9.686274509803921, samples: 51}
            else if X[1] <= 0.4425
              then {value: 14.0, samples: 3}
              else {value: 10.303030303030303, samples: 33}
          else if X[5] <= 0.24575
            then if X[1] <= 0.445
              then {value: 18.0, samples: 2}
              else {value: 12.461538461538462, samples: 13}
            else {value: 10.324324324324325, samples: 37}
  else if X[6] <= 0.5845
    then if X[4] <= 0.3845
      then if X[1] <= 0.485
        then if X[2] <= 0.15
          then {value: 20.0, samples: 2}
          else {value: 14.0, samples: 5}
        else {value: 26.0, samples: 1}
      else if X[6] <= 0.43975
        then if X[4] <= 0.5527500000000001
          then if X[2] <= 0.1875
            then if X[1] <= 0.5175000000000001
              then {value: 11.61111111111111, samples: 18}
              else {value: 16.0, samples: 4}
            else {value: 19.0, samples: 3}
          else {value: 10.27659574468085, samples: 47}
        else if X[5] <= 0.322

then if X[1] <= 0.5675
    then if X[3] <= 1.405
       then {value: 11.5, samples: 8}
       else {value: 15.5, samples: 8}
    else {value: 29.0, samples: 1}
  else {value: 12.485714285714286, samples: 35}
else if X[1] <= 0.545
  then {value: 21.333333333333332, samples: 3}
  else if X[4] <= 0.867
    then {value: 11.333333333333334, samples: 3}
    else {value: 19.0, samples: 3}

This is the evaluation for mse:
8.444067619122007

Fold 3
Regression Tree:

if X[6] <= 0.19425
  then if X[6] <= 0.06975
    then if X[6] <= 0.029249999999999998
      then {value: 4.0588235294117645, samples: 17}
      else {value: 6.425925925925926, samples: 54}
    else if X[6] <= 0.13975
      then if X[2] <= 0.1225
        then if X[5] <= 0.05775
          then {value: 8.818181818181818, samples: 22}
          else {value: 7.380281690140845, samples: 71}
        else if X[0] <= 0.4525
          then {value: 9.0, samples: 5}
          else {value: 16.0, samples: 1}
      else if X[4] <= 0.19425
        then if X[1] <= 0.38
          then {value: 10.304347826086957, samples: 23}
          else {value: 17.0, samples: 1}
        else {value: 8.609756097560975, samples: 82}
  else if X[2] <= 0.1775
    then if X[4] <= 0.287
      then if X[3] <= 0.75825
        then {value: 11.2, samples: 25}
        else if X[1] <= 0.3975
          then {value: 21.0, samples: 2}
          else if X[3] <= 0.9410000000000001
            then {value: 12.666666666666666, samples: 6}
            else {value: 19.0, samples: 1}
      else if X[6] <= 0.291
        then if X[4] <= 0.397
          then if X[6] <= 0.2345
            then {value: 8.952380952380953, samples: 21}
            else {value: 10.857142857142858, samples: 28}

else {value: 9.029411764705882, samples: 68}
            else if X[4] <= 0.42
               then if X[3] <= 0.992
                  then {value: 11.833333333333334, samples: 12}
                  else if X[2] <= 0.1625
                     then {value: 12.0, samples: 2}
                     else {value: 18.0, samples: 3}
               else if X[6] <= 0.41774999999999995
                  then {value: 10.363636363636363, samples: 110}
                  else {value: 12.857142857142858, samples: 14}
        else if X[4] <= 0.50075
           then if X[5] <= 0.26775000000000004
              then if X[0] <= 0.5325
                 then {value: 20.0, samples: 3}
                 else if X[1] <= 0.4875
                    then {value: 13.666666666666666, samples: 12}
                    else if X[3] <= 1.0815000000000001
                       then {value: 26.0, samples: 1}
                       else {value: 14.25, samples: 4}
              else {value: 19.5, samples: 4}
           else if X[6] <= 0.41974999999999996
              then {value: 10.16, samples: 25}
              else if X[5] <= 0.34425
                 then if X[3] <= 1.784
                    then if X[3] <= 1.5785
                       then {value: 15.8, samples: 10}
                       else {value: 11.571428571428571, samples: 7}
                    else if X[3] <= 1.8639999999999999
                       then {value: 25.5, samples: 2}
                       else {value: 14.5, samples: 2}
                 else {value: 11.866666666666667, samples: 30}

This is the evaluation for mse:
9.652548078370641

Fold 4
Regression Tree:

 if X[6] <= 0.17575
    then if X[6] <= 0.06975
       then if X[0] <= 0.2575
          then {value: 4.235294117647059, samples: 17}
          else {value: 6.411764705882353, samples: 51}
       else if X[2] <= 0.1225
          then {value: 7.964912280701754, samples: 114}
          else if X[4] <= 0.19025
             then if X[5] <= 0.08925
                then {value: 8.75, samples: 4}
                else {value: 12.375, samples: 8}
             else {value: 8.511627906976743, samples: 43}

else if X[2] <= 0.1775
  then if X[6] <= 0.53
    then if X[4] <= 0.24375
      then if X[3] <= 0.782
        then if X[3] <= 0.64425
          then {value: 11.272727272727273, samples: 11}
          else {value: 14.666666666666666, samples: 6}
        else {value: 23.0, samples: 1}
      else if X[6] <= 0.3285
        then if X[4] <= 0.30974999999999997
          then if X[3] <= 0.766
            then {value: 10.257142857142858, samples: 35}
            else if X[6] <= 0.265
              then {value: 20.0, samples: 2}
              else {value: 12.25, samples: 8}
          else if X[6] <= 0.23475
            then {value: 8.976744186046512, samples: 43}
            else if X[4] <= 0.39975000000000005
              then {value: 10.91891891891892, samples: 37}
              else {value: 9.662790697674419, samples: 86}
        else if X[4] <= 0.42025
          then if X[2] <= 0.15
            then {value: 20.0, samples: 2}
            else if X[6] <= 0.33999999999999997
              then {value: 18.5, samples: 2}
              else {value: 13.142857142857142, samples: 7}
          else if X[4] <= 0.5535000000000001
            then if X[1] <= 0.545
              then {value: 11.439024390243903, samples: 41}
              else {value: 17.5, samples: 2}
            else {value: 10.155555555555555, samples: 45}
    else {value: 16.5, samples: 4}
  else if X[4] <= 0.388
    then if X[0] <= 0.5925
      then if X[0] <= 0.5475000000000001
        then {value: 18.75, samples: 4}
        else {value: 12.0, samples: 4}
      else {value: 24.5, samples: 2}
    else if X[6] <= 0.3895
      then if X[4] <= 0.4395
        then {value: 14.0, samples: 4}
        else {value: 10.421052631578947, samples: 19}
      else if X[5] <= 0.34425
        then if X[3] <= 1.784
          then if X[4] <= 0.663
            then if X[0] <= 0.59
              then {value: 8.0, samples: 1}
              else {value: 16.384615384615383, samples: 13}
            else {value: 12.2, samples: 10}
          else if X[0] <= 0.6775
            then {value: 19.5, samples: 2}

else {value: 26.5, samples: 2}
      else if X[0] <= 0.7875000000000001
        then if X[2] <= 0.2225
          then {value: 11.566666666666666, samples: 30}
          else {value: 14.857142857142858, samples: 7}
        else {value: 23.0, samples: 1}

This is the evaluation for mse:
6.576325427083873

Fold 5
Regression Tree:

if X[6] <= 0.1695
  then if X[5] <= 0.04525
    then if X[6] <= 0.029249999999999998
      then {value: 4.5625, samples: 16}
      else {value: 6.382978723404255, samples: 47}
    else if X[2] <= 0.1575
      then if X[6] <= 0.10975
        then {value: 7.482758620689655, samples: 58}
        else if X[3] <= 0.29325
          then {value: 15.0, samples: 1}
          else {value: 8.443298969072165, samples: 97}
      else {value: 13.0, samples: 2}
  else if X[6] <= 0.43374999999999997
    then if X[4] <= 0.30925
      then if X[3] <= 0.75675
        then if X[2] <= 0.18
          then if X[4] <= 0.23725
            then if X[3] <= 0.57725
              then if X[4] <= 0.1965
                then if X[2] <= 0.10250000000000001
                  then {value: 8.5, samples: 2}
                  else {value: 13.375, samples: 8}
                else {value: 9.285714285714286, samples: 7}
              else {value: 14.0, samples: 8}
            else if X[3] <= 0.5874999999999999
              then {value: 7.5, samples: 6}
              else if X[0] <= 0.4975
                then {value: 12.333333333333334, samples: 6}
                else {value: 9.714285714285714, samples: 28}
          else {value: 20.0, samples: 1}
        else if X[1] <= 0.3975
          then if X[2] <= 0.14
            then {value: 13.0, samples: 1}
            else {value: 21.0, samples: 2}
          else if X[2] <= 0.14500000000000002
            then if X[0] <= 0.535
              then {value: 14.0, samples: 5}

else {value: 23.0, samples: 1}
                  else {value: 13.1, samples: 10}
            else if X[6] <= 0.31875
               then if X[6] <= 0.23475
                  then {value: 8.925925925925926, samples: 54}
                  else if X[4] <= 0.397
                     then if X[3] <= 0.9235
                        then {value: 10.457142857142857, samples: 35}
                        else {value: 13.125, samples: 8}
                     else {value: 9.423076923076923, samples: 78}
                  else if X[4] <= 0.5049999999999999
                     then if X[0] <= 0.5625
                        then {value: 18.333333333333332, samples: 3}
                        else if X[1] <= 0.53
                           then if X[2] <= 0.1625
                              then {value: 11.307692307692308, samples: 13}
                              else {value: 13.545454545454545, samples: 22}
                           else {value: 21.0, samples: 1}
                     else {value: 10.261363636363637, samples: 88}
         else if X[6] <= 0.5845
            then if X[4] <= 0.399
               then {value: 23.0, samples: 1}
               else if X[4] <= 0.7
                  then if X[5] <= 0.28274999999999995
                     then {value: 11.125, samples: 8}
                     else {value: 14.45, samples: 20}
                  else {value: 11.19047619047619, samples: 21}
            else if X[4] <= 0.7545
               then {value: 23.0, samples: 2}
               else if X[2] <= 0.2075
                  then {value: 19.333333333333332, samples: 3}
                  else {value: 13.0, samples: 5}

This is the evaluation for mse:
11.15862673947987

For These Hyper-Parameters: 7 and 0.1
Fold 1
Regression Tree:

 if X[6] <= 0.17575
   then if X[6] <= 0.069
      then {value: 5.933333333333334, samples: 60}
      else if X[2] <= 0.1225
         then {value: 8.06140350877193, samples: 114}
         else if X[4] <= 0.19025
            then {value: 11.466666666666667, samples: 15}
            else {value: 8.38, samples: 50}
   else if X[2] <= 0.1775
      then if X[6] <= 0.32375

then if X[4] <= 0.287
           then if X[3] <= 0.75825
              then {value: 10.930232558139535, samples: 43}
              else {value: 16.0, samples: 7}
           else {value: 9.744444444444444, samples: 180}
        else if X[4] <= 0.42
           then {value: 15.0, samples: 12}
           else if X[6] <= 0.5774999999999999
              then if X[4] <= 0.55225
                 then if X[1] <= 0.545
                    then {value: 11.473684210526315, samples: 38}
                    else {value: 17.5, samples: 2}
                 else {value: 10.333333333333334, samples: 51}
              else {value: 17.0, samples: 2}
     else if X[3] <= 1.7955
        then if X[4] <= 0.5157499999999999
           then if X[6] <= 0.241
              then {value: 9.0, samples: 2}
              else if X[0] <= 0.5275000000000001
                 then {value: 20.0, samples: 2}
                 else if X[1] <= 0.4825
                    then {value: 13.25, samples: 12}
                    else if X[3] <= 1.0815000000000001
                       then {value: 26.0, samples: 1}
                       else {value: 15.9, samples: 10}
           else {value: 11.66, samples: 50}
        else if X[4] <= 0.758
           then {value: 25.0, samples: 3}
           else if X[0] <= 0.7875000000000001
              then {value: 13.076923076923077, samples: 13}
              else {value: 23.0, samples: 1}

This is the evaluation for mse:
7.236477685410364

Fold 2
Regression Tree:

 if X[6] <= 0.1695
   then if X[6] <= 0.06975
     then {value: 6.095890410958904, samples: 73}
     else if X[6] <= 0.11975
        then {value: 7.818181818181818, samples: 66}
        else if X[4] <= 0.16275
           then if X[3] <= 0.42125
              then {value: 9.142857142857142, samples: 7}
              else {value: 16.0, samples: 2}
           else {value: 8.551282051282051, samples: 78}
   else if X[6] <= 0.3895
     then if X[4] <= 0.4015

then if X[6] <= 0.2395
              then if X[2] <= 0.1825
                then if X[4] <= 0.22525
                  then {value: 12.11111111111111, samples: 18}
                  else {value: 9.6375, samples: 80}
                else {value: 20.0, samples: 1}
              else if X[6] <= 0.3225
                then if X[1] <= 0.4175
                  then if X[5] <= 0.14800000000000002
                    then {value: 23.0, samples: 1}
                    else if X[2] <= 0.14500000000000002
                      then {value: 17.5, samples: 4}
                      else {value: 12.285714285714286, samples: 7}
                  else {value: 11.27659574468085, samples: 47}
                else if X[1] <= 0.4575
                  then {value: 18.166666666666668, samples: 6}
                  else {value: 12.6, samples: 5}
            else if X[6] <= 0.312
              then {value: 9.305882352941177, samples: 85}
              else {value: 10.767676767676768, samples: 99}
          else if X[6] <= 0.5845
            then if X[5] <= 0.34425
              then if X[1] <= 0.58
                then if X[4] <= 0.54375
                  then if X[3] <= 1.217
                    then {value: 11.75, samples: 4}
                    else if X[3] <= 1.2535
                      then {value: 21.666666666666668, samples: 3}
                      else {value: 14.615384615384615, samples: 13}
                  else {value: 12.583333333333334, samples: 24}
                else {value: 29.0, samples: 1}
              else {value: 11.61111111111111, samples: 36}
            else if X[0] <= 0.705
              then {value: 23.0, samples: 2}
              else if X[2] <= 0.1975
                then {value: 20.5, samples: 2}
                else {value: 13.0, samples: 4}

This is the evaluation for mse:
7.7333722264382745

Fold 3
Regression Tree:

 if X[6] <= 0.1695
   then if X[5] <= 0.032
     then {value: 5.136363636363637, samples: 44}
     else {value: 8.042780748663102, samples: 187}
   else if X[6] <= 0.37475
     then if X[4] <= 0.30925

then if X[3] <= 0.7362500000000001
                then if X[2] <= 0.16999999999999998
                    then if X[0] <= 0.5075000000000001
                        then {value: 11.774193548387096, samples: 31}
                        else {value: 9.52, samples: 25}
                    else {value: 22.0, samples: 1}
                else {value: 14.238095238095237, samples: 21}
            else if X[6] <= 0.2535
                then {value: 8.957142857142857, samples: 70}
                else if X[4] <= 0.32675
                    then {value: 15.0, samples: 4}
                    else {value: 10.511627906976743, samples: 172}
        else if X[3] <= 1.06425
            then {value: 23.5, samples: 2}
            else if X[6] <= 0.579
                then if X[4] <= 0.51225
                    then if X[2] <= 0.1675
                        then {value: 10.8, samples: 5}
                        else {value: 16.642857142857142, samples: 14}
                    else if X[6] <= 0.41974999999999996
                        then {value: 10.413793103448276, samples: 29}
                        else if X[4] <= 0.70275
                            then {value: 13.925925925925926, samples: 27}
                            else {value: 11.52, samples: 25}
                else if X[1] <= 0.545
                    then {value: 20.0, samples: 4}
                    else if X[0] <= 0.78
                        then {value: 13.666666666666666, samples: 6}
                        else {value: 23.0, samples: 1}

This is the evaluation for mse:
9.83211606140303

Fold 4
Regression Tree:

 if X[6] <= 0.17575
    then if X[6] <= 0.06975
        then {value: 5.821917808219178, samples: 73}
        else if X[6] <= 0.14125
            then {value: 7.914285714285715, samples: 105}
            else if X[4] <= 0.19425
                then {value: 10.833333333333334, samples: 18}
                else {value: 8.403508771929825, samples: 57}
    else if X[2] <= 0.1775
        then if X[4] <= 0.30925
            then if X[3] <= 0.7715000000000001
                then {value: 10.96, samples: 50}
                else if X[1] <= 0.3975
                    then {value: 21.0, samples: 2}

else if X[3] <= 0.77625
    then {value: 23.0, samples: 1}
    else {value: 13.875, samples: 8}
else if X[6] <= 0.30225
    then {value: 9.417910447761194, samples: 134}
    else if X[4] <= 0.42
        then {value: 14.375, samples: 16}
        else {value: 10.745454545454546, samples: 110}
else if X[5] <= 0.1925
    then {value: 22.666666666666668, samples: 3}
    else if X[6] <= 0.4075
        then if X[3] <= 1.143
            then {value: 14.555555555555555, samples: 9}
            else {value: 10.375, samples: 24}
        else if X[5] <= 0.34425
            then if X[3] <= 1.784
                then if X[6] <= 0.43525
                    then {value: 17.5, samples: 6}
                    else {value: 13.117647058823529, samples: 17}
                else if X[3] <= 1.8639999999999999
                    then {value: 25.5, samples: 2}
                    else {value: 14.5, samples: 2}
            else {value: 12.258064516129032, samples: 31}

This is the evaluation for mse:
10.672754869075947

Fold 5
Regression Tree:

if X[6] <= 0.17925
    then if X[6] <= 0.06975
        then if X[6] <= 0.029249999999999998
            then {value: 4.190476190476191, samples: 21}
            else {value: 6.489795918367347, samples: 49}
        else {value: 8.403409090909092, samples: 176}
    else if X[2] <= 0.1775
        then if X[6] <= 0.53
            then if X[4] <= 0.30925
                then if X[3] <= 0.7715000000000001
                    then {value: 10.942307692307692, samples: 52}
                    else if X[1] <= 0.3975
                        then {value: 21.0, samples: 2}
                        else if X[3] <= 0.77625
                            then {value: 23.0, samples: 1}
                            else {value: 13.727272727272727, samples: 11}
                else if X[6] <= 0.302
                    then {value: 9.565891472868216, samples: 129}
                    else if X[4] <= 0.51
                        then {value: 12.306122448979592, samples: 49}

else {value: 10.2, samples: 80}
                     else {value: 17.666666666666668, samples: 3}
                  else if X[4] <= 0.40549999999999997
                     then if X[1] <= 0.485
                        then if X[0] <= 0.5325
                           then {value: 20.0, samples: 3}
                           else if X[0] <= 0.6125
                              then {value: 13.5, samples: 10}
                              else {value: 23.0, samples: 1}
                        else {value: 26.0, samples: 1}
                     else if X[6] <= 0.598
                        then if X[6] <= 0.3895
                           then {value: 10.347826086956522, samples: 23}
                           else if X[4] <= 0.70575
                              then if X[3] <= 1.784
                                 then {value: 13.333333333333334, samples: 30}
                                 else {value: 29.0, samples: 1}
                              else {value: 11.05, samples: 20}
                        else if X[1] <= 0.5575
                           then {value: 24.0, samples: 1}
                           else if X[0] <= 0.78
                              then {value: 13.75, samples: 4}
                              else {value: 23.0, samples: 1}

This is the evaluation for mse:
7.288892762778763

For These Hyper-Parameters: 7 and 0.15
Fold 1
Regression Tree:

 if X[6] <= 0.17275
   then if X[5] <= 0.032
      then {value: 5.2, samples: 40}
      else {value: 8.035532994923859, samples: 197}
   else if X[2] <= 0.1775
      then if X[6] <= 0.31925000000000003
         then if X[4] <= 0.30974999999999997
            then if X[3] <= 0.75675
               then {value: 10.649122807017545, samples: 57}
               else {value: 14.533333333333333, samples: 15}
            else {value: 9.656050955414013, samples: 157}
         else if X[4] <= 0.42
            then {value: 15.6, samples: 10}
            else if X[6] <= 0.53
               then {value: 11.065934065934066, samples: 91}
               else {value: 16.5, samples: 4}
      else if X[4] <= 0.40549999999999997
         then if X[1] <= 0.485
            then {value: 15.461538461538462, samples: 13}

else {value: 26.0, samples: 1}
            else if X[6] <= 0.3895
                then {value: 10.636363636363637, samples: 22}
                else if X[5] <= 0.34425
                    then if X[3] <= 1.784
                        then {value: 14.15, samples: 20}
                        else if X[0] <= 0.7224999999999999
                            then {value: 26.5, samples: 2}
                            else {value: 12.0, samples: 1}
                    else if X[0] <= 0.7875000000000001
                        then {value: 12.135135135135135, samples: 37}
                        else {value: 23.0, samples: 1}

This is the evaluation for mse:
5.014342137993815

Fold 2
Regression Tree:

 if X[6] <= 0.1775
    then if X[6] <= 0.06975
        then {value: 5.9411764705882355, samples: 68}
        else {value: 8.441340782122905, samples: 179}
    else if X[6] <= 0.37475
        then if X[4] <= 0.30925
            then if X[3] <= 0.7362500000000001
                then {value: 10.45, samples: 40}
                else {value: 14.25, samples: 24}
            else if X[6] <= 0.312
                then {value: 9.677631578947368, samples: 152}
                else if X[4] <= 0.43725
                    then {value: 14.071428571428571, samples: 14}
                    else {value: 10.58974358974359, samples: 78}
        else if X[6] <= 0.37525
            then {value: 23.5, samples: 2}
            else if X[6] <= 0.6825
                then if X[6] <= 0.43975
                    then if X[4] <= 0.551
                        then {value: 14.133333333333333, samples: 15}
                        else {value: 10.473684210526315, samples: 38}
                    else if X[0] <= 0.7075
                        then if X[1] <= 0.565
                            then if X[6] <= 0.5375000000000001
                                then {value: 12.575757575757576, samples: 33}
                                else {value: 20.5, samples: 2}
                            else if X[0] <= 0.6975
                                then {value: 16.0, samples: 3}
                                else {value: 29.0, samples: 1}
                        else {value: 11.470588235294118, samples: 17}
                else {value: 21.0, samples: 2}

This is the evaluation for mse:
9.021501298424075

Fold 3
Regression Tree:

if X[6] <= 0.1695
  then if X[6] <= 0.0635
    then {value: 5.517857142857143, samples: 56}
    else {value: 8.365853658536585, samples: 164}
  else if X[2] <= 0.1775
    then if X[6] <= 0.32375
      then if X[4] <= 0.23725
        then {value: 12.375, samples: 24}
        else if X[4] <= 0.397
          then if X[6] <= 0.2555
            then {value: 9.829545454545455, samples: 88}
            else if X[2] <= 0.14250000000000002
              then {value: 16.6, samples: 5}
              else {value: 11.24, samples: 25}
          else {value: 9.377358490566039, samples: 106}
      else if X[4] <= 0.43725
        then {value: 14.928571428571429, samples: 14}
        else if X[6] <= 0.5215000000000001
          then {value: 10.83529411764706, samples: 85}
          else {value: 16.5, samples: 4}
    else if X[0] <= 0.545
      then {value: 18.6, samples: 5}
      else if X[6] <= 0.37475
        then {value: 11.0, samples: 25}
        else if X[5] <= 0.329
          then if X[3] <= 1.784
            then if X[5] <= 0.1925
              then {value: 26.0, samples: 1}
              else {value: 14.48, samples: 25}
            else {value: 25.0, samples: 3}
          else if X[0] <= 0.7875000000000001
            then {value: 12.162162162162161, samples: 37}
            else {value: 23.0, samples: 1}

This is the evaluation for mse:
6.685355384417517

Fold 4
Regression Tree:

if X[6] <= 0.1695
  then if X[6] <= 0.069
    then {value: 5.845070422535211, samples: 71}

```
                else {value: 8.26875, samples: 160}
      else if X[2] <= 0.1825
         then if X[6] <= 0.2395
            then if X[4] <= 0.23625
               then {value: 11.8, samples: 20}
               else {value: 9.202127659574469, samples: 94}
            else if X[4] <= 0.30774999999999997
               then if X[1] <= 0.4225
                  then {value: 16.583333333333332, samples: 12}
                  else {value: 11.166666666666666, samples: 6}
               else {value: 10.680365296803654, samples: 219}
         else if X[4] <= 0.50075
            then {value: 16.166666666666668, samples: 18}
            else if X[6] <= 0.4075
               then {value: 10.38888888888889, samples: 18}
               else if X[5] <= 0.34425
                  then if X[3] <= 1.784
                     then {value: 14.125, samples: 16}
                     else {value: 23.0, samples: 4}
                  else if X[3] <= 2.5172499999999998
                     then {value: 12.035714285714286, samples: 28}
                     else {value: 20.0, samples: 2}
```

This is the evaluation for mse:
7.78054501789532

Fold 5
Regression Tree:

```
 if X[6] <= 0.1695
   then if X[5] <= 0.032
      then {value: 5.1, samples: 40}
      else {value: 8.02116402116402, samples: 189}
   else if X[6] <= 0.4055
      then if X[4] <= 0.24275
         then if X[3] <= 0.588
            then {value: 11.38888888888889, samples: 18}
            else {value: 16.0, samples: 10}
         else if X[6] <= 0.2555
            then {value: 9.431034482758621, samples: 116}
            else if X[4] <= 0.4015
               then if X[3] <= 0.9722500000000001
                  then {value: 12.275, samples: 40}
                  else {value: 16.181818181818183, samples: 11}
               else if X[2] <= 0.1625
                  then {value: 9.746835443037975, samples: 79}
                  else if X[4] <= 0.48875
                     then {value: 13.285714285714286, samples: 14}
                     else {value: 10.233766233766234, samples: 77}
      else {value: 13.35135135135135, samples: 74}
```

This is the evaluation for mse:
9.412721250026475

For These Hyper-Parameters: 7 and 0.2
Fold 1
Regression Tree:

```
if X[6] <= 0.17575
   then if X[5] <= 0.03175
      then {value: 4.95, samples: 40}
      else {value: 8.159203980099502, samples: 201}
   else if X[6] <= 0.43374999999999997
      then if X[4] <= 0.32475
         then if X[6] <= 0.23249999999999998
            then {value: 10.634615384615385, samples: 52}
            else {value: 14.166666666666666, samples: 30}
         else if X[6] <= 0.28925
            then {value: 9.375, samples: 112}
            else if X[4] <= 0.48875
               then if X[6] <= 0.37475
                  then {value: 11.72, samples: 50}
                  else {value: 16.6, samples: 10}
               else {value: 10.344827586206897, samples: 116}
      else if X[6] <= 0.6825
         then if X[0] <= 0.785
            then if X[5] <= 0.34425
               then if X[1] <= 0.5825
                  then {value: 14.25, samples: 28}
                  else {value: 29.0, samples: 1}
               else {value: 11.961538461538462, samples: 26}
            else {value: 23.0, samples: 1}
         else {value: 24.0, samples: 1}
```

This is the evaluation for mse:
7.526891692245461

Fold 2
Regression Tree:

```
if X[6] <= 0.18075
   then if X[6] <= 0.0635
      then {value: 5.720588235294118, samples: 68}
      else {value: 8.431693989071038, samples: 183}
   else if X[2] <= 0.1775
      then if X[6] <= 0.53
         then if X[4] <= 0.2455
            then {value: 13.2, samples: 15}
            else if X[6] <= 0.31925000000000003
               then {value: 9.792746113989637, samples: 193}
```

else if X[4] <= 0.42
                        then {value: 15.1, samples: 10}
                        else {value: 10.835051546391753, samples: 97}
                else {value: 16.5, samples: 4}
            else if X[4] <= 0.40549999999999997
                then {value: 16.923076923076923, samples: 13}
                else if X[6] <= 0.5845
                    then {value: 12.181818181818182, samples: 77}
                    else {value: 17.25, samples: 8}

This is the evaluation for mse:
9.988721504763243

Fold 3
Regression Tree:

 if X[6] <= 0.1695
    then if X[6] <= 0.06975
        then {value: 6.088235294117647, samples: 68}
        else {value: 8.248407643312103, samples: 157}
    else if X[6] <= 0.32475
        then if X[4] <= 0.30925
            then if X[3] <= 0.74375
                then {value: 10.56060606060606, samples: 66}
                else {value: 14.526315789473685, samples: 19}
            else {value: 9.676646706586826, samples: 167}
        else if X[4] <= 0.40875
            then {value: 16.058823529411764, samples: 17}
            else if X[6] <= 0.41974999999999996
                then if X[4] <= 0.5049999999999999
                    then {value: 13.0625, samples: 32}
                    else {value: 10.266666666666667, samples: 75}
                else if X[6] <= 0.6825
                    then if X[0] <= 0.7875000000000001
                        then if X[0] <= 0.7024999999999999
                            then if X[3] <= 1.7085
                                then {value: 13.055555555555555, samples: 36}
                                else if X[1] <= 0.5825
                                    then {value: 16.5, samples: 8}
                                    else {value: 29.0, samples: 1}
                            else {value: 11.44444444444445, samples: 18}
                        else {value: 23.0, samples: 1}
                    else {value: 19.666666666666668, samples: 3}

This is the evaluation for mse:
5.845490606450541

Fold 4
Regression Tree:

if X[6] <= 0.17925
  then if X[6] <= 0.069
    then {value: 5.923076923076923, samples: 65}
    else {value: 8.447513812154696, samples: 181}
  else if X[2] <= 0.1775
    then if X[6] <= 0.53
      then if X[4] <= 0.3075
        then {value: 11.661290322580646, samples: 62}
        else if X[6] <= 0.302
          then {value: 9.609022556390977, samples: 133}
          else if X[4] <= 0.40975
            then {value: 15.2, samples: 10}
            else {value: 10.734513274336283, samples: 113}
      else {value: 16.5, samples: 4}
    else if X[0] <= 0.545
      then {value: 18.6, samples: 5}
      else if X[6] <= 0.6825
        then if X[0] <= 0.7875000000000001
          then if X[5] <= 0.34425
            then if X[6] <= 0.37475
              then {value: 11.35, samples: 20}
              else {value: 15.516129032258064, samples: 31}
            else {value: 11.78048780487805, samples: 41}
          else {value: 23.0, samples: 1}
        else {value: 20.5, samples: 2}

This is the evaluation for mse:
6.455051209282231

Fold 5
Regression Tree:

if X[6] <= 0.1695
  then if X[5] <= 0.03325
    then {value: 5.204545454545454, samples: 44}
    else {value: 8.08994708994709, samples: 189}
  else if X[6] <= 0.4055
    then if X[4] <= 0.39425
      then if X[6] <= 0.2395
        then {value: 10.318181818181818, samples: 88}
        else if X[1] <= 0.4175
          then {value: 15.529411764705882, samples: 17}
          else {value: 11.945454545454545, samples: 55}
      else {value: 10.063725490196079, samples: 204}
    else if X[4] <= 0.41200000000000003
      then {value: 23.0, samples: 1}
      else if X[1] <= 0.5774999999999999
        then {value: 12.721311475409836, samples: 61}
        else if X[2] <= 0.19
          then {value: 29.0, samples: 1}

else {value: 13.5, samples: 8}

This is the evaluation for mse:
8.635022393255012

For These Hyper-Parameters: 7 and 0.25
Fold 1
Regression Tree:

 if X[6] <= 0.17925
   then if X[6] <= 0.06875
     then {value: 5.958333333333333, samples: 72}
     else {value: 8.521212121212121, samples: 165}
   else if X[2] <= 0.1775
     then if X[6] <= 0.31925000000000003
       then if X[4] <= 0.30925
         then {value: 11.87719298245614, samples: 57}
         else {value: 9.66875, samples: 160}
       else if X[4] <= 0.43725
         then {value: 14.866666666666667, samples: 15}
         else {value: 11.193877551020408, samples: 98}
     else if X[4] <= 0.40549999999999997
       then {value: 16.153846153846153, samples: 13}
       else if X[6] <= 0.3895
         then {value: 10.666666666666666, samples: 24}
         else if X[5] <= 0.34425
           then if X[3] <= 1.784
             then {value: 14.08, samples: 25}
             else {value: 20.8, samples: 5}
           else {value: 12.088235294117647, samples: 34}

This is the evaluation for mse:
3.9576363871818327

Fold 2
Regression Tree:

 if X[6] <= 0.1695
   then if X[6] <= 0.056999999999999995
     then {value: 5.603448275862069, samples: 58}
     else {value: 8.217647058823529, samples: 170}
   else if X[2] <= 0.1775
     then if X[6] <= 0.2555
       then {value: 9.816176470588236, samples: 136}
       else if X[4] <= 0.402
         then {value: 12.847826086956522, samples: 46}
         else {value: 10.522292993630574, samples: 157}
     else if X[4] <= 0.388
       then {value: 17.454545454545453, samples: 11}
       else if X[6] <= 0.3895

then {value: 10.74074074074074, samples: 27}
else if X[5] <= 0.34425
then if X[3] <= 1.784
then {value: 14.208333333333334, samples: 24}
else {value: 23.0, samples: 4}
else {value: 12.285714285714286, samples: 35}

This is the evaluation for mse:
7.472322751270223

Fold 3
Regression Tree:

if X[6] <= 0.18075
then if X[6] <= 0.06975
then {value: 5.904109589041096, samples: 73}
else {value: 8.324324324324325, samples: 185}
else if X[6] <= 0.41974999999999996
then if X[4] <= 0.32475
then if X[3] <= 0.7422500000000001
then {value: 10.72, samples: 50}
else {value: 14.206896551724139, samples: 29}
else if X[6] <= 0.27825
then {value: 9.311827956989248, samples: 93}
else if X[4] <= 0.49075
then if X[6] <= 0.37475
then {value: 11.571428571428571, samples: 49}
else {value: 17.333333333333332, samples: 6}
else {value: 10.296610169491526, samples: 118}
else if X[5] <= 0.322
then if X[3] <= 1.71775
then {value: 14.529411764705882, samples: 17}
else {value: 22.5, samples: 4}
else {value: 12.545454545454545, samples: 44}

This is the evaluation for mse:
9.432437125630369

Fold 4
Regression Tree:

if X[6] <= 0.1695
then if X[5] <= 0.03175
then {value: 5.256410256410256, samples: 39}
else {value: 8.083769633507853, samples: 191}
else if X[2] <= 0.1775
then if X[6] <= 0.31925000000000003
then if X[4] <= 0.30925
then if X[3] <= 0.75825
then {value: 10.661016949152541, samples: 59}

else {value: 15.777777777777779, samples: 9}
              else {value: 9.57396449704142, samples: 169}
          else if X[4] <= 0.42
              then {value: 15.0, samples: 13}
              else {value: 11.166666666666666, samples: 96}
        else if X[4] <= 0.40549999999999997
            then {value: 16.428571428571427, samples: 14}
            else {value: 12.653846153846153, samples: 78}

This is the evaluation for mse:
6.46425850379912

Fold 5
Regression Tree:

 if X[6] <= 0.16825
   then if X[5] <= 0.03325
      then {value: 5.0, samples: 38}
      else {value: 8.068783068783068, samples: 189}
   else if X[2] <= 0.1775
      then if X[6] <= 0.53
         then if X[4] <= 0.23725
            then {value: 12.321428571428571, samples: 28}
            else if X[6] <= 0.2395
               then {value: 9.347368421052632, samples: 95}
               else if X[4] <= 0.32675
                  then {value: 13.454545454545455, samples: 22}
                  else {value: 10.395939086294415, samples: 197}
         else {value: 16.5, samples: 4}
      else {value: 13.042105263157895, samples: 95}

This is the evaluation for mse:
7.574471573188331

For These Hyper-Parameters: 9 and 0.05
Fold 1
Regression Tree:

 if X[6] <= 0.1695
   then if X[5] <= 0.0445
      then if X[0] <= 0.26
         then {value: 4.117647058823529, samples: 17}
         else {value: 6.27906976744186, samples: 43}
      else if X[6] <= 0.11175
         then {value: 7.5606060606060606, samples: 66}
         else if X[1] <= 0.3275
            then {value: 13.5, samples: 2}
            else {value: 8.578947368421053, samples: 95}
   else if X[2] <= 0.1775
      then if X[6] <= 0.2395

then if X[0] <= 0.5025
    then if X[3] <= 0.6675
        then if X[6] <= 0.17149999999999999
            then {value: 15.5, samples: 2}
            else {value: 11.130434782608695, samples: 23}
        else {value: 16.0, samples: 2}
    else if X[1] <= 0.3825
        then {value: 12.5, samples: 2}
        else if X[6] <= 0.17575
            then {value: 7.916666666666667, samples: 12}
            else if X[4] <= 0.287
                then {value: 10.8, samples: 15}
                else {value: 8.944444444444445, samples: 54}
else if X[4] <= 0.4015
    then if X[1] <= 0.4175
        then if X[5] <= 0.14700000000000002
            then {value: 21.0, samples: 2}
            else if X[2] <= 0.1475
                then if X[0] <= 0.53
                    then {value: 15.666666666666666, samples: 3}
                    else {value: 21.0, samples: 2}
                else {value: 11.714285714285714, samples: 7}
        else if X[3] <= 0.9415
            then {value: 11.0, samples: 38}
            else if X[3] <= 0.95975
                then {value: 19.0, samples: 2}
                else if X[4] <= 0.39225
                    then {value: 11.6, samples: 5}
                    else {value: 15.75, samples: 4}
    else if X[6] <= 0.31925000000000003
        then {value: 9.582089552238806, samples: 67}
        else if X[6] <= 0.55
            then if X[4] <= 0.50625
                then if X[6] <= 0.346
                    then if X[3] <= 1.17175
                        then {value: 11.7, samples: 10}
                        else {value: 15.666666666666666, samples: 3}
                    else {value: 11.125, samples: 16}
                else if X[6] <= 0.41774999999999995
                    then if X[2] <= 0.1375
                        then {value: 14.0, samples: 1}
                        else if X[4] <= 0.5822499999999999
                            then if X[0] <= 0.66
                                then {value: 10.444444444444445, samples: 27}
                                else {value: 18.0, samples: 1}
                            else {value: 9.942857142857143, samples: 35}
                    else {value: 12.090909090909092, samples: 11}
                else {value: 17.0, samples: 2}
else if X[6] <= 0.5845
    then if X[0] <= 0.545
        then {value: 18.6, samples: 5}

else if X[4] <= 0.7085
           then if X[1] <= 0.575
              then if X[6] <= 0.4075
                 then if X[3] <= 1.13125
                    then if X[1] <= 0.485
                       then {value: 11.857142857142858, samples: 7}
                       else if X[0] <= 0.6074999999999999
                          then {value: 26.0, samples: 1}
                          else {value: 16.0, samples: 1}
                    else {value: 10.64, samples: 25}
                 else if X[0] <= 0.585
                    then {value: 8.0, samples: 1}
                    else if X[4] <= 0.591
                       then {value: 14.933333333333334, samples: 15}
                       else if X[0] <= 0.6475
                          then {value: 19.0, samples: 1}
                          else if X[4] <= 0.67
                             then {value: 10.4, samples: 5}
                             else {value: 14.25, samples: 8}
              else {value: 29.0, samples: 1}
           else {value: 10.714285714285714, samples: 21}
        else if X[1] <= 0.5575
           then {value: 23.0, samples: 2}
           else if X[0] <= 0.775
              then {value: 14.0, samples: 5}
              else {value: 23.0, samples: 1}

This is the evaluation for mse:
10.244205685469234

Fold 2
Regression Tree:

 if X[6] <= 0.17575
    then if X[5] <= 0.032
       then {value: 4.95, samples: 40}
       else if X[6] <= 0.13975
          then if X[6] <= 0.06975
             then {value: 6.878787878787879, samples: 33}
             else if X[4] <= 0.10275
                then if X[1] <= 0.315
                   then {value: 8.68421052631579, samples: 19}
                   else {value: 15.0, samples: 1}
                else {value: 7.710843373493976, samples: 83}
          else if X[4] <= 0.19425
             then {value: 10.3, samples: 20}
             else {value: 8.413793103448276, samples: 58}
    else if X[2] <= 0.1775
       then if X[6] <= 0.32375
          then if X[4] <= 0.307

then if X[3] <= 0.7715000000000001
    then if X[4] <= 0.238
        then if X[3] <= 0.57725
            then {value: 10.625, samples: 8}
            else {value: 13.8, samples: 10}
        else {value: 9.96875, samples: 32}
    else if X[0] <= 0.4925
        then {value: 23.0, samples: 1}
        else if X[3] <= 0.77625
            then {value: 23.0, samples: 1}
            else {value: 13.0, samples: 5}
else if X[6] <= 0.24375
    then if X[4] <= 0.39275000000000004
        then if X[3] <= 0.875
            then {value: 9.10344827586207, samples: 29}
            else {value: 13.5, samples: 2}
        else {value: 8.555555555555555, samples: 27}
    else {value: 9.942307692307692, samples: 104}
else if X[4] <= 0.43725
    then if X[3] <= 0.9265
        then {value: 12.666666666666666, samples: 3}
        else if X[3] <= 1.0732499999999998
            then {value: 19.666666666666668, samples: 3}
            else {value: 14.8, samples: 5}
    else if X[1] <= 0.5325
        then if X[4] <= 0.5567500000000001
            then if X[1] <= 0.52
                then {value: 10.89655172413793, samples: 29}
                else {value: 18.0, samples: 1}
            else {value: 9.735294117647058, samples: 34}
        else if X[3] <= 1.26825
            then {value: 21.0, samples: 1}
            else if X[6] <= 0.5075000000000001
                then {value: 11.454545454545455, samples: 11}
                else {value: 15.666666666666666, samples: 3}
else if X[4] <= 0.40549999999999997
    then if X[1] <= 0.485
        then if X[0] <= 0.5325
            then {value: 20.0, samples: 3}
            else if X[0] <= 0.6125
                then if X[3] <= 0.804
                    then {value: 8.0, samples: 1}
                    else {value: 14.11111111111111, samples: 9}
                else {value: 23.0, samples: 1}
        else {value: 26.0, samples: 1}
    else if X[6] <= 0.3895
        then {value: 10.423076923076923, samples: 26}
        else if X[5] <= 0.34425
            then if X[1] <= 0.5825
                then if X[6] <= 0.5575
                    then if X[4] <= 0.663

```
                    then if X[0] <= 0.585
                        then {value: 8.0, samples: 1}
                        else {value: 15.9375, samples: 16}
                    else {value: 11.333333333333334, samples: 6}
                else {value: 21.0, samples: 3}
            else {value: 29.0, samples: 1}
        else if X[0] <= 0.7875000000000001
            then if X[2] <= 0.2225
                then {value: 11.633333333333333, samples: 30}
                else {value: 15.166666666666666, samples: 6}
            else {value: 23.0, samples: 1}
```

This is the evaluation for mse:
8.432858213926988

Fold 3
Regression Tree:

```
 if X[6] <= 0.1695
   then if X[5] <= 0.032
     then {value: 5.222222222222222, samples: 45}
     else if X[6] <= 0.1315
         then {value: 7.530612244897959, samples: 98}
         else if X[2] <= 0.1575
            then if X[4] <= 0.1945
               then if X[3] <= 0.44225000000000003
                   then {value: 8.5, samples: 10}
                   else if X[4] <= 0.15975
                      then {value: 16.0, samples: 1}
                      else {value: 9.916666666666666, samples: 12}
               else {value: 8.26530612244898, samples: 49}
            else {value: 16.0, samples: 1}
   else if X[2] <= 0.1775
     then if X[6] <= 0.53
       then if X[4] <= 0.24275
          then if X[3] <= 0.782
             then if X[3] <= 0.6165
                then if X[4] <= 0.21225
                   then if X[0] <= 0.4425
                      then {value: 7.0, samples: 1}
                      else {value: 13.222222222222221, samples: 9}
                   else {value: 9.777777777777779, samples: 9}
                else {value: 14.428571428571429, samples: 7}
             else {value: 23.0, samples: 1}
          else if X[6] <= 0.2555
             then if X[0] <= 0.5075000000000001
                then {value: 10.476190476190476, samples: 21}
                else if X[4] <= 0.386
                   then if X[3] <= 0.8452500000000001
                      then {value: 9.214285714285714, samples: 56}
```

else {value: 11.714285714285714, samples: 7}
            else {value: 8.702702702702704, samples: 37}
          else if X[4] <= 0.4015
            then if X[1] <= 0.4175
              then if X[0] <= 0.51
                then {value: 13.0, samples: 2}
                else {value: 19.5, samples: 4}
              else if X[6] <= 0.3175
                then {value: 11.181818181818182, samples: 33}
                else if X[2] <= 0.1625
                  then if X[2] <= 0.1375
                    then {value: 21.0, samples: 1}
                    else {value: 12.166666666666666, samples: 6}
                  else {value: 18.666666666666668, samples: 3}
            else if X[1] <= 0.545
              then if X[6] <= 0.31225
                then {value: 9.636363636363637, samples: 55}
                else if X[4] <= 0.50675
                  then if X[0] <= 0.6225
                    then {value: 12.45, samples: 20}
                    else {value: 10.333333333333334, samples: 12}
                  else {value: 10.2, samples: 70}
              else if X[0] <= 0.685
                then {value: 21.0, samples: 1}
                else {value: 12.0, samples: 2}
      else {value: 16.5, samples: 4}
  else if X[4] <= 0.5157499999999999
    then if X[6] <= 0.3675
      then if X[0] <= 0.545
        then {value: 17.75, samples: 4}
        else {value: 12.272727272727273, samples: 11}
      else if X[5] <= 0.1925
        then {value: 26.0, samples: 1}
        else if X[5] <= 0.26775000000000004
          then {value: 14.0, samples: 4}
          else if X[3] <= 1.3050000000000002
            then {value: 22.0, samples: 2}
            else {value: 16.4, samples: 5}
    else if X[6] <= 0.4365
      then {value: 10.444444444444445, samples: 27}
      else if X[5] <= 0.3235
        then if X[3] <= 1.70425
          then {value: 14.2, samples: 5}
          else {value: 26.5, samples: 2}
        else if X[0] <= 0.7875000000000001
          then if X[0] <= 0.7124999999999999
            then if X[6] <= 0.4955
              then {value: 12.307692307692308, samples: 13}
              else {value: 16.0, samples: 5}
            else {value: 11.454545454545455, samples: 11}
          else {value: 23.0, samples: 1}

This is the evaluation for mse:
7.1346898452380945

Fold 4
Regression Tree:

```
if X[6] <= 0.1695
  then if X[5] <= 0.04525
    then if X[0] <= 0.2575
      then {value: 4.142857142857143, samples: 14}
      else {value: 6.480769230769231, samples: 52}
    else if X[2] <= 0.1225
      then if X[4] <= 0.1015
        then if X[1] <= 0.315
          then {value: 9.055555555555555, samples: 18}
          else {value: 15.0, samples: 1}
        else {value: 7.7032967032967035, samples: 91}
      else if X[4] <= 0.19025
        then {value: 11.272727272727273, samples: 11}
        else {value: 8.486486486486486, samples: 37}
  else if X[2] <= 0.1875
    then if X[6] <= 0.53
      then if X[4] <= 0.1615
        then {value: 22.0, samples: 1}
        else if X[2] <= 0.1625
          then if X[0] <= 0.4975
            then if X[3] <= 0.782
              then if X[1] <= 0.3625
                then {value: 9.8, samples: 5}
                else if X[2] <= 0.1525
                  then if X[4] <= 0.2765
                    then {value: 13.923076923076923, samples: 13}
                    else {value: 9.5, samples: 2}
                  else {value: 9.0, samples: 2}
              else {value: 23.0, samples: 1}
            else if X[6] <= 0.3535
              then if X[3] <= 0.51325
                then {value: 17.0, samples: 1}
                else if X[6] <= 0.2345
                  then {value: 9.292682926829269, samples: 82}
                  else if X[4] <= 0.29425
                    then {value: 12.9, samples: 10}
                    else {value: 9.815126050420169, samples: 119}
              else if X[0] <= 0.5725
                then {value: 16.0, samples: 3}
                else {value: 10.692307692307692, samples: 13}
          else if X[4] <= 0.528
            then if X[6] <= 0.2435
              then {value: 8.6, samples: 5}
```

else if X[1] <= 0.545
  then if X[1] <= 0.3975
    then {value: 19.0, samples: 1}
    else if X[3] <= 1.40475
      then if X[0] <= 0.6225
        then if X[6] <= 0.313
          then {value: 11.875, samples: 16}
          else {value: 14.2, samples: 15}
        else {value: 10.9, samples: 10}
      else {value: 18.0, samples: 1}
    else {value: 17.5, samples: 2}
else if X[6] <= 0.4475
  then if X[5] <= 0.26825
    then {value: 9.3, samples: 10}
    else if X[1] <= 0.5125
      then {value: 10.06060606060606, samples: 33}
      else if X[4] <= 0.56875
        then {value: 18.0, samples: 1}
        else {value: 10.38888888888889, samples: 18}
  else {value: 12.090909090909092, samples: 11}
else {value: 16.5, samples: 4}
else if X[4] <= 0.40049999999999997
  then if X[0] <= 0.59
    then {value: 14.0, samples: 2}
    else {value: 24.5, samples: 2}
  else if X[6] <= 0.5845
    then if X[4] <= 0.5694999999999999
      then if X[0] <= 0.6074999999999999
        then {value: 11.6, samples: 5}
        else {value: 16.0, samples: 10}
      else if X[4] <= 0.6259999999999999
        then {value: 10.272727272727273, samples: 11}
        else if X[3] <= 1.9115
          then if X[5] <= 0.41775
            then {value: 12.529411764705882, samples: 17}
            else {value: 17.0, samples: 3}
          else {value: 11.0, samples: 8}
    else if X[0] <= 0.7124999999999999
      then {value: 23.0, samples: 2}
      else if X[0] <= 0.78
        then {value: 13.5, samples: 4}
        else {value: 23.0, samples: 1}

This is the evaluation for mse:
10.470204597039032

Fold 5
Regression Tree:

if X[6] <= 0.17925

then if X[6] <= 0.06975
   then if X[6] <= 0.029249999999999998
      then {value: 4.4375, samples: 16}
      else {value: 6.418181818181818, samples: 55}
   else if X[6] <= 0.13975
      then if X[4] <= 0.101
         then if X[1] <= 0.315
            then {value: 8.68421052631579, samples: 19}
            else {value: 15.0, samples: 1}
         else if X[2] <= 0.1225
            then {value: 7.54054054054054, samples: 74}
            else if X[0] <= 0.4525
               then {value: 8.75, samples: 4}
               else {value: 16.0, samples: 1}
      else if X[4] <= 0.19425
         then if X[6] <= 0.16925
            then {value: 10.222222222222221, samples: 18}
            else {value: 14.666666666666666, samples: 3}
         else {value: 8.402985074626866, samples: 67}
else if X[6] <= 0.32375
   then if X[4] <= 0.31875
      then if X[2] <= 0.1775
         then if X[3] <= 0.75525
            then {value: 10.488888888888889, samples: 45}
            else if X[1] <= 0.4225
               then if X[1] <= 0.4125
                  then {value: 14.142857142857142, samples: 7}
                  else {value: 23.0, samples: 1}
               else {value: 11.75, samples: 8}
         else if X[0] <= 0.5325
            then {value: 21.0, samples: 2}
            else {value: 15.0, samples: 2}
      else if X[6] <= 0.24375
         then {value: 9.0, samples: 52}
         else if X[4] <= 0.397
            then {value: 11.258064516129032, samples: 31}
            else {value: 9.77027027027027, samples: 74}
   else if X[4] <= 0.40875
      then if X[3] <= 1.1705
         then if X[1] <= 0.4575
            then {value: 17.333333333333332, samples: 9}
            else if X[1] <= 0.48
               then {value: 10.333333333333334, samples: 3}
               else {value: 16.0, samples: 2}
         else {value: 23.0, samples: 1}
      else if X[6] <= 0.3895
         then if X[4] <= 0.5049999999999999
            then if X[3] <= 1.17425
               then {value: 11.526315789473685, samples: 19}
               else {value: 14.6, samples: 5}
            else if X[2] <= 0.1375

then {value: 14.0, samples: 1}
else if X[4] <= 0.5794999999999999
  then if X[1] <= 0.52
    then {value: 10.521739130434783, samples: 23}
    else {value: 15.0, samples: 2}
  else {value: 9.821428571428571, samples: 28}
else if X[5] <= 0.34425
  then if X[3] <= 1.6844999999999999
    then if X[2] <= 0.1875
      then if X[4] <= 0.53625
        then if X[6] <= 0.403
          then {value: 21.0, samples: 1}
          else {value: 12.714285714285714, samples: 7}
        else {value: 10.842105263157896, samples: 19}
      else if X[6] <= 0.43525
        then {value: 17.833333333333332, samples: 6}
        else {value: 12.125, samples: 8}
    else if X[1] <= 0.5825
      then if X[6] <= 0.4975
        then {value: 12.0, samples: 2}
        else {value: 18.0, samples: 6}
      else {value: 29.0, samples: 1}
  else if X[2] <= 0.2225
    then {value: 11.394736842105264, samples: 38}
    else {value: 14.857142857142858, samples: 7}

This is the evaluation for mse:
8.06721280552366

For These Hyper-Parameters: 9 and 0.1
Fold 1
Regression Tree:

if X[6] <= 0.18175
  then if X[6] <= 0.06975
    then {value: 5.835616438356165, samples: 73}
    else if X[6] <= 0.13975
      then {value: 7.968421052631579, samples: 95}
      else if X[4] <= 0.19425
        then {value: 10.608695652173912, samples: 23}
        else {value: 8.492307692307692, samples: 65}
  else if X[2] <= 0.1775
    then if X[4] <= 0.30925
      then if X[3] <= 0.75675
        then {value: 10.931818181818182, samples: 44}
        else {value: 14.5625, samples: 16}
      else if X[6] <= 0.302
        then {value: 9.566176470588236, samples: 136}
        else if X[4] <= 0.40975
          then if X[6] <= 0.3175

then {value: 11.666666666666, samples: 6}
else {value: 16.428571428571427, samples: 7}
else if X[6] <= 0.53
then {value: 10.638095238095238, samples: 105}
else {value: 16.0, samples: 3}
else if X[6] <= 0.5845
then if X[4] <= 0.5157499999999999
then if X[0] <= 0.5325
then {value: 20.0, samples: 3}
else if X[0] <= 0.5974999999999999
then {value: 11.818181818181818, samples: 11}
else if X[4] <= 0.388
then {value: 24.5, samples: 2}
else {value: 15.461538461538462, samples: 13}
else if X[6] <= 0.39275000000000004
then {value: 10.0, samples: 18}
else if X[4] <= 0.70575
then if X[1] <= 0.575
then {value: 13.75, samples: 20}
else {value: 29.0, samples: 1}
else {value: 11.142857142857142, samples: 21}
else {value: 19.333333333333332, samples: 6}

This is the evaluation for mse:
7.267798316201406

Fold 2
Regression Tree:

if X[6] <= 0.1695
then if X[6] <= 0.056999999999999995
then {value: 5.553571428571429, samples: 56}
else if X[2] <= 0.1225
then {value: 7.8347107438016526, samples: 121}
else if X[4] <= 0.169
then {value: 12.0, samples: 7}
else {value: 8.581395348837209, samples: 43}
else if X[2] <= 0.1775
then if X[6] <= 0.32375
then if X[4] <= 0.30925
then if X[3] <= 0.75675
then if X[4] <= 0.2365
then {value: 12.19047619047619, samples: 21}
else {value: 9.8, samples: 40}
else if X[1] <= 0.3975
then {value: 18.333333333333332, samples: 3}
else if X[2] <= 0.14500000000000002
then if X[0] <= 0.535
then {value: 14.0, samples: 5}
else {value: 23.0, samples: 1}

else {value: 12.428571428571429, samples: 7}
else {value: 9.735849056603774, samples: 159}
else if X[4] <= 0.42
  then if X[1] <= 0.4575
    then {value: 17.833333333333332, samples: 6}
    else {value: 13.142857142857142, samples: 7}
  else if X[1] <= 0.5375000000000001
    then {value: 10.775, samples: 80}
    else {value: 14.0, samples: 7}
else if X[4] <= 0.40549999999999997
  then if X[1] <= 0.485
    then if X[0] <= 0.5325
      then {value: 20.0, samples: 3}
      else if X[0] <= 0.6125
        then {value: 14.0, samples: 8}
        else {value: 23.0, samples: 1}
    else {value: 26.0, samples: 1}
  else if X[6] <= 0.38625
    then {value: 10.576923076923077, samples: 26}
    else if X[5] <= 0.35
      then if X[3] <= 1.784
        then if X[4] <= 0.663
          then {value: 15.785714285714286, samples: 14}
          else {value: 12.2, samples: 10}
        else if X[4] <= 0.84825
          then {value: 25.0, samples: 3}
          else {value: 14.5, samples: 2}
      else {value: 12.027027027027026, samples: 37}

This is the evaluation for mse:
5.503483361882439

Fold 3
Regression Tree:

if X[6] <= 0.2395
  then if X[6] <= 0.06875
    then {value: 5.873015873015873, samples: 63}
    else if X[6] <= 0.1665
      then {value: 8.275, samples: 160}
      else if X[2] <= 0.1825
        then if X[0] <= 0.4875
          then {value: 12.166666666666666, samples: 12}
          else {value: 9.256880733944953, samples: 109}
        else {value: 20.0, samples: 1}
  else if X[6] <= 0.43374999999999997
    then if X[4] <= 0.397
      then if X[1] <= 0.4175
        then {value: 16.5, samples: 12}
        else if X[6] <= 0.3225

then {value: 11.136363636363637, samples: 44}
            else if X[2] <= 0.1625
                then {value: 13.571428571428571, samples: 7}
                else if X[1] <= 0.49
                    then {value: 16.4, samples: 5}
                    else {value: 26.0, samples: 1}
        else if X[6] <= 0.312
            then {value: 9.370967741935484, samples: 62}
            else if X[4] <= 0.51
                then if X[6] <= 0.387
                    then {value: 12.083333333333334, samples: 24}
                    else {value: 16.0, samples: 7}
                else {value: 10.43157894736842, samples: 95}
    else if X[6] <= 0.6825
        then if X[0] <= 0.7875000000000001
            then if X[4] <= 0.399
                then {value: 23.0, samples: 1}
                else if X[5] <= 0.34425
                    then if X[3] <= 1.77425
                        then {value: 13.434782608695652, samples: 23}
                        else if X[3] <= 1.8639999999999999
                            then {value: 25.5, samples: 2}
                            else {value: 14.5, samples: 2}
                    else {value: 12.235294117647058, samples: 34}
            else {value: 23.0, samples: 1}
        else {value: 19.666666666666668, samples: 3}

This is the evaluation for mse:
5.165674723157199

Fold 4
Regression Tree:

 if X[6] <= 0.1695
   then if X[5] <= 0.032
     then {value: 5.081081081081081, samples: 37}
     else {value: 8.011049723756907, samples: 181}
   else if X[6] <= 0.40874999999999995
     then if X[2] <= 0.1625
        then if X[4] <= 0.24375
            then if X[3] <= 0.782
                then {value: 11.551724137931034, samples: 29}
                else {value: 23.0, samples: 1}
            else {value: 9.87906976744186, samples: 215}
        else if X[4] <= 0.487
            then if X[2] <= 0.1825
                then if X[6] <= 0.315
                    then {value: 11.333333333333334, samples: 18}
                    else {value: 14.105263157894736, samples: 19}
                else if X[3] <= 1.06175

then if X[1] <= 0.4825
    then {value: 16.6, samples: 5}
    else {value: 26.0, samples: 1}
else {value: 13.333333333333334, samples: 3}
else {value: 10.25301204819277, samples: 83}
else if X[6] <= 0.5845
then {value: 12.909090909090908, samples: 66}
else if X[1] <= 0.545
then {value: 21.333333333333332, samples: 3}
else if X[3] <= 2.07475
then {value: 10.666666666666666, samples: 3}
else {value: 17.75, samples: 4}

This is the evaluation for mse:
10.380277607298167

Fold 5
Regression Tree:

if X[6] <= 0.1695
then if X[6] <= 0.0955
then if X[5] <= 0.03325
then {value: 5.333333333333333, samples: 42}
else {value: 7.090909090909091, samples: 66}
else {value: 8.541666666666666, samples: 120}
else if X[6] <= 0.3495
then if X[4] <= 0.24275
then if X[3] <= 0.6325000000000001
then {value: 11.458333333333334, samples: 24}
else if X[1] <= 0.405
then {value: 21.0, samples: 3}
else {value: 13.333333333333334, samples: 3}
else if X[6] <= 0.2555
then {value: 9.4, samples: 120}
else if X[4] <= 0.4015
then if X[1] <= 0.4175
then {value: 18.333333333333332, samples: 3}
else {value: 11.945945945945946, samples: 37}
else {value: 10.133928571428571, samples: 112}
else if X[4] <= 0.383
then {value: 17.571428571428573, samples: 7}
else if X[6] <= 0.4425
then if X[4] <= 0.50075
then {value: 13.523809523809524, samples: 21}
else {value: 10.627118644067796, samples: 59}
else if X[0] <= 0.7875000000000001
then if X[5] <= 0.34375
then if X[1] <= 0.575
then if X[6] <= 0.481
then {value: 11.9, samples: 10}

else {value: 15.777777777777779, samples: 9}
else {value: 29.0, samples: 1}
else {value: 12.366666666666667, samples: 30}
else {value: 23.0, samples: 1}

This is the evaluation for mse:
10.368695769617894

For These Hyper-Parameters: 9 and 0.15
Fold 1
Regression Tree:

if X[6] <= 0.17925
  then if X[6] <= 0.069
    then {value: 5.950819672131147, samples: 61}
    else {value: 8.438888888888888, samples: 180}
  else if X[2] <= 0.1775
    then if X[6] <= 0.32375
      then if X[4] <= 0.287
        then if X[3] <= 0.7575000000000001
          then {value: 11.268292682926829, samples: 41}
          else {value: 15.11111111111111, samples: 9}
        else {value: 9.839779005524862, samples: 181}
      else if X[4] <= 0.42025
        then {value: 15.416666666666666, samples: 12}
        else if X[6] <= 0.53
          then {value: 11.0, samples: 83}
          else {value: 16.5, samples: 4}
    else if X[4] <= 0.389
      then if X[0] <= 0.59
        then {value: 15.555555555555555, samples: 9}
        else {value: 24.5, samples: 2}
      else if X[6] <= 0.3895
        then {value: 10.782608695652174, samples: 23}
        else if X[5] <= 0.34425
          then if X[3] <= 1.784
            then if X[6] <= 0.43525
              then {value: 17.833333333333332, samples: 6}
              else {value: 13.11111111111111, samples: 18}
            else if X[4] <= 0.84825
              then {value: 25.0, samples: 3}
              else {value: 14.5, samples: 2}
          else if X[0] <= 0.7875000000000001
            then {value: 12.151515151515152, samples: 33}
            else {value: 23.0, samples: 1}

This is the evaluation for mse:
4.957357229403097

Fold 2

Regression Tree:

if X[6] <= 0.1695
   then if X[5] <= 0.032
      then {value: 5.085714285714285, samples: 35}
      else {value: 8.043956043956044, samples: 182}
   else if X[2] <= 0.1775
      then if X[6] <= 0.2965
         then if X[4] <= 0.307
            then if X[3] <= 0.766
               then {value: 10.478260869565217, samples: 69}
               else {value: 15.3, samples: 10}
            else {value: 9.433823529411764, samples: 136}
         else if X[4] <= 0.42
            then {value: 14.529411764705882, samples: 17}
            else {value: 10.921739130434782, samples: 115}
      else if X[4] <= 0.40549999999999997
         then if X[3] <= 1.04425
            then {value: 14.818181818181818, samples: 11}
            else {value: 24.5, samples: 2}
         else if X[6] <= 0.3895
            then {value: 10.347826086956522, samples: 23}
            else if X[5] <= 0.34425
               then if X[3] <= 1.784
                  then {value: 13.96, samples: 25}
                  else if X[3] <= 1.8639999999999999
                     then {value: 25.5, samples: 2}
                     else {value: 14.5, samples: 2}
               else {value: 11.897435897435898, samples: 39}

This is the evaluation for mse:
6.957243380756887

Fold 3
Regression Tree:

if X[6] <= 0.1695
   then if X[6] <= 0.06975
      then {value: 5.786666666666667, samples: 75}
      else {value: 8.348684210526315, samples: 152}
   else if X[6] <= 0.40800000000000003
      then if X[6] <= 0.32475
         then if X[4] <= 0.2365
            then {value: 12.818181818181818, samples: 22}
            else if X[6] <= 0.2555
               then {value: 9.308333333333334, samples: 120}
               else if X[4] <= 0.315
                  then {value: 14.0, samples: 13}
                  else {value: 10.131313131313131, samples: 99}
      else if X[4] <= 0.42

```
          then {value: 16.352941176470587, samples: 17}
          else {value: 10.676767676767676, samples: 99}
      else if X[6] <= 0.5774999999999999
        then if X[1] <= 0.5825
          then {value: 12.716666666666667, samples: 60}
          else if X[2] <= 0.19
            then {value: 29.0, samples: 1}
            else {value: 13.0, samples: 2}
      else {value: 17.875, samples: 8}
```

This is the evaluation for mse:
9.396879254671678

Fold 4
Regression Tree:

```
 if X[6] <= 0.17925
   then if X[5] <= 0.032
     then {value: 5.181818181818182, samples: 44}
     else {value: 8.101851851851851, samples: 216}
   else if X[6] <= 0.41974999999999996
     then if X[4] <= 0.307
       then if X[3] <= 0.75825
         then if X[2] <= 0.1775
           then {value: 11.208333333333334, samples: 48}
           else {value: 21.0, samples: 2}
         else {value: 15.235294117647058, samples: 17}
       else if X[6] <= 0.2895
         then {value: 9.409090909090908, samples: 110}
         else if X[4] <= 0.5015000000000001
           then if X[2] <= 0.1625
             then if X[2] <= 0.1275
               then {value: 21.0, samples: 1}
               else {value: 10.428571428571429, samples: 28}
             else {value: 14.1, samples: 30}
           else {value: 10.222222222222221, samples: 108}
     else if X[6] <= 0.6825
       then {value: 13.442622950819672, samples: 61}
       else {value: 19.666666666666668, samples: 3}
```

This is the evaluation for mse:
6.936452662779136

Fold 5
Regression Tree:

```
 if X[6] <= 0.1695
   then if X[5] <= 0.032
     then {value: 5.214285714285714, samples: 42}
     else {value: 8.08994708994709, samples: 189}
```

else if X[2] <= 0.1775
    then if X[6] <= 0.53
        then if X[4] <= 0.30925
            then if X[3] <= 0.75675
                then {value: 10.682539682539682, samples: 63}
                else {value: 14.5, samples: 16}
            else if X[6] <= 0.31875
                then {value: 9.651898734177216, samples: 158}
                else {value: 11.029702970297029, samples: 101}
        else {value: 17.666666666666668, samples: 3}
    else if X[4] <= 0.40549999999999997
        then {value: 16.5, samples: 12}
        else if X[6] <= 0.6825
            then if X[0] <= 0.7875000000000001
                then if X[6] <= 0.3895
                    then {value: 10.75, samples: 24}
                    else if X[5] <= 0.3465
                        then if X[2] <= 0.1925
                            then if X[1] <= 0.5575
                                then {value: 15.625, samples: 8}
                                else {value: 29.0, samples: 1}
                            else {value: 13.384615384615385, samples: 13}
                        else {value: 11.685714285714285, samples: 35}
                else {value: 23.0, samples: 1}
            else {value: 20.5, samples: 2}

This is the evaluation for mse:
7.950878173417158

For These Hyper-Parameters: 9 and 0.2
Fold 1
Regression Tree:

 if X[6] <= 0.23475
    then if X[6] <= 0.06975
        then {value: 5.942028985507246, samples: 69}
        else {value: 8.714814814814815, samples: 270}
    else if X[6] <= 0.43374999999999997
        then if X[4] <= 0.32675
            then if X[1] <= 0.3975
                then {value: 19.25, samples: 4}
                else {value: 12.933333333333334, samples: 30}
            else if X[6] <= 0.302
                then {value: 9.853932584269662, samples: 89}
                else if X[4] <= 0.5015000000000001
                    then {value: 13.023809523809524, samples: 42}
                    else {value: 10.282828282828282, samples: 99}
        else if X[6] <= 0.5845
            then if X[4] <= 0.70575
                then if X[1] <= 0.575

then {value: 13.78125, samples: 32}
                   else {value: 29.0, samples: 1}
             else {value: 11.409090909090908, samples: 22}
          else {value: 16.9, samples: 10}

This is the evaluation for mse:
8.507992406255871

Fold 2
Regression Tree:

 if X[6] <= 0.18175
    then if X[5] <= 0.032
       then {value: 5.205128205128205, samples: 39}
       else {value: 8.218009478672986, samples: 211}
    else if X[2] <= 0.1775
       then if X[6] <= 0.31875
          then if X[4] <= 0.306
             then if X[3] <= 0.7695000000000001
                then {value: 11.16, samples: 50}
                else if X[5] <= 0.1795
                   then {value: 21.666666666666668, samples: 3}
                   else {value: 11.0, samples: 3}
             else {value: 9.522875816993464, samples: 153}
          else if X[4] <= 0.42
             then {value: 16.181818181818183, samples: 11}
             else {value: 11.07, samples: 100}
       else if X[4] <= 0.5157499999999999
          then if X[0] <= 0.5974999999999999
             then if X[0] <= 0.545
                then {value: 19.666666666666668, samples: 3}
                else {value: 11.363636363636363, samples: 11}
             else {value: 17.071428571428573, samples: 14}
          else if X[6] <= 0.6825
             then if X[0] <= 0.7875000000000001
                then if X[6] <= 0.38875000000000004
                   then {value: 10.176470588235293, samples: 17}
                   else if X[5] <= 0.34425
                      then if X[3] <= 1.784
                         then {value: 13.642857142857142, samples: 14}
                         else {value: 23.0, samples: 2}
                      else {value: 11.764705882352942, samples: 34}
                else {value: 23.0, samples: 1}
             else {value: 20.5, samples: 2}

This is the evaluation for mse:
8.367798741348118

Fold 3
Regression Tree:

if X[6] <= 0.1695
  then if X[5] <= 0.03325
    then {value: 5.175, samples: 40}
    else {value: 8.026881720430108, samples: 186}
  else if X[6] <= 0.40874999999999995
    then if X[2] <= 0.1625
      then if X[4] <= 0.307
        then if X[3] <= 0.7715000000000001
          then {value: 10.850746268656716, samples: 67}
          else {value: 16.0, samples: 7}
        else {value: 9.781065088757396, samples: 169}
      else if X[4] <= 0.48875
        then {value: 13.818181818181818, samples: 44}
        else {value: 10.325, samples: 80}
    else if X[6] <= 0.5814999999999999
      then if X[4] <= 0.70575
        then if X[1] <= 0.58
          then {value: 13.928571428571429, samples: 42}
          else {value: 29.0, samples: 1}
        else {value: 11.6, samples: 25}
      else {value: 18.0, samples: 7}

This is the evaluation for mse:
6.1838833668116555

Fold 4
Regression Tree:

if X[6] <= 0.16825
  then if X[6] <= 0.056999999999999995
    then {value: 5.610169491525424, samples: 59}
    else {value: 8.191616766467066, samples: 167}
  else if X[2] <= 0.1775
    then if X[6] <= 0.32375
      then if X[4] <= 0.30925
        then if X[3] <= 0.75675
          then {value: 10.610169491525424, samples: 59}
          else {value: 14.571428571428571, samples: 14}
        else {value: 9.708333333333334, samples: 168}
      else if X[4] <= 0.40975
        then {value: 15.333333333333334, samples: 12}
        else {value: 11.202127659574469, samples: 94}
    else if X[0] <= 0.545
      then {value: 18.6, samples: 5}
      else if X[3] <= 2.5172499999999998
        then if X[6] <= 0.3895
          then if X[4] <= 0.4395
            then if X[6] <= 0.3675
              then {value: 12.5, samples: 8}

else {value: 26.0, samples: 1}
else {value: 10.473684210526315, samples: 19}
else {value: 13.133333333333333, samples: 60}
else {value: 20.0, samples: 2}

This is the evaluation for mse:
6.025083765277118

Fold 5
Regression Tree:

if X[6] <= 0.1695
  then if X[6] <= 0.06975
    then {value: 5.651515151515151, samples: 66}
    else {value: 8.397350993377483, samples: 151}
  else if X[2] <= 0.1875
    then if X[4] <= 0.219
      then {value: 13.31578947368421, samples: 19}
      else if X[6] <= 0.2395
        then {value: 9.431192660550458, samples: 109}
        else if X[4] <= 0.39775000000000005
          then {value: 12.370967741935484, samples: 62}
          else {value: 10.51530612244898, samples: 196}
    else if X[4] <= 0.388
      then {value: 19.0, samples: 5}
      else {value: 13.333333333333334, samples: 60}

This is the evaluation for mse:
8.531907766231779

For These Hyper-Parameters: 9 and 0.25
Fold 1
Regression Tree:

if X[6] <= 0.1695
  then if X[5] <= 0.03125
    then {value: 5.1891891891891895, samples: 37}
    else {value: 8.07182320441989, samples: 181}
  else if X[6] <= 0.3545
    then if X[4] <= 0.30925
      then if X[3] <= 0.7362500000000001
        then {value: 10.682539682539682, samples: 63}
        else {value: 14.090909090909092, samples: 22}
      else {value: 10.199115044247788, samples: 226}
    else if X[4] <= 0.3875
      then {value: 18.125, samples: 8}
      else if X[6] <= 0.5845
        then if X[6] <= 0.3895
          then {value: 10.794117647058824, samples: 34}
          else if X[4] <= 0.70575

          then if X[1] <= 0.58
            then {value: 13.035714285714286, samples: 56}
            else {value: 29.0, samples: 1}
          else {value: 11.241379310344827, samples: 29}
        else {value: 16.363636363636363, samples: 11}

This is the evaluation for mse:
4.967548216150093

Fold 2
Regression Tree:

 if X[6] <= 0.17575
  then if X[6] <= 0.06975
    then {value: 5.842105263157895, samples: 76}
    else {value: 8.415300546448087, samples: 183}
  else if X[2] <= 0.1775
    then if X[6] <= 0.32375
      then {value: 10.042056074766355, samples: 214}
      else if X[4] <= 0.42025
        then {value: 15.545454545454545, samples: 11}
        else {value: 11.089887640449438, samples: 89}
    else if X[0] <= 0.545
      then {value: 18.6, samples: 5}
      else if X[6] <= 0.5845
        then {value: 12.146341463414634, samples: 82}
        else {value: 17.25, samples: 8}

This is the evaluation for mse:
8.987454882488269

Fold 3
Regression Tree:

 if X[6] <= 0.1695
  then if X[6] <= 0.0635
    then {value: 5.873015873015873, samples: 63}
    else {value: 8.300613496932515, samples: 163}
  else if X[6] <= 0.37475
    then {value: 10.532934131736527, samples: 334}
    else if X[4] <= 0.40049999999999997
      then {value: 19.6, samples: 5}
      else if X[0] <= 0.7875000000000001
        then if X[6] <= 0.3895
          then {value: 9.909090909090908, samples: 11}
          else if X[5] <= 0.348
            then if X[1] <= 0.5825
              then {value: 13.717391304347826, samples: 46}
              else {value: 29.0, samples: 1}
            else {value: 11.704545454545455, samples: 44}

else {value: 23.0, samples: 1}

This is the evaluation for mse:
9.316530961589756

Fold 4
Regression Tree:

 if X[6] <= 0.1695
   then if X[5] <= 0.032
     then {value: 5.116279069767442, samples: 43}
     else {value: 8.032432432432433, samples: 185}
   else if X[2] <= 0.1775
     then {value: 10.48857142857143, samples: 350}
     else if X[4] <= 0.388
       then {value: 17.166666666666668, samples: 12}
       else if X[6] <= 0.5814999999999999
         then if X[6] <= 0.4075
           then {value: 11.185185185185185, samples: 27}
           else if X[5] <= 0.322
             then if X[1] <= 0.575
               then {value: 15.181818181818182, samples: 11}
               else {value: 29.0, samples: 1}
             else {value: 12.625, samples: 32}
         else {value: 18.142857142857142, samples: 7}

This is the evaluation for mse:
8.549778475897009

Fold 5
Regression Tree:

 if X[6] <= 0.18075
   then if X[5] <= 0.04475
     then {value: 5.761904761904762, samples: 63}
     else {value: 8.416216216216217, samples: 185}
   else if X[2] <= 0.1775
     then if X[4] <= 0.287
       then {value: 12.521739130434783, samples: 46}
       else if X[6] <= 0.302
         then {value: 9.63888888888889, samples: 144}
         else if X[4] <= 0.42
           then {value: 14.714285714285714, samples: 14}
           else {value: 10.798319327731093, samples: 119}
     else if X[4] <= 0.5157499999999999
       then if X[0] <= 0.5974999999999999
         then if X[0] <= 0.5425
           then {value: 19.0, samples: 4}
           else {value: 11.363636363636363, samples: 11}
         else {value: 16.785714285714285, samples: 14}

else {value: 12.220588235294118, samples: 68}

This is the evaluation for mse:
8.799846485804684

Fold 1
Regression Tree:

if X[6] <= 0.19425
  then if X[6] <= 0.069
    then if X[6] <= 0.029249999999999998
      then {value: 4.5, samples: 16}
      else {value: 6.416666666666667, samples: 48}
    else if X[6] <= 0.14125
      then if X[4] <= 0.101
        then if X[0] <= 0.415
          then {value: 8.866666666666667, samples: 15}
          else {value: 15.0, samples: 1}
        else {value: 7.734939759036145, samples: 83}
      else if X[4] <= 0.19425
        then {value: 10.15, samples: 20}
        else {value: 8.6625, samples: 80}
  else if X[2] <= 0.1775
    then if X[6] <= 0.32375
      then if X[4] <= 0.287
        then if X[3] <= 0.7575000000000001
          then if X[4] <= 0.22375
            then {value: 14.0, samples: 6}
            else {value: 10.894736842105264, samples: 19}
          else if X[0] <= 0.53
            then {value: 18.5, samples: 4}
            else {value: 11.0, samples: 2}
        else if X[6] <= 0.2395
          then {value: 8.958333333333334, samples: 48}
          else if X[4] <= 0.397
            then {value: 10.891891891891891, samples: 37}
            else {value: 9.609756097560975, samples: 82}
      else if X[4] <= 0.42
        then if X[1] <= 0.4575
          then {value: 17.833333333333332, samples: 6}
          else if X[4] <= 0.38925
            then {value: 10.333333333333334, samples: 3}
            else {value: 16.333333333333332, samples: 3}
        else if X[6] <= 0.515
          then if X[1] <= 0.5475000000000001
            then if X[4] <= 0.5567500000000001
              then if X[5] <= 0.34199999999999997
                then if X[4] <= 0.48875
                  then if X[3] <= 1.15475
                    then {value: 10.9, samples: 10}

else {value: 14.0, samples: 7}
                else {value: 10.869565217391305, samples: 23}
              else {value: 18.0, samples: 1}
            else {value: 10.066666666666666, samples: 45}
          else if X[0] <= 0.6725000000000001
            then {value: 21.0, samples: 1}
            else {value: 13.5, samples: 2}
        else {value: 16.5, samples: 4}
    else if X[4] <= 0.5157499999999999
      then if X[0] <= 0.5325
        then {value: 20.0, samples: 3}
        else if X[6] <= 0.3675
          then {value: 13.153846153846153, samples: 13}
          else if X[5] <= 0.1925
            then {value: 26.0, samples: 1}
            else if X[5] <= 0.27475
              then {value: 14.333333333333334, samples: 6}
              else {value: 18.0, samples: 5}
      else if X[6] <= 0.5845
        then if X[6] <= 0.43374999999999997
          then {value: 10.548387096774194, samples: 31}
          else if X[4] <= 0.7110000000000001
            then if X[1] <= 0.575
              then {value: 13.466666666666667, samples: 15}
              else {value: 29.0, samples: 1}
            else if X[2] <= 0.2275
              then {value: 11.277777777777779, samples: 18}
              else {value: 19.0, samples: 1}
        else if X[1] <= 0.5575
          then {value: 23.0, samples: 2}
          else if X[4] <= 0.93075
            then {value: 11.666666666666666, samples: 3}
            else {value: 19.0, samples: 3}

This is the evaluation for mse:
9.607460446595095

Fold 2
Regression Tree:

 if X[6] <= 0.2395
   then if X[6] <= 0.06975
     then if X[0] <= 0.2575
       then {value: 4.222222222222222, samples: 18}
       else {value: 6.568627450980392, samples: 51}
     else if X[6] <= 0.1665
       then if X[2] <= 0.1225
         then if X[4] <= 0.10275
           then if X[1] <= 0.315
             then {value: 8.75, samples: 20}

else {value: 15.0, samples: 1}
else {value: 7.844444444444444, samples: 90}
else if X[4] <= 0.19025
then {value: 11.333333333333334, samples: 12}
else {value: 8.297297297297296, samples: 37}
else if X[2] <= 0.1825
then if X[4] <= 0.21225
then if X[2] <= 0.10250000000000001
then {value: 8.5, samples: 2}
else {value: 13.0, samples: 10}
else if X[5] <= 0.0995
then {value: 15.0, samples: 1}
else if X[3] <= 0.5834999999999999
then {value: 8.0, samples: 10}
else if X[4] <= 0.307
then {value: 10.194444444444445, samples: 36}
else {value: 8.936507936507937, samples: 63}
else {value: 20.0, samples: 1}
else if X[2] <= 0.1775
then if X[4] <= 0.35775
then if X[3] <= 0.93225
then if X[1] <= 0.4175
then if X[3] <= 0.7735000000000001
then {value: 12.2, samples: 5}
else if X[5] <= 0.1795
then {value: 21.666666666666668, samples: 3}
else {value: 14.25, samples: 4}
else {value: 11.666666666666666, samples: 18}
else {value: 19.666666666666668, samples: 3}
else if X[2] <= 0.1625
then if X[4] <= 0.397
then if X[4] <= 0.3705
then {value: 9.5, samples: 8}
else {value: 12.166666666666666, samples: 18}
else {value: 9.781609195402298, samples: 87}
else if X[4] <= 0.48875
then if X[1] <= 0.5275000000000001
then if X[5] <= 0.24475
then {value: 14.9, samples: 10}
else {value: 11.777777777777779, samples: 9}
else {value: 21.0, samples: 1}
else if X[6] <= 0.5075000000000001
then {value: 10.5, samples: 60}
else {value: 15.333333333333334, samples: 3}
else if X[4] <= 0.40549999999999997
then if X[1] <= 0.485
then if X[0] <= 0.6125
then if X[0] <= 0.5375000000000001
then {value: 20.0, samples: 2}
else {value: 13.428571428571429, samples: 7}
else {value: 23.0, samples: 1}

else {value: 26.0, samples: 1}
            else if X[6] <= 0.3895
                then {value: 10.3, samples: 20}
                else if X[5] <= 0.35
                    then if X[3] <= 1.77425
                        then if X[6] <= 0.43525
                            then {value: 17.0, samples: 7}
                            else if X[5] <= 0.2745
                                then {value: 10.25, samples: 4}
                                else if X[4] <= 0.62625
                                    then {value: 16.0, samples: 5}
                                    else {value: 12.285714285714286, samples: 7}
                        else if X[0] <= 0.7224999999999999
                            then {value: 25.0, samples: 3}
                            else {value: 12.0, samples: 1}
                    else if X[0] <= 0.7875000000000001
                        then {value: 11.785714285714286, samples: 28}
                        else {value: 23.0, samples: 1}

This is the evaluation for mse:
5.960316861048654

Fold 3
Regression Tree:

 if X[6] <= 0.1775
   then if X[6] <= 0.0635
     then if X[0] <= 0.2575
       then {value: 4.0, samples: 12}
       else {value: 6.122448979591836, samples: 49}
     else if X[6] <= 0.11975
       then if X[4] <= 0.101
         then if X[1] <= 0.315
           then {value: 8.529411764705882, samples: 17}
           else {value: 15.0, samples: 1}
         else {value: 7.288135593220339, samples: 59}
       else if X[4] <= 0.1935
         then if X[3] <= 0.42674999999999996
           then {value: 8.6875, samples: 16}
           else if X[2] <= 0.1175
             then {value: 15.5, samples: 2}
             else if X[4] <= 0.16
               then {value: 14.666666666666666, samples: 3}
               else {value: 10.0, samples: 10}
         else {value: 8.315068493150685, samples: 73}
   else if X[2] <= 0.1775
     then if X[4] <= 0.238
       then {value: 12.941176470588236, samples: 17}
       else if X[6] <= 0.31225
         then if X[4] <= 0.39225

then if X[6] <= 0.2345
    then if X[0] <= 0.5075000000000001
        then if X[4] <= 0.258
            then if X[5] <= 0.11075
                then {value: 15.0, samples: 1}
                else {value: 8.714285714285714, samples: 7}
            else {value: 12.11111111111, samples: 9}
        else {value: 9.314285714285715, samples: 35}
    else if X[1] <= 0.4175
        then if X[0] <= 0.535
            then {value: 11.857142857142858, samples: 7}
            else if X[1] <= 0.4125
                then {value: 12.0, samples: 1}
                else {value: 23.0, samples: 1}
        else {value: 10.954545454545455, samples: 44}
    else {value: 9.296703296703297, samples: 91}
else if X[4] <= 0.36375
    then if X[3] <= 0.92025
        then {value: 12.0, samples: 2}
        else {value: 19.666666666666668, samples: 3}
    else if X[6] <= 0.53
        then if X[4] <= 0.51225
            then if X[1] <= 0.545
                then {value: 11.793103448275861, samples: 29}
                else {value: 17.5, samples: 2}
            else if X[6] <= 0.41774999999999995
                then if X[2] <= 0.1375
                    then {value: 14.0, samples: 1}
                    else if X[4] <= 0.5822499999999999
                        then if X[0] <= 0.66
                            then {value: 10.375, samples: 24}
                            else {value: 18.0, samples: 1}
                        else {value: 9.743589743589743, samples: 39}
                else {value: 12.11111111111, samples: 9}
        else {value: 17.5, samples: 2}
else if X[4] <= 0.40549999999999997
    then if X[1] <= 0.485
        then if X[0] <= 0.6125
            then if X[0] <= 0.5475000000000001
                then {value: 17.75, samples: 4}
                else {value: 12.6, samples: 5}
            else {value: 23.0, samples: 1}
        else {value: 26.0, samples: 1}
    else if X[6] <= 0.38825
        then {value: 10.538461538461538, samples: 26}
        else if X[5] <= 0.34425
            then if X[3] <= 1.784
                then if X[6] <= 0.43525
                    then {value: 17.166666666666668, samples: 6}
                    else if X[0] <= 0.585
                        then {value: 8.0, samples: 1}

else {value: 14.066666666666666, samples: 15}
                else if X[4] <= 0.84825
                    then {value: 25.0, samples: 3}
                    else {value: 14.5, samples: 2}
            else if X[2] <= 0.2225
                then if X[4] <= 0.60625
                    then {value: 9.75, samples: 4}
                    else if X[4] <= 0.695
                        then {value: 13.571428571428571, samples: 7}
                        else {value: 10.9, samples: 20}
                else {value: 14.833333333333334, samples: 6}

This is the evaluation for mse:
7.24726287824855

Fold 4
Regression Tree:

 if X[6] <= 0.1695
    then if X[5] <= 0.03325
        then {value: 5.209302325581396, samples: 43}
        else if X[6] <= 0.11175
            then {value: 7.380434782608695, samples: 92}
            else if X[4] <= 0.1935
                then if X[2] <= 0.15250000000000002
                    then if X[1] <= 0.3275
                        then {value: 13.5, samples: 2}
                        else if X[3] <= 0.429
                            then {value: 8.11111111111111, samples: 18}
                            else {value: 10.25, samples: 16}
                    else {value: 16.0, samples: 1}
                else {value: 8.140350877192983, samples: 57}
    else if X[6] <= 0.41974999999999996
        then if X[4] <= 0.30925
            then if X[6] <= 0.22975
                then if X[0] <= 0.5125
                    then if X[4] <= 0.22425
                        then if X[1] <= 0.3775
                            then {value: 10.714285714285714, samples: 7}
                            else {value: 14.714285714285714, samples: 7}
                        else {value: 10.7, samples: 20}
                    else {value: 9.2, samples: 20}
                else if X[1] <= 0.3975
                    then if X[2] <= 0.14
                        then {value: 13.0, samples: 1}
                        else {value: 21.333333333333332, samples: 3}
                    else if X[5] <= 0.175
                        then {value: 11.666666666666666, samples: 9}
                        else if X[3] <= 0.77625
                            then {value: 23.0, samples: 1}

```
            else if X[3] <= 0.9655
                then {value: 13.25, samples: 12}
                else {value: 17.0, samples: 3}
    else if X[6] <= 0.2765
       then if X[4] <= 0.39175000000000004
          then if X[4] <= 0.37175
             then {value: 9.405405405405405, samples: 37}
             else if X[4] <= 0.379
                then {value: 13.4, samples: 5}
                else {value: 9.833333333333334, samples: 6}
          else {value: 8.928571428571429, samples: 56}
       else if X[4] <= 0.5015000000000001
          then if X[2] <= 0.1625
             then if X[1] <= 0.4525
                then if X[6] <= 0.3045
                   then {value: 9.666666666666666, samples: 3}
                   else if X[4] <= 0.44775
                      then {value: 14.6, samples: 5}
                      else {value: 8.0, samples: 1}
                else {value: 10.115384615384615, samples: 26}
             else if X[1] <= 0.445
                then {value: 17.75, samples: 4}
                else if X[6] <= 0.385
                   then {value: 12.551724137931034, samples: 29}
                   else if X[2] <= 0.1825
                      then {value: 12.0, samples: 2}
                      else {value: 18.333333333333332, samples: 3}
          else if X[2] <= 0.22
             then if X[0] <= 0.5425
                then {value: 13.0, samples: 1}
                else if X[6] <= 0.334
                   then {value: 9.794871794871796, samples: 39}
                   else if X[2] <= 0.14
                      then {value: 14.0, samples: 1}
                      else if X[4] <= 0.5567500000000001
                         then if X[1] <= 0.52
                            then {value: 10.470588235294118, samples: 17}
                            else {value: 18.0, samples: 1}
                         else {value: 10.022222222222222, samples: 45}
             else {value: 12.5, samples: 2}
else if X[6] <= 0.6825
   then if X[0] <= 0.7875000000000001
      then if X[4] <= 0.399
         then {value: 23.0, samples: 1}
         else if X[5] <= 0.34425
            then if X[1] <= 0.5825
               then if X[4] <= 0.43825000000000003
                  then {value: 9.0, samples: 2}
                  else if X[6] <= 0.4975
                     then if X[6] <= 0.43725
                        then {value: 16.75, samples: 4}
```

else {value: 12.61111111111111, samples: 18}
                        else {value: 16.333333333333332, samples: 6}
                    else {value: 29.0, samples: 1}
                else if X[5] <= 0.42125
                    then {value: 11.347826086956522, samples: 23}
                    else if X[0] <= 0.705
                        then {value: 16.5, samples: 4}
                        else {value: 12.0, samples: 10}
            else {value: 23.0, samples: 1}
        else {value: 19.666666666666668, samples: 3}

This is the evaluation for mse:
9.053220077358962

Fold 5
Regression Tree:

 if X[6] <= 0.1695
   then if X[5] <= 0.032
     then if X[6] <= 0.027999999999999997
        then {value: 4.190476190476191, samples: 21}
        else {value: 5.954545454545454, samples: 22}
     else if X[6] <= 0.1195
        then {value: 7.47, samples: 100}
        else if X[4] <= 0.16
           then if X[3] <= 0.434
              then {value: 9.666666666666666, samples: 6}
              else {value: 16.0, samples: 2}
           else {value: 8.505882352941176, samples: 85}
   else if X[6] <= 0.37475
     then if X[4] <= 0.30925
        then if X[3] <= 0.74725
           then if X[2] <= 0.16999999999999998
              then if X[4] <= 0.2365
                 then if X[6] <= 0.17375
                    then {value: 15.0, samples: 3}
                    else if X[2] <= 0.1375
                       then {value: 10.384615384615385, samples: 13}
                       else {value: 13.714285714285714, samples: 7}
                 else if X[3] <= 0.58725
                    then {value: 7.857142857142857, samples: 7}
                    else {value: 10.352941176470589, samples: 34}
              else {value: 22.0, samples: 1}
           else if X[6] <= 0.265
              then if X[2] <= 0.1325
                 then {value: 12.666666666666666, samples: 3}
                 else if X[5] <= 0.1795
                    then {value: 22.0, samples: 3}
                    else {value: 16.0, samples: 2}
              else {value: 13.3, samples: 10}

else if X[6] <= 0.2495
  then {value: 8.928571428571429, samples: 70}
  else if X[4] <= 0.402
    then if X[6] <= 0.3225
      then {value: 11.344827586206897, samples: 29}
      else {value: 16.4, samples: 5}
    else if X[2] <= 0.1625
      then {value: 9.702702702702704, samples: 74}
      else if X[4] <= 0.5015000000000001
        then {value: 12.15, samples: 20}
        else {value: 10.24, samples: 50}
else if X[4] <= 0.40049999999999997
  then {value: 23.333333333333332, samples: 3}
  else if X[6] <= 0.5845
    then if X[4] <= 0.5682499999999999
      then if X[3] <= 1.395
        then if X[1] <= 0.5425
          then if X[2] <= 0.1875
            then {value: 10.909090909090908, samples: 11}
            else if X[0] <= 0.585
              then {value: 8.0, samples: 1}
              else {value: 15.4, samples: 5}
          else {value: 17.5, samples: 2}
        else {value: 15.857142857142858, samples: 7}
      else if X[6] <= 0.4475
        then {value: 10.848484848484848, samples: 33}
        else if X[2] <= 0.16749999999999998
          then {value: 19.0, samples: 1}
          else if X[0] <= 0.7075
            then if X[5] <= 0.4155
              then {value: 12.4, samples: 20}
              else {value: 17.0, samples: 3}
            else {value: 10.714285714285714, samples: 7}
    else if X[6] <= 0.6315
      then if X[4] <= 0.946
        then {value: 22.5, samples: 2}
        else {value: 15.5, samples: 2}
      else if X[6] <= 0.7175
        then {value: 10.5, samples: 2}
        else {value: 17.5, samples: 2}

This is the evaluation for mse:
12.44891672032336

Fold 1
Regression Tree:

 if X[6] <= 0.17575
   then if X[5] <= 0.032
     then {value: 5.256410256410256, samples: 39}

```
        else if X[6] <= 0.129
          then {value: 7.634615384615385, samples: 104}
          else if X[4] <= 0.18875
            then {value: 10.423076923076923, samples: 26}
            else {value: 8.355263157894736, samples: 76}
    else if X[2] <= 0.1775
      then if X[6] <= 0.32375
        then if X[4] <= 0.30925
          then if X[3] <= 0.7575000000000001
            then {value: 10.680851063829786, samples: 47}
            else if X[1] <= 0.4225
              then {value: 16.666666666666668, samples: 9}
              else {value: 12.0, samples: 5}
          else {value: 9.729559748427674, samples: 159}
        else if X[4] <= 0.42
          then {value: 15.636363636363637, samples: 11}
          else if X[6] <= 0.53
            then {value: 11.03225806451613, samples: 93}
            else {value: 16.5, samples: 4}
      else if X[4] <= 0.40449999999999997
        then if X[1] <= 0.4825
          then if X[0] <= 0.5325
            then {value: 20.0, samples: 3}
            else if X[0] <= 0.61
              then {value: 13.5, samples: 8}
              else {value: 23.0, samples: 1}
          else {value: 26.0, samples: 1}
        else if X[6] <= 0.6825
          then if X[0] <= 0.7875000000000001
            then {value: 12.025316455696203, samples: 79}
            else {value: 23.0, samples: 1}
          else {value: 20.5, samples: 2}
```

This is the evaluation for mse:
7.52917150129078

Fold 2
Regression Tree:

```
 if X[6] <= 0.1695
   then if X[6] <= 0.056999999999999995
     then {value: 5.428571428571429, samples: 56}
     else {value: 8.166666666666666, samples: 180}
   else if X[6] <= 0.40874999999999995
     then if X[6] <= 0.24375
       then if X[4] <= 0.219
         then {value: 13.090909090909092, samples: 11}
         else {value: 9.43859649122807, samples: 114}
       else if X[4] <= 0.32675
         then if X[1] <= 0.3975
```

then {value: 20.5, samples: 2}
else if X[5] <= 0.17825
    then {value: 10.9, samples: 10}
    else if X[2] <= 0.1475
        then {value: 19.666666666666668, samples: 3}
        else {value: 13.833333333333334, samples: 12}
else if X[1] <= 0.545
    then if X[4] <= 0.50675
        then if X[2] <= 0.1625
            then if X[5] <= 0.14125
                then {value: 21.0, samples: 1}
                else {value: 10.153846153846153, samples: 65}
            else if X[6] <= 0.385
                then {value: 12.371428571428572, samples: 35}
                else {value: 18.5, samples: 2}
        else {value: 10.058252427184467, samples: 103}
    else {value: 21.0, samples: 1}
else if X[6] <= 0.6825
    then if X[4] <= 0.399
        then {value: 23.0, samples: 1}
        else if X[5] <= 0.34425
            then if X[3] <= 1.784
                then {value: 13.28125, samples: 32}
                else if X[3] <= 1.8639999999999999
                    then {value: 25.5, samples: 2}
                    else {value: 14.5, samples: 2}
            else {value: 12.181818181818182, samples: 33}
    else {value: 19.666666666666668, samples: 3}

This is the evaluation for mse:
9.453138186972062

Fold 3
Regression Tree:

if X[6] <= 0.18075
    then if X[6] <= 0.0635
        then {value: 5.666666666666667, samples: 63}
        else if X[6] <= 0.13975
            then {value: 7.823529411764706, samples: 102}
            else if X[4] <= 0.19425
                then {value: 10.5, samples: 22}
                else {value: 8.37704918032787, samples: 61}
    else if X[2] <= 0.1775
        then if X[4] <= 0.30925
            then if X[3] <= 0.7715000000000001
                then {value: 10.946428571428571, samples: 56}
                else if X[5] <= 0.1795
                    then {value: 21.666666666666668, samples: 3}
                    else {value: 13.166666666666666, samples: 6}

else if X[6] <= 0.302
    then {value: 9.6328125, samples: 128}
    else if X[4] <= 0.42
        then {value: 14.0, samples: 15}
        else if X[1] <= 0.5325
            then {value: 10.57, samples: 100}
            else if X[4] <= 0.48575
                then {value: 21.0, samples: 1}
                else {value: 12.1, samples: 10}
else if X[0] <= 0.545
    then {value: 18.6, samples: 5}
    else if X[6] <= 0.5845
        then if X[4] <= 0.5157499999999999
            then if X[0] <= 0.59
                then {value: 10.875, samples: 8}
                else if X[4] <= 0.388
                    then {value: 26.0, samples: 1}
                    else {value: 15.142857142857142, samples: 14}
            else if X[6] <= 0.4475
                then {value: 10.583333333333334, samples: 36}
                else if X[5] <= 0.322
                    then if X[1] <= 0.575
                        then {value: 14.5, samples: 4}
                        else {value: 29.0, samples: 1}
                    else {value: 12.521739130434783, samples: 23}
        else if X[1] <= 0.5575
            then {value: 23.0, samples: 2}
            else if X[0] <= 0.78
                then {value: 13.833333333333334, samples: 6}
                else {value: 23.0, samples: 1}

This is the evaluation for mse:
7.988949176048753

Fold 4
Regression Tree:

if X[6] <= 0.17575
    then if X[6] <= 0.06975
        then {value: 5.954545454545454, samples: 66}
        else if X[2] <= 0.1225
            then {value: 7.982456140350878, samples: 114}
            else if X[4] <= 0.19025
                then {value: 11.1875, samples: 16}
                else {value: 8.404255319148936, samples: 47}
    else if X[2] <= 0.1775
        then if X[6] <= 0.32375
            then if X[4] <= 0.24375
                then if X[3] <= 0.782
                    then {value: 12.19047619047619, samples: 21}

else {value: 23.0, samples: 1}
                else {value: 9.825242718446601, samples: 206}
             else if X[4] <= 0.42
                then if X[1] <= 0.4575
                   then {value: 17.833333333333332, samples: 6}
                   else {value: 12.0, samples: 4}
                else if X[6] <= 0.53
                   then {value: 11.010989010989011, samples: 91}
                   else {value: 17.5, samples: 2}
          else if X[4] <= 0.5157499999999999
             then if X[6] <= 0.3675
                then {value: 14.416666666666666, samples: 12}
                else if X[5] <= 0.1925
                   then {value: 26.0, samples: 1}
                   else {value: 16.307692307692307, samples: 13}
             else if X[6] <= 0.43374999999999997
                then {value: 10.518518518518519, samples: 27}
                else if X[5] <= 0.34425
                   then if X[1] <= 0.5825
                      then if X[0] <= 0.6575
                         then {value: 18.0, samples: 5}
                         else {value: 12.428571428571429, samples: 7}
                      else {value: 29.0, samples: 1}
                   else if X[0] <= 0.7875000000000001
                      then {value: 12.25925925925926, samples: 27}
                      else {value: 23.0, samples: 1}

This is the evaluation for mse:
10.20095267007096

Fold 5
Regression Tree:

 if X[6] <= 0.16825
   then if X[6] <= 0.056999999999999995
     then {value: 5.660714285714286, samples: 56}
     else if X[6] <= 0.10975
        then {value: 7.438356164383562, samples: 73}
        else {value: 8.736842105263158, samples: 95}
   else if X[6] <= 0.41974999999999996
     then if X[4] <= 0.307
        then if X[3] <= 0.7362500000000001
           then if X[2] <= 0.16999999999999998
              then {value: 10.683333333333334, samples: 60}
              else {value: 22.0, samples: 1}
           else if X[1] <= 0.3975
              then {value: 18.333333333333332, samples: 3}
              else if X[6] <= 0.20825
                 then {value: 20.0, samples: 1}
                 else if X[2] <= 0.1475

```
                    then if X[0] <= 0.535
                        then {value: 13.833333333333334, samples: 6}
                        else {value: 21.0, samples: 2}
                    else {value: 12.461538461538462, samples: 13}
            else if X[6] <= 0.2895
                then {value: 9.368852459016393, samples: 122}
                else if X[4] <= 0.453
                    then if X[6] <= 0.3225
                        then {value: 11.117647058823529, samples: 17}
                        else if X[2] <= 0.1925
                            then if X[1] <= 0.4575
                                then {value: 17.666666666666668, samples: 6}
                                else {value: 12.857142857142858, samples: 14}
                            else {value: 21.0, samples: 2}
                    else if X[2] <= 0.1875
                        then {value: 10.267857142857142, samples: 112}
                        else if X[3] <= 1.25625
                            then {value: 21.0, samples: 1}
                            else {value: 11.0625, samples: 16}
            else if X[5] <= 0.34425
                then if X[3] <= 1.784
                    then if X[6] <= 0.43525
                        then {value: 18.5, samples: 4}
                        else {value: 13.5, samples: 24}
                    else if X[0] <= 0.705
                        then {value: 25.0, samples: 3}
                        else {value: 15.0, samples: 2}
                else if X[0] <= 0.7875000000000001
                    then {value: 12.147058823529411, samples: 34}
                    else {value: 23.0, samples: 1}

This is the evaluation for mse:
7.746440618677559


Fold 1
Regression Tree:

 if X[6] <= 0.17925
   then if X[5] <= 0.032
     then {value: 5.195121951219512, samples: 41}
     else {value: 8.196078431372548, samples: 204}
   else if X[2] <= 0.1775
     then if X[6] <= 0.53
       then if X[4] <= 0.307
         then if X[3] <= 0.75525
           then {value: 10.568181818181818, samples: 44}
           else {value: 14.642857142857142, samples: 14}
         else if X[6] <= 0.31925000000000003
           then {value: 9.72121212121212, samples: 165}
           else {value: 11.038461538461538, samples: 104}
```

else {value: 16.666666666668, samples: 3}
            else if X[4] <= 0.40549999999999997
                then if X[3] <= 1.04425
                    then {value: 14.818181818181818, samples: 11}
                    else {value: 24.5, samples: 2}
                else if X[6] <= 0.3895
                    then {value: 10.380952380952381, samples: 21}
                    else if X[6] <= 0.6779999999999999
                        then if X[0] <= 0.7875000000000001
                            then if X[4] <= 0.70575
                                then if X[3] <= 1.784
                                    then {value: 14.068965517241379, samples: 29}
                                    else {value: 29.0, samples: 1}
                                else {value: 12.0, samples: 27}
                            else {value: 23.0, samples: 1}
                        else {value: 24.0, samples: 1}

This is the evaluation for mse:
7.11429843309787

Fold 2
Regression Tree:

 if X[6] <= 0.1695
    then if X[6] <= 0.06975
        then {value: 5.826086956521739, samples: 69}
        else {value: 8.316455696202532, samples: 158}
    else if X[2] <= 0.1775
        then if X[6] <= 0.5075000000000001
            then if X[4] <= 0.23725
                then {value: 12.521739130434783, samples: 23}
                else if X[6] <= 0.2555
                    then {value: 9.508474576271187, samples: 118}
                    else if X[4] <= 0.34524999999999995
                        then if X[3] <= 0.93225
                            then {value: 12.363636363636363, samples: 22}
                            else {value: 19.666666666666668, samples: 3}
                        else {value: 10.547486033519553, samples: 179}
            else {value: 15.75, samples: 4}
        else if X[0] <= 0.545
            then {value: 18.25, samples: 4}
            else if X[6] <= 0.38625
                then {value: 10.923076923076923, samples: 26}
                else if X[5] <= 0.34425
                    then if X[3] <= 1.784
                        then {value: 14.2, samples: 25}
                        else {value: 22.666666666666668, samples: 3}
                    else {value: 11.941176470588236, samples: 34}

This is the evaluation for mse:

9.469695120302902

Fold 3
Regression Tree:

 if X[6] <= 0.17925
   then if X[5] <= 0.03875
     then {value: 5.38, samples: 50}
     else {value: 8.376884422110553, samples: 199}
   else if X[2] <= 0.1775
     then if X[6] <= 0.3175
       then if X[4] <= 0.30925
         then if X[3] <= 0.7575000000000001
           then {value: 10.688888888888888, samples: 45}
           else {value: 14.5625, samples: 16}
         else {value: 9.54109589041096, samples: 146}
       else if X[4] <= 0.42
         then {value: 15.538461538461538, samples: 13}
         else if X[6] <= 0.53
           then {value: 10.98913043478261, samples: 92}
           else {value: 17.666666666666668, samples: 3}
     else if X[4] <= 0.50075
       then if X[6] <= 0.35124999999999995
         then if X[0] <= 0.545
           then {value: 18.75, samples: 4}
           else {value: 11.75, samples: 8}
         else {value: 17.333333333333332, samples: 12}
       else if X[6] <= 0.43374999999999997
         then {value: 10.606060606060606, samples: 33}
         else if X[5] <= 0.34425
           then if X[3] <= 1.784
             then {value: 13.642857142857142, samples: 14}
             else if X[4] <= 0.84825
               then {value: 25.0, samples: 3}
               else {value: 14.5, samples: 2}
           else if X[0] <= 0.7875000000000001
             then {value: 12.074074074074074, samples: 27}
             else {value: 23.0, samples: 1}

This is the evaluation for mse:
4.812796326003555

Fold 4
Regression Tree:

 if X[6] <= 0.18075
   then if X[5] <= 0.032
     then {value: 5.255813953488372, samples: 43}
     else {value: 8.109004739336493, samples: 211}
   else if X[6] <= 0.40874999999999995

then if X[4] <= 0.402
   then if X[6] <= 0.3225
     then if X[6] <= 0.2395
      then {value: 10.276315789473685, samples: 76}
      else if X[1] <= 0.4125
       then {value: 15.5, samples: 10}
       else {value: 11.2, samples: 45}
     else {value: 16.4, samples: 15}
   else if X[6] <= 0.312
     then {value: 9.261904761904763, samples: 84}
     else {value: 10.743119266055047, samples: 109}
  else if X[6] <= 0.579
   then if X[4] <= 0.399
     then {value: 23.0, samples: 1}
     else {value: 12.676923076923076, samples: 65}
   else {value: 17.11111111111111, samples: 9}

This is the evaluation for mse:
8.086449530816289

Fold 5
Regression Tree:

if X[6] <= 0.1695
  then if X[6] <= 0.06975
    then {value: 5.955882352941177, samples: 68}
    else {value: 8.280254777070065, samples: 157}
  else if X[2] <= 0.1775
    then if X[6] <= 0.32375
      then if X[4] <= 0.30925
       then if X[3] <= 0.7715000000000001
        then {value: 10.82089552238806, samples: 67}
        else {value: 15.88888888888889, samples: 9}
       else {value: 9.666666666666666, samples: 165}
     else if X[4] <= 0.40975
      then {value: 15.818181818181818, samples: 11}
      else {value: 11.1, samples: 90}
    else if X[4] <= 0.388
      then {value: 18.444444444444443, samples: 9}
      else if X[6] <= 0.3895
       then {value: 11.0, samples: 28}
       else if X[5] <= 0.3305
        then if X[3] <= 1.71475
         then {value: 14.666666666666666, samples: 18}
         else {value: 25.0, samples: 3}
        else if X[3] <= 2.5172499999999998
         then {value: 12.195121951219512, samples: 41}
         else {value: 20.0, samples: 2}

This is the evaluation for mse:

8.31660751661586

Fold 1
Regression Tree:

```
if X[6] <= 0.17575
   then if X[5] <= 0.032
      then {value: 5.212765957446808, samples: 47}
      else {value: 8.185567010309278, samples: 194}
   else if X[2] <= 0.1775
      then if X[6] <= 0.53
         then if X[4] <= 0.31125
            then if X[3] <= 0.7695000000000001
               then {value: 11.0, samples: 54}
               else {value: 15.428571428571429, samples: 14}
            else if X[6] <= 0.302
               then {value: 9.571428571428571, samples: 140}
               else {value: 11.206611570247935, samples: 121}
         else {value: 16.5, samples: 4}
      else if X[4] <= 0.50125
         then {value: 15.833333333333334, samples: 24}
         else if X[6] <= 0.40700000000000003
            then {value: 10.391304347826088, samples: 23}
            else if X[0] <= 0.7875000000000001
               then if X[5] <= 0.322
                  then if X[1] <= 0.575
                     then {value: 14.666666666666666, samples: 6}
                     else {value: 29.0, samples: 1}
                  else {value: 12.692307692307692, samples: 39}
               else {value: 23.0, samples: 1}
```

This is the evaluation for mse:
6.660283517391001

Fold 2
Regression Tree:

```
if X[6] <= 0.18075
   then if X[6] <= 0.06975
      then {value: 5.916666666666667, samples: 72}
      else {value: 8.519337016574585, samples: 181}
   else if X[6] <= 0.4325
      then if X[6] <= 0.32475
         then if X[4] <= 0.16275
            then {value: 22.0, samples: 1}
            else {value: 10.139013452914797, samples: 223}
         else if X[4] <= 0.43725
            then {value: 15.210526315789474, samples: 19}
            else {value: 10.814814814814815, samples: 108}
      else if X[6] <= 0.6825
```

then if X[0] <= 0.7875000000000001
        then if X[4] <= 0.399
            then {value: 23.0, samples: 1}
            else if X[5] <= 0.34375
                then if X[3] <= 1.784
                    then {value: 13.26923076923077, samples: 26}
                    else {value: 22.666666666666668, samples: 3}
                else {value: 12.096774193548388, samples: 31}
        else {value: 23.0, samples: 1}
    else {value: 20.5, samples: 2}

This is the evaluation for mse:
9.737410903504287

Fold 3
Regression Tree:

 if X[6] <= 0.17575
    then if X[5] <= 0.03325
        then {value: 5.0, samples: 38}
        else {value: 8.168316831683168, samples: 202}
    else if X[2] <= 0.1775
        then if X[6] <= 0.5075000000000001
            then if X[4] <= 0.30925
                then if X[3] <= 0.7715000000000001
                    then {value: 11.122448979591837, samples: 49}
                    else {value: 15.23076923076923, samples: 13}
                else if X[6] <= 0.31925000000000003
                    then {value: 9.70625, samples: 160}
                    else if X[4] <= 0.48875
                        then {value: 13.321428571428571, samples: 28}
                        else {value: 10.512820512820513, samples: 78}
            else {value: 16.2, samples: 5}
        else if X[4] <= 0.5177499999999999
            then {value: 15.703703703703704, samples: 27}
            else if X[6] <= 0.55525
                then {value: 11.75438596491228, samples: 57}
                else {value: 16.0, samples: 11}

This is the evaluation for mse:
6.899256290223798

Fold 4
Regression Tree:

 if X[6] <= 0.16825
    then if X[5] <= 0.032
        then {value: 5.357142857142857, samples: 42}
        else {value: 8.052910052910052, samples: 189}
    else if X[2] <= 0.1825

then if X[6] <= 0.31925000000000003
   then if X[4] <= 0.30925
      then if X[3] <= 0.75675
         then {value: 10.582089552238806, samples: 67}
         else {value: 14.6875, samples: 16}
      else {value: 9.668674698795181, samples: 166}
   else if X[4] <= 0.41075
      then {value: 16.0, samples: 8}
      else {value: 11.085714285714285, samples: 105}
else if X[5] <= 0.195
   then {value: 20.666666666666668, samples: 3}
   else if X[6] <= 0.6825
      then if X[6] <= 0.3895
         then {value: 11.136363636363637, samples: 22}
         else if X[5] <= 0.34425
            then {value: 15.35, samples: 20}
            else {value: 11.785714285714286, samples: 28}
      else {value: 20.5, samples: 2}

This is the evaluation for mse:
7.384573349441504

Fold 5
Regression Tree:

 if X[6] <= 0.1695
   then if X[6] <= 0.0635
      then {value: 5.701754385964913, samples: 57}
      else {value: 8.209302325581396, samples: 172}
   else if X[6] <= 0.41974999999999996
      then if X[4] <= 0.219
         then {value: 13.8, samples: 15}
         else if X[6] <= 0.25825
            then {value: 9.511811023622048, samples: 127}
            else if X[4] <= 0.4015
               then if X[6] <= 0.3225
                  then if X[1] <= 0.4225
                     then {value: 16.285714285714285, samples: 7}
                     else {value: 11.34375, samples: 32}
                  else {value: 15.928571428571429, samples: 14}
               else {value: 10.44186046511628, samples: 172}
      else if X[5] <= 0.34425
         then if X[3] <= 1.784
            then {value: 14.1, samples: 30}
            else {value: 20.333333333333332, samples: 6}
         else {value: 12.444444444444445, samples: 36}

This is the evaluation for mse:
5.572067327817604

Fold 1
Regression Tree:

```
if X[6] <= 0.1695
   then if X[6] <= 0.06975
      then {value: 5.911764705882353, samples: 68}
      else {value: 8.372670807453416, samples: 161}
   else if X[2] <= 0.1775
      then if X[6] <= 0.32375
         then if X[4] <= 0.24275
            then {value: 12.678571428571429, samples: 28}
            else {value: 9.830917874396135, samples: 207}
         else if X[4] <= 0.42
            then {value: 15.214285714285714, samples: 14}
            else {value: 11.277777777777779, samples: 90}
      else if X[4] <= 0.40549999999999997
         then {value: 16.857142857142858, samples: 14}
         else if X[6] <= 0.3895
            then {value: 10.541666666666666, samples: 24}
            else if X[5] <= 0.34875
               then {value: 15.357142857142858, samples: 28}
               else {value: 11.911764705882353, samples: 34}
```

This is the evaluation for mse:
5.827724379513302

Fold 2
Regression Tree:

```
if X[6] <= 0.17575
   then if X[5] <= 0.032
      then {value: 5.105263157894737, samples: 38}
      else {value: 8.21531100478469, samples: 209}
   else if X[2] <= 0.1775
      then {value: 10.575384615384616, samples: 325}
      else if X[4] <= 0.40549999999999997
         then {value: 16.5, samples: 12}
         else if X[6] <= 0.3895
            then {value: 10.583333333333334, samples: 24}
            else if X[5] <= 0.34425
               then if X[3] <= 1.77425
                  then {value: 14.0, samples: 23}
                  else {value: 20.8, samples: 5}
               else {value: 12.40625, samples: 32}
```

This is the evaluation for mse:
6.278914156628877

Fold 3
Regression Tree:

if X[6] <= 0.1695
  then if X[6] <= 0.06975
    then {value: 5.9, samples: 70}
    else {value: 8.299363057324841, samples: 157}
  else if X[2] <= 0.1775
    then if X[6] <= 0.53
      then if X[4] <= 0.30925
        then if X[3] <= 0.7715000000000001
          then {value: 10.636363636363637, samples: 66}
          else {value: 17.333333333333332, samples: 9}
        else {value: 10.180451127819548, samples: 266}
      else {value: 16.5, samples: 4}
    else if X[0] <= 0.545
      then {value: 18.75, samples: 4}
      else if X[6] <= 0.3895
        then {value: 11.142857142857142, samples: 28}
        else if X[5] <= 0.34425
          then if X[1] <= 0.5825
            then {value: 15.5, samples: 26}
            else {value: 29.0, samples: 1}
          else {value: 12.432432432432432, samples: 37}

This is the evaluation for mse:
9.653207074031572

Fold 4
Regression Tree:

if X[6] <= 0.17575
  then if X[6] <= 0.056999999999999995
    then {value: 5.5, samples: 54}
    else {value: 8.24731182795699, samples: 186}
  else if X[6] <= 0.4975
    then if X[6] <= 0.32475
      then if X[4] <= 0.30925
        then {value: 11.711864406779661, samples: 59}
        else {value: 9.765714285714285, samples: 175}
      else if X[4] <= 0.40875
        then {value: 16.41176470588235, samples: 17}
        else {value: 11.100671140939598, samples: 149}
    else {value: 14.821428571428571, samples: 28}

This is the evaluation for mse:
10.29150954408171

Fold 5
Regression Tree:

if X[6] <= 0.18075

```
then if X[5] <= 0.032
    then {value: 5.204545454545454, samples: 44}
    else {value: 8.17224880382775, samples: 209}
else if X[6] <= 0.4055
    then if X[4] <= 0.32475
        then if X[6] <= 0.23249999999999998
            then {value: 10.755555555555556, samples: 45}
            else if X[1] <= 0.3975
                then {value: 21.333333333333332, samples: 3}
                else {value: 13.448275862068966, samples: 29}
        else if X[6] <= 0.302
            then {value: 9.580152671755725, samples: 131}
            else if X[4] <= 0.44475
                then {value: 14.26086956521739, samples: 23}
                else {value: 10.554545454545455, samples: 110}
    else if X[6] <= 0.6825
        then if X[0] <= 0.7875000000000001
            then if X[5] <= 0.34425
                then if X[3] <= 1.784
                    then {value: 13.67741935483871, samples: 31}
                    else {value: 25.5, samples: 2}
                else {value: 12.026315789473685, samples: 38}
            else {value: 23.0, samples: 1}
        else {value: 20.5, samples: 2}

This is the evaluation for mse:
8.228201127396948


Process finished with exit code 0
```

Max Depth	Minimum Criterion	MSE
1	0.05	8.46132335191726
1	0.1	9.67807976078908
1	0.15	7.283756713467984
1	0.2	11.4438557660621
1	0.25	7.312925860348029
3	0.05	7.995196890067388
3	0.1	8.279577006652222
3	0.15	7.4519792135054175
3	0.2	6.437908537462682
3	0.25	6.07849167812727
5	0.05	6.585459486122514
5	0.1	8.867494697756523
5	0.15	8.695643246747997
5	0.2	6.141032984851419
5	0.25	6.9990435601255925
7	0.05	11.15862673947987
7	0.1	7.288892762778763
7	0.15	9.412721250026475
7	0.2	8.635022393255012
7	0.25	7.574471573188331
9	0.05	8.06721280552366
9	0.1	10.368695769617894
9	0.15	7.950878173417158
9	0.2	8.531907766231779
9	0.25	8.799846485804684

Max Depth	Minimum Criterion	MSE
0	0.05	12.44891672032336
0	0.1	7.746440618677559
0	0.15	8.31660751661586
0	0.2	5.572067327817604
0	0.25	8.228201127396948

Abalone Testing Results:

```python
# Testing Pruned and NonPruned Trees
numFolds = [1,2,3,4,5]
print('Pruned Tree Results')
AbaloneTestingPrunedResults, AbaloneTestingPrunedList =
CrossValidation(abaloneDF_80, 5, CART_algo,tree='reg',
criterion='mse', prune='criterion', maxDepth=3, minCriterion=0.25)
print('Unpruned Tree Results')
AbaloneTestingNPResults, AbaloneTestingNPList =
CrossValidation(abaloneDF_80, 5, CART_algo,tree='reg',
criterion='mse', prune='criterion', maxDepth=0, minCriterion=0.2)

AbaloneDict = {'Folds': numFolds,
'Pruned':AbaloneTestingPrunedList,'Non-Pruned':AbaloneTestingNPList}
```
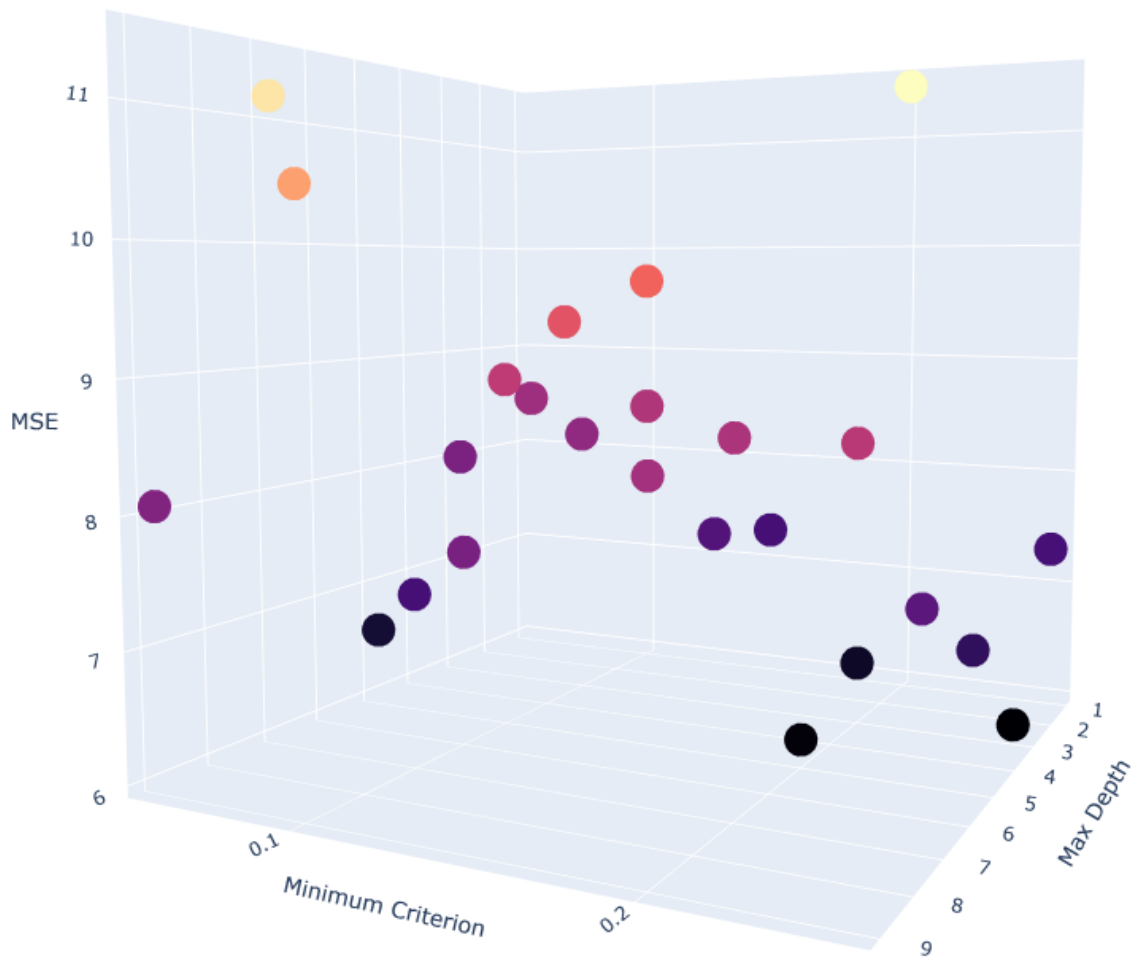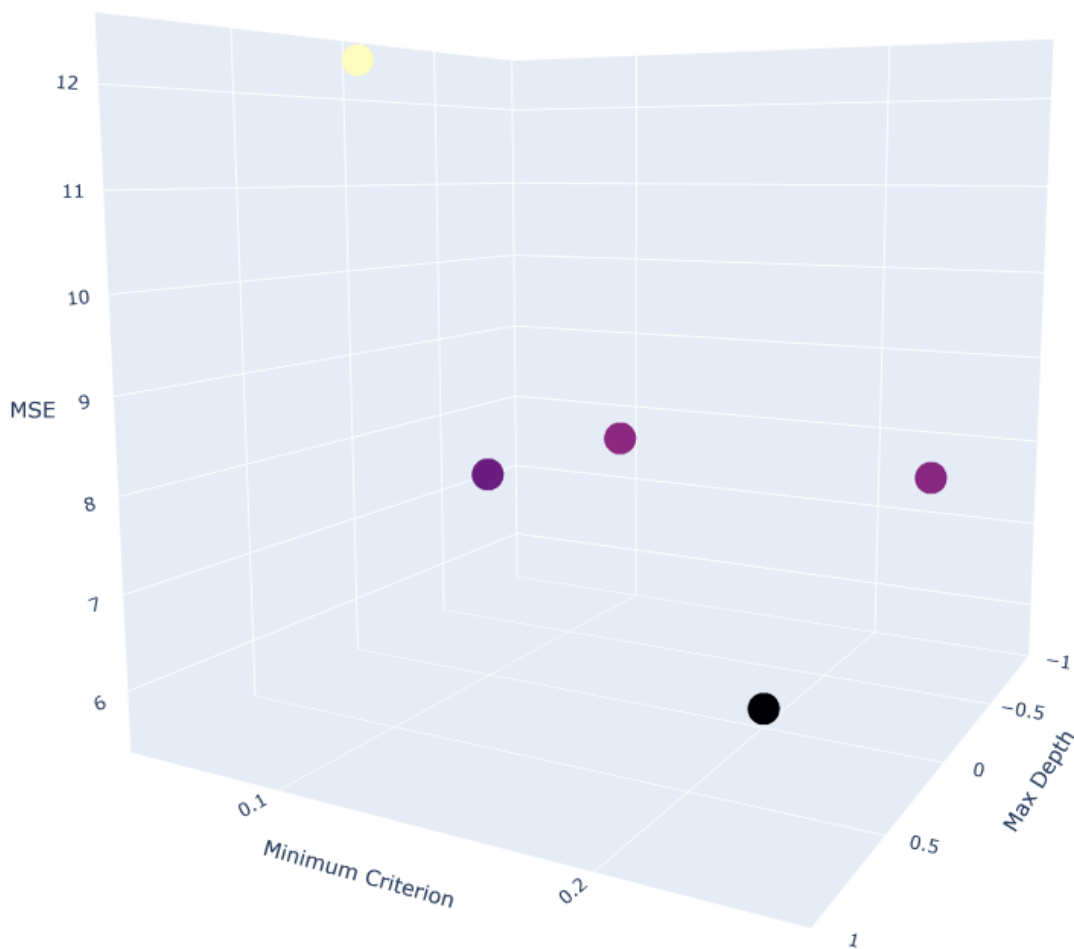
```
finalAbaloneResults = pd.DataFrame(AbaloneDict)

AbaloneFinalFig = px.scatter(finalAbaloneResults, x='Folds',
y=['Pruned', 'Non-Pruned'] , title="K-Fold vs. MSE", width=800,
height=600)
AbaloneFinalFig.update_traces(marker_size = 15)
AbaloneFinalFig.update_yaxes(title_text = 'MSE')
AbaloneFinalFig.show()
```

OUTPUT:

```
Pruned Tree Results
Fold 1
Regression Tree:

 if X[6] <= 0.1775
    then if X[6] <= 0.06775
        then {value: 5.892857142857143, samples: 280}
        else {value: 8.41021897810219, samples: 685}
    else if X[6] <= 0.37475
        then if X[6] <= 0.24925
            then {value: 10.010799136069114, samples: 463}
            else if X[4] <= 0.42974999999999997
                then {value: 12.246153846153845, samples: 325}
                else {value: 10.338775510204082, samples: 490}
        else {value: 12.816279069767441, samples: 430}

This is the evaluation for mse:
6.4123912351050665

Fold 2
Regression Tree:

 if X[6] <= 0.18975
    then if X[6] <= 0.06775
        then {value: 5.917562724014337, samples: 279}
        else {value: 8.507915567282321, samples: 758}
    else if X[6] <= 0.40974999999999995
        then if X[4] <= 0.3997500000000005
            then if X[6] <= 0.28974999999999995
                then {value: 11.016279069767442, samples: 430}
                else {value: 13.967213114754099, samples: 122}
            else {value: 10.444159178433889, samples: 779}
        else {value: 13.31803278688245, samples: 305}

This is the evaluation for mse:
5.758661522386715
```

```
Fold 3
Regression Tree:

 if X[6] <= 0.18975
    then if X[6] <= 0.06725
        then {value: 5.89198606271777, samples: 287}
        else {value: 8.552941176470588, samples: 765}
    else if X[6] <= 0.37475
        then {value: 10.895093062605753, samples: 1182}
        else {value: 12.863636363636363, samples: 440}

This is the evaluation for mse:
6.450865628181679

Fold 4
Regression Tree:

 if X[6] <= 0.16775
    then if X[6] <= 0.06825
        then {value: 5.852112676056338, samples: 284}
        else {value: 8.274834437086092, samples: 604}
    else if X[6] <= 0.37475
        then if X[6] <= 0.2335
            then {value: 9.884875846501128, samples: 443}
            else if X[4] <= 0.34475
                then {value: 12.745762711864407, samples: 177}
                else {value: 10.520974289580515, samples: 739}
        else {value: 12.810304449648712, samples: 427}

This is the evaluation for mse:
7.137606254266249

Fold 5
Regression Tree:

 if X[6] <= 0.17875
    then if X[6] <= 0.06775
        then {value: 5.8861209964412815, samples: 281}
        else {value: 8.370738636363637, samples: 704}
    else if X[6] <= 0.35424999999999995
        then {value: 10.683202785030462, samples: 1149}
        else {value: 12.562962962962963, samples: 540}

This is the evaluation for mse:
6.4591177305924505

This is the Average Evaluation for the Cross Validation
```

```
6.443728474106432


Unpruned Tree Results
Fold 1
Regression Tree:

 if X[6] <= 0.17975
    then if X[6] <= 0.06775
        then {value: 5.862676056338028, samples: 284}
        else {value: 8.404011461318051, samples: 698}
    else if X[6] <= 0.38925
        then if X[6] <= 0.24925
            then {value: 10.034632034632034, samples: 462}
            else if X[4] <= 0.39975000000000005
                then {value: 12.7890625, samples: 256}
                else {value: 10.48881239242685, samples: 581}
        else if X[4] <= 0.552
            then {value: 15.04040404040404, samples: 99}
            else {value: 12.279863481228668, samples: 293}

This is the evaluation for mse:
6.415710386067168

Fold 2
Regression Tree:

 if X[6] <= 0.18975
    then if X[6] <= 0.0685
        then {value: 5.913043478260869, samples: 299}
        else {value: 8.477393617021276, samples: 752}
    else if X[6] <= 0.40974999999999995
        then if X[4] <= 0.40325
            then if X[6] <= 0.28974999999999995
                then {value: 11.094907407407407, samples: 432}
                else {value: 13.89344262295082, samples: 122}
            else {value: 10.442988204456094, samples: 763}
        else {value: 13.229508196721312, samples: 305}

This is the evaluation for mse:
6.876897275221622

Fold 3
Regression Tree:

 if X[6] <= 0.17875
    then if X[6] <= 0.06725
        then {value: 5.908759124087592, samples: 274}
        else {value: 8.43131868131868, samples: 728}
```

```
    else if X[6] <= 0.40974999999999995
        then if X[4] <= 0.40125
            then if X[6] <= 0.2495
                then {value: 10.54131054131054, samples: 351}
                else {value: 12.744444444444444, samples: 270}
            else {value: 10.354029062087186, samples: 757}
        else {value: 13.214285714285714, samples: 294}

This is the evaluation for mse:
6.0474646603776385

Fold 4
Regression Tree:

 if X[6] <= 0.1675
    then if X[6] <= 0.06775
        then {value: 5.856115107913669, samples: 278}
        else {value: 8.298333333333334, samples: 600}
    else if X[6] <= 0.37475
        then if X[6] <= 0.24925
            then {value: 9.912087912087912, samples: 546}
            else if X[4] <= 0.42974999999999997
                then {value: 12.413793103448276, samples: 319}
                else {value: 10.278557114228457, samples: 499}
        else if X[4] <= 0.552
            then {value: 14.885245901639344, samples: 122}
            else {value: 12.164516129032258, samples: 310}

This is the evaluation for mse:
6.160088233614381

Fold 5
Regression Tree:

 if X[6] <= 0.17875
    then if X[6] <= 0.06775
        then {value: 5.902527075812275, samples: 277}
        else {value: 8.430678466076696, samples: 678}
    else if X[6] <= 0.35775
        then {value: 10.655860349127183, samples: 1203}
        else if X[4] <= 0.435
            then {value: 15.943396226415095, samples: 53}
            else if X[6] <= 0.56875
                then {value: 11.856796116504855, samples: 412}
                else {value: 15.450980392156863, samples: 51}

This is the evaluation for mse:
6.339341310076405
```

```
This is the Average Evaluation for the Cross Validation

6.36790037307137
```

COMPUTER REGRESSION TUNING:

```python
# Cross Validation for the tuning on mse criterion
ComputerTuningDepth = [x for x in range(100,550,50)]
ComputerTuningMin = [x/10 for x in range(5,30,5)]

ComputerTuningResults = []
for depth in ComputerTuningDepth:
    for min in ComputerTuningMin:
        print(f'For These Hyper-Parameters: {depth} and {min}')
        mse,ComputerTuningList = CrossValidation(computerTuningNP, 5,
CART_algo, tree='reg', criterion='mse', prune='criterion',
maxDepth=depth, minCriterion=min)
        instance = (depth, min, mse)
        ComputerTuningResults.append(instance)

ComputerResultsDF = pd.DataFrame(ComputerTuningResults, columns=['Max
Depth', 'Minimum Criterion', 'MSE'])
ComputerX = ComputerResultsDF['Max Depth']
ComputerY = ComputerResultsDF['Minimum Criterion']
ComputerZ = ComputerResultsDF['MSE']


ComputerTable = go.Figure(data=[go.Table(header=dict(values=['Max
Depth', 'Minimum Criterion', 'MSE']),
                                cells =dict(values=[ComputerX,
ComputerY, ComputerZ]))])
ComputerTable.update_layout(width=800, height = 2900)
ComputerTable.show()

# Figure
ComputerTrace = go.Scatter3d(
  x = ComputerX, y= ComputerY, z = ComputerZ, mode = 'markers',
marker = dict(
    size = 12,
    color = ComputerZ,
    colorscale = 'Magma'
    )
```

```python
    )
layout = go.Layout(title ='Computer Pruned Tree Hyper Parameter 3D
Scatter Plot')
ComputerFig = go.Figure(data =[ComputerTrace], layout = layout)
ComputerFig.update_layout(scene = dict(
                    xaxis_title='Max Depth',
                    yaxis_title='Minimum Criterion',
                    zaxis_title='MSE'))
ComputerFig.show()

# No Pruning Cross validation

ComputerTuningNPResults = []
for min in ComputerTuningMin:
    mse, ComputerNPTuningList = CrossValidation(computerTuningNP, 5,
CART_algo, tree='reg', criterion='mse', prune='criterion',
maxDepth=0, minCriterion=min)
    instance = (0,min,mse)
    ComputerTuningNPResults.append(instance)
# Table
ComputerResultsNPDF = pd.DataFrame(ComputerTuningNPResults,
columns=['Max Depth', 'Minimum Criterion', 'MSE'])
ComputerNPX = ComputerResultsNPDF['Max Depth']
ComputerNPY = ComputerResultsNPDF['Minimum Criterion']
ComputerNPZ = ComputerResultsNPDF['MSE']

ComputerTableNP = go.Figure(data=[go.Table(header=dict(values=['Max
Depth', 'Minimum Criterion', 'MSE']),
                                 cells =dict(values=[ComputerNPX,
ComputerNPY, ComputerNPZ]))])
ComputerTableNP.update_layout(width = 800, height = 2900)
ComputerTableNP.show()

# Figure
ComputerTraceNP = go.Scatter3d(
  x = ComputerNPX, y= ComputerNPY, z = ComputerNPZ, mode = 'markers',
marker = dict(
    size = 12,
    color = ComputerNPZ,
    colorscale = 'Magma'
    )
  )
ComputerLayoutNP = go.Layout(title ='Computer Unpruned Tree Hyper
Parameter 3D Scatter Plot')
ComputerFigNP = go.Figure(data =[ComputerTraceNP],
```

```
layout=ComputerLayoutNP)
ComputerFigNP.update_layout(scene = dict(
                    xaxis_title='Max Depth',
                    yaxis_title='Minimum Criterion',
                    zaxis_title='MSE'))
ComputerFigNP.show()
```

OUTPUT:
Computer Regression Problem

removed values

	MYCT	MMIN	MMAX	CACH	CHMIN	CHMAX	PRP
0	125.0	256.0	6000.0	256.0	16.0	128.0	198.0
1	29.0	8000.0	32000.0	32.0	8.0	32.0	269.0
2	29.0	8000.0	32000.0	32.0	8.0	32.0	220.0
3	29.0	8000.0	32000.0	32.0	8.0	32.0	172.0
4	29.0	8000.0	16000.0	32.0	8.0	16.0	132.0

This is the size of the original: 209
This is the size of the 80%: 167
This is the size of the 20%: 42

For These Hyper-Parameters: 100 and 0.5
Fold 1
Regression Tree:

```
if X[0] <= 24.5
   then {value: 1144.0, samples: 1}
   else if X[3] <= 96.5
      then if X[1] <= 3310.0
         then if X[2] <= 24000.0
            then if X[2] <= 7000.0
               then if X[2] <= 2500.0
                  then if X[4] <= 5.5
                     then if X[3] <= 4.0
                        then if X[1] <= 160.0
                           then {value: 10.0, samples: 1}
                           else if X[0] <= 87.0
                              then {value: 12.0, samples: 1}
                              else if X[1] <= 884.0
                                 then {value: 17.5, samples: 2}
                                 else {value: 24.0, samples: 1}
                        else {value: 6.0, samples: 1}
                     else {value: 36.0, samples: 1}
                  else if X[0] <= 122.5
                     then if X[5] <= 13.5
                        then {value: 21.5, samples: 2}
                        else {value: 32.0, samples: 2}
                     else if X[3] <= 2.0
                        then if X[0] <= 325.0
```

then {value: 34.5, samples: 2}
                        else {value: 22.0, samples: 1}
                    else if X[0] <= 182.5
                        then {value: 35.0, samples: 1}
                        else {value: 40.0, samples: 2}
            else if X[3] <= 2.0
                then if X[0] <= 128.0
                    then {value: 24.0, samples: 1}
                    else {value: 36.0, samples: 1}
                else if X[4] <= 2.0
                    then if X[3] <= 10.0
                        then {value: 50.0, samples: 1}
                        else {value: 60.0, samples: 2}
                    else if X[3] <= 10.0
                        then {value: 62.0, samples: 1}
                        else if X[2] <= 13240.0
                            then {value: 32.0, samples: 2}
                            else {value: 45.0, samples: 1}
            else {value: 114.0, samples: 1}
        else if X[0] <= 38.0
            then {value: 173.0, samples: 1}
            else if X[0] <= 53.0
                then {value: 138.0, samples: 1}
                else {value: 106.0, samples: 1}
    else if X[0] <= 75.5
        then {value: 405.0, samples: 1}
        else {value: 198.0, samples: 1}

This is the evaluation for mse:
1445.611111111111

Fold 2
Regression Tree:

 if X[0] <= 24.5
    then {value: 1144.0, samples: 1}
    else if X[1] <= 3310.0
        then if X[5] <= 25.0
            then if X[2] <= 7000.0
                then if X[2] <= 1500.0
                    then {value: 8.0, samples: 2}
                    else if X[5] <= 17.5
                        then if X[5] <= 7.0
                            then if X[0] <= 159.0
                                then if X[0] <= 82.5
                                    then {value: 27.0, samples: 1}
                                    else {value: 40.0, samples: 1}
                                else if X[2] <= 5500.0
                                    then {value: 24.333333333333332, samples: 3}
                                    else {value: 33.0, samples: 1}

```
                    else {value: 20.666666666666668, samples: 3}
                  else {value: 33.5, samples: 2}
              else if X[3] <= 2.0
                then if X[5] <= 3.0
                    then {value: 36.0, samples: 1}
                    else if X[0] <= 428.0
                        then {value: 24.0, samples: 1}
                        else {value: 16.0, samples: 1}
                  else if X[0] <= 62.5
                      then if X[2] <= 13240.0
                          then {value: 34.0, samples: 2}
                          else {value: 45.0, samples: 1}
                      else if X[3] <= 6.0
                          then {value: 50.0, samples: 1}
                          else {value: 60.666666666666664, samples: 3}
          else if X[0] <= 87.5
              then {value: 114.0, samples: 1}
              else {value: 198.0, samples: 1}
        else if X[2] <= 28000.0
          then if X[0] <= 60.5
              then if X[0] <= 38.0
                  then if X[2] <= 20000.0
                      then {value: 185.0, samples: 1}
                      else {value: 173.0, samples: 1}
                  else if X[1] <= 4620.0
                      then if X[0] <= 53.5
                          then {value: 138.0, samples: 1}
                          else {value: 132.0, samples: 1}
                      else {value: 106.0, samples: 1}
              else {value: 208.0, samples: 1}
          else {value: 405.0, samples: 1}
```

This is the evaluation for mse:
334.47530864197535

Fold 3
Regression Tree:

```
 if X[0] <= 24.5
    then {value: 1144.0, samples: 1}
    else if X[1] <= 4620.0
      then if X[3] <= 48.5
        then if X[2] <= 14000.0
          then if X[3] <= 1.0
            then if X[4] <= 4.5
              then if X[2] <= 3000.0
                then if X[1] <= 160.0
                  then {value: 10.0, samples: 1}
                  else if X[0] <= 87.0
                    then {value: 12.0, samples: 1}
```

else {value: 17.5, samples: 2}
                 else if X[5] <= 3.0
                    then {value: 36.0, samples: 1}
                    else if X[0] <= 565.0
                       then if X[1] <= 628.0
                          then {value: 33.0, samples: 1}
                          else {value: 23.5, samples: 4}
                       else {value: 16.0, samples: 1}
                 else {value: 36.0, samples: 2}
              else if X[2] <= 6500.0
                 then if X[2] <= 2750.0
                    then {value: 19.0, samples: 1}
                    else if X[1] <= 384.0
                       then {value: 27.0, samples: 1}
                       else if X[0] <= 110.0
                          then {value: 32.0, samples: 1}
                          else {value: 40.0, samples: 3}
                 else if X[0] <= 62.5
                    then {value: 34.0, samples: 2}
                    else if X[0] <= 96.0
                       then if X[3] <= 6.0
                          then {value: 50.0, samples: 1}
                          else {value: 61.0, samples: 2}
                       else if X[0] <= 105.0
                          then {value: 32.0, samples: 1}
                          else {value: 60.0, samples: 1}
           else if X[0] <= 53.5
              then {value: 114.0, samples: 1}
              else {value: 132.0, samples: 1}
        else if X[0] <= 87.5
           then {value: 138.0, samples: 1}
           else {value: 198.0, samples: 1}
     else if X[2] <= 26485.0
        then if X[0] <= 45.0
           then {value: 185.0, samples: 1}
           else {value: 208.0, samples: 1}
        else {value: 405.0, samples: 1}

This is the evaluation for mse:
1964.6875

Fold 4
Regression Tree:

 if X[0] <= 24.5
    then {value: 1144.0, samples: 1}
    else if X[1] <= 3310.0
       then if X[5] <= 25.0
          then if X[2] <= 2500.0
             then if X[4] <= 6.0

then if X[1] <= 518.0
  then if X[0] <= 165.0
    then {value: 17.0, samples: 1}
    else {value: 6.0, samples: 1}
  else if X[0] <= 125.5
    then {value: 12.0, samples: 1}
    else if X[1] <= 884.0
      then {value: 18.5, samples: 2}
      else {value: 24.0, samples: 1}
  else {value: 36.0, samples: 1}
else if X[2] <= 11240.0
  then if X[3] <= 1.0
    then if X[5] <= 16.0
      then if X[0] <= 565.0
        then {value: 24.333333333333332, samples: 3}
        else {value: 16.0, samples: 1}
      else {value: 34.0, samples: 2}
    else if X[5] <= 7.0
      then if X[1] <= 1500.0
        then if X[1] <= 384.0
          then {value: 27.0, samples: 1}
          else if X[0] <= 250.0
            then {value: 34.0, samples: 2}
            else {value: 40.0, samples: 1}
        else if X[0] <= 103.5
          then {value: 50.0, samples: 1}
          else {value: 40.0, samples: 2}
      else if X[5] <= 13.5
        then {value: 22.0, samples: 1}
        else {value: 33.0, samples: 3}
  else if X[0] <= 80.0
    then {value: 45.0, samples: 1}
    else {value: 60.0, samples: 1}
else if X[0] <= 87.5
  then {value: 114.0, samples: 1}
  else {value: 198.0, samples: 1}
else if X[0] <= 60.5
  then if X[0] <= 41.0
    then if X[2] <= 20000.0
      then {value: 185.0, samples: 1}
      else {value: 173.0, samples: 1}
    else if X[0] <= 56.5
      then {value: 106.0, samples: 1}
      else {value: 132.0, samples: 1}
  else {value: 208.0, samples: 1}

This is the evaluation for mse:
7003.416666666667

Fold 5
Regression Tree:

```
if X[1] <= 3000.0
  then if X[2] <= 2500.0
    then if X[4] <= 6.0
      then if X[1] <= 518.0
        then if X[0] <= 165.0
          then {value: 17.0, samples: 1}
          else {value: 8.0, samples: 2}
        else if X[0] <= 125.5
          then {value: 12.0, samples: 1}
          else if X[1] <= 884.0
            then {value: 18.5, samples: 2}
            else {value: 24.0, samples: 1}
      else {value: 36.0, samples: 1}
    else if X[3] <= 28.0
      then if X[5] <= 12.0
        then if X[0] <= 600.0
          then if X[5] <= 7.0
            then if X[1] <= 384.0
              then if X[2] <= 5500.0
                then {value: 27.0, samples: 1}
                else {value: 33.0, samples: 1}
              else if X[0] <= 107.5
                then if X[1] <= 1500.0
                  then {value: 34.0, samples: 2}
                  else {value: 27.0, samples: 1}
                else {value: 39.0, samples: 4}
            else {value: 21.5, samples: 2}
          else {value: 16.0, samples: 1}
        else if X[0] <= 90.0
          then if X[0] <= 62.5
            then {value: 45.0, samples: 1}
            else {value: 62.0, samples: 1}
          else {value: 33.75, samples: 4}
      else {value: 60.0, samples: 1}
  else if X[2] <= 28000.0
    then if X[0] <= 60.5
      then if X[0] <= 38.0
        then if X[2] <= 20000.0
          then {value: 185.0, samples: 1}
          else {value: 173.0, samples: 1}
        else if X[1] <= 4620.0
          then if X[0] <= 53.5
            then {value: 138.0, samples: 1}
            else {value: 132.0, samples: 1}
          else {value: 106.0, samples: 1}
      else {value: 208.0, samples: 1}
    else {value: 405.0, samples: 1}
```

This is the evaluation for mse:
71496.90625

This is the Average Evaluation for the Cross Validation

16449.01936728395
For These Hyper-Parameters: 100 and 1.0
Fold 1
Regression Tree:

```
if X[0] <= 24.5
  then {value: 1144.0, samples: 1}
  else if X[1] <= 3310.0
    then if X[3] <= 144.0
      then if X[2] <= 2750.0
        then if X[4] <= 5.5
          then if X[3] <= 4.0
            then if X[1] <= 160.0
              then {value: 10.0, samples: 1}
              else if X[0] <= 87.0
                then {value: 12.0, samples: 1}
                else {value: 19.666666666666668, samples: 3}
            else {value: 6.0, samples: 1}
          else {value: 36.0, samples: 1}
        else if X[3] <= 1.0
          then if X[0] <= 560.0
            then if X[0] <= 80.5
              then {value: 22.5, samples: 2}
              else {value: 33.666666666666664, samples: 3}
            else {value: 16.0, samples: 1}
          else if X[2] <= 6500.0
            then if X[0] <= 110.0
              then {value: 22.0, samples: 1}
              else if X[1] <= 384.0
                then {value: 27.0, samples: 1}
                else {value: 38.333333333333336, samples: 3}
            else if X[4] <= 2.0
              then if X[3] <= 10.0
                then {value: 50.0, samples: 1}
                else {value: 60.0, samples: 2}
              else if X[3] <= 18.0
                then if X[0] <= 62.5
                  then if X[1] <= 1500.0
                    then {value: 36.0, samples: 1}
                    else {value: 45.0, samples: 1}
                  else {value: 62.0, samples: 1}
                else {value: 32.0, samples: 2}
      else {value: 198.0, samples: 1}
    else if X[2] <= 28000.0
      then if X[1] <= 4620.0
        then {value: 138.0, samples: 1}
        else if X[0] <= 45.0
```

then if X[2] <= 20000.0
                    then {value: 185.0, samples: 1}
                    else {value: 173.0, samples: 1}
                else {value: 208.0, samples: 1}
            else {value: 405.0, samples: 1}

This is the evaluation for mse:
1955.287037037037

Fold 2
Regression Tree:

 if X[0] <= 24.5
    then {value: 1144.0, samples: 1}
    else if X[1] <= 3000.0
        then if X[2] <= 24000.0
            then if X[3] <= 1.0
                then if X[0] <= 340.0
                    then if X[1] <= 884.0
                        then {value: 35.0, samples: 3}
                        else if X[2] <= 7000.0
                            then if X[0] <= 53.0
                                then {value: 27.0, samples: 1}
                                else if X[0] <= 143.5
                                    then if X[0] <= 70.0
                                        then {value: 21.0, samples: 1}
                                        else {value: 12.0, samples: 1}
                                    else {value: 23.0, samples: 2}
                            else {value: 36.0, samples: 1}
                        else {value: 14.666666666666666, samples: 3}
                    else if X[2] <= 6500.0
                        then if X[5] <= 7.0
                            then if X[1] <= 384.0
                                then {value: 27.0, samples: 1}
                                else {value: 40.0, samples: 3}
                            else if X[5] <= 17.0
                                then {value: 20.5, samples: 2}
                                else {value: 32.0, samples: 1}
                        else if X[3] <= 20.0
                            then if X[0] <= 62.5
                                then {value: 45.0, samples: 1}
                                else if X[3] <= 6.0
                                    then {value: 50.0, samples: 1}
                                    else {value: 61.0, samples: 2}
                            else {value: 32.0, samples: 1}
                else {value: 114.0, samples: 1}
            else if X[2] <= 28000.0
                then if X[0] <= 60.5
                    then if X[0] <= 38.0
                        then if X[2] <= 20000.0

then {value: 185.0, samples: 1}
                    else {value: 173.0, samples: 1}
                else if X[1] <= 4620.0
                    then {value: 135.0, samples: 2}
                    else {value: 106.0, samples: 1}
            else {value: 208.0, samples: 1}
        else {value: 405.0, samples: 1}

This is the evaluation for mse:
3383.777777777778

Fold 3
Regression Tree:

 if X[0] <= 24.5
    then {value: 1144.0, samples: 1}
    else if X[1] <= 3310.0
        then if X[5] <= 25.0
            then if X[3] <= 12.0
                then if X[2] <= 2500.0
                    then if X[4] <= 6.0
                        then if X[1] <= 518.0
                            then if X[0] <= 165.0
                                then {value: 17.0, samples: 1}
                                else {value: 6.0, samples: 1}
                            else {value: 20.333333333333332, samples: 3}
                        else {value: 36.0, samples: 1}
                    else if X[0] <= 600.0
                        then if X[3] <= 2.0
                            then if X[0] <= 80.5
                                then {value: 24.0, samples: 3}
                                else if X[0] <= 325.0
                                    then {value: 34.25, samples: 4}
                                    else {value: 22.0, samples: 1}
                            else if X[1] <= 384.0
                                then {value: 27.0, samples: 1}
                                else if X[0] <= 182.5
                                    then {value: 34.333333333333336, samples: 3}
                                    else {value: 40.0, samples: 2}
                        else {value: 16.0, samples: 1}
                else if X[4] <= 2.0
                    then {value: 60.0, samples: 2}
                    else {value: 32.0, samples: 2}
            else if X[0] <= 87.5
                then {value: 114.0, samples: 1}
                else {value: 198.0, samples: 1}
        else if X[2] <= 28000.0
            then if X[0] <= 60.5
                then if X[0] <= 41.0
                    then if X[2] <= 20000.0

then {value: 185.0, samples: 1}
else {value: 173.0, samples: 1}
else if X[0] <= 56.5
then {value: 106.0, samples: 1}
else {value: 132.0, samples: 1}
else {value: 208.0, samples: 1}
else {value: 405.0, samples: 1}

This is the evaluation for mse:
302.41059027777777

Fold 4
Regression Tree:

if X[1] <= 3310.0
then if X[5] <= 25.0
then if X[2] <= 2500.0
then if X[4] <= 6.0
then if X[4] <= 2.0
then if X[0] <= 925.0
then {value: 9.333333333333334, samples: 3}
else {value: 18.0, samples: 1}
else {value: 18.0, samples: 2}
else {value: 36.0, samples: 1}
else if X[2] <= 7000.0
then if X[0] <= 110.0
then if X[5] <= 13.5
then {value: 24.5, samples: 2}
else {value: 32.0, samples: 2}
else if X[0] <= 310.0
then {value: 37.75, samples: 4}
else if X[0] <= 365.0
then if X[2] <= 5500.0
then {value: 24.5, samples: 2}
else {value: 33.0, samples: 1}
else {value: 40.0, samples: 1}
else if X[0] <= 65.5
then if X[2] <= 13240.0
then if X[0] <= 53.0
then {value: 34.0, samples: 2}
else {value: 24.0, samples: 1}
else {value: 45.0, samples: 1}
else if X[0] <= 96.0
then if X[3] <= 6.0
then {value: 50.0, samples: 1}
else {value: 61.0, samples: 2}
else if X[0] <= 105.0
then {value: 32.0, samples: 1}
else {value: 60.0, samples: 1}
else if X[0] <= 87.5

then {value: 114.0, samples: 1}
            else {value: 198.0, samples: 1}
        else if X[0] <= 38.0
            then {value: 185.0, samples: 1}
            else if X[1] <= 4620.0
                then {value: 135.0, samples: 2}
                else {value: 106.0, samples: 1}

This is the evaluation for mse:
122671.04513888889

Fold 5
Regression Tree:

 if X[0] <= 24.5
    then {value: 1144.0, samples: 1}
    else if X[4] <= 20.0
        then if X[3] <= 18.0
            then if X[1] <= 3000.0
                then if X[2] <= 2500.0
                    then if X[0] <= 221.5
                        then if X[0] <= 128.5
                            then {value: 14.5, samples: 2}
                            else {value: 21.5, samples: 2}
                        else {value: 8.0, samples: 2}
                    else if X[3] <= 1.0
                        then if X[0] <= 315.0
                            then if X[0] <= 80.5
                                then {value: 24.0, samples: 3}
                                else {value: 34.666666666666664, samples: 3}
                            else {value: 19.0, samples: 2}
                        else if X[5] <= 22.0
                            then if X[0] <= 98.5
                                then if X[1] <= 1500.0
                                    then {value: 36.0, samples: 1}
                                    else {value: 47.5, samples: 2}
                                else if X[0] <= 110.0
                                    then if X[5] <= 13.5
                                        then {value: 22.0, samples: 1}
                                        else {value: 32.0, samples: 1}
                                    else {value: 38.333333333333336, samples: 3}
                            else {value: 62.0, samples: 1}
                    else {value: 132.0, samples: 1}
                else if X[1] <= 3310.0
                    then if X[0] <= 108.5
                        then if X[2] <= 21240.0
                            then if X[0] <= 71.0
                                then {value: 32.0, samples: 1}
                                else {value: 60.0, samples: 1}
                            else {value: 114.0, samples: 1}

else {value: 198.0, samples: 1}
          else if X[0] <= 60.0
             then if X[0] <= 38.0
                then {value: 173.0, samples: 1}
                else if X[0] <= 53.0
                   then {value: 138.0, samples: 1}
                   else {value: 106.0, samples: 1}
             else {value: 208.0, samples: 1}
       else {value: 405.0, samples: 1}

This is the evaluation for mse:
740.8090277777777

This is the Average Evaluation for the Cross Validation

25810.665914351855
For These Hyper-Parameters: 100 and 1.5
Fold 1
Regression Tree:

 if X[0] <= 24.5
    then {value: 1144.0, samples: 1}
    else if X[3] <= 96.5
       then if X[1] <= 3000.0
          then if X[2] <= 24000.0
             then if X[3] <= 10.0
                then if X[2] <= 2750.0
                   then if X[4] <= 6.0
                      then if X[1] <= 160.0
                         then {value: 10.0, samples: 1}
                         else {value: 18.0, samples: 5}
                      else {value: 36.0, samples: 1}
                   else if X[3] <= 1.0
                      then if X[0] <= 80.5
                         then {value: 24.0, samples: 3}
                         else if X[0] <= 325.0
                            then {value: 33.666666666666664, samples: 3}
                            else {value: 22.0, samples: 1}
                      else if X[5] <= 7.0
                         then if X[1] <= 1500.0
                            then {value: 38.0, samples: 2}
                            else if X[0] <= 103.5
                               then {value: 50.0, samples: 1}
                               else {value: 40.0, samples: 2}
                         else if X[5] <= 13.5
                            then {value: 22.0, samples: 1}
                            else {value: 33.5, samples: 2}
                else if X[0] <= 71.0
                   then {value: 45.0, samples: 1}
                   else {value: 60.0, samples: 2}

else {value: 114.0, samples: 1}
            else if X[0] <= 38.0
                then {value: 185.0, samples: 1}
                else if X[1] <= 4620.0
                    then {value: 135.0, samples: 2}
                    else {value: 106.0, samples: 1}
        else if X[0] <= 75.5
            then {value: 405.0, samples: 1}
            else {value: 198.0, samples: 1}

This is the evaluation for mse:
1402.1882716049383

Fold 2
Regression Tree:

 if X[0] <= 24.5
    then {value: 1144.0, samples: 1}
    else if X[4] <= 20.0
        then if X[2] <= 14000.0
            then if X[3] <= 144.0
                then if X[2] <= 2500.0
                    then if X[1] <= 518.0
                        then {value: 6.0, samples: 1}
                        else {value: 20.333333333333332, samples: 3}
                    else if X[3] <= 1.0
                        then if X[0] <= 315.0
                            then if X[0] <= 80.5
                                then {value: 24.0, samples: 2}
                                else {value: 34.666666666666664, samples: 3}
                            else {value: 19.0, samples: 2}
                        else if X[2] <= 6500.0
                            then if X[0] <= 110.0
                                then if X[5] <= 13.5
                                    then {value: 22.0, samples: 1}
                                    else {value: 32.0, samples: 1}
                                else if X[1] <= 384.0
                                    then {value: 27.0, samples: 1}
                                    else {value: 38.75, samples: 4}
                            else if X[0] <= 62.5
                                then {value: 34.0, samples: 2}
                                else if X[0] <= 96.0
                                    then {value: 61.0, samples: 2}
                                    else if X[0] <= 105.0
                                        then {value: 32.0, samples: 1}
                                        else {value: 60.0, samples: 1}
                else {value: 198.0, samples: 1}
            else if X[0] <= 60.5
                then if X[0] <= 38.0
                    then {value: 173.0, samples: 1}

else if X[2] <= 18485.0
                        then {value: 135.0, samples: 2}
                        else {value: 110.0, samples: 2}
                else {value: 208.0, samples: 1}
        else {value: 405.0, samples: 1}

This is the evaluation for mse:
1074.1604938271605

Fold 3
Regression Tree:

if X[0] <= 24.5
    then {value: 1144.0, samples: 1}
    else if X[1] <= 3310.0
        then if X[5] <= 25.0
            then if X[2] <= 2500.0
                then if X[4] <= 5.5
                    then if X[3] <= 4.0
                        then {value: 16.2, samples: 5}
                        else {value: 6.0, samples: 1}
                    else {value: 36.0, samples: 1}
                else if X[3] <= 31.0
                    then if X[5] <= 12.0
                        then if X[5] <= 7.0
                            then if X[0] <= 600.0
                                then if X[2] <= 7000.0
                                    then if X[0] <= 360.0
                                        then {value: 29.0, samples: 3}
                                        else {value: 40.0, samples: 1}
                                    else if X[1] <= 1500.0
                                        then {value: 34.666666666666664, samples: 3}
                                        else {value: 50.0, samples: 1}
                                else {value: 16.0, samples: 1}
                            else {value: 22.333333333333332, samples: 3}
                        else if X[0] <= 90.0
                            then if X[0] <= 62.5
                                then if X[1] <= 2310.0
                                    then {value: 45.0, samples: 1}
                                    else {value: 32.0, samples: 1}
                                else {value: 62.0, samples: 1}
                            else {value: 34.0, samples: 2}
                    else {value: 60.0, samples: 1}
            else if X[0] <= 87.5
                then {value: 114.0, samples: 1}
                else {value: 198.0, samples: 1}
        else if X[2] <= 28000.0
            then if X[0] <= 60.0
                then if X[0] <= 38.0
                    then if X[2] <= 20000.0

then {value: 185.0, samples: 1}
              else {value: 173.0, samples: 1}
          else if X[0] <= 53.0
              then {value: 138.0, samples: 1}
              else {value: 106.0, samples: 1}
        else {value: 208.0, samples: 1}
      else {value: 405.0, samples: 1}

This is the evaluation for mse:
222.84722222222223

Fold 4
Regression Tree:

 if X[0] <= 24.5
    then {value: 1144.0, samples: 1}
    else if X[1] <= 3310.0
      then if X[3] <= 143.0
        then if X[2] <= 2500.0
          then if X[4] <= 6.0
            then if X[4] <= 2.0
              then if X[0] <= 925.0
                then {value: 9.333333333333334, samples: 3}
                else {value: 18.0, samples: 1}
              else {value: 18.0, samples: 2}
            else {value: 36.0, samples: 1}
          else if X[2] <= 11240.0
            then if X[0] <= 325.0
              then if X[0] <= 96.0
                then if X[0] <= 65.5
                  then {value: 28.0, samples: 2}
                  else if X[0] <= 83.5
                    then {value: 62.0, samples: 1}
                    else {value: 50.0, samples: 1}
                else if X[0] <= 110.0
                  then {value: 29.5, samples: 4}
                  else if X[0] <= 310.0
                    then {value: 37.4, samples: 5}
                    else {value: 30.0, samples: 2}
              else {value: 19.0, samples: 2}
            else if X[0] <= 80.0
              then {value: 45.0, samples: 1}
              else {value: 60.0, samples: 1}
          else {value: 198.0, samples: 1}
      else if X[0] <= 60.5
        then if X[0] <= 38.0
          then if X[2] <= 20000.0
            then {value: 185.0, samples: 1}
            else {value: 173.0, samples: 1}
          else if X[1] <= 4620.0

then {value: 135.0, samples: 2}
                    else {value: 106.0, samples: 1}
              else {value: 208.0, samples: 1}

This is the evaluation for mse:
7431.888888888889

Fold 5
Regression Tree:

 if X[1] <= 4620.0
   then if X[2] <= 14000.0
     then if X[2] <= 2500.0
       then if X[4] <= 6.0
         then if X[0] <= 221.5
           then {value: 18.0, samples: 4}
           else {value: 8.0, samples: 2}
         else {value: 36.0, samples: 1}
       else if X[3] <= 1.0
         then if X[5] <= 16.0
           then if X[0] <= 565.0
             then if X[1] <= 628.0
               then {value: 33.0, samples: 1}
               else {value: 23.5, samples: 4}
             else {value: 16.0, samples: 1}
           else {value: 34.0, samples: 2}
         else if X[0] <= 112.5
           then if X[0] <= 62.5
             then {value: 34.0, samples: 2}
             else if X[0] <= 96.0
               then if X[3] <= 6.0
                 then {value: 50.0, samples: 1}
                 else {value: 61.0, samples: 2}
               else if X[0] <= 105.0
                 then {value: 32.0, samples: 1}
                 else {value: 60.0, samples: 1}
           else if X[1] <= 384.0
             then {value: 27.0, samples: 1}
             else {value: 38.75, samples: 4}
     else if X[4] <= 4.5
       then {value: 45.0, samples: 1}
       else if X[0] <= 53.5
         then {value: 114.0, samples: 1}
         else {value: 132.0, samples: 1}
   else if X[2] <= 28000.0
     then if X[0] <= 45.0
       then if X[2] <= 20000.0
         then {value: 185.0, samples: 1}
         else {value: 173.0, samples: 1}
       else {value: 208.0, samples: 1}

else {value: 405.0, samples: 1}

This is the evaluation for mse:
74346.40625

This is the Average Evaluation for the Cross Validation

16895.498225308642
For These Hyper-Parameters: 100 and 2.0
Fold 1
Regression Tree:

```
if X[4] <= 7.0
  then if X[2] <= 14000.0
    then if X[2] <= 10000.0
      then if X[2] <= 2500.0
        then {value: 18.0, samples: 5}
        else if X[0] <= 600.0
          then if X[2] <= 7000.0
            then if X[2] <= 3750.0
              then {value: 38.0, samples: 2}
              else if X[3] <= 6.0
                then {value: 27.0, samples: 6}
                else if X[0] <= 122.5
                  then {value: 27.0, samples: 2}
                  else {value: 37.5, samples: 2}
            else if X[1] <= 1500.0
              then {value: 34.666666666666664, samples: 3}
              else {value: 50.0, samples: 1}
          else {value: 16.0, samples: 1}
        else {value: 60.0, samples: 1}
    else if X[1] <= 3000.0
      then if X[2] <= 24000.0
        then {value: 45.0, samples: 1}
        else {value: 114.0, samples: 1}
      else {value: 135.0, samples: 2}
  else if X[2] <= 28000.0
    then if X[0] <= 60.0
      then if X[0] <= 41.0
        then if X[2] <= 20000.0
          then {value: 185.0, samples: 1}
          else {value: 173.0, samples: 1}
        else {value: 106.0, samples: 1}
      else {value: 203.0, samples: 2}
    else {value: 405.0, samples: 1}
```

This is the evaluation for mse:
64531.444444444445

Fold 2

Regression Tree:

if X[0] <= 24.5
  then {value: 1144.0, samples: 1}
  else if X[1] <= 4620.0
    then if X[5] <= 25.0
      then if X[1] <= 3310.0
        then if X[2] <= 2750.0
          then if X[4] <= 6.0
            then if X[0] <= 221.5
              then {value: 18.333333333333332, samples: 3}
              else {value: 8.0, samples: 2}
            else {value: 36.0, samples: 1}
          else if X[3] <= 1.0
            then if X[0] <= 560.0
              then if X[0] <= 80.5
                then {value: 24.0, samples: 3}
                else {value: 32.5, samples: 2}
              else {value: 16.0, samples: 1}
            else if X[2] <= 6500.0
              then if X[1] <= 384.0
                then {value: 27.0, samples: 1}
                else {value: 37.4, samples: 5}
              else if X[4] <= 2.0
                then if X[3] <= 10.0
                  then {value: 50.0, samples: 1}
                  else {value: 60.0, samples: 2}
                else if X[3] <= 18.0
                  then if X[0] <= 62.5
                    then {value: 40.5, samples: 2}
                    else {value: 62.0, samples: 1}
                  else {value: 32.0, samples: 2}
        else {value: 132.0, samples: 1}
      else if X[0] <= 87.5
        then {value: 114.0, samples: 1}
        else {value: 198.0, samples: 1}
    else if X[2] <= 26485.0
      then if X[0] <= 45.0
        then {value: 185.0, samples: 1}
        else {value: 208.0, samples: 1}
      else {value: 405.0, samples: 1}

This is the evaluation for mse:
1228.6319753086418

Fold 3
Regression Tree:

if X[0] <= 24.5
  then {value: 1144.0, samples: 1}

```
else if X[1] <= 3310.0
    then if X[3] <= 144.0
        then if X[2] <= 2500.0
            then if X[4] <= 6.0
                then if X[1] <= 518.0
                    then {value: 11.0, samples: 3}
                    else {value: 18.25, samples: 4}
                else {value: 36.0, samples: 1}
            else if X[3] <= 1.0
                then if X[0] <= 325.0
                    then if X[0] <= 80.5
                        then {value: 22.5, samples: 2}
                        else {value: 34.25, samples: 4}
                    else {value: 19.0, samples: 2}
                else if X[0] <= 96.0
                    then if X[0] <= 62.5
                        then {value: 34.0, samples: 2}
                        else if X[3] <= 6.0
                            then {value: 50.0, samples: 1}
                            else {value: 61.0, samples: 2}
                    else if X[0] <= 110.0
                        then {value: 28.666666666666668, samples: 3}
                        else {value: 38.333333333333336, samples: 3}
            else {value: 198.0, samples: 1}
        else if X[0] <= 38.0
            then if X[2] <= 20000.0
                then {value: 185.0, samples: 1}
                else {value: 173.0, samples: 1}
            else if X[1] <= 4620.0
                then {value: 135.0, samples: 2}
                else {value: 106.0, samples: 1}
```

This is the evaluation for mse:
8985.28125

Fold 4
Regression Tree:

```
if X[0] <= 24.5
    then {value: 1144.0, samples: 1}
    else if X[1] <= 3310.0
        then if X[5] <= 25.0
            then if X[2] <= 7000.0
                then if X[5] <= 4.5
                    then {value: 11.333333333333334, samples: 3}
                    else if X[0] <= 110.0
                        then {value: 21.75, samples: 4}
                        else if X[1] <= 1500.0
                            then if X[4] <= 4.5
                                then {value: 24.333333333333332, samples: 3}
```

```
                    else {value: 36.0, samples: 2}
                else {value: 40.0, samples: 2}
            else if X[0] <= 65.5
                then if X[2] <= 13240.0
                    then {value: 30.666666666666668, samples: 3}
                    else {value: 45.0, samples: 1}
                else if X[0] <= 96.0
                    then if X[3] <= 6.0
                        then {value: 50.0, samples: 1}
                        else {value: 61.0, samples: 2}
                    else if X[2] <= 10000.0
                        then {value: 34.0, samples: 2}
                        else {value: 60.0, samples: 1}
        else if X[0] <= 87.5
            then {value: 114.0, samples: 1}
            else {value: 198.0, samples: 1}
    else if X[2] <= 28000.0
        then if X[0] <= 60.5
            then if X[0] <= 38.0
                then if X[2] <= 20000.0
                    then {value: 185.0, samples: 1}
                    else {value: 173.0, samples: 1}
                else if X[1] <= 4620.0
                    then {value: 135.0, samples: 2}
                    else {value: 106.0, samples: 1}
            else {value: 208.0, samples: 1}
        else {value: 405.0, samples: 1}
```

This is the evaluation for mse:
125.3984375

Fold 5
Regression Tree:

```
 if X[0] <= 24.5
    then {value: 1144.0, samples: 1}
    else if X[1] <= 3310.0
        then if X[2] <= 24000.0
            then if X[2] <= 2500.0
                then if X[4] <= 6.0
                    then {value: 13.666666666666666, samples: 6}
                    else {value: 36.0, samples: 1}
                else if X[3] <= 10.0
                    then if X[5] <= 22.0
                        then if X[0] <= 600.0
                            then if X[0] <= 110.0
                                then {value: 26.25, samples: 4}
                                else if X[0] <= 272.5
                                    then {value: 37.75, samples: 4}
                                    else if X[0] <= 365.0
```

then {value: 27.333333333333332, samples: 3}
else {value: 40.0, samples: 1}
else {value: 16.0, samples: 1}
else if X[0] <= 90.0
then {value: 62.0, samples: 1}
else {value: 34.0, samples: 2}
else if X[0] <= 71.0
then if X[1] <= 2310.0
then {value: 45.0, samples: 1}
else {value: 32.0, samples: 1}
else {value: 60.0, samples: 2}
else {value: 114.0, samples: 1}
else if X[2] <= 28000.0
then if X[0] <= 60.0
then if X[0] <= 38.0
then {value: 173.0, samples: 1}
else if X[0] <= 53.0
then {value: 138.0, samples: 1}
else {value: 106.0, samples: 1}
else {value: 208.0, samples: 1}
else {value: 405.0, samples: 1}

This is the evaluation for mse:
2680.183159722222

This is the Average Evaluation for the Cross Validation

15510.18785339506
For These Hyper-Parameters: 100 and 2.5
Fold 1
Regression Tree:

if X[1] <= 3310.0
then if X[5] <= 25.0
then if X[2] <= 2500.0
then {value: 13.666666666666666, samples: 6}
else if X[3] <= 6.0
then if X[0] <= 325.0
then if X[0] <= 178.0
then {value: 24.0, samples: 3}
else {value: 32.0, samples: 3}
else {value: 19.0, samples: 2}
else if X[5] <= 3.5
then {value: 60.0, samples: 1}
else if X[0] <= 87.5
then if X[0] <= 62.5
then {value: 37.666666666666664, samples: 3}
else {value: 62.0, samples: 1}
else if X[0] <= 122.5
then {value: 28.666666666666668, samples: 3}

else {value: 37.5, samples: 2}
         else if X[0] <= 87.5
             then {value: 114.0, samples: 1}
             else {value: 198.0, samples: 1}
      else if X[2] <= 28000.0
         then if X[0] <= 60.5
             then if X[0] <= 38.0
                then {value: 179.0, samples: 2}
                else if X[1] <= 4620.0
                    then {value: 135.0, samples: 2}
                    else {value: 106.0, samples: 1}
             else {value: 208.0, samples: 1}
         else {value: 405.0, samples: 1}

This is the evaluation for mse:
61017.92592592593

Fold 2
Regression Tree:

 if X[0] <= 24.5
    then {value: 1144.0, samples: 1}
    else if X[1] <= 3000.0
       then if X[2] <= 24000.0
          then if X[2] <= 7000.0
             then if X[5] <= 4.5
                then {value: 11.333333333333334, samples: 3}
                else if X[0] <= 97.5
                   then if X[0] <= 70.0
                       then {value: 24.0, samples: 2}
                       else {value: 14.5, samples: 2}
                   else if X[0] <= 365.0
                       then if X[0] <= 171.5
                          then if X[0] <= 110.0
                             then {value: 28.666666666666668, samples: 3}
                             else {value: 37.0, samples: 3}
                          else {value: 24.333333333333332, samples: 3}
                       else {value: 40.0, samples: 1}
             else if X[0] <= 155.0
                then if X[4] <= 2.0
                   then {value: 56.666666666666664, samples: 3}
                   else if X[3] <= 10.0
                       then {value: 62.0, samples: 1}
                       else if X[0] <= 75.0
                          then {value: 45.0, samples: 1}
                          else {value: 32.0, samples: 1}
                else if X[0] <= 500.0
                   then {value: 36.0, samples: 1}
                   else {value: 16.0, samples: 1}
          else {value: 114.0, samples: 1}

else if X[2] <= 28000.0
          then if X[0] <= 60.5
            then if X[0] <= 38.0
              then {value: 173.0, samples: 1}
              else if X[1] <= 4620.0
                then {value: 135.0, samples: 2}
                else {value: 106.0, samples: 1}
            else {value: 208.0, samples: 1}
          else {value: 405.0, samples: 1}

This is the evaluation for mse:
3195.308641975308

Fold 3
Regression Tree:

 if X[0] <= 24.5
   then {value: 1144.0, samples: 1}
   else if X[1] <= 3310.0
     then if X[3] <= 144.0
       then if X[3] <= 1.0
         then if X[5] <= 15.0
           then if X[2] <= 3000.0
             then {value: 16.2, samples: 5}
             else if X[5] <= 3.0
               then {value: 36.0, samples: 1}
               else {value: 23.833333333333332, samples: 6}
           else {value: 34.666666666666664, samples: 3}
         else if X[0] <= 96.0
           then if X[0] <= 62.5
             then {value: 34.0, samples: 2}
             else {value: 57.333333333333336, samples: 3}
           else if X[5] <= 7.0
             then if X[2] <= 4500.0
               then {value: 40.0, samples: 3}
               else {value: 29.5, samples: 2}
             else if X[4] <= 2.0
               then {value: 35.0, samples: 1}
               else {value: 20.5, samples: 2}
       else {value: 198.0, samples: 1}
     else if X[0] <= 38.0
       then {value: 179.0, samples: 2}
       else if X[0] <= 53.0
         then {value: 138.0, samples: 1}
         else {value: 106.0, samples: 1}

This is the evaluation for mse:
8861.9375

Fold 4

Regression Tree:

if X[0] <= 24.5
  then {value: 1144.0, samples: 1}
  else if X[1] <= 4620.0
    then if X[3] <= 48.5
      then if X[2] <= 14000.0
        then if X[2] <= 2500.0
          then if X[4] <= 6.0
            then if X[1] <= 518.0
              then {value: 11.0, samples: 3}
              else {value: 20.333333333333332, samples: 3}
            else {value: 36.0, samples: 1}
          else if X[3] <= 1.0
            then if X[0] <= 325.0
              then if X[0] <= 80.5
                then {value: 25.5, samples: 2}
                else {value: 34.25, samples: 4}
              else {value: 22.0, samples: 1}
            else if X[4] <= 2.0
              then if X[0] <= 112.5
                then {value: 56.666666666666664, samples: 3}
                else {value: 40.0, samples: 2}
              else if X[5] <= 21.5
                then {value: 35.0, samples: 4}
                else if X[0] <= 62.5
                  then {value: 32.0, samples: 1}
                  else {value: 62.0, samples: 1}
        else if X[4] <= 4.5
          then {value: 45.0, samples: 1}
          else if X[0] <= 53.5
            then {value: 114.0, samples: 1}
            else {value: 132.0, samples: 1}
      else if X[0] <= 87.5
        then {value: 138.0, samples: 1}
        else {value: 198.0, samples: 1}
    else if X[2] <= 26485.0
      then if X[0] <= 45.0
        then {value: 185.0, samples: 1}
        else {value: 208.0, samples: 1}
      else {value: 405.0, samples: 1}

This is the evaluation for mse:
1379.5868055555557

Fold 5
Regression Tree:

if X[0] <= 24.5
  then {value: 1144.0, samples: 1}

```
else if X[1] <= 3310.0
    then if X[5] <= 25.0
        then if X[3] <= 10.0
            then if X[2] <= 2500.0
                then if X[4] <= 6.0
                    then if X[0] <= 221.5
                        then {value: 18.333333333333332, samples: 3}
                        else {value: 6.0, samples: 1}
                    else {value: 36.0, samples: 1}
                else if X[0] <= 600.0
                    then if X[5] <= 7.0
                        then if X[1] <= 384.0
                            then {value: 30.0, samples: 2}
                            else {value: 40.333333333333336, samples: 6}
                        else if X[5] <= 13.5
                            then {value: 22.333333333333332, samples: 3}
                            else {value: 33.75, samples: 4}
                    else {value: 16.0, samples: 1}
                else if X[0] <= 71.0
                    then {value: 38.5, samples: 2}
                    else {value: 60.0, samples: 2}
            else if X[0] <= 87.5
                then {value: 114.0, samples: 1}
                else {value: 198.0, samples: 1}
        else if X[2] <= 28000.0
            then if X[0] <= 60.5
                then if X[0] <= 41.0
                    then {value: 179.0, samples: 2}
                    else if X[0] <= 56.5
                        then {value: 106.0, samples: 1}
                        else {value: 132.0, samples: 1}
                else {value: 208.0, samples: 1}
            else {value: 405.0, samples: 1}
```

This is the evaluation for mse:
410.21614583333337

This is the Average Evaluation for the Cross Validation

14972.995003858025
For These Hyper-Parameters: 150 and 0.5
Fold 1
Regression Tree:

```
if X[0] <= 24.5
    then {value: 1144.0, samples: 1}
    else if X[1] <= 3310.0
        then if X[5] <= 25.0
            then if X[2] <= 2500.0
                then if X[1] <= 518.0
```

```
        then if X[0] <= 165.0
            then {value: 17.0, samples: 1}
            else {value: 8.0, samples: 2}
        else if X[0] <= 125.5
            then {value: 12.0, samples: 1}
            else if X[1] <= 884.0
                then {value: 18.5, samples: 2}
                else {value: 24.0, samples: 1}
    else if X[2] <= 11240.0
        then if X[0] <= 600.0
            then if X[0] <= 78.0
                then if X[3] <= 4.0
                    then {value: 24.0, samples: 3}
                    else {value: 34.0, samples: 2}
                else if X[1] <= 384.0
                    then if X[2] <= 5500.0
                        then {value: 27.0, samples: 1}
                        else {value: 33.0, samples: 1}
                    else if X[0] <= 110.0
                        then {value: 32.0, samples: 3}
                        else {value: 38.0, samples: 4}
            else {value: 16.0, samples: 1}
        else if X[0] <= 80.0
            then {value: 45.0, samples: 1}
            else {value: 60.0, samples: 1}
    else if X[0] <= 87.5
        then {value: 114.0, samples: 1}
        else {value: 198.0, samples: 1}
else if X[2] <= 28000.0
    then if X[1] <= 4620.0
        then if X[0] <= 53.5
            then {value: 138.0, samples: 1}
            else {value: 132.0, samples: 1}
        else if X[0] <= 45.0
            then if X[2] <= 20000.0
                then {value: 185.0, samples: 1}
                else {value: 173.0, samples: 1}
            else {value: 208.0, samples: 1}
    else {value: 405.0, samples: 1}
```

This is the evaluation for mse:
1447.3333333333333

Fold 2
Regression Tree:

```
if X[0] <= 24.5
    then {value: 1144.0, samples: 1}
    else if X[1] <= 3310.0
        then if X[2] <= 7000.0
```

then if X[5] <= 4.0
           then {value: 6.0, samples: 1}
           else if X[0] <= 97.5
              then if X[0] <= 53.0
                 then {value: 27.0, samples: 1}
                 else {value: 19.0, samples: 2}
              else if X[4] <= 2.0
                 then if X[1] <= 384.0
                    then {value: 27.0, samples: 1}
                    else if X[3] <= 6.0
                       then {value: 40.0, samples: 2}
                       else {value: 35.0, samples: 1}
                 else if X[5] <= 17.0
                    then if X[0] <= 196.0
                       then {value: 20.5, samples: 2}
                       else if X[0] <= 277.5
                          then {value: 40.0, samples: 1}
                          else {value: 22.0, samples: 1}
                    else {value: 33.333333333333336, samples: 3}
        else if X[3] <= 2.0
           then if X[5] <= 3.0
              then {value: 36.0, samples: 1}
              else if X[0] <= 428.0
                 then {value: 24.0, samples: 1}
                 else {value: 16.0, samples: 1}
           else if X[0] <= 62.5
              then {value: 34.0, samples: 2}
              else if X[0] <= 96.0
                 then if X[3] <= 6.0
                    then {value: 50.0, samples: 1}
                    else {value: 61.0, samples: 2}
                 else if X[0] <= 105.0
                    then {value: 32.0, samples: 1}
                    else {value: 60.0, samples: 1}
     else if X[2] <= 28000.0
        then if X[0] <= 60.5
           then if X[0] <= 38.0
              then if X[2] <= 20000.0
                 then {value: 185.0, samples: 1}
                 else {value: 173.0, samples: 1}
              else if X[1] <= 4620.0
                 then if X[0] <= 53.5
                    then {value: 138.0, samples: 1}
                    else {value: 132.0, samples: 1}
                 else {value: 106.0, samples: 1}
           else {value: 208.0, samples: 1}
        else {value: 405.0, samples: 1}

This is the evaluation for mse:
3793.8024691358023

Fold 3
Regression Tree:

if X[0] <= 24.5
  then {value: 1144.0, samples: 1}
  else if X[1] <= 3620.0
    then if X[5] <= 25.0
      then if X[3] <= 2.0
        then if X[5] <= 15.0
          then if X[2] <= 3000.0
            then if X[1] <= 160.0
              then {value: 10.0, samples: 1}
              else if X[0] <= 87.0
                then {value: 12.0, samples: 1}
                else if X[1] <= 884.0
                  then {value: 17.5, samples: 2}
                  else {value: 24.0, samples: 1}
            else if X[5] <= 3.0
              then {value: 36.0, samples: 1}
              else if X[0] <= 565.0
                then if X[1] <= 628.0
                  then {value: 33.0, samples: 1}
                  else {value: 23.5, samples: 4}
                else {value: 16.0, samples: 1}
          else {value: 34.666666666666664, samples: 3}
        else if X[2] <= 6500.0
          then if X[2] <= 3000.0
            then {value: 19.0, samples: 1}
            else if X[0] <= 122.5
              then {value: 22.0, samples: 1}
              else if X[0] <= 272.5
                then {value: 37.5, samples: 2}
                else {value: 27.0, samples: 1}
          else if X[4] <= 2.0
            then if X[3] <= 10.0
              then {value: 50.0, samples: 1}
              else {value: 60.0, samples: 2}
            else if X[3] <= 10.0
              then {value: 62.0, samples: 1}
              else if X[0] <= 75.0
                then {value: 45.0, samples: 1}
                else {value: 32.0, samples: 1}
      else if X[0] <= 87.5
        then {value: 114.0, samples: 1}
        else {value: 198.0, samples: 1}
    else if X[2] <= 28000.0
      then if X[0] <= 60.0
        then if X[0] <= 41.0
          then if X[2] <= 20000.0
            then {value: 185.0, samples: 1}
            else {value: 173.0, samples: 1}

else {value: 106.0, samples: 1}
                else {value: 208.0, samples: 1}
            else {value: 405.0, samples: 1}

This is the evaluation for mse:
406.90625

Fold 4
Regression Tree:

 if X[0] <= 24.5
   then {value: 1144.0, samples: 1}
   else if X[1] <= 3310.0
     then if X[5] <= 25.0
       then if X[2] <= 2500.0
         then if X[4] <= 6.0
           then if X[1] <= 518.0
             then if X[0] <= 165.0
               then {value: 17.0, samples: 1}
               else {value: 8.0, samples: 2}
             else if X[0] <= 125.5
               then {value: 12.0, samples: 1}
               else if X[1] <= 884.0
                 then {value: 18.5, samples: 2}
                 else {value: 24.0, samples: 1}
           else {value: 36.0, samples: 1}
         else if X[3] <= 1.0
           then if X[0] <= 325.0
             then if X[0] <= 178.0
               then {value: 25.5, samples: 2}
               else {value: 34.5, samples: 2}
             else if X[0] <= 565.0
               then {value: 22.0, samples: 1}
               else {value: 16.0, samples: 1}
           else if X[2] <= 6000.0
             then if X[0] <= 110.0
               then if X[5] <= 13.5
                 then {value: 22.0, samples: 1}
                 else {value: 32.0, samples: 1}
               else if X[5] <= 13.0
                 then {value: 40.0, samples: 3}
                 else {value: 35.0, samples: 1}
             else if X[0] <= 62.5
               then if X[2] <= 13240.0
                 then {value: 34.0, samples: 2}
                 else {value: 45.0, samples: 1}
               else if X[3] <= 6.0
                 then {value: 50.0, samples: 1}
                 else {value: 60.666666666666664, samples: 3}
       else if X[0] <= 87.5

then {value: 114.0, samples: 1}
else {value: 198.0, samples: 1}
else if X[0] <= 38.0
then {value: 185.0, samples: 1}
else if X[1] <= 4620.0
then if X[0] <= 53.5
then {value: 138.0, samples: 1}
else {value: 132.0, samples: 1}
else {value: 106.0, samples: 1}

This is the evaluation for mse:
7500.440972222223

Fold 5
Regression Tree:

if X[4] <= 20.0
then if X[1] <= 3310.0
then if X[5] <= 25.0
then if X[2] <= 2500.0
then if X[4] <= 4.5
then if X[1] <= 640.0
then {value: 8.0, samples: 2}
else if X[0] <= 143.5
then {value: 12.0, samples: 1}
else if X[0] <= 851.5
then {value: 24.0, samples: 1}
else {value: 18.0, samples: 1}
else {value: 36.0, samples: 1}
else if X[2] <= 7000.0
then if X[0] <= 110.0
then if X[5] <= 13.5
then {value: 21.5, samples: 2}
else {value: 32.0, samples: 2}
else if X[0] <= 310.0
then if X[5] <= 13.0
then {value: 40.0, samples: 2}
else {value: 35.5, samples: 2}
else if X[0] <= 365.0
then if X[2] <= 5500.0
then {value: 24.5, samples: 2}
else {value: 33.0, samples: 1}
else {value: 40.0, samples: 1}
else if X[1] <= 1500.0
then {value: 34.666666666666664, samples: 3}
else if X[0] <= 62.5
then if X[1] <= 2310.0
then {value: 45.0, samples: 1}
else {value: 32.0, samples: 1}
else if X[3] <= 6.0

then {value: 50.0, samples: 1}
                    else {value: 61.0, samples: 2}
          else if X[0] <= 87.5
              then {value: 114.0, samples: 1}
              else {value: 198.0, samples: 1}
        else if X[0] <= 60.5
            then if X[0] <= 38.0
              then {value: 173.0, samples: 1}
              else if X[1] <= 4620.0
                then if X[0] <= 53.5
                    then {value: 138.0, samples: 1}
                    else {value: 132.0, samples: 1}
                  else {value: 106.0, samples: 1}
            else {value: 208.0, samples: 1}
      else {value: 405.0, samples: 1}

This is the evaluation for mse:
68491.05902777778

This is the Average Evaluation for the Cross Validation

16327.908410493828
For These Hyper-Parameters: 150 and 1.0
Fold 1
Regression Tree:

 if X[0] <= 24.5
   then {value: 1144.0, samples: 1}
   else if X[0] <= 38.0
     then if X[2] <= 28000.0
        then if X[2] <= 20000.0
           then {value: 185.0, samples: 1}
           else {value: 173.0, samples: 1}
        else {value: 405.0, samples: 1}
     else if X[2] <= 14000.0
        then if X[2] <= 2500.0
           then if X[0] <= 221.5
              then if X[0] <= 125.5
                 then {value: 12.0, samples: 1}
                 else {value: 21.5, samples: 2}
              else {value: 8.0, samples: 2}
           else if X[3] <= 1.0
              then if X[0] <= 560.0
                 then if X[0] <= 80.5
                    then {value: 22.5, samples: 2}
                    else {value: 34.25, samples: 4}
                 else {value: 16.0, samples: 1}
              else if X[2] <= 6500.0
                 then if X[0] <= 110.0
                    then {value: 22.0, samples: 1}

else if X[1] <= 384.0
                        then {value: 27.0, samples: 1}
                        else {value: 38.75, samples: 4}
                else if X[0] <= 62.5
                    then {value: 34.0, samples: 2}
                    else if X[0] <= 96.0
                        then if X[3] <= 6.0
                            then {value: 50.0, samples: 1}
                            else {value: 61.0, samples: 2}
                        else if X[0] <= 105.0
                            then {value: 32.0, samples: 1}
                            else {value: 60.0, samples: 1}
        else if X[3] <= 18.0
            then {value: 45.0, samples: 1}
            else if X[2] <= 18485.0
                then {value: 138.0, samples: 1}
                else {value: 110.0, samples: 2}

This is the evaluation for mse:
5265.034722222223

Fold 2
Regression Tree:

 if X[0] <= 24.5
    then {value: 1144.0, samples: 1}
    else if X[3] <= 20.0
        then if X[1] <= 3000.0
            then if X[2] <= 2500.0
                then if X[4] <= 6.0
                    then if X[4] <= 2.0
                        then if X[0] <= 925.0
                            then {value: 9.333333333333334, samples: 3}
                            else {value: 18.0, samples: 1}
                        else {value: 18.0, samples: 2}
                    else {value: 36.0, samples: 1}
                else if X[2] <= 10000.0
                    then if X[5] <= 22.0
                        then if X[0] <= 600.0
                            then if X[1] <= 1500.0
                                then if X[3] <= 2.0
                                    then if X[0] <= 325.0
                                        then {value: 34.5, samples: 2}
                                        else {value: 22.0, samples: 1}
                                    else {value: 38.0, samples: 2}
                                else if X[5] <= 13.5
                                    then {value: 23.5, samples: 4}
                                    else {value: 33.5, samples: 2}
                            else {value: 16.0, samples: 1}
                        else if X[0] <= 90.0

then {value: 62.0, samples: 1}
                    else {value: 34.0, samples: 2}
                else {value: 60.0, samples: 1}
            else {value: 132.0, samples: 1}
        else if X[4] <= 20.0
            then if X[5] <= 7.0
                then {value: 60.0, samples: 1}
                else if X[0] <= 60.0
                    then if X[0] <= 38.0
                        then {value: 173.0, samples: 1}
                        else if X[2] <= 18485.0
                            then {value: 138.0, samples: 1}
                            else {value: 110.0, samples: 2}
                    else if X[0] <= 94.5
                        then {value: 208.0, samples: 1}
                        else {value: 198.0, samples: 1}
            else {value: 405.0, samples: 1}

This is the evaluation for mse:
1848.5401234567898

Fold 3
Regression Tree:

 if X[0] <= 24.5
    then {value: 1144.0, samples: 1}
    else if X[1] <= 3310.0
        then if X[3] <= 144.0
            then if X[2] <= 2500.0
                then if X[4] <= 5.5
                    then if X[3] <= 4.0
                        then if X[1] <= 160.0
                            then {value: 10.0, samples: 1}
                            else if X[0] <= 87.0
                                then {value: 12.0, samples: 1}
                                else {value: 19.666666666666668, samples: 3}
                        else {value: 6.0, samples: 1}
                    else {value: 36.0, samples: 1}
                else if X[3] <= 31.0
                    then if X[3] <= 1.0
                        then if X[0] <= 325.0
                            then if X[0] <= 80.5
                                then {value: 24.0, samples: 3}
                                else {value: 34.25, samples: 4}
                            else {value: 19.0, samples: 2}
                        else if X[1] <= 1500.0
                            then {value: 31.666666666666668, samples: 3}
                            else if X[5] <= 17.5
                                then if X[0] <= 103.5
                                    then {value: 47.5, samples: 2}

```
                        else {value: 40.0, samples: 2}
                     else {value: 33.0, samples: 3}
                 else {value: 60.0, samples: 1}
             else {value: 198.0, samples: 1}
         else if X[0] <= 60.5
            then if X[0] <= 41.0
               then if X[2] <= 20000.0
                  then {value: 185.0, samples: 1}
                  else {value: 173.0, samples: 1}
               else if X[0] <= 56.5
                  then {value: 106.0, samples: 1}
                  else {value: 132.0, samples: 1}
            else {value: 208.0, samples: 1}
```

This is the evaluation for mse:
7951.902777777777

Fold 4
Regression Tree:

```
 if X[1] <= 3310.0
   then if X[5] <= 25.0
      then if X[2] <= 7000.0
         then if X[2] <= 2750.0
            then if X[4] <= 6.0
               then if X[1] <= 518.0
                  then if X[0] <= 165.0
                     then {value: 17.0, samples: 1}
                     else {value: 8.0, samples: 2}
                  else if X[0] <= 125.5
                     then {value: 12.0, samples: 1}
                     else {value: 20.333333333333332, samples: 3}
               else {value: 36.0, samples: 1}
            else if X[3] <= 1.0
               then {value: 23.333333333333332, samples: 3}
               else if X[0] <= 110.0
                  then if X[5] <= 13.5
                     then {value: 22.0, samples: 1}
                     else {value: 32.0, samples: 1}
                  else if X[1] <= 384.0
                     then {value: 27.0, samples: 1}
                     else {value: 38.75, samples: 4}
         else if X[3] <= 20.0
            then if X[0] <= 62.5
               then if X[1] <= 1500.0
                  then {value: 36.0, samples: 1}
                  else {value: 45.0, samples: 1}
               else if X[3] <= 6.0
                  then {value: 50.0, samples: 1}
                  else {value: 61.0, samples: 2}
```

else {value: 32.0, samples: 2}
            else if X[0] <= 87.5
                then {value: 114.0, samples: 1}
                else {value: 198.0, samples: 1}
        else if X[2] <= 28000.0
            then if X[0] <= 60.5
                then if X[0] <= 38.0
                    then if X[2] <= 20000.0
                        then {value: 185.0, samples: 1}
                        else {value: 173.0, samples: 1}
                    else if X[1] <= 4620.0
                        then {value: 135.0, samples: 2}
                        else {value: 106.0, samples: 1}
                else {value: 208.0, samples: 1}
            else {value: 405.0, samples: 1}

This is the evaluation for mse:
68628.375

Fold 5
Regression Tree:

 if X[0] <= 24.5
    then {value: 1144.0, samples: 1}
    else if X[1] <= 4620.0
        then if X[3] <= 48.5
            then if X[2] <= 14000.0
                then if X[3] <= 1.0
                    then if X[0] <= 325.0
                        then if X[0] <= 97.5
                            then if X[0] <= 73.0
                                then {value: 25.5, samples: 2}
                                else {value: 17.0, samples: 1}
                            else if X[4] <= 4.5
                                then if X[2] <= 3000.0
                                    then {value: 24.0, samples: 1}
                                    else {value: 33.666666666666664, samples: 3}
                                else {value: 36.0, samples: 2}
                        else {value: 18.666666666666668, samples: 3}
                    else if X[2] <= 6500.0
                        then if X[5] <= 7.0
                            then if X[1] <= 384.0
                                then {value: 27.0, samples: 1}
                                else {value: 40.0, samples: 3}
                            else if X[5] <= 17.0
                                then {value: 20.5, samples: 2}
                                else {value: 32.0, samples: 1}
                        else if X[3] <= 20.0
                            then if X[3] <= 6.0
                                then {value: 50.0, samples: 1}

else {value: 61.0, samples: 2}
              else if X[3] <= 31.0
                  then {value: 32.0, samples: 2}
                  else {value: 60.0, samples: 1}
          else if X[4] <= 4.5
              then {value: 45.0, samples: 1}
              else if X[0] <= 53.5
                  then {value: 114.0, samples: 1}
                  else {value: 132.0, samples: 1}
        else if X[0] <= 87.5
            then {value: 138.0, samples: 1}
            else {value: 198.0, samples: 1}
      else if X[2] <= 26485.0
        then if X[0] <= 45.0
            then {value: 185.0, samples: 1}
            else {value: 208.0, samples: 1}
        else {value: 405.0, samples: 1}

This is the evaluation for mse:
1557.295138888889

This is the Average Evaluation for the Cross Validation

17050.229552469136
For These Hyper-Parameters: 150 and 1.5
Fold 1
Regression Tree:

 if X[0] <= 24.5
   then {value: 1144.0, samples: 1}
   else if X[1] <= 3310.0
     then if X[5] <= 25.0
       then if X[2] <= 7000.0
         then if X[5] <= 4.5
           then if X[0] <= 925.0
             then {value: 8.0, samples: 2}
             else {value: 18.0, samples: 1}
           else if X[5] <= 17.5
             then if X[0] <= 214.0
               then {value: 22.6, samples: 5}
               else if X[0] <= 272.5
                 then {value: 40.0, samples: 1}
                 else {value: 27.333333333333332, samples: 3}
             else {value: 34.333333333333336, samples: 3}
           else if X[0] <= 455.0
             then if X[4] <= 2.0
               then if X[3] <= 10.0
                 then {value: 50.0, samples: 1}
                 else {value: 60.0, samples: 2}
               else if X[3] <= 18.0

then if X[0] <= 62.5
    then {value: 40.5, samples: 2}
    else {value: 62.0, samples: 1}
  else {value: 32.0, samples: 2}
else {value: 16.0, samples: 1}
else if X[0] <= 87.5
  then {value: 114.0, samples: 1}
  else {value: 198.0, samples: 1}
else if X[0] <= 60.5
  then if X[0] <= 38.0
    then if X[2] <= 20000.0
      then {value: 185.0, samples: 1}
      else {value: 173.0, samples: 1}
    else if X[1] <= 4620.0
      then {value: 135.0, samples: 2}
      else {value: 106.0, samples: 1}
  else {value: 208.0, samples: 1}

This is the evaluation for mse:
6145.682962962963

Fold 2
Regression Tree:

if X[0] <= 24.5
  then {value: 1144.0, samples: 1}
  else if X[3] <= 80.0
    then if X[1] <= 3310.0
      then if X[2] <= 2500.0
        then if X[4] <= 6.0
          then if X[4] <= 2.0
            then {value: 9.333333333333334, samples: 3}
            else {value: 18.0, samples: 2}
          else {value: 36.0, samples: 1}
        else if X[3] <= 31.0
          then if X[3] <= 1.0
            then if X[0] <= 325.0
              then if X[0] <= 128.0
                then {value: 24.0, samples: 3}
                else {value: 35.0, samples: 3}
              else {value: 19.0, samples: 2}
            else if X[0] <= 96.0
              then if X[0] <= 71.0
                then if X[2] <= 13240.0
                  then {value: 34.0, samples: 2}
                  else {value: 45.0, samples: 1}
                else {value: 50.0, samples: 1}
              else if X[0] <= 110.0
                then if X[0] <= 102.5
                  then {value: 32.0, samples: 1}

else if X[5] <= 13.5
                        then {value: 22.0, samples: 1}
                        else {value: 32.0, samples: 1}
                    else if X[1] <= 384.0
                        then {value: 27.0, samples: 1}
                        else {value: 38.333333333333336, samples: 3}
                else {value: 60.0, samples: 1}
        else if X[0] <= 60.5
            then if X[0] <= 41.0
                then {value: 173.0, samples: 1}
                else if X[0] <= 56.5
                    then {value: 106.0, samples: 1}
                    else {value: 132.0, samples: 1}
            else {value: 208.0, samples: 1}
        else if X[0] <= 75.5
            then {value: 405.0, samples: 1}
            else {value: 198.0, samples: 1}

This is the evaluation for mse:
874.8888888888889

Fold 3
Regression Tree:

 if X[0] <= 24.5
    then {value: 1144.0, samples: 1}
    else if X[4] <= 20.0
        then if X[2] <= 14000.0
            then if X[3] <= 144.0
                then if X[2] <= 2500.0
                    then if X[4] <= 6.0
                        then if X[1] <= 518.0
                            then if X[0] <= 165.0
                                then {value: 17.0, samples: 1}
                                else {value: 6.0, samples: 1}
                            else if X[0] <= 125.5
                                then {value: 12.0, samples: 1}
                                else {value: 20.333333333333332, samples: 3}
                        else {value: 36.0, samples: 1}
                    else if X[3] <= 1.0
                        then if X[0] <= 560.0
                            then if X[0] <= 80.5
                                then {value: 24.0, samples: 1}
                                else {value: 34.25, samples: 4}
                            else {value: 16.0, samples: 1}
                        else if X[2] <= 6500.0
                            then if X[0] <= 110.0
                                then {value: 27.0, samples: 2}
                                else if X[1] <= 384.0
                                    then {value: 27.0, samples: 1}

else {value: 40.0, samples: 3}
  else if X[3] <= 20.0
   then if X[3] <= 6.0
    then {value: 50.0, samples: 1}
    else {value: 61.0, samples: 2}
   else if X[3] <= 31.0
    then {value: 32.0, samples: 2}
    else {value: 60.0, samples: 1}
 else {value: 198.0, samples: 1}
else if X[0] <= 38.0
 then if X[2] <= 20000.0
  then {value: 185.0, samples: 1}
  else {value: 173.0, samples: 1}
 else if X[2] <= 18485.0
  then {value: 135.0, samples: 2}
  else {value: 110.0, samples: 2}
else {value: 405.0, samples: 1}

This is the evaluation for mse:
2317.2578125

Fold 4
Regression Tree:

if X[0] <= 24.5
 then {value: 1144.0, samples: 1}
 else if X[3] <= 27.0
  then if X[0] <= 38.0
   then {value: 185.0, samples: 1}
   else if X[2] <= 24000.0
    then if X[2] <= 2500.0
     then if X[4] <= 5.5
      then if X[3] <= 4.0
       then {value: 16.2, samples: 5}
       else {value: 6.0, samples: 1}
      else {value: 36.0, samples: 1}
     else if X[3] <= 1.0
      then if X[0] <= 315.0
       then if X[0] <= 80.5
        then {value: 24.0, samples: 3}
        else {value: 34.666666666666664, samples: 3}
       else {value: 19.0, samples: 2}
      else if X[5] <= 22.0
       then if X[5] <= 3.5
        then {value: 60.0, samples: 1}
        else if X[2] <= 12000.0
         then if X[0] <= 110.0
          then {value: 30.5, samples: 4}
          else {value: 38.75, samples: 4}
         else {value: 45.0, samples: 1}

else {value: 62.0, samples: 1}
            else {value: 114.0, samples: 1}
       else if X[2] <= 28000.0
          then if X[4] <= 4.5
             then {value: 138.0, samples: 1}
             else if X[0] <= 45.0
                then {value: 173.0, samples: 1}
                else {value: 203.0, samples: 2}
          else {value: 405.0, samples: 1}

This is the evaluation for mse:
7160.1640625

Fold 5
Regression Tree:

 if X[1] <= 3310.0
   then if X[2] <= 24000.0
      then if X[2] <= 2500.0
         then if X[1] <= 160.0
            then {value: 10.0, samples: 1}
            else {value: 18.0, samples: 5}
         else if X[3] <= 1.0
            then if X[0] <= 80.5
               then {value: 24.0, samples: 3}
               else if X[0] <= 325.0
                  then {value: 34.25, samples: 4}
                  else {value: 22.0, samples: 1}
            else if X[2] <= 6500.0
               then if X[1] <= 384.0
                  then {value: 27.0, samples: 1}
                  else {value: 37.4, samples: 5}
               else if X[0] <= 62.5
                  then if X[2] <= 13240.0
                     then {value: 34.0, samples: 2}
                     else {value: 45.0, samples: 1}
                  else if X[3] <= 6.0
                     then {value: 50.0, samples: 1}
                     else {value: 60.666666666666664, samples: 3}
      else {value: 114.0, samples: 1}
   else if X[2] <= 26485.0
      then if X[0] <= 60.5
         then if X[0] <= 38.0
            then {value: 185.0, samples: 1}
            else if X[1] <= 4620.0
               then {value: 135.0, samples: 2}
               else {value: 106.0, samples: 1}
         else {value: 208.0, samples: 1}
      else {value: 405.0, samples: 1}

This is the evaluation for mse:
72133.61722222222

This is the Average Evaluation for the Cross Validation

17726.322189814815
For These Hyper-Parameters: 150 and 2.0
Fold 1
Regression Tree:

```
 if X[4] <= 20.0
   then if X[2] <= 13240.0
     then if X[3] <= 144.0
       then if X[2] <= 2500.0
         then if X[4] <= 6.0
           then if X[1] <= 518.0
             then {value: 8.0, samples: 2}
             else {value: 18.25, samples: 4}
           else {value: 36.0, samples: 1}
         else if X[3] <= 1.0
           then if X[0] <= 315.0
             then if X[0] <= 80.5
               then {value: 24.0, samples: 2}
               else {value: 34.666666666666664, samples: 3}
             else {value: 19.0, samples: 2}
           else if X[0] <= 98.5
             then if X[0] <= 62.5
               then {value: 34.0, samples: 2}
               else if X[3] <= 6.0
                 then {value: 50.0, samples: 1}
                 else {value: 61.0, samples: 2}
             else if X[0] <= 110.0
               then {value: 27.0, samples: 2}
               else if X[1] <= 384.0
                 then {value: 27.0, samples: 1}
                 else {value: 40.0, samples: 3}
       else {value: 198.0, samples: 1}
     else if X[0] <= 38.0
       then if X[2] <= 20000.0
         then {value: 185.0, samples: 1}
         else {value: 173.0, samples: 1}
       else if X[2] <= 18485.0
         then {value: 135.0, samples: 2}
         else {value: 110.0, samples: 2}
   else {value: 405.0, samples: 1}
```

This is the evaluation for mse:
62804.555555555555

Fold 2

Regression Tree:

```
if X[0] <= 24.5
   then {value: 1144.0, samples: 1}
   else if X[1] <= 3310.0
      then if X[5] <= 25.0
         then if X[2] <= 2500.0
            then if X[0] <= 221.5
               then {value: 18.0, samples: 4}
               else {value: 8.0, samples: 2}
            else if X[3] <= 6.0
               then if X[0] <= 325.0
                  then if X[0] <= 80.5
                     then {value: 25.5, samples: 2}
                     else {value: 34.0, samples: 6}
                  else {value: 19.0, samples: 2}
               else if X[3] <= 31.0
                  then if X[5] <= 3.5
                     then {value: 60.0, samples: 1}
                     else if X[3] <= 18.0
                        then if X[5] <= 22.0
                           then {value: 39.0, samples: 4}
                           else {value: 62.0, samples: 1}
                        else {value: 32.0, samples: 2}
                  else {value: 60.0, samples: 1}
         else if X[0] <= 87.5
            then {value: 114.0, samples: 1}
            else {value: 198.0, samples: 1}
      else if X[2] <= 28000.0
         then if X[1] <= 4620.0
            then {value: 138.0, samples: 1}
            else if X[0] <= 45.0
               then if X[2] <= 20000.0
                  then {value: 185.0, samples: 1}
                  else {value: 173.0, samples: 1}
               else {value: 208.0, samples: 1}
         else {value: 405.0, samples: 1}
```

This is the evaluation for mse:
1324.361111111111

Fold 3
Regression Tree:

```
if X[0] <= 24.5
   then {value: 1144.0, samples: 1}
   else if X[3] <= 27.0
      then if X[2] <= 14000.0
         then if X[2] <= 2500.0
            then if X[4] <= 5.5
```

then if X[3] <= 4.0
                        then {value: 16.2, samples: 5}
                        else {value: 6.0, samples: 1}
                    else {value: 36.0, samples: 1}
                else if X[3] <= 2.0
                    then if X[0] <= 325.0
                        then if X[0] <= 128.0
                            then {value: 24.0, samples: 3}
                            else {value: 35.0, samples: 3}
                        else {value: 19.0, samples: 2}
                    else if X[2] <= 6500.0
                        then if X[0] <= 360.0
                            then if X[5] <= 13.5
                                then {value: 24.5, samples: 2}
                                else {value: 33.5, samples: 2}
                            else {value: 40.0, samples: 1}
                        else if X[3] <= 20.0
                            then if X[0] <= 62.5
                                then {value: 36.0, samples: 1}
                                else if X[3] <= 6.0
                                    then {value: 50.0, samples: 1}
                                    else {value: 61.0, samples: 2}
                            else {value: 32.0, samples: 1}
            else if X[4] <= 4.5
                then {value: 45.0, samples: 1}
                else if X[0] <= 53.5
                    then {value: 114.0, samples: 1}
                    else {value: 132.0, samples: 1}
        else if X[0] <= 38.0
            then {value: 405.0, samples: 1}
            else if X[0] <= 60.0
                then if X[0] <= 53.0
                    then {value: 138.0, samples: 1}
                    else {value: 106.0, samples: 1}
                else {value: 203.0, samples: 2}

This is the evaluation for mse:
11409.90625

Fold 4
Regression Tree:

 if X[0] <= 24.5
    then {value: 1144.0, samples: 1}
    else if X[1] <= 3310.0
        then if X[3] <= 144.0
            then if X[3] <= 10.0
                then if X[2] <= 2750.0
                    then if X[4] <= 6.0
                        then {value: 15.0, samples: 4}

else {value: 36.0, samples: 1}
              else if X[3] <= 1.0
                then if X[0] <= 325.0
                  then if X[0] <= 80.5
                    then {value: 24.0, samples: 3}
                    else {value: 33.666666666666664, samples: 3}
                  else {value: 19.0, samples: 2}
                else if X[0] <= 98.5
                  then {value: 50.0, samples: 1}
                  else if X[0] <= 110.0
                    then {value: 27.0, samples: 2}
                    else if X[1] <= 384.0
                      then {value: 27.0, samples: 1}
                      else {value: 38.75, samples: 4}
            else if X[4] <= 2.0
              then {value: 60.0, samples: 2}
              else if X[2] <= 13240.0
                then {value: 32.0, samples: 2}
                else {value: 45.0, samples: 1}
          else {value: 198.0, samples: 1}
        else if X[2] <= 28000.0
          then if X[0] <= 60.5
            then if X[0] <= 41.0
              then if X[2] <= 20000.0
                then {value: 185.0, samples: 1}
                else {value: 173.0, samples: 1}
              else if X[0] <= 56.5
                then {value: 106.0, samples: 1}
                else {value: 132.0, samples: 1}
            else {value: 208.0, samples: 1}
          else {value: 405.0, samples: 1}

This is the evaluation for mse:
780.6805555555555

Fold 5
Regression Tree:

 if X[0] <= 24.5
   then {value: 1144.0, samples: 1}
   else if X[1] <= 3310.0
     then if X[2] <= 24000.0
       then if X[2] <= 2500.0
         then if X[4] <= 6.0
           then {value: 16.666666666666668, samples: 6}
           else {value: 36.0, samples: 1}
         else if X[2] <= 7000.0
           then if X[0] <= 110.0
             then if X[5] <= 13.5
               then {value: 21.5, samples: 2}

else {value: 32.0, samples: 2}
else {value: 37.333333333333336, samples: 6}
else if X[0] <= 65.5
then if X[2] <= 13240.0
then {value: 30.666666666666668, samples: 3}
else {value: 45.0, samples: 1}
else if X[0] <= 96.0
then if X[3] <= 6.0
then {value: 50.0, samples: 1}
else {value: 61.0, samples: 2}
else if X[0] <= 105.0
then {value: 32.0, samples: 1}
else {value: 60.0, samples: 1}
else {value: 114.0, samples: 1}
else if X[0] <= 60.5
then if X[0] <= 38.0
then if X[2] <= 20000.0
then {value: 185.0, samples: 1}
else {value: 173.0, samples: 1}
else if X[1] <= 4620.0
then {value: 135.0, samples: 2}
else {value: 106.0, samples: 1}
else {value: 208.0, samples: 1}

This is the evaluation for mse:
10329.461805555555

This is the Average Evaluation for the Cross Validation

17329.793055555558
For These Hyper-Parameters: 150 and 2.5
Fold 1
Regression Tree:

if X[0] <= 24.5
then {value: 1144.0, samples: 1}
else if X[4] <= 20.0
then if X[3] <= 27.0
then if X[2] <= 22000.0
then if X[2] <= 2500.0
then if X[1] <= 518.0
then {value: 8.0, samples: 2}
else {value: 18.25, samples: 4}
else if X[2] <= 10000.0
then if X[5] <= 22.0
then if X[0] <= 560.0
then if X[5] <= 7.0
then if X[1] <= 1500.0
then {value: 32.8, samples: 5}
else {value: 43.333333333333336, samples: 3}

else if X[5] <= 13.5
then {value: 22.333333333333332, samples: 3}
else {value: 33.5, samples: 2}
else {value: 16.0, samples: 1}
else if X[0] <= 187.5
then {value: 62.0, samples: 1}
else {value: 36.0, samples: 1}
else {value: 60.0, samples: 1}
else {value: 114.0, samples: 1}
else if X[1] <= 3310.0
then if X[0] <= 108.5
then if X[0] <= 71.0
then {value: 32.0, samples: 1}
else {value: 60.0, samples: 1}
else {value: 198.0, samples: 1}
else if X[0] <= 60.0
then if X[0] <= 38.0
then {value: 173.0, samples: 1}
else if X[0] <= 53.0
then {value: 138.0, samples: 1}
else {value: 106.0, samples: 1}
else {value: 208.0, samples: 1}
else {value: 405.0, samples: 1}

This is the evaluation for mse:
2581.584197530864

Fold 2
Regression Tree:

if X[0] <= 24.5
then {value: 1144.0, samples: 1}
else if X[1] <= 4620.0
then if X[5] <= 25.0
then if X[1] <= 3000.0
then if X[2] <= 7000.0
then if X[2] <= 2500.0
then if X[4] <= 6.0
then if X[1] <= 518.0
then {value: 11.0, samples: 3}
else {value: 18.25, samples: 4}
else {value: 36.0, samples: 1}
else if X[2] <= 3750.0
then {value: 38.0, samples: 2}
else if X[5] <= 5.5
then {value: 40.0, samples: 1}
else if X[5] <= 13.5
then {value: 25.333333333333332, samples: 6}
else {value: 33.0, samples: 3}
else if X[0] <= 146.0

then if X[0] <= 62.5
             then {value: 45.0, samples: 1}
             else {value: 57.333333333333336, samples: 3}
         else {value: 36.0, samples: 1}
      else {value: 132.0, samples: 1}
   else if X[0] <= 87.5
      then {value: 114.0, samples: 1}
      else {value: 198.0, samples: 1}
else if X[2] <= 28000.0
   then if X[0] <= 45.0
      then {value: 179.0, samples: 2}
      else {value: 208.0, samples: 1}
   else {value: 405.0, samples: 1}

This is the evaluation for mse:
1377.2222222222222

Fold 3
Regression Tree:

 if X[0] <= 24.5
   then {value: 1144.0, samples: 1}
   else if X[1] <= 3310.0
      then if X[3] <= 144.0
         then if X[3] <= 1.0
            then if X[5] <= 15.0
               then if X[2] <= 3000.0
                  then {value: 15.666666666666666, samples: 3}
                  else {value: 23.833333333333332, samples: 6}
               else {value: 34.0, samples: 2}
            else if X[2] <= 2250.0
               then {value: 6.0, samples: 1}
               else if X[2] <= 6500.0
                  then if X[1] <= 384.0
                     then {value: 27.0, samples: 1}
                     else {value: 37.4, samples: 5}
                  else if X[4] <= 2.0
                     then {value: 56.666666666666664, samples: 3}
                     else if X[3] <= 18.0
                        then if X[0] <= 62.5
                           then {value: 40.5, samples: 2}
                           else {value: 62.0, samples: 1}
                        else {value: 32.0, samples: 2}
         else {value: 198.0, samples: 1}
      else if X[2] <= 26485.0
         then if X[0] <= 60.5
            then if X[0] <= 38.0
               then {value: 185.0, samples: 1}
               else if X[1] <= 4620.0
                  then {value: 135.0, samples: 2}

else {value: 106.0, samples: 1}
                    else {value: 208.0, samples: 1}
                else {value: 405.0, samples: 1}

This is the evaluation for mse:
940.9679166666666

Fold 4
Regression Tree:

 if X[0] <= 24.5
    then {value: 1144.0, samples: 1}
    else if X[1] <= 3310.0
       then if X[5] <= 25.0
          then if X[3] <= 10.0
             then if X[2] <= 2500.0
                then if X[4] <= 6.0
                   then if X[1] <= 518.0
                      then {value: 11.0, samples: 3}
                      else {value: 20.333333333333332, samples: 3}
                   else {value: 36.0, samples: 1}
                else if X[0] <= 600.0
                   then if X[5] <= 5.5
                      then {value: 37.333333333333336, samples: 3}
                      else if X[2] <= 3750.0
                         then {value: 38.0, samples: 2}
                         else {value: 27.714285714285715, samples: 7}
                   else {value: 16.0, samples: 1}
             else if X[4] <= 2.0
                then {value: 60.0, samples: 2}
                else if X[2] <= 13240.0
                   then {value: 32.0, samples: 2}
                   else {value: 45.0, samples: 1}
          else if X[0] <= 87.5
             then {value: 114.0, samples: 1}
             else {value: 198.0, samples: 1}
       else if X[0] <= 60.5
          then if X[0] <= 38.0
             then {value: 179.0, samples: 2}
             else if X[1] <= 4620.0
                then {value: 135.0, samples: 2}
                else {value: 106.0, samples: 1}
          else {value: 208.0, samples: 1}

This is the evaluation for mse:
6620.259637188209

Fold 5
Regression Tree:

```
if X[0] <= 38.0
  then if X[2] <= 28000.0
    then {value: 179.0, samples: 2}
    else {value: 405.0, samples: 1}
  else if X[2] <= 14000.0
    then if X[3] <= 2.0
      then if X[5] <= 15.0
        then if X[2] <= 3000.0
          then {value: 15.75, samples: 4}
          else if X[5] <= 3.0
            then {value: 36.0, samples: 1}
            else {value: 23.833333333333332, samples: 6}
        else {value: 34.666666666666664, samples: 3}
      else if X[2] <= 6000.0
        then if X[0] <= 196.0
          then if X[5] <= 17.0
            then {value: 20.5, samples: 2}
            else {value: 33.5, samples: 2}
          else {value: 40.0, samples: 2}
        else if X[3] <= 20.0
          then if X[0] <= 62.5
            then {value: 36.0, samples: 1}
            else {value: 57.333333333333336, samples: 3}
          else {value: 32.0, samples: 2}
    else if X[5] <= 14.0
      then {value: 135.0, samples: 2}
      else if X[2] <= 18485.0
        then {value: 45.0, samples: 1}
        else {value: 110.0, samples: 2}
```

This is the evaluation for mse:
73145.08420138889

This is the Average Evaluation for the Cross Validation

16933.023634999372
For These Hyper-Parameters: 200 and 0.5
Fold 1
Regression Tree:

```
if X[0] <= 24.5
  then {value: 1144.0, samples: 1}
  else if X[4] <= 7.0
    then if X[1] <= 3000.0
      then if X[2] <= 2500.0
        then if X[3] <= 4.0
          then if X[1] <= 160.0
            then {value: 10.0, samples: 1}
            else if X[0] <= 87.0
              then {value: 12.0, samples: 1}
```

```
            else if X[1] <= 884.0
                then {value: 17.5, samples: 2}
                else {value: 24.0, samples: 1}
        else {value: 6.0, samples: 1}
    else if X[2] <= 7000.0
        then if X[2] <= 3750.0
            then {value: 38.0, samples: 2}
            else if X[5] <= 5.5
                then {value: 40.0, samples: 1}
                else if X[5] <= 13.5
                    then if X[1] <= 628.0
                        then if X[2] <= 5500.0
                            then {value: 27.0, samples: 1}
                            else {value: 33.0, samples: 1}
                        else {value: 21.666666666666668, samples: 3}
                    else {value: 33.0, samples: 3}
        else if X[3] <= 2.0
            then if X[0] <= 128.0
                then {value: 24.0, samples: 1}
                else {value: 36.0, samples: 1}
            else if X[1] <= 1500.0
                then {value: 34.0, samples: 2}
                else if X[0] <= 62.5
                    then {value: 45.0, samples: 1}
                    else if X[3] <= 6.0
                        then {value: 50.0, samples: 1}
                        else {value: 61.0, samples: 2}
    else if X[0] <= 53.5
        then {value: 138.0, samples: 1}
        else {value: 132.0, samples: 1}
else if X[2] <= 28000.0
    then if X[2] <= 18485.0
        then if X[0] <= 75.5
            then {value: 185.0, samples: 1}
            else {value: 198.0, samples: 1}
        else if X[0] <= 41.0
            then {value: 173.0, samples: 1}
            else {value: 106.0, samples: 1}
    else {value: 405.0, samples: 1}
```

This is the evaluation for mse:
7380.839506172839

Fold 2
Regression Tree:

```
if X[0] <= 24.5
    then {value: 1144.0, samples: 1}
    else if X[1] <= 3310.0
        then if X[5] <= 25.0
```

then if X[2] <= 11240.0
  then if X[1] <= 384.0
    then if X[3] <= 2.0
      then if X[1] <= 160.0
        then {value: 10.0, samples: 1}
        else {value: 16.5, samples: 2}
      else {value: 27.0, samples: 1}
    else if X[2] <= 2750.0
      then if X[0] <= 146.0
        then {value: 36.0, samples: 1}
        else if X[1] <= 884.0
          then {value: 18.5, samples: 2}
          else {value: 24.0, samples: 1}
      else if X[4] <= 2.0
        then if X[0] <= 103.5
          then {value: 50.0, samples: 1}
          else {value: 37.75, samples: 4}
        else if X[0] <= 277.5
          then if X[0] <= 165.0
            then if X[1] <= 1500.0
              then {value: 33.333333333333336, samples: 3}
              else if X[5] <= 13.5
                then {value: 24.5, samples: 2}
                else {value: 32.0, samples: 2}
            else {value: 40.0, samples: 1}
          else {value: 22.0, samples: 1}
  else if X[0] <= 80.0
    then {value: 45.0, samples: 1}
    else {value: 60.0, samples: 1}
else if X[0] <= 87.5
  then {value: 114.0, samples: 1}
  else {value: 198.0, samples: 1}
else if X[2] <= 28000.0
  then if X[0] <= 60.5
    then if X[0] <= 41.0
      then if X[2] <= 20000.0
        then {value: 185.0, samples: 1}
        else {value: 173.0, samples: 1}
      else if X[0] <= 56.5
        then {value: 106.0, samples: 1}
        else {value: 132.0, samples: 1}
    else {value: 208.0, samples: 1}
  else {value: 405.0, samples: 1}

This is the evaluation for mse:
526.8333333333334

Fold 3
Regression Tree:

```
if X[0] <= 36.5
  then {value: 1144.0, samples: 1}
  else if X[1] <= 3310.0
    then if X[5] <= 25.0
      then if X[2] <= 7000.0
        then if X[2] <= 2500.0
          then if X[4] <= 6.0
            then if X[4] <= 2.0
              then if X[0] <= 925.0
                then {value: 9.333333333333334, samples: 3}
                else {value: 18.0, samples: 1}
              else {value: 18.0, samples: 2}
            else {value: 36.0, samples: 1}
          else if X[5] <= 13.5
            then if X[5] <= 7.0
              then if X[3] <= 6.0
                then if X[2] <= 5500.0
                  then {value: 25.333333333333332, samples: 3}
                  else {value: 33.0, samples: 1}
                else {value: 40.0, samples: 1}
              else {value: 21.5, samples: 2}
            else {value: 33.333333333333336, samples: 3}
        else if X[3] <= 2.0
          then if X[5] <= 3.0
            then {value: 36.0, samples: 1}
            else if X[0] <= 428.0
              then {value: 24.0, samples: 1}
              else {value: 16.0, samples: 1}
          else if X[4] <= 2.0
            then if X[3] <= 10.0
              then {value: 50.0, samples: 1}
              else {value: 60.0, samples: 2}
            else if X[3] <= 18.0
              then if X[0] <= 62.5
                then if X[1] <= 1500.0
                  then {value: 36.0, samples: 1}
                  else {value: 45.0, samples: 1}
                else {value: 62.0, samples: 1}
              else {value: 32.0, samples: 2}
      else if X[0] <= 87.5
        then {value: 114.0, samples: 1}
        else {value: 198.0, samples: 1}
    else if X[0] <= 60.5
      then if X[0] <= 53.5
        then {value: 138.0, samples: 1}
        else {value: 132.0, samples: 1}
      else {value: 208.0, samples: 1}

This is the evaluation for mse:
301245.8888888889
```

Fold 4
Regression Tree:

```
if X[1] <= 3310.0
  then if X[5] <= 25.0
    then if X[2] <= 2500.0
      then if X[4] <= 6.0
        then if X[0] <= 221.5
          then if X[0] <= 125.5
            then {value: 12.0, samples: 1}
            else {value: 21.5, samples: 2}
          else {value: 8.0, samples: 2}
        else {value: 36.0, samples: 1}
      else if X[3] <= 1.0
        then if X[0] <= 325.0
          then if X[0] <= 128.0
            then {value: 24.0, samples: 3}
            else {value: 35.0, samples: 3}
          else if X[0] <= 565.0
            then {value: 22.0, samples: 1}
            else {value: 16.0, samples: 1}
        else if X[0] <= 112.5
          then if X[0] <= 62.5
            then if X[1] <= 2310.0
              then {value: 45.0, samples: 1}
              else {value: 32.0, samples: 1}
            else if X[3] <= 6.0
              then {value: 50.0, samples: 1}
              else {value: 60.666666666666664, samples: 3}
          else if X[1] <= 384.0
            then {value: 27.0, samples: 1}
            else if X[5] <= 13.0
              then {value: 40.0, samples: 3}
              else {value: 35.0, samples: 1}
    else if X[0] <= 87.5
      then {value: 114.0, samples: 1}
      else {value: 198.0, samples: 1}
  else if X[2] <= 28000.0
    then if X[0] <= 60.5
      then if X[0] <= 38.0
        then if X[2] <= 20000.0
          then {value: 185.0, samples: 1}
          else {value: 173.0, samples: 1}
        else if X[1] <= 4620.0
          then if X[0] <= 53.5
            then {value: 138.0, samples: 1}
            else {value: 132.0, samples: 1}
          else {value: 106.0, samples: 1}
      else {value: 208.0, samples: 1}
    else {value: 405.0, samples: 1}
```

This is the evaluation for mse:
68691.20833333333

Fold 5
Regression Tree:

```
if X[0] <= 24.5
   then {value: 1144.0, samples: 1}
   else if X[1] <= 3310.0
      then if X[2] <= 22000.0
         then if X[2] <= 2500.0
            then if X[4] <= 6.0
               then if X[1] <= 518.0
                  then if X[0] <= 165.0
                     then {value: 17.0, samples: 1}
                     else {value: 6.0, samples: 1}
                  else if X[0] <= 125.5
                     then {value: 12.0, samples: 1}
                     else if X[1] <= 884.0
                        then {value: 18.5, samples: 2}
                        else {value: 24.0, samples: 1}
               else {value: 36.0, samples: 1}
            else if X[3] <= 1.0
               then if X[0] <= 560.0
                  then if X[0] <= 80.5
                     then {value: 24.0, samples: 3}
                     else {value: 33.666666666666664, samples: 3}
                  else {value: 16.0, samples: 1}
               else if X[2] <= 6000.0
                  then if X[0] <= 110.0
                     then if X[5] <= 13.5
                        then {value: 22.0, samples: 1}
                        else {value: 32.0, samples: 1}
                     else if X[5] <= 13.0
                        then {value: 40.0, samples: 3}
                        else {value: 35.0, samples: 1}
                  else if X[0] <= 62.5
                     then {value: 34.0, samples: 2}
                     else if X[0] <= 96.0
                        then {value: 61.0, samples: 2}
                        else if X[0] <= 105.0
                           then {value: 32.0, samples: 1}
                           else {value: 60.0, samples: 1}
         else {value: 114.0, samples: 1}
      else if X[2] <= 28000.0
         then if X[0] <= 60.0
            then if X[0] <= 38.0
               then if X[2] <= 20000.0
                  then {value: 185.0, samples: 1}
                  else {value: 173.0, samples: 1}
               else if X[0] <= 53.0
```

then {value: 138.0, samples: 1}
                  else {value: 106.0, samples: 1}
            else {value: 208.0, samples: 1}
          else {value: 405.0, samples: 1}

This is the evaluation for mse:
3476.6944444444443

This is the Average Evaluation for the Cross Validation

76264.29290123456
For These Hyper-Parameters: 200 and 1.0
Fold 1
Regression Tree:

 if X[0] <= 24.5
   then {value: 1144.0, samples: 1}
   else if X[1] <= 3310.0
      then if X[2] <= 24000.0
        then if X[2] <= 7000.0
          then if X[5] <= 4.0
             then {value: 6.0, samples: 1}
             else if X[0] <= 97.5
                then {value: 19.0, samples: 2}
                else if X[1] <= 1500.0
                   then if X[1] <= 518.0
                      then if X[1] <= 384.0
                         then {value: 30.0, samples: 2}
                         else {value: 38.0, samples: 2}
                      else if X[0] <= 136.0
                         then {value: 32.0, samples: 1}
                         else {value: 21.666666666666668, samples: 3}
                   else {value: 35.666666666666664, samples: 3}
          else if X[3] <= 2.0
            then if X[5] <= 3.0
               then {value: 36.0, samples: 1}
               else {value: 20.0, samples: 2}
            else if X[4] <= 2.0
               then if X[3] <= 10.0
                  then {value: 50.0, samples: 1}
                  else {value: 60.0, samples: 2}
               else if X[3] <= 18.0
                  then if X[0] <= 62.5
                     then if X[1] <= 1500.0
                        then {value: 36.0, samples: 1}
                        else {value: 45.0, samples: 1}
                     else {value: 62.0, samples: 1}
                  else {value: 32.0, samples: 2}
        else {value: 114.0, samples: 1}
      else if X[2] <= 28000.0

then if X[0] <= 60.0
            then if X[0] <= 38.0
              then if X[2] <= 20000.0
                then {value: 185.0, samples: 1}
                else {value: 173.0, samples: 1}
              else if X[0] <= 53.0
                then {value: 138.0, samples: 1}
                else {value: 106.0, samples: 1}
            else {value: 208.0, samples: 1}
          else {value: 405.0, samples: 1}

This is the evaluation for mse:
3287.1111111111113

Fold 2
Regression Tree:

 if X[2] <= 14000.0
   then if X[3] <= 144.0
     then if X[2] <= 2500.0
       then if X[4] <= 6.0
         then if X[1] <= 518.0
           then {value: 8.0, samples: 2}
           else if X[0] <= 125.5
             then {value: 12.0, samples: 1}
             else {value: 20.333333333333332, samples: 3}
         else {value: 36.0, samples: 1}
       else if X[3] <= 1.0
         then if X[0] <= 325.0
           then if X[0] <= 80.5
             then {value: 25.5, samples: 2}
             else {value: 33.666666666666664, samples: 3}
           else {value: 19.0, samples: 2}
         else if X[2] <= 6500.0
           then if X[0] <= 110.0
             then if X[5] <= 13.5
               then {value: 22.0, samples: 1}
               else {value: 32.0, samples: 1}
             else if X[1] <= 384.0
               then {value: 27.0, samples: 1}
               else {value: 38.75, samples: 4}
           else if X[0] <= 62.5
             then {value: 34.0, samples: 2}
             else if X[3] <= 6.0
               then {value: 50.0, samples: 1}
               else {value: 60.666666666666664, samples: 3}
     else {value: 198.0, samples: 1}
   else if X[0] <= 60.5
     then if X[0] <= 38.0
       then {value: 185.0, samples: 1}

else if X[0] <= 56.5
            then {value: 110.0, samples: 2}
            else {value: 132.0, samples: 1}
        else {value: 208.0, samples: 1}

This is the evaluation for mse:
108240.27469135803

Fold 3
Regression Tree:

 if X[0] <= 24.5
    then {value: 1144.0, samples: 1}
    else if X[1] <= 3000.0
        then if X[5] <= 25.0
            then if X[2] <= 7000.0
                then if X[2] <= 2500.0
                    then if X[4] <= 6.0
                        then if X[1] <= 160.0
                            then {value: 10.0, samples: 1}
                            else if X[0] <= 87.0
                                then {value: 12.0, samples: 1}
                                else {value: 19.5, samples: 4}
                        else {value: 36.0, samples: 1}
                    else if X[0] <= 110.0
                        then if X[1] <= 1500.0
                            then {value: 32.0, samples: 1}
                            else {value: 23.333333333333332, samples: 3}
                        else {value: 36.8, samples: 5}
                else if X[3] <= 2.0
                    then if X[0] <= 128.0
                        then {value: 24.0, samples: 1}
                        else {value: 36.0, samples: 1}
                    else if X[4] <= 2.0
                        then if X[3] <= 10.0
                            then {value: 50.0, samples: 1}
                            else {value: 60.0, samples: 2}
                        else if X[3] <= 10.0
                            then {value: 62.0, samples: 1}
                            else if X[0] <= 75.0
                                then {value: 45.0, samples: 1}
                                else {value: 32.0, samples: 1}
            else if X[0] <= 87.5
                then {value: 114.0, samples: 1}
                else {value: 198.0, samples: 1}
        else if X[2] <= 28000.0
            then if X[0] <= 60.5
                then if X[0] <= 38.0
                    then if X[2] <= 20000.0
                        then {value: 185.0, samples: 1}

else {value: 173.0, samples: 1}
else if X[1] <= 4620.0
then {value: 135.0, samples: 2}
else {value: 106.0, samples: 1}
else {value: 208.0, samples: 1}
else {value: 405.0, samples: 1}

This is the evaluation for mse:
228.46013888888888

Fold 4
Regression Tree:

if X[0] <= 24.5
then {value: 1144.0, samples: 1}
else if X[3] <= 96.5
then if X[1] <= 3310.0
then if X[2] <= 2500.0
then if X[4] <= 6.0
then if X[1] <= 518.0
then if X[0] <= 165.0
then {value: 17.0, samples: 1}
else {value: 8.0, samples: 2}
else if X[0] <= 125.5
then {value: 12.0, samples: 1}
else {value: 20.333333333333332, samples: 3}
else {value: 36.0, samples: 1}
else if X[3] <= 31.0
then if X[5] <= 12.0
then if X[3] <= 1.0
then if X[5] <= 3.0
then {value: 36.0, samples: 1}
else if X[0] <= 53.0
then {value: 27.0, samples: 1}
else {value: 19.666666666666668, samples: 3}
else if X[5] <= 7.0
then if X[2] <= 4500.0
then {value: 40.0, samples: 2}
else {value: 31.666666666666668, samples: 3}
else {value: 22.0, samples: 1}
else if X[0] <= 90.0
then if X[0] <= 62.5
then if X[1] <= 2310.0
then {value: 45.0, samples: 1}
else {value: 32.0, samples: 1}
else {value: 62.0, samples: 1}
else {value: 34.333333333333336, samples: 3}
else {value: 60.0, samples: 1}
else if X[0] <= 38.0
then if X[2] <= 20000.0

then {value: 185.0, samples: 1}
                else {value: 173.0, samples: 1}
            else if X[1] <= 4620.0
                then {value: 135.0, samples: 2}
                else {value: 106.0, samples: 1}
        else if X[0] <= 75.5
            then {value: 405.0, samples: 1}
            else {value: 198.0, samples: 1}

This is the evaluation for mse:
2063.2361111111113

Fold 5
Regression Tree:

 if X[0] <= 24.5
    then {value: 1144.0, samples: 1}
    else if X[1] <= 4620.0
        then if X[3] <= 47.5
            then if X[2] <= 14000.0
                then if X[2] <= 2500.0
                    then if X[3] <= 4.0
                        then {value: 14.25, samples: 4}
                        else {value: 6.0, samples: 1}
                    else if X[2] <= 11240.0
                        then if X[3] <= 1.0
                            then if X[0] <= 325.0
                                then if X[0] <= 80.5
                                    then {value: 24.0, samples: 3}
                                    else {value: 34.25, samples: 4}
                                else {value: 19.0, samples: 2}
                            else if X[5] <= 7.0
                                then if X[1] <= 1500.0
                                    then if X[1] <= 384.0
                                        then {value: 27.0, samples: 1}
                                        else {value: 36.0, samples: 3}
                                    else if X[0] <= 103.5
                                        then {value: 50.0, samples: 1}
                                        else {value: 40.0, samples: 2}
                                else if X[5] <= 13.5
                                    then {value: 22.0, samples: 1}
                                    else {value: 32.0, samples: 2}
                        else {value: 60.0, samples: 1}
                else if X[4] <= 4.5
                    then {value: 45.0, samples: 1}
                    else if X[0] <= 53.5
                        then {value: 114.0, samples: 1}
                        else {value: 132.0, samples: 1}
            else if X[0] <= 87.5
                then {value: 138.0, samples: 1}

else {value: 198.0, samples: 1}
    else if X[2] <= 28000.0
      then if X[0] <= 45.0
        then {value: 173.0, samples: 1}
        else {value: 208.0, samples: 1}
      else {value: 405.0, samples: 1}

This is the evaluation for mse:
1536.765625

This is the Average Evaluation for the Cross Validation

23071.169535493827
For These Hyper-Parameters: 200 and 1.5
Fold 1
Regression Tree:

 if X[4] <= 10.0
   then if X[2] <= 12000.0
     then if X[2] <= 2500.0
       then if X[4] <= 6.0
         then if X[1] <= 518.0
           then {value: 8.0, samples: 2}
           else if X[0] <= 125.5
             then {value: 12.0, samples: 1}
             else {value: 20.333333333333332, samples: 3}
         else {value: 36.0, samples: 1}
       else if X[3] <= 1.0
         then if X[0] <= 560.0
           then if X[0] <= 80.5
             then {value: 24.0, samples: 3}
             else {value: 34.25, samples: 4}
           else {value: 16.0, samples: 1}
         else if X[0] <= 96.0
           then if X[0] <= 62.5
             then {value: 36.0, samples: 1}
             else if X[3] <= 6.0
               then {value: 50.0, samples: 1}
               else {value: 61.0, samples: 2}
           else if X[0] <= 110.0
             then if X[0] <= 102.5
               then {value: 32.0, samples: 1}
               else {value: 22.0, samples: 1}
             else if X[1] <= 384.0
               then {value: 27.0, samples: 1}
               else {value: 38.75, samples: 4}
     else if X[4] <= 4.5
       then {value: 45.0, samples: 1}
       else if X[0] <= 53.5
         then {value: 114.0, samples: 1}

else {value: 132.0, samples: 1}
else if X[0] <= 41.0
then {value: 405.0, samples: 1}
else if X[0] <= 60.0
then {value: 106.0, samples: 1}
else if X[0] <= 94.5
then {value: 208.0, samples: 1}
else {value: 198.0, samples: 1}

This is the evaluation for mse:
63393.67361111111

Fold 2
Regression Tree:

if X[0] <= 24.5
then {value: 1144.0, samples: 1}
else if X[2] <= 14000.0
then if X[2] <= 2500.0
then if X[4] <= 6.0
then if X[0] <= 221.5
then {value: 18.0, samples: 4}
else {value: 8.0, samples: 2}
else {value: 36.0, samples: 1}
else if X[2] <= 11240.0
then if X[3] <= 2.0
then if X[0] <= 325.0
then if X[0] <= 128.0
then {value: 21.0, samples: 1}
else {value: 35.0, samples: 3}
else {value: 19.0, samples: 2}
else if X[0] <= 96.0
then if X[0] <= 62.5
then {value: 34.0, samples: 2}
else if X[0] <= 83.5
then {value: 62.0, samples: 1}
else {value: 50.0, samples: 1}
else if X[5] <= 7.0
then if X[2] <= 4500.0
then {value: 40.0, samples: 2}
else {value: 29.5, samples: 2}
else if X[5] <= 13.5
then {value: 22.0, samples: 1}
else {value: 32.0, samples: 1}
else {value: 60.0, samples: 1}
else if X[3] <= 96.5
then if X[0] <= 60.5
then if X[0] <= 38.0
then if X[2] <= 20000.0
then {value: 185.0, samples: 1}

else {value: 173.0, samples: 1}
                  else if X[2] <= 18485.0
                      then {value: 135.0, samples: 2}
                      else {value: 110.0, samples: 2}
              else {value: 208.0, samples: 1}
          else {value: 405.0, samples: 1}

This is the evaluation for mse:
4043.5555555555557

Fold 3
Regression Tree:

 if X[0] <= 24.5
    then {value: 1144.0, samples: 1}
    else if X[1] <= 3310.0
        then if X[5] <= 25.0
            then if X[3] <= 10.0
                then if X[2] <= 2500.0
                    then if X[4] <= 6.0
                        then if X[1] <= 518.0
                            then if X[0] <= 165.0
                                then {value: 17.0, samples: 1}
                                else {value: 6.0, samples: 1}
                            else if X[0] <= 125.5
                                then {value: 12.0, samples: 1}
                                else {value: 20.333333333333332, samples: 3}
                        else {value: 36.0, samples: 1}
                    else if X[5] <= 5.5
                        then {value: 37.333333333333336, samples: 3}
                        else if X[2] <= 3750.0
                            then {value: 38.0, samples: 2}
                            else if X[5] <= 13.5
                                then {value: 24.4, samples: 5}
                                else {value: 33.0, samples: 3}
                else if X[0] <= 71.0
                    then if X[1] <= 2310.0
                        then {value: 45.0, samples: 1}
                        else {value: 32.0, samples: 1}
                    else {value: 60.0, samples: 2}
            else if X[0] <= 87.5
                then {value: 114.0, samples: 1}
                else {value: 198.0, samples: 1}
        else if X[2] <= 28000.0
            then if X[0] <= 60.5
                then if X[0] <= 38.0
                    then if X[2] <= 20000.0
                        then {value: 185.0, samples: 1}
                        else {value: 173.0, samples: 1}
                    else if X[1] <= 4620.0

then {value: 135.0, samples: 2}
                else {value: 106.0, samples: 1}
            else {value: 208.0, samples: 1}
        else {value: 405.0, samples: 1}

This is the evaluation for mse:
385.04388888888894

Fold 4
Regression Tree:

if X[0] <= 24.5
    then {value: 1144.0, samples: 1}
    else if X[4] <= 20.0
        then if X[4] <= 5.0
            then if X[1] <= 3000.0
                then if X[3] <= 1.0
                    then if X[2] <= 3000.0
                        then {value: 14.25, samples: 4}
                        else if X[0] <= 325.0
                            then if X[0] <= 80.5
                                then {value: 24.0, samples: 3}
                                else {value: 33.666666666666664, samples: 3}
                            else {value: 19.0, samples: 2}
                    else if X[2] <= 6000.0
                        then if X[5] <= 7.0
                            then {value: 40.0, samples: 3}
                            else if X[5] <= 17.0
                                then {value: 20.5, samples: 2}
                                else {value: 33.5, samples: 2}
                        else if X[4] <= 2.0
                            then if X[3] <= 10.0
                                then {value: 50.0, samples: 1}
                                else {value: 60.0, samples: 2}
                            else if X[3] <= 10.0
                                then {value: 62.0, samples: 1}
                                else if X[0] <= 75.0
                                    then {value: 45.0, samples: 1}
                                    else {value: 32.0, samples: 1}
                else {value: 138.0, samples: 1}
            else if X[3] <= 31.0
                then if X[2] <= 13240.0
                    then {value: 32.0, samples: 1}
                    else if X[0] <= 38.0
                        then {value: 185.0, samples: 1}
                        else {value: 110.0, samples: 2}
                else if X[0] <= 75.5
                    then {value: 173.0, samples: 1}
                    else {value: 198.0, samples: 1}
        else {value: 405.0, samples: 1}

This is the evaluation for mse:
1527.0078125

Fold 5
Regression Tree:

```
if X[0] <= 24.5
   then {value: 1144.0, samples: 1}
   else if X[1] <= 3310.0
      then if X[3] <= 144.0
         then if X[3] <= 1.0
            then if X[5] <= 15.0
               then if X[0] <= 340.0
                  then if X[5] <= 7.0
                     then if X[1] <= 628.0
                        then {value: 33.0, samples: 1}
                        else {value: 24.333333333333332, samples: 3}
                     else {value: 20.666666666666668, samples: 3}
                  else {value: 14.666666666666666, samples: 3}
               else {value: 34.666666666666664, samples: 3}
            else if X[0] <= 232.5
               then if X[3] <= 31.0
                  then if X[5] <= 3.5
                     then {value: 60.0, samples: 1}
                     else if X[0] <= 96.0
                        then if X[0] <= 62.5
                           then if X[2] <= 13240.0
                              then {value: 34.0, samples: 2}
                              else {value: 45.0, samples: 1}
                           else if X[0] <= 83.5
                              then {value: 62.0, samples: 1}
                              else {value: 50.0, samples: 1}
                        else {value: 35.8, samples: 5}
                  else {value: 60.0, samples: 1}
               else if X[0] <= 280.0
                  then {value: 6.0, samples: 1}
                  else {value: 27.0, samples: 1}
         else {value: 198.0, samples: 1}
      else if X[1] <= 4620.0
         then {value: 135.0, samples: 2}
         else if X[0] <= 45.0
            then if X[2] <= 20000.0
               then {value: 185.0, samples: 1}
               else {value: 173.0, samples: 1}
            else {value: 208.0, samples: 1}
```

This is the evaluation for mse:
8739.862777777777

This is the Average Evaluation for the Cross Validation

15617.828729166667
For These Hyper-Parameters: 200 and 2.0
Fold 1
Regression Tree:

```
 if X[0] <= 24.5
    then {value: 1144.0, samples: 1}
    else if X[2] <= 13240.0
       then if X[3] <= 144.0
          then if X[5] <= 4.5
             then if X[0] <= 575.0
                then {value: 8.0, samples: 2}
                else {value: 17.0, samples: 2}
             else if X[2] <= 7000.0
                then if X[0] <= 94.5
                   then if X[0] <= 70.0
                      then {value: 24.0, samples: 2}
                      else {value: 12.0, samples: 1}
                   else if X[0] <= 153.5
                      then {value: 35.0, samples: 5}
                      else if X[0] <= 365.0
                         then {value: 23.0, samples: 4}
                         else {value: 40.0, samples: 1}
                else if X[0] <= 65.5
                   then if X[0] <= 53.0
                      then {value: 34.0, samples: 2}
                      else {value: 24.0, samples: 1}
                   else if X[3] <= 6.0
                      then {value: 50.0, samples: 1}
                      else {value: 61.0, samples: 2}
          else {value: 198.0, samples: 1}
       else if X[3] <= 96.5
          then if X[0] <= 60.5
             then if X[0] <= 38.0
                then if X[2] <= 20000.0
                   then {value: 185.0, samples: 1}
                   else {value: 173.0, samples: 1}
                else if X[2] <= 18485.0
                   then {value: 135.0, samples: 2}
                   else {value: 110.0, samples: 2}
             else {value: 208.0, samples: 1}
          else {value: 405.0, samples: 1}
```

This is the evaluation for mse:
1464.5555555555557

Fold 2
Regression Tree:

```
if X[0] <= 24.5
   then {value: 1144.0, samples: 1}
   else if X[1] <= 3000.0
      then if X[5] <= 25.0
         then if X[2] <= 2500.0
            then if X[4] <= 6.0
               then if X[1] <= 518.0
                  then {value: 11.0, samples: 3}
                  else {value: 20.333333333333332, samples: 3}
               else {value: 36.0, samples: 1}
            else if X[3] <= 10.0
               then if X[0] <= 600.0
                  then if X[5] <= 7.0
                     then if X[3] <= 1.0
                        then {value: 32.0, samples: 3}
                        else if X[1] <= 1500.0
                           then {value: 38.0, samples: 2}
                           else if X[0] <= 103.5
                              then {value: 50.0, samples: 1}
                              else {value: 40.0, samples: 2}
                     else if X[5] <= 13.5
                        then {value: 21.5, samples: 2}
                        else {value: 34.333333333333336, samples: 3}
                  else {value: 16.0, samples: 1}
               else if X[4] <= 2.0
                  then {value: 60.0, samples: 2}
                  else if X[0] <= 75.0
                     then {value: 45.0, samples: 1}
                     else {value: 32.0, samples: 1}
         else if X[0] <= 87.5
            then {value: 114.0, samples: 1}
            else {value: 198.0, samples: 1}
      else if X[0] <= 60.5
         then if X[0] <= 38.0
            then {value: 185.0, samples: 1}
            else if X[1] <= 4620.0
               then {value: 135.0, samples: 2}
               else {value: 106.0, samples: 1}
         else {value: 208.0, samples: 1}
```

This is the evaluation for mse:
5531.175925925926

Fold 3
Regression Tree:

```
if X[0] <= 24.5
   then {value: 1144.0, samples: 1}
   else if X[1] <= 3310.0
```

```
    then if X[5] <= 25.0
        then if X[3] <= 1.0
            then if X[2] <= 2500.0
                then {value: 15.666666666666666, samples: 3}
                else if X[0] <= 325.0
                    then if X[0] <= 80.5
                        then {value: 24.0, samples: 3}
                        else {value: 34.25, samples: 4}
                    else {value: 19.0, samples: 2}
            else if X[2] <= 6500.0
                then if X[0] <= 110.0
                    then {value: 27.0, samples: 2}
                    else if X[0] <= 272.5
                        then {value: 38.333333333333336, samples: 3}
                        else {value: 27.0, samples: 1}
                else if X[4] <= 2.0
                    then {value: 60.0, samples: 2}
                    else if X[3] <= 18.0
                        then if X[0] <= 62.5
                            then {value: 40.5, samples: 2}
                            else {value: 62.0, samples: 1}
                        else {value: 32.0, samples: 2}
            else if X[0] <= 87.5
                then {value: 114.0, samples: 1}
                else {value: 198.0, samples: 1}
        else if X[2] <= 28000.0
            then if X[0] <= 60.5
                then if X[0] <= 41.0
                    then if X[2] <= 20000.0
                        then {value: 185.0, samples: 1}
                        else {value: 173.0, samples: 1}
                    else if X[0] <= 56.5
                        then {value: 106.0, samples: 1}
                        else {value: 132.0, samples: 1}
                else {value: 208.0, samples: 1}
            else {value: 405.0, samples: 1}
```

This is the evaluation for mse:
403.4027777777778

Fold 4
Regression Tree:

```
 if X[3] <= 96.5
    then if X[1] <= 3310.0
        then if X[2] <= 24000.0
            then if X[2] <= 2500.0
                then if X[4] <= 6.0
                    then if X[0] <= 221.5
                        then {value: 18.0, samples: 4}
```

else {value: 8.0, samples: 2}
else {value: 36.0, samples: 1}
else if X[3] <= 2.0
then if X[0] <= 325.0
then if X[0] <= 80.5
then {value: 25.5, samples: 2}
else {value: 34.25, samples: 4}
else {value: 19.0, samples: 2}
else if X[2] <= 6500.0
then if X[0] <= 122.5
then {value: 27.0, samples: 2}
else if X[1] <= 384.0
then {value: 27.0, samples: 1}
else {value: 38.333333333333336, samples: 3}
else if X[4] <= 2.0
then {value: 56.666666666666664, samples: 3}
else if X[3] <= 18.0
then if X[0] <= 62.5
then {value: 40.5, samples: 2}
else {value: 62.0, samples: 1}
else {value: 32.0, samples: 2}
else {value: 114.0, samples: 1}
else if X[0] <= 38.0
then {value: 173.0, samples: 1}
else {value: 138.0, samples: 1}
else if X[0] <= 75.5
then {value: 405.0, samples: 1}
else {value: 198.0, samples: 1}

This is the evaluation for mse:
69047.2890625

Fold 5
Regression Tree:

if X[0] <= 24.5
then {value: 1144.0, samples: 1}
else if X[1] <= 3310.0
then if X[2] <= 2500.0
then if X[4] <= 6.0
then if X[1] <= 518.0
then {value: 11.0, samples: 3}
else {value: 18.25, samples: 4}
else {value: 36.0, samples: 1}
else if X[3] <= 1.0
then if X[0] <= 80.5
then {value: 22.5, samples: 2}
else if X[0] <= 325.0
then {value: 34.25, samples: 4}
else {value: 22.0, samples: 1}

```
        else if X[2] <= 6500.0
          then if X[0] <= 110.0
            then {value: 22.0, samples: 1}
            else if X[1] <= 384.0
              then {value: 27.0, samples: 1}
              else {value: 40.0, samples: 3}
          else if X[3] <= 20.0
            then if X[0] <= 62.5
              then {value: 45.0, samples: 1}
              else if X[3] <= 6.0
                then {value: 50.0, samples: 1}
                else {value: 61.0, samples: 2}
            else {value: 32.0, samples: 2}
      else if X[2] <= 28000.0
        then if X[0] <= 60.5
          then if X[0] <= 38.0
            then if X[2] <= 20000.0
              then {value: 185.0, samples: 1}
              else {value: 173.0, samples: 1}
            else if X[1] <= 4620.0
              then {value: 135.0, samples: 2}
              else {value: 106.0, samples: 1}
          else {value: 208.0, samples: 1}
        else {value: 405.0, samples: 1}
```

This is the evaluation for mse:
4626.40625

This is the Average Evaluation for the Cross Validation

16214.565914351851
For These Hyper-Parameters: 200 and 2.5
Fold 1
Regression Tree:

```
 if X[0] <= 24.5
   then {value: 1144.0, samples: 1}
   else if X[1] <= 4620.0
     then if X[2] <= 14000.0
       then if X[2] <= 2500.0
         then if X[4] <= 6.0
           then {value: 14.4, samples: 5}
           else {value: 36.0, samples: 1}
         else if X[3] <= 1.0
           then if X[2] <= 3500.0
             then {value: 36.0, samples: 1}
             else {value: 23.833333333333332, samples: 6}
           else if X[2] <= 6500.0
             then {value: 34.8, samples: 5}
             else if X[0] <= 62.5
```

then {value: 34.0, samples: 2}
else if X[0] <= 96.0
    then {value: 57.333333333333336, samples: 3}
    else if X[0] <= 105.0
        then {value: 32.0, samples: 1}
        else {value: 60.0, samples: 1}
else if X[1] <= 3000.0
    then if X[2] <= 24000.0
        then {value: 45.0, samples: 1}
        else {value: 114.0, samples: 1}
    else {value: 135.0, samples: 2}
else if X[2] <= 26485.0
    then if X[0] <= 45.0
        then {value: 185.0, samples: 1}
        else {value: 208.0, samples: 1}
    else {value: 405.0, samples: 1}

This is the evaluation for mse:
4188.818024691358

Fold 2
Regression Tree:

if X[2] <= 14000.0
  then if X[3] <= 144.0
    then if X[2] <= 2500.0
      then if X[4] <= 6.0
        then if X[0] <= 221.5
            then {value: 18.0, samples: 4}
            else {value: 8.0, samples: 2}
        else {value: 36.0, samples: 1}
      else if X[3] <= 2.0
        then if X[0] <= 560.0
            then if X[0] <= 80.5
                then {value: 25.5, samples: 2}
                else {value: 34.25, samples: 4}
            else {value: 16.0, samples: 1}
        else if X[2] <= 6500.0
            then if X[0] <= 165.0
                then {value: 22.0, samples: 1}
                else if X[1] <= 384.0
                    then {value: 27.0, samples: 1}
                    else {value: 40.0, samples: 2}
            else if X[3] <= 20.0
                then {value: 57.333333333333336, samples: 3}
                else if X[3] <= 31.0
                    then {value: 32.0, samples: 2}
                    else {value: 60.0, samples: 1}
      else {value: 198.0, samples: 1}
    else if X[3] <= 96.5

then if X[0] <= 60.5
　　　　　then if X[0] <= 38.0
　　　　　　then {value: 179.0, samples: 2}
　　　　　　else if X[2] <= 18485.0
　　　　　　　then {value: 135.0, samples: 2}
　　　　　　　else {value: 110.0, samples: 2}
　　　　　else {value: 208.0, samples: 1}
　　　else {value: 405.0, samples: 1}

This is the evaluation for mse:
61694.2762345679

Fold 3
Regression Tree:

if X[0] <= 24.5
　　then {value: 1144.0, samples: 1}
　　else if X[3] <= 27.0
　　　then if X[1] <= 3000.0
　　　　then if X[3] <= 1.0
　　　　　then if X[5] <= 14.0
　　　　　　then if X[0] <= 340.0
　　　　　　　then if X[5] <= 3.5
　　　　　　　　then {value: 36.0, samples: 1}
　　　　　　　　else {value: 21.666666666666668, samples: 6}
　　　　　　　else {value: 14.666666666666666, samples: 3}
　　　　　　else {value: 34.666666666666664, samples: 3}
　　　　　else if X[2] <= 6000.0
　　　　　　then if X[5] <= 7.0
　　　　　　　then {value: 40.0, samples: 3}
　　　　　　　else if X[5] <= 17.0
　　　　　　　　then {value: 20.5, samples: 2}
　　　　　　　　else {value: 33.5, samples: 2}
　　　　　　else if X[3] <= 20.0
　　　　　　　then if X[0] <= 62.5
　　　　　　　　then {value: 40.5, samples: 2}
　　　　　　　　else {value: 57.333333333333336, samples: 3}
　　　　　　　else {value: 32.0, samples: 1}
　　　　else {value: 132.0, samples: 1}
　　　else if X[5] <= 7.0
　　　　then {value: 60.0, samples: 1}
　　　　else if X[0] <= 60.0
　　　　　then if X[0] <= 38.0
　　　　　　then {value: 173.0, samples: 1}
　　　　　　else if X[0] <= 53.0
　　　　　　　then {value: 138.0, samples: 1}
　　　　　　　else {value: 106.0, samples: 1}
　　　　　else {value: 203.0, samples: 2}

This is the evaluation for mse:

9508.527777777777

Fold 4
Regression Tree:

```
if X[0] <= 24.5
   then {value: 1144.0, samples: 1}
   else if X[1] <= 3930.0
      then if X[5] <= 25.0
         then if X[2] <= 11240.0
            then if X[5] <= 4.5
               then if X[0] <= 220.0
                  then {value: 36.0, samples: 1}
                  else {value: 12.5, samples: 4}
               else if X[3] <= 1.0
                  then if X[5] <= 15.0
                     then {value: 23.5, samples: 6}
                     else {value: 34.666666666666664, samples: 3}
                  else if X[4] <= 2.0
                     then if X[0] <= 103.5
                        then {value: 50.0, samples: 1}
                        else if X[1] <= 384.0
                           then {value: 27.0, samples: 1}
                           else {value: 38.333333333333336, samples: 3}
                     else {value: 30.8, samples: 5}
            else if X[0] <= 80.0
               then {value: 45.0, samples: 1}
               else {value: 60.0, samples: 1}
         else if X[0] <= 87.5
            then {value: 114.0, samples: 1}
            else {value: 198.0, samples: 1}
      else if X[2] <= 28000.0
         then if X[0] <= 60.0
            then if X[0] <= 41.0
               then {value: 179.0, samples: 2}
               else {value: 106.0, samples: 1}
            else {value: 208.0, samples: 1}
         else {value: 405.0, samples: 1}
```

This is the evaluation for mse:
392.72749999999996

Fold 5
Regression Tree:

```
if X[0] <= 24.5
   then {value: 1144.0, samples: 1}
   else if X[4] <= 20.0
      then if X[4] <= 5.0
         then if X[1] <= 3000.0
```

then if X[2] <= 2750.0
          then if X[1] <= 518.0
            then {value: 11.0, samples: 3}
            else {value: 18.25, samples: 4}
          else if X[2] <= 7000.0
            then if X[0] <= 110.0
              then if X[5] <= 13.5
                then {value: 23.333333333333332, samples: 3}
                else {value: 32.0, samples: 2}
              else if X[3] <= 1.0
                then {value: 27.5, samples: 2}
                else if X[1] <= 384.0
                  then {value: 27.0, samples: 1}
                  else {value: 38.75, samples: 4}
            else if X[1] <= 1500.0
              then {value: 36.0, samples: 2}
              else if X[0] <= 62.5
                then {value: 45.0, samples: 1}
                else {value: 61.0, samples: 2}
        else {value: 138.0, samples: 1}
      else if X[3] <= 31.0
        then if X[2] <= 13240.0
          then {value: 32.0, samples: 1}
          else if X[0] <= 38.0
            then {value: 185.0, samples: 1}
            else if X[0] <= 56.5
              then {value: 110.0, samples: 2}
              else {value: 132.0, samples: 1}
        else if X[0] <= 75.5
          then {value: 173.0, samples: 1}
          else {value: 198.0, samples: 1}
    else {value: 405.0, samples: 1}

This is the evaluation for mse:
920.25

This is the Average Evaluation for the Cross Validation

15340.919907407408
For These Hyper-Parameters: 250 and 0.5
Fold 1
Regression Tree:

 if X[0] <= 24.5
   then {value: 1144.0, samples: 1}
   else if X[4] <= 20.0
     then if X[2] <= 14000.0
       then if X[3] <= 144.0
         then if X[2] <= 2500.0
           then if X[4] <= 6.0

```
        then if X[4] <= 2.0
          then if X[3] <= 4.0
            then {value: 11.0, samples: 2}
            else {value: 6.0, samples: 1}
          else {value: 18.0, samples: 2}
        else {value: 36.0, samples: 1}
      else if X[3] <= 1.0
        then if X[0] <= 325.0
          then if X[0] <= 128.0
            then {value: 24.0, samples: 3}
            else {value: 35.0, samples: 3}
          else if X[0] <= 565.0
            then {value: 22.0, samples: 1}
            else {value: 16.0, samples: 1}
        else if X[2] <= 11240.0
          then if X[3] <= 31.0
            then if X[1] <= 384.0
              then {value: 27.0, samples: 1}
              else if X[3] <= 6.0
                then if X[0] <= 103.5
                  then {value: 50.0, samples: 1}
                  else {value: 40.0, samples: 2}
                else if X[0] <= 182.5
                  then {value: 33.75, samples: 4}
                  else {value: 40.0, samples: 1}
            else {value: 60.0, samples: 1}
          else {value: 60.0, samples: 1}
      else {value: 198.0, samples: 1}
    else if X[0] <= 38.0
      then if X[2] <= 20000.0
        then {value: 185.0, samples: 1}
        else {value: 173.0, samples: 1}
      else if X[1] <= 3000.0
        then {value: 114.0, samples: 1}
        else if X[0] <= 53.5
          then {value: 138.0, samples: 1}
          else {value: 132.0, samples: 1}
  else {value: 405.0, samples: 1}
```

This is the evaluation for mse:
1381.576388888889

Fold 2
Regression Tree:

```
if X[0] <= 24.5
  then {value: 1144.0, samples: 1}
  else if X[4] <= 5.0
    then if X[1] <= 3000.0
      then if X[2] <= 2750.0
```

then if X[1] <= 518.0
 then if X[0] <= 165.0
  then {value: 17.0, samples: 1}
  else {value: 8.0, samples: 2}
 else if X[0] <= 125.5
  then {value: 12.0, samples: 1}
  else if X[1] <= 884.0
   then {value: 18.5, samples: 2}
   else {value: 24.0, samples: 1}
 else if X[3] <= 10.0
  then if X[5] <= 22.0
   then if X[0] <= 600.0
    then if X[0] <= 110.0
     then if X[5] <= 13.5
      then if X[0] <= 53.0
       then {value: 27.0, samples: 1}
       else {value: 21.5, samples: 2}
      else {value: 32.0, samples: 1}
     else if X[1] <= 384.0
      then if X[2] <= 5500.0
       then {value: 27.0, samples: 1}
       else {value: 33.0, samples: 1}
      else {value: 37.75, samples: 4}
    else {value: 16.0, samples: 1}
   else if X[0] <= 90.0
    then {value: 62.0, samples: 1}
    else {value: 32.0, samples: 1}
  else if X[4] <= 2.0
   then {value: 60.0, samples: 2}
   else if X[0] <= 75.0
    then {value: 45.0, samples: 1}
    else {value: 32.0, samples: 1}
else {value: 138.0, samples: 1}
else if X[2] <= 3500.0
 then {value: 36.0, samples: 1}
 else if X[0] <= 60.5
  then if X[0] <= 38.0
   then {value: 185.0, samples: 1}
   else if X[0] <= 56.5
    then if X[0] <= 53.0
     then {value: 114.0, samples: 1}
     else {value: 106.0, samples: 1}
    else {value: 132.0, samples: 1}
  else if X[0] <= 94.5
   then {value: 208.0, samples: 1}
   else {value: 198.0, samples: 1}

This is the evaluation for mse:
6268.958333333333

Fold 3

Regression Tree:

if X[0] <= 24.5
  then {value: 1144.0, samples: 1}
  else if X[1] <= 3310.0
    then if X[2] <= 24000.0
      then if X[3] <= 2.0
        then if X[2] <= 2500.0
          then if X[1] <= 160.0
            then {value: 10.0, samples: 1}
            else if X[0] <= 87.0
              then {value: 12.0, samples: 1}
              else if X[1] <= 884.0
                then {value: 17.5, samples: 2}
                else {value: 24.0, samples: 1}
          else if X[0] <= 325.0
            then if X[0] <= 80.5
              then {value: 22.5, samples: 2}
              else {value: 34.25, samples: 4}
            else if X[0] <= 565.0
              then {value: 22.0, samples: 1}
              else {value: 16.0, samples: 1}
        else if X[2] <= 6500.0
          then if X[2] <= 3000.0
            then {value: 19.0, samples: 1}
            else if X[0] <= 122.5
              then if X[5] <= 13.5
                then {value: 22.0, samples: 1}
                else {value: 32.0, samples: 1}
              else if X[0] <= 272.5
                then {value: 37.5, samples: 2}
                else {value: 27.0, samples: 1}
          else if X[4] <= 2.0
            then if X[3] <= 10.0
              then {value: 50.0, samples: 1}
              else {value: 60.0, samples: 2}
            else if X[3] <= 18.0
              then if X[0] <= 62.5
                then if X[1] <= 1500.0
                  then {value: 36.0, samples: 1}
                  else {value: 45.0, samples: 1}
                else {value: 62.0, samples: 1}
              else {value: 32.0, samples: 2}
      else {value: 114.0, samples: 1}
    else if X[2] <= 28000.0
      then if X[0] <= 60.5
        then if X[0] <= 41.0
          then {value: 173.0, samples: 1}
          else if X[0] <= 56.5
            then {value: 106.0, samples: 1}
            else {value: 132.0, samples: 1}

else {value: 208.0, samples: 1}
        else {value: 405.0, samples: 1}

This is the evaluation for mse:
3457.7265625

Fold 4
Regression Tree:

 if X[1] <= 3310.0
    then if X[5] <= 25.0
      then if X[2] <= 2500.0
        then if X[4] <= 4.5
          then if X[1] <= 640.0
            then {value: 8.0, samples: 2}
            else if X[0] <= 143.5
              then {value: 12.0, samples: 1}
              else if X[0] <= 851.5
                then {value: 24.0, samples: 1}
                else {value: 18.0, samples: 1}
          else {value: 36.0, samples: 1}
        else if X[2] <= 7000.0
          then if X[0] <= 110.0
            then if X[1] <= 1500.0
              then {value: 32.0, samples: 1}
              else {value: 24.5, samples: 2}
            else if X[0] <= 310.0
              then {value: 38.666666666666664, samples: 3}
              else if X[0] <= 365.0
                then if X[2] <= 5500.0
                  then {value: 24.5, samples: 2}
                  else {value: 33.0, samples: 1}
                else {value: 40.0, samples: 1}
          else if X[0] <= 65.5
            then if X[2] <= 13240.0
              then if X[0] <= 53.0
                then {value: 34.0, samples: 2}
                else {value: 24.0, samples: 1}
              else {value: 45.0, samples: 1}
            else if X[0] <= 96.0
              then if X[3] <= 6.0
                then {value: 50.0, samples: 1}
                else {value: 61.0, samples: 2}
              else if X[2] <= 10000.0
                then {value: 34.0, samples: 2}
                else {value: 60.0, samples: 1}
      else if X[0] <= 87.5
        then {value: 114.0, samples: 1}
        else {value: 198.0, samples: 1}
    else if X[2] <= 28000.0

then if X[0] <= 60.0
            then if X[0] <= 38.0
                then if X[2] <= 20000.0
                    then {value: 185.0, samples: 1}
                    else {value: 173.0, samples: 1}
                else if X[0] <= 53.0
                    then {value: 138.0, samples: 1}
                    else {value: 106.0, samples: 1}
            else {value: 208.0, samples: 1}
        else {value: 405.0, samples: 1}

This is the evaluation for mse:
68425.61805555556

Fold 5
Regression Tree:

 if X[0] <= 24.5
    then {value: 1144.0, samples: 1}
    else if X[1] <= 3310.0
        then if X[3] <= 143.0
            then if X[5] <= 4.5
                then if X[0] <= 520.0
                    then {value: 6.0, samples: 1}
                    else {value: 17.0, samples: 2}
                else if X[3] <= 1.0
                    then if X[5] <= 15.0
                        then if X[1] <= 628.0
                            then {value: 17.0, samples: 1}
                            else {value: 23.6, samples: 5}
                        else {value: 34.666666666666664, samples: 3}
                    else if X[0] <= 96.0
                        then if X[0] <= 62.5
                            then if X[2] <= 13240.0
                                then {value: 34.0, samples: 2}
                                else {value: 45.0, samples: 1}
                            else if X[0] <= 83.5
                                then {value: 62.0, samples: 1}
                                else {value: 50.0, samples: 1}
                        else if X[5] <= 7.0
                            then if X[0] <= 107.5
                                then {value: 32.0, samples: 1}
                                else {value: 40.0, samples: 3}
                            else if X[5] <= 17.0
                                then {value: 20.5, samples: 2}
                                else {value: 33.5, samples: 2}
            else {value: 198.0, samples: 1}
        else if X[2] <= 28000.0
            then if X[0] <= 60.5
                then if X[0] <= 38.0

then if X[2] <= 20000.0
                       then {value: 185.0, samples: 1}
                       else {value: 173.0, samples: 1}
                 else if X[1] <= 4620.0
                    then if X[0] <= 53.5
                       then {value: 138.0, samples: 1}
                       else {value: 132.0, samples: 1}
                    else {value: 106.0, samples: 1}
              else {value: 208.0, samples: 1}
           else {value: 405.0, samples: 1}

This is the evaluation for mse:
1156.57

This is the Average Evaluation for the Cross Validation

16138.089868055558
For These Hyper-Parameters: 250 and 1.0
Fold 1
Regression Tree:

 if X[3] <= 31.0
    then if X[1] <= 3310.0
       then if X[2] <= 2500.0
          then if X[4] <= 6.0
             then if X[1] <= 518.0
                then if X[0] <= 165.0
                   then {value: 17.0, samples: 1}
                   else {value: 8.0, samples: 2}
                else if X[0] <= 125.5
                   then {value: 12.0, samples: 1}
                   else {value: 20.333333333333332, samples: 3}
             else {value: 36.0, samples: 1}
          else if X[2] <= 11240.0
             then if X[2] <= 7000.0
                then if X[0] <= 122.5
                   then if X[5] <= 13.5
                      then {value: 23.333333333333332, samples: 3}
                      else {value: 32.0, samples: 2}
                   else if X[3] <= 2.0
                      then if X[0] <= 325.0
                         then {value: 34.5, samples: 2}
                         else {value: 22.0, samples: 1}
                      else {value: 38.333333333333336, samples: 3}
                else if X[3] <= 6.0
                   then if X[0] <= 146.0
                      then {value: 50.0, samples: 1}
                      else {value: 36.0, samples: 1}
                   else {value: 33.333333333333336, samples: 3}
             else if X[0] <= 80.0

then {value: 45.0, samples: 1}
                    else {value: 60.0, samples: 1}
            else if X[0] <= 60.5
                then if X[0] <= 56.5
                    then {value: 106.0, samples: 1}
                    else {value: 132.0, samples: 1}
                else {value: 208.0, samples: 1}
        else if X[2] <= 28000.0
            then if X[4] <= 4.5
                then {value: 138.0, samples: 1}
                else if X[0] <= 75.5
                    then {value: 173.0, samples: 1}
                    else {value: 198.0, samples: 1}
            else {value: 405.0, samples: 1}

This is the evaluation for mse:
62834.555555555555

Fold 2
Regression Tree:

 if X[0] <= 24.5
    then {value: 1144.0, samples: 1}
    else if X[4] <= 5.0
        then if X[1] <= 3000.0
            then if X[3] <= 1.0
                then if X[2] <= 3000.0
                    then {value: 13.0, samples: 3}
                    else if X[0] <= 325.0
                        then if X[0] <= 80.5
                            then {value: 24.0, samples: 3}
                            else {value: 33.666666666666664, samples: 3}
                        else {value: 19.0, samples: 2}
                else if X[2] <= 6500.0
                    then if X[1] <= 1262.0
                        then {value: 23.0, samples: 2}
                        else if X[0] <= 110.0
                            then if X[5] <= 13.5
                                then {value: 22.0, samples: 1}
                                else {value: 32.0, samples: 1}
                            else {value: 38.333333333333336, samples: 3}
                    else if X[4] <= 2.0
                        then if X[3] <= 10.0
                            then {value: 50.0, samples: 1}
                            else {value: 60.0, samples: 2}
                        else if X[3] <= 10.0
                            then {value: 62.0, samples: 1}
                            else if X[0] <= 75.0
                                then {value: 45.0, samples: 1}
                                else {value: 32.0, samples: 1}

else {value: 138.0, samples: 1}
          else if X[2] <= 3500.0
            then {value: 36.0, samples: 1}
            else if X[4] <= 7.0
                then if X[0] <= 53.5
                    then {value: 114.0, samples: 1}
                    else {value: 132.0, samples: 1}
                else if X[0] <= 45.0
                    then if X[2] <= 20000.0
                        then {value: 185.0, samples: 1}
                        else {value: 173.0, samples: 1}
                    else if X[0] <= 94.5
                        then {value: 208.0, samples: 1}
                        else {value: 198.0, samples: 1}

This is the evaluation for mse:
10733.777777777777

Fold 3
Regression Tree:

 if X[0] <= 24.5
    then {value: 1144.0, samples: 1}
    else if X[3] <= 96.5
        then if X[2] <= 14000.0
            then if X[3] <= 1.0
                then if X[5] <= 14.0
                    then if X[2] <= 3000.0
                        then if X[0] <= 143.5
                            then {value: 12.0, samples: 1}
                            else {value: 21.0, samples: 2}
                        else if X[5] <= 3.0
                            then {value: 36.0, samples: 1}
                            else if X[0] <= 565.0
                                then {value: 23.5, samples: 4}
                                else {value: 16.0, samples: 1}
                    else {value: 34.666666666666664, samples: 3}
                else if X[2] <= 2250.0
                    then {value: 6.0, samples: 1}
                    else if X[2] <= 6500.0
                        then if X[1] <= 384.0
                            then {value: 27.0, samples: 1}
                            else if X[5] <= 12.5
                                then {value: 40.0, samples: 3}
                                else {value: 33.5, samples: 2}
                        else if X[0] <= 62.5
                            then {value: 34.0, samples: 2}
                            else if X[0] <= 96.0
                                then if X[3] <= 6.0
                                    then {value: 50.0, samples: 1}

else {value: 61.0, samples: 2}
                else if X[0] <= 105.0
                    then {value: 32.0, samples: 1}
                    else {value: 60.0, samples: 1}
        else if X[0] <= 38.0
            then if X[2] <= 20000.0
                then {value: 185.0, samples: 1}
                else {value: 173.0, samples: 1}
            else if X[2] <= 18485.0
                then {value: 135.0, samples: 2}
                else {value: 110.0, samples: 2}
        else {value: 405.0, samples: 1}

This is the evaluation for mse:
7660.28125

Fold 4
Regression Tree:

 if X[0] <= 24.5
   then {value: 1144.0, samples: 1}
   else if X[1] <= 3310.0
     then if X[5] <= 25.0
        then if X[2] <= 2500.0
           then if X[1] <= 518.0
              then if X[0] <= 165.0
                 then {value: 17.0, samples: 1}
                 else {value: 8.0, samples: 2}
              else if X[0] <= 125.5
                 then {value: 12.0, samples: 1}
                 else {value: 20.333333333333332, samples: 3}
           else if X[3] <= 31.0
              then if X[5] <= 12.0
                 then if X[5] <= 7.0
                    then if X[0] <= 600.0
                       then if X[2] <= 4500.0
                          then {value: 40.0, samples: 2}
                          else if X[2] <= 5500.0
                             then {value: 27.0, samples: 1}
                             else {value: 34.25, samples: 4}
                       else {value: 16.0, samples: 1}
                    else {value: 22.333333333333332, samples: 3}
                 else if X[0] <= 90.0
                    then if X[0] <= 62.5
                       then if X[1] <= 2310.0
                          then {value: 45.0, samples: 1}
                          else {value: 32.0, samples: 1}
                       else {value: 62.0, samples: 1}
                    else {value: 34.333333333333336, samples: 3}
              else {value: 60.0, samples: 1}

else if X[0] <= 87.5
    then {value: 114.0, samples: 1}
    else {value: 198.0, samples: 1}
else if X[2] <= 28000.0
    then if X[0] <= 60.5
        then if X[0] <= 41.0
            then if X[2] <= 20000.0
                then {value: 185.0, samples: 1}
                else {value: 173.0, samples: 1}
            else if X[0] <= 56.5
                then {value: 106.0, samples: 1}
                else {value: 132.0, samples: 1}
        else {value: 208.0, samples: 1}
    else {value: 405.0, samples: 1}

This is the evaluation for mse:
349.32118055555554

Fold 5
Regression Tree:

if X[0] <= 24.5
    then {value: 1144.0, samples: 1}
    else if X[1] <= 3310.0
        then if X[5] <= 25.0
            then if X[2] <= 2500.0
                then if X[4] <= 6.0
                    then if X[1] <= 518.0
                        then if X[0] <= 165.0
                            then {value: 17.0, samples: 1}
                            else {value: 8.0, samples: 2}
                        else {value: 20.333333333333332, samples: 3}
                    else {value: 36.0, samples: 1}
                else if X[3] <= 1.0
                    then if X[0] <= 325.0
                        then if X[0] <= 80.5
                            then {value: 25.5, samples: 2}
                            else {value: 33.666666666666664, samples: 3}
                        else {value: 19.0, samples: 2}
                    else if X[2] <= 6500.0
                        then if X[0] <= 110.0
                            then {value: 22.0, samples: 1}
                            else if X[1] <= 384.0
                                then {value: 27.0, samples: 1}
                                else {value: 40.0, samples: 3}
                        else if X[0] <= 62.5
                            then if X[2] <= 13240.0
                                then {value: 34.0, samples: 2}
                                else {value: 45.0, samples: 1}
                            else if X[3] <= 6.0

```
            then {value: 50.0, samples: 1}
                else {value: 60.666666666666664, samples: 3}
        else if X[0] <= 87.5
            then {value: 114.0, samples: 1}
            else {value: 198.0, samples: 1}
    else if X[2] <= 26485.0
        then if X[0] <= 60.0
            then if X[0] <= 38.0
                then {value: 185.0, samples: 1}
                else if X[0] <= 53.0
                    then {value: 138.0, samples: 1}
                    else {value: 106.0, samples: 1}
            else {value: 208.0, samples: 1}
        else {value: 405.0, samples: 1}
```

This is the evaluation for mse:
232.73958333333331

This is the Average Evaluation for the Cross Validation

16362.135069444445
For These Hyper-Parameters: 250 and 1.5
Fold 1
Regression Tree:

```
 if X[1] <= 3310.0
    then if X[3] <= 144.0
        then if X[2] <= 2500.0
            then {value: 15.2, samples: 5}
            else if X[3] <= 1.0
                then if X[0] <= 315.0
                    then if X[0] <= 80.5
                        then {value: 24.0, samples: 2}
                        else {value: 34.666666666666664, samples: 3}
                    else {value: 19.0, samples: 2}
                else if X[0] <= 96.0
                    then if X[0] <= 62.5
                        then if X[2] <= 13240.0
                            then {value: 34.0, samples: 2}
                            else {value: 45.0, samples: 1}
                        else if X[3] <= 6.0
                            then {value: 50.0, samples: 1}
                            else {value: 61.0, samples: 2}
                    else if X[0] <= 110.0
                        then if X[0] <= 102.5
                            then {value: 32.0, samples: 1}
                            else if X[5] <= 13.5
                                then {value: 22.0, samples: 1}
                                else {value: 32.0, samples: 1}
                        else {value: 38.75, samples: 4}
```

else {value: 198.0, samples: 1}
          else if X[2] <= 28000.0
            then if X[0] <= 60.5
              then if X[0] <= 38.0
                then if X[2] <= 20000.0
                  then {value: 185.0, samples: 1}
                  else {value: 173.0, samples: 1}
                else if X[1] <= 4620.0
                  then {value: 135.0, samples: 2}
                  else {value: 106.0, samples: 1}
              else {value: 208.0, samples: 1}
            else {value: 405.0, samples: 1}

This is the evaluation for mse:
61472.75361111111

Fold 2
Regression Tree:

 if X[0] <= 24.5
    then {value: 1144.0, samples: 1}
    else if X[3] <= 96.5
      then if X[1] <= 3310.0
        then if X[2] <= 24000.0
          then if X[2] <= 7000.0
            then if X[5] <= 4.5
              then {value: 8.0, samples: 2}
              else if X[0] <= 97.5
                then if X[0] <= 70.0
                  then {value: 24.0, samples: 2}
                  else {value: 14.5, samples: 2}
                else if X[4] <= 2.0
                  then if X[2] <= 2750.0
                    then {value: 24.0, samples: 1}
                    else if X[1] <= 384.0
                      then {value: 30.0, samples: 2}
                      else {value: 38.333333333333336, samples: 3}
                  else if X[5] <= 17.0
                    then {value: 21.0, samples: 3}
                    else {value: 34.0, samples: 2}
            else if X[0] <= 65.5
              then if X[2] <= 13240.0
                then if X[0] <= 53.0
                  then {value: 34.0, samples: 2}
                  else {value: 24.0, samples: 1}
                else {value: 45.0, samples: 1}
              else if X[0] <= 155.0
                then if X[3] <= 6.0
                  then {value: 50.0, samples: 1}
                  else {value: 61.0, samples: 2}

               else {value: 36.0, samples: 1}
           else {value: 114.0, samples: 1}
        else if X[0] <= 60.5
          then if X[1] <= 4620.0
            then {value: 135.0, samples: 2}
            else {value: 106.0, samples: 1}
          else {value: 208.0, samples: 1}
      else if X[0] <= 75.5
        then {value: 405.0, samples: 1}
        else {value: 198.0, samples: 1}

This is the evaluation for mse:
1382.3333333333333

Fold 3
Regression Tree:

if X[0] <= 24.5
   then {value: 1144.0, samples: 1}
   else if X[1] <= 3000.0
     then if X[2] <= 24000.0
       then if X[2] <= 2500.0
         then if X[4] <= 6.0
           then if X[1] <= 518.0
             then if X[0] <= 165.0
               then {value: 17.0, samples: 1}
               else {value: 8.0, samples: 2}
             else if X[0] <= 125.5
               then {value: 12.0, samples: 1}
               else {value: 20.333333333333332, samples: 3}
           else {value: 36.0, samples: 1}
         else if X[3] <= 1.0
          then if X[0] <= 560.0
            then if X[0] <= 80.5
              then {value: 25.5, samples: 2}
              else {value: 34.25, samples: 4}
           else {value: 16.0, samples: 1}
          else if X[2] <= 6500.0
           then if X[0] <= 110.0
             then {value: 27.0, samples: 2}
             else if X[1] <= 384.0
               then {value: 27.0, samples: 1}
               else {value: 40.0, samples: 3}
           else if X[4] <= 2.0
            then if X[3] <= 10.0
             then {value: 50.0, samples: 1}
             else {value: 60.0, samples: 2}
            else if X[3] <= 10.0
             then {value: 62.0, samples: 1}
             else if X[0] <= 75.0

then {value: 45.0, samples: 1}
                    else {value: 32.0, samples: 1}
            else {value: 114.0, samples: 1}
        else if X[1] <= 4620.0
            then {value: 135.0, samples: 2}
            else if X[0] <= 45.0
                then if X[2] <= 20000.0
                    then {value: 185.0, samples: 1}
                    else {value: 173.0, samples: 1}
                else {value: 208.0, samples: 1}

This is the evaluation for mse:
11813.6640625

Fold 4
Regression Tree:

 if X[0] <= 24.5
    then {value: 1144.0, samples: 1}
    else if X[3] <= 96.5
        then if X[2] <= 14000.0
            then if X[2] <= 2500.0
                then if X[4] <= 6.0
                    then if X[1] <= 518.0
                        then if X[0] <= 165.0
                            then {value: 17.0, samples: 1}
                            else {value: 6.0, samples: 1}
                        else if X[0] <= 125.5
                            then {value: 12.0, samples: 1}
                            else {value: 20.333333333333332, samples: 3}
                    else {value: 36.0, samples: 1}
                else if X[3] <= 1.0
                    then if X[0] <= 325.0
                        then if X[0] <= 80.5
                            then {value: 24.0, samples: 3}
                            else {value: 34.25, samples: 4}
                        else {value: 19.0, samples: 2}
                    else if X[2] <= 11240.0
                        then if X[3] <= 31.0
                            then if X[1] <= 1500.0
                                then {value: 31.666666666666668, samples: 3}
                                else if X[5] <= 13.0
                                    then if X[0] <= 103.5
                                        then {value: 50.0, samples: 1}
                                        else {value: 40.0, samples: 2}
                                    else {value: 33.5, samples: 2}
                            else {value: 60.0, samples: 1}
                        else {value: 60.0, samples: 1}
            else if X[0] <= 38.0
                then if X[2] <= 20000.0

then {value: 185.0, samples: 1}
                    else {value: 173.0, samples: 1}
                else if X[2] <= 18485.0
                    then {value: 138.0, samples: 1}
                    else {value: 110.0, samples: 2}
        else if X[0] <= 75.5
            then {value: 405.0, samples: 1}
            else {value: 198.0, samples: 1}

This is the evaluation for mse:
2439.1180555555557

Fold 5
Regression Tree:

 if X[0] <= 24.5
    then {value: 1144.0, samples: 1}
    else if X[1] <= 3310.0
        then if X[5] <= 25.0
            then if X[3] <= 10.0
                then if X[5] <= 4.5
                    then if X[0] <= 575.0
                        then {value: 8.0, samples: 2}
                        else {value: 17.0, samples: 2}
                    else if X[5] <= 22.0
                        then if X[3] <= 2.0
                            then if X[1] <= 756.0
                                then {value: 34.5, samples: 2}
                                else {value: 22.75, samples: 4}
                            else if X[5] <= 7.0
                                then if X[1] <= 384.0
                                    then {value: 27.0, samples: 1}
                                    else {value: 38.666666666666664, samples: 3}
                                else if X[5] <= 13.5
                                    then {value: 22.0, samples: 1}
                                    else {value: 33.5, samples: 2}
                        else if X[0] <= 90.0
                            then {value: 62.0, samples: 1}
                            else {value: 34.0, samples: 2}
                else if X[4] <= 2.0
                    then {value: 60.0, samples: 2}
                    else if X[2] <= 13240.0
                        then {value: 32.0, samples: 2}
                        else {value: 45.0, samples: 1}
            else if X[0] <= 87.5
                then {value: 114.0, samples: 1}
                else {value: 198.0, samples: 1}
        else if X[2] <= 28000.0
            then if X[0] <= 60.5
                then if X[0] <= 41.0

then if X[2] <= 20000.0
then {value: 185.0, samples: 1}
else {value: 173.0, samples: 1}
else if X[0] <= 56.5
then {value: 106.0, samples: 1}
else {value: 132.0, samples: 1}
else {value: 208.0, samples: 1}
else {value: 405.0, samples: 1}

This is the evaluation for mse:
360.51649305555554

This is the Average Evaluation for the Cross Validation

15493.677111111116
For These Hyper-Parameters: 250 and 2.0
Fold 1
Regression Tree:

if X[1] <= 3000.0
then if X[2] <= 24000.0
then if X[2] <= 2500.0
then if X[4] <= 6.0
then {value: 16.0, samples: 6}
else {value: 36.0, samples: 1}
else if X[3] <= 2.0
then if X[0] <= 325.0
then if X[0] <= 80.5
then {value: 24.0, samples: 3}
else {value: 34.25, samples: 4}
else {value: 19.0, samples: 2}
else if X[5] <= 22.0
then if X[0] <= 98.5
then if X[1] <= 1500.0
then {value: 36.0, samples: 1}
else {value: 47.5, samples: 2}
else if X[0] <= 122.5
then {value: 27.0, samples: 2}
else if X[1] <= 384.0
then {value: 27.0, samples: 1}
else {value: 38.333333333333336, samples: 3}
else {value: 62.0, samples: 1}
else {value: 114.0, samples: 1}
else if X[2] <= 28000.0
then if X[0] <= 60.0
then if X[0] <= 38.0
then if X[2] <= 20000.0
then {value: 185.0, samples: 1}
else {value: 173.0, samples: 1}
else if X[0] <= 53.0

then {value: 138.0, samples: 1}
            else {value: 106.0, samples: 1}
        else {value: 208.0, samples: 1}
    else {value: 405.0, samples: 1}

This is the evaluation for mse:
63059.145833333336

Fold 2
Regression Tree:

 if X[0] <= 24.5
   then {value: 1144.0, samples: 1}
   else if X[2] <= 28000.0
      then if X[1] <= 3310.0
         then if X[3] <= 144.0
            then if X[3] <= 1.0
               then if X[5] <= 15.0
                  then if X[5] <= 3.0
                     then {value: 36.0, samples: 1}
                     else if X[2] <= 3000.0
                        then {value: 13.0, samples: 3}
                        else {value: 22.0, samples: 5}
                  else {value: 34.666666666666664, samples: 3}
               else if X[2] <= 6500.0
                  then if X[0] <= 110.0
                     then {value: 27.0, samples: 2}
                     else if X[1] <= 384.0
                        then {value: 27.0, samples: 1}
                        else {value: 38.75, samples: 4}
                  else if X[4] <= 2.0
                     then {value: 60.0, samples: 2}
                     else if X[3] <= 18.0
                        then if X[0] <= 62.5
                           then {value: 40.5, samples: 2}
                           else {value: 62.0, samples: 1}
                        else {value: 32.0, samples: 2}
            else {value: 198.0, samples: 1}
         else if X[0] <= 38.0
            then if X[2] <= 20000.0
               then {value: 185.0, samples: 1}
               else {value: 173.0, samples: 1}
            else {value: 135.0, samples: 2}
      else {value: 405.0, samples: 1}

This is the evaluation for mse:
10331.069444444445

Fold 3
Regression Tree:

if X[0] <= 24.5
   then {value: 1144.0, samples: 1}
   else if X[2] <= 14000.0
      then if X[3] <= 144.0
         then if X[2] <= 2500.0
            then if X[4] <= 6.0
               then if X[1] <= 518.0
                  then {value: 11.0, samples: 3}
                  else {value: 18.25, samples: 4}
               else {value: 36.0, samples: 1}
            else if X[3] <= 1.0
               then if X[0] <= 560.0
                  then if X[0] <= 80.5
                     then {value: 24.0, samples: 3}
                     else {value: 33.666666666666664, samples: 3}
                  else {value: 16.0, samples: 1}
               else if X[2] <= 11240.0
                  then if X[3] <= 31.0
                     then if X[3] <= 16.0
                        then if X[5] <= 22.0
                           then {value: 40.166666666666664, samples: 6}
                           else {value: 62.0, samples: 1}
                        else {value: 32.0, samples: 2}
                     else {value: 60.0, samples: 1}
                  else {value: 60.0, samples: 1}
         else {value: 198.0, samples: 1}
      else if X[0] <= 60.5
         then if X[0] <= 38.0
            then if X[2] <= 20000.0
               then {value: 185.0, samples: 1}
               else {value: 173.0, samples: 1}
            else if X[0] <= 56.5
               then {value: 110.0, samples: 2}
               else {value: 132.0, samples: 1}
         else {value: 208.0, samples: 1}

This is the evaluation for mse:
7443.079861111111

Fold 4
Regression Tree:

if X[0] <= 24.5
   then {value: 1144.0, samples: 1}
   else if X[1] <= 3310.0
      then if X[5] <= 25.0
         then if X[3] <= 10.0
            then if X[0] <= 201.5
               then if X[5] <= 7.0

then if X[3] <= 3.0
                       then if X[0] <= 82.5
                          then {value: 27.0, samples: 1}
                          else {value: 38.0, samples: 2}
                       else {value: 50.0, samples: 1}
                    else if X[5] <= 17.0
                       then {value: 21.5, samples: 4}
                       else {value: 33.75, samples: 4}
                 else if X[5] <= 4.5
                    then if X[0] <= 575.0
                       then {value: 8.0, samples: 2}
                       else {value: 17.0, samples: 2}
                    else {value: 26.5, samples: 4}
              else if X[4] <= 2.0
                 then {value: 60.0, samples: 2}
                 else if X[2] <= 13240.0
                    then {value: 32.0, samples: 2}
                    else {value: 45.0, samples: 1}
           else if X[0] <= 87.5
              then {value: 114.0, samples: 1}
              else {value: 198.0, samples: 1}
        else if X[2] <= 26485.0
           then if X[0] <= 60.5
              then if X[0] <= 38.0
                 then {value: 185.0, samples: 1}
                 else if X[1] <= 4620.0
                    then {value: 135.0, samples: 2}
                    else {value: 106.0, samples: 1}
              else {value: 208.0, samples: 1}
           else {value: 405.0, samples: 1}

This is the evaluation for mse:
286.1328125

Fold 5
Regression Tree:

 if X[0] <= 24.5
    then {value: 1144.0, samples: 1}
    else if X[4] <= 20.0
       then if X[1] <= 3310.0
          then if X[5] <= 25.0
             then if X[2] <= 2500.0
                then if X[1] <= 518.0
                   then {value: 11.0, samples: 3}
                   else {value: 18.25, samples: 4}
                else if X[2] <= 7000.0
                   then if X[2] <= 3750.0
                      then {value: 38.0, samples: 2}
                      else if X[5] <= 5.5

```
                    then {value: 40.0, samples: 1}
                    else {value: 29.333333333333332, samples: 6}
                else if X[0] <= 62.5
                    then if X[2] <= 13240.0
                        then {value: 34.0, samples: 2}
                        else {value: 45.0, samples: 1}
                    else if X[0] <= 96.0
                        then if X[3] <= 6.0
                            then {value: 50.0, samples: 1}
                            else {value: 61.0, samples: 2}
                        else if X[2] <= 10000.0
                            then {value: 34.0, samples: 2}
                            else {value: 60.0, samples: 1}
            else if X[0] <= 87.5
                then {value: 114.0, samples: 1}
                else {value: 198.0, samples: 1}
        else if X[0] <= 60.5
            then if X[0] <= 38.0
                then {value: 173.0, samples: 1}
                else if X[1] <= 4620.0
                    then {value: 135.0, samples: 2}
                    else {value: 106.0, samples: 1}
            else {value: 208.0, samples: 1}
    else {value: 405.0, samples: 1}
```

This is the evaluation for mse:
163.38888888888886

This is the Average Evaluation for the Cross Validation

16256.563368055557
For These Hyper-Parameters: 250 and 2.5
Fold 1
Regression Tree:

```
 if X[0] <= 24.5
    then {value: 1144.0, samples: 1}
    else if X[1] <= 3310.0
        then if X[2] <= 24000.0
            then if X[2] <= 7000.0
                then if X[2] <= 2750.0
                    then if X[1] <= 518.0
                        then {value: 8.0, samples: 2}
                        else {value: 18.25, samples: 4}
                    else if X[3] <= 1.0
                        then {value: 25.5, samples: 4}
                        else if X[0] <= 110.0
                            then {value: 27.0, samples: 2}
                            else if X[1] <= 384.0
                                then {value: 27.0, samples: 1}
```

else {value: 38.75, samples: 4}
            else if X[0] <= 65.5
                then if X[2] <= 13240.0
                    then {value: 30.666666666666668, samples: 3}
                    else {value: 45.0, samples: 1}
                else if X[0] <= 155.0
                    then if X[3] <= 6.0
                        then {value: 50.0, samples: 1}
                        else {value: 60.666666666666664, samples: 3}
                    else {value: 36.0, samples: 1}
            else {value: 114.0, samples: 1}
        else if X[0] <= 38.0
            then {value: 179.0, samples: 2}
            else if X[1] <= 4620.0
                then {value: 135.0, samples: 2}
                else {value: 106.0, samples: 1}

This is the evaluation for mse:
10330.475308641975

Fold 2
Regression Tree:

 if X[0] <= 24.5
    then {value: 1144.0, samples: 1}
    else if X[3] <= 96.5
        then if X[2] <= 13240.0
            then if X[2] <= 2500.0
                then if X[4] <= 6.0
                    then if X[1] <= 518.0
                        then {value: 11.0, samples: 3}
                        else {value: 20.333333333333332, samples: 3}
                    else {value: 36.0, samples: 1}
                else if X[3] <= 1.0
                    then if X[0] <= 325.0
                        then if X[0] <= 128.0
                            then {value: 22.5, samples: 2}
                            else {value: 35.0, samples: 3}
                        else {value: 19.0, samples: 2}
                    else if X[0] <= 96.0
                        then if X[0] <= 62.5
                            then {value: 34.0, samples: 2}
                            else {value: 56.0, samples: 2}
                        else if X[0] <= 110.0
                            then {value: 28.666666666666668, samples: 3}
                            else if X[1] <= 384.0
                                then {value: 27.0, samples: 1}
                                else {value: 38.333333333333336, samples: 3}
            else if X[0] <= 60.5
                then if X[2] <= 18485.0

then {value: 135.0, samples: 2}
                else {value: 110.0, samples: 2}
            else {value: 208.0, samples: 1}
      else if X[0] <= 75.5
          then {value: 405.0, samples: 1}
          else {value: 198.0, samples: 1}

This is the evaluation for mse:
1749.9444444444443

Fold 3
Regression Tree:

 if X[0] <= 24.5
    then {value: 1144.0, samples: 1}
    else if X[1] <= 3310.0
       then if X[5] <= 25.0
          then if X[3] <= 10.0
             then if X[2] <= 2500.0
                then if X[4] <= 6.0
                   then {value: 16.5, samples: 4}
                   else {value: 36.0, samples: 1}
                else if X[0] <= 560.0
                   then if X[5] <= 7.0
                      then if X[2] <= 7000.0
                         then if X[3] <= 6.0
                            then {value: 29.0, samples: 3}
                            else {value: 40.0, samples: 1}
                         else if X[1] <= 1500.0
                            then {value: 36.0, samples: 2}
                            else {value: 50.0, samples: 1}
                      else if X[5] <= 13.5
                         then {value: 22.333333333333332, samples: 3}
                         else {value: 33.75, samples: 4}
                   else {value: 16.0, samples: 1}
             else if X[4] <= 2.0
                then {value: 60.0, samples: 2}
                else if X[2] <= 13240.0
                   then {value: 32.0, samples: 2}
                   else {value: 45.0, samples: 1}
          else if X[0] <= 87.5
             then {value: 114.0, samples: 1}
             else {value: 198.0, samples: 1}
       else if X[2] <= 28000.0
          then if X[0] <= 60.0
             then if X[0] <= 38.0
                then {value: 179.0, samples: 2}
                else if X[0] <= 53.0
                   then {value: 138.0, samples: 1}
                   else {value: 106.0, samples: 1}

else {value: 208.0, samples: 1}
        else {value: 405.0, samples: 1}

This is the evaluation for mse:
246.7265625

Fold 4
Regression Tree:

 if X[0] <= 24.5
    then {value: 1144.0, samples: 1}
    else if X[1] <= 3310.0
       then if X[5] <= 25.0
          then if X[2] <= 2500.0
             then if X[4] <= 6.0
                then if X[1] <= 518.0
                   then {value: 11.0, samples: 3}
                   else {value: 18.25, samples: 4}
                else {value: 36.0, samples: 1}
             else if X[3] <= 6.0
                then if X[0] <= 600.0
                   then if X[2] <= 3750.0
                      then {value: 38.0, samples: 2}
                      else if X[5] <= 5.5
                         then {value: 40.0, samples: 1}
                         else {value: 28.2, samples: 5}
                   else {value: 16.0, samples: 1}
                else if X[4] <= 2.0
                   then {value: 60.0, samples: 2}
                   else if X[0] <= 87.5
                      then if X[0] <= 62.5
                         then {value: 38.5, samples: 2}
                         else {value: 62.0, samples: 1}
                      else if X[5] <= 7.0
                         then {value: 36.0, samples: 2}
                         else {value: 22.0, samples: 1}
          else if X[0] <= 87.5
             then {value: 114.0, samples: 1}
             else {value: 198.0, samples: 1}
       else if X[2] <= 28000.0
          then if X[1] <= 4620.0
             then {value: 135.0, samples: 2}
             else if X[0] <= 45.0
                then {value: 179.0, samples: 2}
                else {value: 208.0, samples: 1}
          else {value: 405.0, samples: 1}

This is the evaluation for mse:
1461.99625

Fold 5
Regression Tree:

```
if X[1] <= 3000.0
   then if X[3] <= 144.0
      then if X[3] <= 1.0
         then if X[5] <= 15.0
            then if X[2] <= 3000.0
               then {value: 15.75, samples: 4}
               else if X[5] <= 3.0
                  then {value: 36.0, samples: 1}
                  else {value: 23.833333333333332, samples: 6}
            else {value: 34.666666666666664, samples: 3}
         else if X[2] <= 2250.0
            then {value: 6.0, samples: 1}
            else if X[2] <= 6000.0
               then {value: 37.4, samples: 5}
               else if X[4] <= 2.0
                  then {value: 56.666666666666664, samples: 3}
                  else if X[5] <= 20.0
                     then {value: 37.666666666666664, samples: 3}
                     else {value: 62.0, samples: 1}
      else {value: 198.0, samples: 1}
   else if X[2] <= 28000.0
      then if X[0] <= 60.5
         then if X[0] <= 41.0
            then {value: 179.0, samples: 2}
            else if X[0] <= 56.5
               then {value: 106.0, samples: 1}
               else {value: 132.0, samples: 1}
         else {value: 208.0, samples: 1}
      else {value: 405.0, samples: 1}
```

This is the evaluation for mse:
68908.54781250001

This is the Average Evaluation for the Cross Validation

16539.538075617285
For These Hyper-Parameters: 300 and 0.5
Fold 1
Regression Tree:

```
if X[0] <= 24.5
   then {value: 1144.0, samples: 1}
   else if X[1] <= 3310.0
      then if X[3] <= 144.0
         then if X[3] <= 1.0
            then if X[0] <= 97.5
               then if X[0] <= 70.0
```

```
                then {value: 24.0, samples: 3}
                else {value: 14.5, samples: 2}
            else if X[0] <= 560.0
                then if X[4] <= 4.5
                    then if X[2] <= 3000.0
                        then {value: 24.0, samples: 1}
                        else {value: 33.666666666666664, samples: 3}
                    else {value: 36.0, samples: 2}
                else {value: 16.0, samples: 1}
        else if X[2] <= 6500.0
            then if X[2] <= 2750.0
                then {value: 19.0, samples: 1}
                else if X[1] <= 384.0
                    then {value: 27.0, samples: 1}
                    else if X[0] <= 110.0
                        then {value: 32.0, samples: 1}
                        else {value: 40.0, samples: 3}
            else if X[3] <= 20.0
                then if X[3] <= 6.0
                    then {value: 50.0, samples: 1}
                    else {value: 61.0, samples: 2}
                else if X[3] <= 31.0
                    then {value: 32.0, samples: 2}
                    else {value: 60.0, samples: 1}
        else {value: 198.0, samples: 1}
    else if X[2] <= 28000.0
        then if X[0] <= 60.5
            then if X[0] <= 38.0
                then if X[2] <= 20000.0
                    then {value: 185.0, samples: 1}
                    else {value: 173.0, samples: 1}
                else if X[1] <= 4620.0
                    then if X[0] <= 53.5
                        then {value: 138.0, samples: 1}
                        else {value: 132.0, samples: 1}
                    else {value: 106.0, samples: 1}
            else {value: 208.0, samples: 1}
        else {value: 405.0, samples: 1}
```

This is the evaluation for mse:
915.0123456790124

Fold 2
Regression Tree:

```
if X[0] <= 24.5
    then {value: 1144.0, samples: 1}
    else if X[1] <= 3000.0
        then if X[2] <= 24000.0
            then if X[3] <= 10.0
```

then if X[5] <= 4.5
            then if X[0] <= 575.0
               then {value: 8.0, samples: 2}
               else {value: 17.0, samples: 2}
            else if X[2] <= 7000.0
               then if X[0] <= 365.0
                  then if X[5] <= 17.0
                     then if X[5] <= 7.0
                        then if X[1] <= 1500.0
                           then if X[2] <= 5500.0
                              then {value: 24.333333333333332, samples: 3}
                              else {value: 33.0, samples: 1}
                           else if X[0] <= 82.5
                              then {value: 27.0, samples: 1}
                              else {value: 40.0, samples: 2}
                        else {value: 20.5, samples: 2}
                     else {value: 34.2, samples: 5}
                  else {value: 40.0, samples: 1}
               else if X[0] <= 65.5
                  then if X[0] <= 53.0
                     then {value: 36.0, samples: 1}
                     else {value: 24.0, samples: 1}
                  else if X[0] <= 83.5
                     then {value: 62.0, samples: 1}
                     else {value: 50.0, samples: 1}
            else if X[0] <= 71.0
               then {value: 45.0, samples: 1}
               else {value: 60.0, samples: 2}
         else {value: 114.0, samples: 1}
      else if X[0] <= 60.0
         then if X[0] <= 38.0
            then if X[2] <= 20000.0
               then {value: 185.0, samples: 1}
               else {value: 173.0, samples: 1}
            else if X[0] <= 53.0
               then {value: 138.0, samples: 1}
               else {value: 106.0, samples: 1}
         else {value: 208.0, samples: 1}

This is the evaluation for mse:
8382.845679012345

Fold 3
Regression Tree:

 if X[0] <= 24.5
   then {value: 1144.0, samples: 1}
   else if X[3] <= 96.5
     then if X[1] <= 3310.0
        then if X[2] <= 24000.0

then if X[2] <= 2500.0
               then if X[4] <= 6.0
                  then if X[4] <= 2.0
                     then if X[0] <= 925.0
                        then {value: 9.333333333333334, samples: 3}
                        else {value: 18.0, samples: 1}
                     else {value: 18.0, samples: 2}
                  else {value: 36.0, samples: 1}
               else if X[3] <= 2.0
                  then if X[0] <= 315.0
                     then if X[0] <= 80.5
                        then if X[0] <= 53.0
                           then {value: 27.0, samples: 1}
                           else {value: 21.0, samples: 1}
                        else {value: 34.666666666666664, samples: 3}
                     else if X[0] <= 565.0
                        then {value: 22.0, samples: 1}
                        else {value: 16.0, samples: 1}
                  else if X[2] <= 6000.0
                     then if X[0] <= 122.5
                        then if X[5] <= 13.5
                           then {value: 22.0, samples: 1}
                           else {value: 32.0, samples: 1}
                        else {value: 38.333333333333336, samples: 3}
                     else if X[4] <= 2.0
                        then if X[3] <= 10.0
                           then {value: 50.0, samples: 1}
                           else {value: 60.0, samples: 2}
                        else if X[3] <= 18.0
                           then if X[0] <= 62.5
                              then if X[1] <= 1500.0
                                 then {value: 36.0, samples: 1}
                                 else {value: 45.0, samples: 1}
                              else {value: 62.0, samples: 1}
                           else {value: 32.0, samples: 2}
            else {value: 114.0, samples: 1}
         else if X[0] <= 38.0
            then {value: 173.0, samples: 1}
            else if X[0] <= 53.5
               then {value: 138.0, samples: 1}
               else {value: 132.0, samples: 1}
      else if X[0] <= 75.5
         then {value: 405.0, samples: 1}
         else {value: 198.0, samples: 1}

This is the evaluation for mse:
887.25

Fold 4
Regression Tree:

```
if X[0] <= 24.5
  then {value: 1144.0, samples: 1}
  else if X[1] <= 3310.0
    then if X[5] <= 25.0
      then if X[2] <= 3000.0
        then if X[3] <= 4.0
          then if X[1] <= 160.0
            then {value: 10.0, samples: 1}
            else if X[0] <= 87.0
              then {value: 12.0, samples: 1}
              else if X[1] <= 884.0
                then {value: 17.5, samples: 2}
                else {value: 24.0, samples: 1}
          else {value: 6.0, samples: 1}
        else if X[3] <= 1.0
          then if X[5] <= 3.0
            then {value: 36.0, samples: 1}
            else if X[0] <= 565.0
              then if X[1] <= 628.0
                then {value: 33.0, samples: 1}
                else {value: 22.333333333333332, samples: 3}
              else {value: 16.0, samples: 1}
          else if X[0] <= 96.0
            then if X[0] <= 62.5
              then if X[2] <= 13240.0
                then {value: 34.0, samples: 2}
                else {value: 45.0, samples: 1}
              else if X[3] <= 6.0
                then {value: 50.0, samples: 1}
                else {value: 61.0, samples: 2}
            else if X[0] <= 110.0
              then if X[0] <= 102.5
                then {value: 32.0, samples: 1}
                else if X[5] <= 13.5
                  then {value: 22.0, samples: 1}
                  else {value: 32.0, samples: 1}
              else if X[0] <= 272.5
                then {value: 38.333333333333336, samples: 3}
                else {value: 27.0, samples: 1}
      else if X[0] <= 87.5
        then {value: 114.0, samples: 1}
        else {value: 198.0, samples: 1}
    else if X[2] <= 26485.0
      then if X[0] <= 60.5
        then if X[0] <= 38.0
          then {value: 185.0, samples: 1}
          else if X[1] <= 4620.0
            then if X[0] <= 53.5
              then {value: 138.0, samples: 1}
              else {value: 132.0, samples: 1}
```

else {value: 106.0, samples: 1}
                else {value: 208.0, samples: 1}
            else {value: 405.0, samples: 1}

This is the evaluation for mse:
340.71527777777777

Fold 5
Regression Tree:

if X[1] <= 3310.0
  then if X[5] <= 25.0
    then if X[2] <= 2500.0
      then if X[4] <= 6.0
        then if X[1] <= 518.0
          then if X[0] <= 165.0
            then {value: 17.0, samples: 1}
            else {value: 8.0, samples: 2}
          else if X[0] <= 125.5
            then {value: 12.0, samples: 1}
            else if X[1] <= 884.0
              then {value: 18.5, samples: 2}
              else {value: 24.0, samples: 1}
        else {value: 36.0, samples: 1}
      else if X[2] <= 11240.0
        then if X[5] <= 5.5
          then {value: 37.333333333333336, samples: 3}
          else if X[2] <= 3750.0
            then {value: 38.0, samples: 2}
            else if X[5] <= 14.0
              then if X[5] <= 7.0
                then if X[2] <= 5500.0
                  then {value: 25.333333333333332, samples: 3}
                  else {value: 32.5, samples: 2}
                else {value: 22.333333333333332, samples: 3}
              else {value: 33.0, samples: 3}
        else if X[0] <= 80.0
          then {value: 45.0, samples: 1}
          else {value: 60.0, samples: 1}
    else if X[0] <= 87.5
      then {value: 114.0, samples: 1}
      else {value: 198.0, samples: 1}
  else if X[2] <= 28000.0
    then if X[0] <= 60.5
      then if X[0] <= 41.0
        then if X[2] <= 20000.0
          then {value: 185.0, samples: 1}
          else {value: 173.0, samples: 1}
        else if X[0] <= 56.5
          then {value: 106.0, samples: 1}

else {value: 132.0, samples: 1}
              else {value: 208.0, samples: 1}
        else {value: 405.0, samples: 1}

This is the evaluation for mse:
68714.96527777778

This is the Average Evaluation for the Cross Validation

15848.157716049382
For These Hyper-Parameters: 300 and 1.0
Fold 1
Regression Tree:

 if X[0] <= 24.5
    then {value: 1144.0, samples: 1}
    else if X[4] <= 4.5
        then if X[1] <= 3000.0
          then if X[3] <= 10.0
            then if X[2] <= 2750.0
               then if X[1] <= 640.0
                  then {value: 8.0, samples: 2}
                  else if X[0] <= 143.5
                      then {value: 12.0, samples: 1}
                      else {value: 21.0, samples: 2}
                else if X[5] <= 22.0
                    then if X[3] <= 1.0
                       then if X[5] <= 3.0
                          then {value: 36.0, samples: 1}
                          else if X[0] <= 565.0
                             then {value: 23.5, samples: 4}
                             else {value: 16.0, samples: 1}
                      else if X[5] <= 5.5
                         then {value: 38.0, samples: 2}
                         else if X[0] <= 360.0
                            then if X[5] <= 13.5
                               then {value: 24.5, samples: 2}
                               else {value: 33.5, samples: 2}
                            else {value: 40.0, samples: 1}
                    else if X[0] <= 90.0
                       then {value: 62.0, samples: 1}
                       else {value: 32.0, samples: 1}
              else if X[0] <= 71.0
                 then {value: 45.0, samples: 1}
                 else {value: 60.0, samples: 2}
          else {value: 138.0, samples: 1}
        else if X[0] <= 60.5
           then if X[2] <= 13240.0
              then {value: 32.0, samples: 1}
              else if X[0] <= 38.0

then if X[2] <= 20000.0
                        then {value: 185.0, samples: 1}
                        else {value: 173.0, samples: 1}
                    else if X[0] <= 56.5
                        then {value: 110.0, samples: 2}
                        else {value: 132.0, samples: 1}
            else if X[0] <= 94.5
                then {value: 208.0, samples: 1}
                else {value: 198.0, samples: 1}

This is the evaluation for mse:
12030.972222222223

Fold 2
Regression Tree:

 if X[4] <= 20.0
    then if X[1] <= 3310.0
        then if X[5] <= 25.0
            then if X[2] <= 2500.0
                then if X[4] <= 6.0
                    then if X[1] <= 518.0
                        then if X[0] <= 165.0
                            then {value: 17.0, samples: 1}
                            else {value: 8.0, samples: 2}
                        else {value: 18.5, samples: 2}
                    else {value: 36.0, samples: 1}
                else if X[2] <= 7000.0
                    then if X[0] <= 110.0
                        then if X[5] <= 13.5
                            then {value: 21.5, samples: 2}
                            else {value: 32.0, samples: 2}
                        else if X[0] <= 310.0
                            then {value: 38.666666666666664, samples: 3}
                            else if X[0] <= 365.0
                                then if X[2] <= 5500.0
                                    then {value: 24.5, samples: 2}
                                    else {value: 33.0, samples: 1}
                                else {value: 40.0, samples: 1}
                    else if X[4] <= 2.0
                        then if X[0] <= 155.0
                            then if X[3] <= 10.0
                                then {value: 50.0, samples: 1}
                                else {value: 60.0, samples: 2}
                            else {value: 36.0, samples: 1}
                        else if X[2] <= 13240.0
                            then {value: 33.333333333333336, samples: 3}
                            else {value: 45.0, samples: 1}
            else if X[0] <= 87.5
                then {value: 114.0, samples: 1}

else {value: 198.0, samples: 1}
    else if X[0] <= 38.0
      then if X[2] <= 20000.0
        then {value: 185.0, samples: 1}
        else {value: 173.0, samples: 1}
      else if X[1] <= 4620.0
        then {value: 135.0, samples: 2}
        else {value: 106.0, samples: 1}
  else {value: 405.0, samples: 1}

This is the evaluation for mse:
62059.885802469136

Fold 3
Regression Tree:

if X[0] <= 24.5
  then {value: 1144.0, samples: 1}
  else if X[1] <= 3310.0
    then if X[2] <= 2500.0
      then if X[4] <= 6.0
        then if X[1] <= 518.0
          then if X[0] <= 165.0
            then {value: 17.0, samples: 1}
            else {value: 8.0, samples: 2}
          else if X[0] <= 125.5
            then {value: 12.0, samples: 1}
            else {value: 20.333333333333332, samples: 3}
        else {value: 36.0, samples: 1}
      else if X[3] <= 1.0
        then if X[0] <= 560.0
          then if X[0] <= 128.0
            then {value: 24.0, samples: 3}
            else {value: 35.0, samples: 3}
          else {value: 16.0, samples: 1}
        else if X[0] <= 96.0
          then if X[0] <= 62.5
            then {value: 34.0, samples: 2}
            else if X[3] <= 6.0
              then {value: 50.0, samples: 1}
              else {value: 61.0, samples: 2}
          else if X[0] <= 110.0
            then if X[0] <= 102.5
              then {value: 32.0, samples: 1}
              else if X[5] <= 13.5
                then {value: 22.0, samples: 1}
                else {value: 32.0, samples: 1}
            else {value: 38.75, samples: 4}
    else if X[2] <= 28000.0
      then if X[1] <= 4620.0

then {value: 135.0, samples: 2}
          else if X[0] <= 45.0
            then if X[2] <= 20000.0
              then {value: 185.0, samples: 1}
              else {value: 173.0, samples: 1}
            else {value: 208.0, samples: 1}
        else {value: 405.0, samples: 1}

This is the evaluation for mse:
5512.578125

Fold 4
Regression Tree:

 if X[0] <= 24.5
   then {value: 1144.0, samples: 1}
   else if X[1] <= 3310.0
     then if X[5] <= 25.0
       then if X[3] <= 1.0
         then if X[5] <= 15.0
           then if X[5] <= 3.0
             then {value: 36.0, samples: 1}
             else if X[2] <= 3000.0
               then if X[0] <= 146.5
                 then {value: 14.5, samples: 2}
                 else {value: 24.0, samples: 1}
               else if X[0] <= 565.0
                 then if X[1] <= 628.0
                   then {value: 33.0, samples: 1}
                   else {value: 23.5, samples: 4}
                 else {value: 16.0, samples: 1}
           else {value: 34.666666666666664, samples: 3}
         else if X[1] <= 762.0
           then {value: 23.0, samples: 2}
           else if X[5] <= 3.5
             then {value: 60.0, samples: 1}
             else if X[3] <= 18.0
               then if X[5] <= 22.0
                 then if X[3] <= 6.0
                   then if X[0] <= 103.5
                     then {value: 50.0, samples: 1}
                     else {value: 40.0, samples: 1}
                   else if X[2] <= 12000.0
                     then {value: 37.0, samples: 3}
                     else {value: 45.0, samples: 1}
                 else {value: 62.0, samples: 1}
               else {value: 32.0, samples: 2}
       else if X[0] <= 87.5
         then {value: 114.0, samples: 1}
         else {value: 198.0, samples: 1}

else if X[2] <= 28000.0
   then if X[0] <= 60.0
      then if X[0] <= 38.0
         then if X[2] <= 20000.0
            then {value: 185.0, samples: 1}
            else {value: 173.0, samples: 1}
         else if X[0] <= 53.0
            then {value: 138.0, samples: 1}
            else {value: 106.0, samples: 1}
      else {value: 208.0, samples: 1}
   else {value: 405.0, samples: 1}

This is the evaluation for mse:
351.0

Fold 5
Regression Tree:

if X[0] <= 24.5
   then {value: 1144.0, samples: 1}
   else if X[4] <= 10.0
      then if X[2] <= 14000.0
         then if X[2] <= 2500.0
            then if X[4] <= 6.0
               then if X[1] <= 518.0
                  then if X[0] <= 165.0
                     then {value: 17.0, samples: 1}
                     else {value: 8.0, samples: 2}
                  else if X[0] <= 125.5
                     then {value: 12.0, samples: 1}
                     else {value: 20.333333333333332, samples: 3}
               else {value: 36.0, samples: 1}
            else if X[3] <= 2.0
               then if X[0] <= 325.0
                  then if X[0] <= 80.5
                     then {value: 25.5, samples: 2}
                     else {value: 33.666666666666664, samples: 3}
                  else {value: 19.0, samples: 2}
               else if X[2] <= 6500.0
                  then if X[0] <= 122.5
                     then if X[5] <= 13.5
                        then {value: 22.0, samples: 1}
                        else {value: 32.0, samples: 1}
                     else if X[1] <= 384.0
                        then {value: 27.0, samples: 1}
                        else {value: 38.333333333333336, samples: 3}
                  else if X[0] <= 96.0
                     then if X[3] <= 6.0
                        then {value: 50.0, samples: 1}
                        else {value: 61.0, samples: 2}

else if X[0] <= 105.0
                            then {value: 32.0, samples: 1}
                            else {value: 60.0, samples: 1}
                else if X[4] <= 4.5
                    then {value: 45.0, samples: 1}
                    else if X[0] <= 53.5
                        then {value: 114.0, samples: 1}
                        else {value: 132.0, samples: 1}
            else if X[0] <= 41.0
                then {value: 405.0, samples: 1}
                else if X[0] <= 60.0
                    then {value: 106.0, samples: 1}
                    else if X[0] <= 94.5
                        then {value: 208.0, samples: 1}
                        else {value: 198.0, samples: 1}

This is the evaluation for mse:
2917.2256944444443

This is the Average Evaluation for the Cross Validation

16574.33236882716
For These Hyper-Parameters: 300 and 1.5
Fold 1
Regression Tree:

 if X[0] <= 24.5
    then {value: 1144.0, samples: 1}
    else if X[3] <= 96.5
        then if X[1] <= 3310.0
            then if X[2] <= 24000.0
                then if X[2] <= 2500.0
                    then if X[1] <= 518.0
                        then {value: 8.0, samples: 2}
                        else {value: 16.333333333333332, samples: 3}
                    else if X[3] <= 1.0
                        then if X[0] <= 325.0
                            then if X[0] <= 80.5
                                then {value: 25.5, samples: 2}
                                else {value: 34.25, samples: 4}
                            else {value: 19.0, samples: 2}
                        else if X[2] <= 6500.0
                            then if X[0] <= 110.0
                                then if X[5] <= 13.5
                                    then {value: 22.0, samples: 1}
                                    else {value: 32.0, samples: 1}
                                else if X[1] <= 384.0
                                    then {value: 27.0, samples: 1}
                                    else {value: 40.0, samples: 3}
                            else if X[0] <= 62.5

then if X[1] <= 2310.0
                then {value: 45.0, samples: 1}
                else {value: 32.0, samples: 1}
            else if X[3] <= 6.0
                then {value: 50.0, samples: 1}
                else {value: 60.666666666666664, samples: 3}
        else {value: 114.0, samples: 1}
    else if X[0] <= 38.0
        then {value: 173.0, samples: 1}
        else if X[1] <= 4620.0
            then {value: 135.0, samples: 2}
            else {value: 106.0, samples: 1}
    else if X[0] <= 75.5
        then {value: 405.0, samples: 1}
        else {value: 198.0, samples: 1}

This is the evaluation for mse:
1379.9783950617284

Fold 2
Regression Tree:

 if X[0] <= 24.5
    then {value: 1144.0, samples: 1}
    else if X[4] <= 20.0
        then if X[1] <= 3310.0
            then if X[5] <= 25.0
                then if X[2] <= 2500.0
                    then if X[4] <= 6.0
                        then if X[0] <= 221.5
                            then {value: 18.0, samples: 4}
                            else {value: 6.0, samples: 1}
                        else {value: 36.0, samples: 1}
                    else if X[3] <= 31.0
                        then if X[3] <= 1.0
                            then if X[0] <= 80.5
                                then {value: 22.5, samples: 2}
                                else if X[0] <= 325.0
                                    then {value: 34.25, samples: 4}
                                    else {value: 22.0, samples: 1}
                            else if X[3] <= 6.0
                                then if X[0] <= 103.5
                                    then {value: 50.0, samples: 1}
                                    else {value: 40.0, samples: 2}
                                else if X[2] <= 13240.0
                                    then if X[0] <= 122.5
                                        then if X[0] <= 102.5
                                            then {value: 33.333333333333336, samples: 3}
                                            else if X[5] <= 13.5
                                                then {value: 22.0, samples: 1}

else {value: 32.0, samples: 1}
                  else {value: 37.5, samples: 2}
                else {value: 45.0, samples: 1}
            else {value: 60.0, samples: 1}
        else if X[0] <= 87.5
            then {value: 114.0, samples: 1}
            else {value: 198.0, samples: 1}
      else if X[0] <= 60.5
          then if X[0] <= 41.0
              then {value: 185.0, samples: 1}
              else if X[0] <= 56.5
                  then {value: 106.0, samples: 1}
                  else {value: 132.0, samples: 1}
          else {value: 208.0, samples: 1}
      else {value: 405.0, samples: 1}

This is the evaluation for mse:
424.3364197530864

Fold 3
Regression Tree:

 if X[0] <= 24.5
    then {value: 1144.0, samples: 1}
    else if X[1] <= 3310.0
      then if X[2] <= 24000.0
        then if X[2] <= 11240.0
          then if X[5] <= 17.0
            then if X[5] <= 4.5
                then {value: 14.666666666666666, samples: 3}
                else if X[5] <= 7.0
                  then if X[0] <= 365.0
                    then if X[2] <= 5500.0
                      then {value: 25.0, samples: 4}
                      else {value: 33.666666666666664, samples: 3}
                    else {value: 40.0, samples: 1}
                  else {value: 20.6, samples: 5}
            else if X[0] <= 90.0
              then if X[0] <= 62.5
                then {value: 32.0, samples: 1}
                else {value: 62.0, samples: 1}
              else {value: 34.2, samples: 5}
          else if X[0] <= 80.0
            then {value: 45.0, samples: 1}
            else {value: 60.0, samples: 1}
        else {value: 114.0, samples: 1}
      else if X[2] <= 28000.0
        then if X[0] <= 60.5
          then if X[0] <= 38.0
            then if X[2] <= 20000.0

```
                then {value: 185.0, samples: 1}
                else {value: 173.0, samples: 1}
            else if X[1] <= 4620.0
                then {value: 135.0, samples: 2}
                else {value: 106.0, samples: 1}
        else {value: 208.0, samples: 1}
    else {value: 405.0, samples: 1}
```

This is the evaluation for mse:
3617.485555555556

Fold 4
Regression Tree:

```
 if X[0] <= 24.5
    then {value: 1144.0, samples: 1}
    else if X[1] <= 3310.0
        then if X[3] <= 144.0
            then if X[2] <= 2750.0
                then if X[4] <= 5.5
                    then if X[3] <= 4.0
                        then {value: 16.2, samples: 5}
                        else {value: 6.0, samples: 1}
                    else {value: 36.0, samples: 1}
                else if X[3] <= 1.0
                    then if X[5] <= 3.0
                        then {value: 36.0, samples: 1}
                        else if X[5] <= 16.0
                            then {value: 22.0, samples: 5}
                            else {value: 32.0, samples: 1}
                    else if X[2] <= 6500.0
                        then if X[0] <= 110.0
                            then {value: 27.0, samples: 2}
                            else if X[1] <= 384.0
                                then {value: 27.0, samples: 1}
                                else {value: 38.75, samples: 4}
                        else if X[0] <= 62.5
                            then {value: 34.0, samples: 2}
                            else if X[0] <= 96.0
                                then if X[3] <= 6.0
                                    then {value: 50.0, samples: 1}
                                    else {value: 61.0, samples: 2}
                                else if X[0] <= 105.0
                                    then {value: 32.0, samples: 1}
                                    else {value: 60.0, samples: 1}
            else {value: 198.0, samples: 1}
        else if X[1] <= 4620.0
            then {value: 138.0, samples: 1}
            else if X[0] <= 45.0
                then if X[2] <= 20000.0
```

then {value: 185.0, samples: 1}
                       else {value: 173.0, samples: 1}
                 else {value: 208.0, samples: 1}

This is the evaluation for mse:
8886.375

Fold 5
Regression Tree:

 if X[1] <= 3000.0
   then if X[5] <= 25.0
     then if X[2] <= 2500.0
       then if X[4] <= 6.0
         then if X[1] <= 518.0
           then if X[0] <= 165.0
               then {value: 17.0, samples: 1}
               else {value: 8.0, samples: 2}
           else if X[0] <= 125.5
               then {value: 12.0, samples: 1}
               else {value: 20.333333333333332, samples: 3}
         else {value: 36.0, samples: 1}
       else if X[3] <= 1.0
         then if X[0] <= 560.0
           then if X[0] <= 128.0
               then {value: 24.0, samples: 2}
               else {value: 35.0, samples: 3}
           else {value: 16.0, samples: 1}
         else if X[0] <= 112.5
           then if X[4] <= 2.0
             then if X[3] <= 10.0
               then {value: 50.0, samples: 1}
               else {value: 60.0, samples: 2}
             else if X[5] <= 20.0
               then if X[1] <= 1500.0
                   then {value: 34.0, samples: 2}
                   else {value: 45.0, samples: 1}
               else {value: 62.0, samples: 1}
           else if X[0] <= 272.5
               then {value: 38.333333333333336, samples: 3}
               else {value: 27.0, samples: 1}
     else if X[0] <= 87.5
       then {value: 114.0, samples: 1}
       else {value: 198.0, samples: 1}
   else if X[2] <= 28000.0
     then if X[0] <= 60.5
       then if X[0] <= 38.0
         then if X[2] <= 20000.0
             then {value: 185.0, samples: 1}
             else {value: 173.0, samples: 1}

```
            else if X[1] <= 4620.0
                then {value: 135.0, samples: 2}
                else {value: 106.0, samples: 1}
          else {value: 208.0, samples: 1}
    else {value: 405.0, samples: 1}
```

This is the evaluation for mse:
68515.125

This is the Average Evaluation for the Cross Validation

16564.660074074076
For These Hyper-Parameters: 300 and 2.0
Fold 1
Regression Tree:

```
 if X[1] <= 3310.0
   then if X[2] <= 24000.0
     then if X[2] <= 2500.0
       then if X[4] <= 6.0
         then if X[1] <= 518.0
           then {value: 11.0, samples: 3}
           else {value: 18.25, samples: 4}
         else {value: 36.0, samples: 1}
       else if X[3] <= 1.0
         then if X[0] <= 560.0
           then if X[0] <= 80.5
             then {value: 25.5, samples: 2}
             else {value: 34.25, samples: 4}
           else {value: 16.0, samples: 1}
         else if X[2] <= 6000.0
           then if X[0] <= 110.0
             then {value: 27.0, samples: 2}
             else {value: 38.75, samples: 4}
           else if X[0] <= 62.5
             then if X[2] <= 13240.0
               then {value: 34.0, samples: 2}
               else {value: 45.0, samples: 1}
             else if X[3] <= 6.0
               then {value: 50.0, samples: 1}
               else {value: 60.666666666666664, samples: 3}
     else {value: 114.0, samples: 1}
   else if X[0] <= 38.0
     then if X[2] <= 20000.0
       then {value: 185.0, samples: 1}
       else {value: 173.0, samples: 1}
     else {value: 135.0, samples: 2}
```

This is the evaluation for mse:
114369.52391975309

Fold 2
Regression Tree:

```
if X[0] <= 24.5
    then {value: 1144.0, samples: 1}
    else if X[4] <= 20.0
        then if X[4] <= 5.0
            then if X[1] <= 3000.0
                then if X[2] <= 7000.0
                    then if X[2] <= 2750.0
                        then if X[0] <= 221.5
                            then {value: 18.0, samples: 4}
                            else {value: 8.0, samples: 2}
                        else if X[0] <= 110.0
                            then {value: 23.333333333333332, samples: 3}
                            else if X[3] <= 1.0
                                then {value: 22.0, samples: 1}
                                else if X[1] <= 384.0
                                    then {value: 27.0, samples: 1}
                                    else {value: 38.75, samples: 4}
                    else if X[3] <= 2.0
                        then if X[0] <= 128.0
                            then {value: 24.0, samples: 1}
                            else {value: 36.0, samples: 1}
                        else if X[4] <= 2.0
                            then if X[3] <= 10.0
                                then {value: 50.0, samples: 1}
                                else {value: 60.0, samples: 2}
                            else if X[5] <= 20.0
                                then if X[1] <= 1500.0
                                    then {value: 34.0, samples: 2}
                                    else {value: 45.0, samples: 1}
                                else {value: 62.0, samples: 1}
                else {value: 138.0, samples: 1}
            else if X[0] <= 60.0
                then if X[2] <= 15725.0
                    then {value: 32.0, samples: 1}
                    else if X[0] <= 38.0
                        then {value: 173.0, samples: 1}
                        else {value: 110.0, samples: 2}
                else {value: 203.0, samples: 2}
        else {value: 405.0, samples: 1}
```

This is the evaluation for mse:
6353.024691358024

Fold 3
Regression Tree:

```
if X[0] <= 24.5
  then {value: 1144.0, samples: 1}
  else if X[1] <= 3000.0
    then if X[3] <= 144.0
      then if X[5] <= 4.5
        then if X[0] <= 575.0
          then {value: 8.0, samples: 2}
          else {value: 17.0, samples: 2}
        else if X[2] <= 7000.0
          then if X[0] <= 94.5
            then if X[0] <= 70.0
              then {value: 24.0, samples: 2}
              else {value: 12.0, samples: 1}
            else if X[5] <= 17.0
              then if X[0] <= 214.0
                then {value: 21.666666666666668, samples: 3}
                else if X[3] <= 2.0
                  then {value: 27.5, samples: 2}
                  else if X[1] <= 384.0
                    then {value: 27.0, samples: 1}
                    else {value: 40.0, samples: 2}
              else {value: 34.2, samples: 5}
          else if X[3] <= 4.0
            then {value: 24.0, samples: 1}
            else if X[0] <= 96.0
              then if X[0] <= 62.5
                then {value: 45.0, samples: 1}
                else {value: 61.0, samples: 2}
              else {value: 32.0, samples: 1}
        else {value: 198.0, samples: 1}
    else if X[2] <= 28000.0
      then if X[0] <= 60.5
        then if X[0] <= 38.0
          then if X[2] <= 20000.0
            then {value: 185.0, samples: 1}
            else {value: 173.0, samples: 1}
          else if X[1] <= 4620.0
            then {value: 135.0, samples: 2}
            else {value: 106.0, samples: 1}
        else {value: 208.0, samples: 1}
      else {value: 405.0, samples: 1}
```

This is the evaluation for mse:
1192.013888888889

Fold 4
Regression Tree:

```
if X[0] <= 24.5
  then {value: 1144.0, samples: 1}
```

```
    else if X[1] <= 3310.0
       then if X[5] <= 25.0
          then if X[2] <= 2500.0
             then if X[4] <= 5.5
                then {value: 12.75, samples: 4}
                else {value: 36.0, samples: 1}
             else if X[3] <= 1.0
                then if X[0] <= 325.0
                   then if X[0] <= 80.5
                      then {value: 24.0, samples: 2}
                      else {value: 34.25, samples: 4}
                   else {value: 19.0, samples: 2}
                else if X[2] <= 6500.0
                   then if X[1] <= 384.0
                      then {value: 27.0, samples: 1}
                      else {value: 36.75, samples: 4}
                   else if X[0] <= 62.5
                      then {value: 34.0, samples: 2}
                      else if X[0] <= 96.0
                         then if X[3] <= 6.0
                            then {value: 50.0, samples: 1}
                            else {value: 61.0, samples: 2}
                         else if X[0] <= 105.0
                            then {value: 32.0, samples: 1}
                            else {value: 60.0, samples: 1}
          else if X[0] <= 87.5
             then {value: 114.0, samples: 1}
             else {value: 198.0, samples: 1}
       else if X[2] <= 28000.0
          then if X[0] <= 60.5
             then if X[0] <= 41.0
                then if X[2] <= 20000.0
                   then {value: 185.0, samples: 1}
                   else {value: 173.0, samples: 1}
                else if X[0] <= 56.5
                   then {value: 106.0, samples: 1}
                   else {value: 132.0, samples: 1}
             else {value: 208.0, samples: 1}
          else {value: 405.0, samples: 1}
```

This is the evaluation for mse:
192.4140625

Fold 5
Regression Tree:

```
if X[0] <= 24.5
   then {value: 1144.0, samples: 1}
   else if X[1] <= 3310.0
      then if X[5] <= 25.0
```

```
        then if X[2] <= 11240.0
           then if X[2] <= 2500.0
              then if X[4] <= 6.0
                 then {value: 18.0, samples: 5}
                 else {value: 36.0, samples: 1}
              else if X[0] <= 325.0
                 then if X[5] <= 7.0
                    then if X[1] <= 1500.0
                       then {value: 32.8, samples: 5}
                       else {value: 43.333333333333336, samples: 3}
                    else if X[5] <= 13.5
                       then {value: 22.333333333333332, samples: 3}
                       else {value: 33.0, samples: 4}
                    else {value: 19.0, samples: 2}
                 else if X[0] <= 80.0
                    then {value: 45.0, samples: 1}
                    else {value: 60.0, samples: 1}
           else if X[0] <= 87.5
              then {value: 114.0, samples: 1}
              else {value: 198.0, samples: 1}
        else if X[2] <= 26485.0
           then if X[0] <= 60.5
              then if X[0] <= 38.0
                 then {value: 185.0, samples: 1}
                 else if X[1] <= 4620.0
                    then {value: 135.0, samples: 2}
                    else {value: 106.0, samples: 1}
              else {value: 208.0, samples: 1}
           else {value: 405.0, samples: 1}
```

This is the evaluation for mse:
272.81944444444446

This is the Average Evaluation for the Cross Validation

24475.959201388887
For These Hyper-Parameters: 300 and 2.5
Fold 1
Regression Tree:

```
if X[1] <= 3310.0
   then if X[3] <= 144.0
      then if X[2] <= 7000.0
         then if X[5] <= 4.5
            then {value: 11.333333333333334, samples: 3}
            else if X[0] <= 365.0
               then if X[5] <= 17.0
                  then if X[5] <= 7.0
                     then if X[1] <= 1500.0
                        then {value: 26.5, samples: 4}
```

else if X[0] <= 82.5
    then {value: 27.0, samples: 1}
    else {value: 40.0, samples: 2}
  else {value: 20.666666666666668, samples: 3}
  else {value: 33.75, samples: 4}
else {value: 40.0, samples: 1}
else if X[3] <= 2.0
  then {value: 30.0, samples: 2}
  else if X[4] <= 2.0
    then {value: 56.666666666666664, samples: 3}
    else if X[3] <= 10.0
      then {value: 62.0, samples: 1}
      else if X[2] <= 13240.0
        then {value: 32.0, samples: 2}
        else {value: 45.0, samples: 1}
else {value: 198.0, samples: 1}
else if X[0] <= 60.5
  then if X[0] <= 38.0
    then {value: 185.0, samples: 1}
    else if X[1] <= 4620.0
      then {value: 135.0, samples: 2}
      else {value: 106.0, samples: 1}
  else {value: 208.0, samples: 1}

This is the evaluation for mse:
108231.86188271605

Fold 2
Regression Tree:

if X[0] <= 24.5
  then {value: 1144.0, samples: 1}
  else if X[1] <= 3310.0
    then if X[2] <= 24000.0
      then if X[3] <= 10.0
        then if X[2] <= 2500.0
          then if X[4] <= 6.0
            then {value: 16.0, samples: 6}
            else {value: 36.0, samples: 1}
          else if X[0] <= 325.0
            then if X[0] <= 110.0
              then if X[1] <= 1500.0
                then {value: 34.0, samples: 2}
                else {value: 24.75, samples: 4}
              else {value: 37.0, samples: 5}
            else {value: 19.0, samples: 2}
        else if X[4] <= 2.0
          then {value: 60.0, samples: 2}
          else if X[2] <= 13240.0
            then {value: 32.0, samples: 2}

```
              else {value: 45.0, samples: 1}
          else {value: 114.0, samples: 1}
      else if X[2] <= 28000.0
        then if X[0] <= 60.0
          then if X[0] <= 38.0
            then {value: 179.0, samples: 2}
            else if X[0] <= 53.0
              then {value: 138.0, samples: 1}
              else {value: 106.0, samples: 1}
          else {value: 208.0, samples: 1}
        else {value: 405.0, samples: 1}
```

This is the evaluation for mse:
3427.0208333333335

Fold 3
Regression Tree:

```
 if X[0] <= 24.5
   then {value: 1144.0, samples: 1}
   else if X[1] <= 4620.0
     then if X[3] <= 47.5
       then if X[2] <= 14000.0
         then if X[2] <= 2500.0
           then if X[4] <= 5.5
             then if X[3] <= 4.0
               then {value: 16.2, samples: 5}
               else {value: 6.0, samples: 1}
             else {value: 36.0, samples: 1}
           else if X[2] <= 11240.0
             then if X[3] <= 2.0
               then if X[0] <= 315.0
                 then if X[0] <= 128.0
                   then {value: 25.5, samples: 2}
                   else {value: 36.0, samples: 2}
                 else {value: 19.0, samples: 2}
               else if X[0] <= 96.0
                 then if X[0] <= 62.5
                   then {value: 34.0, samples: 2}
                   else {value: 56.0, samples: 2}
                 else if X[0] <= 122.5
                   then {value: 28.666666666666668, samples: 3}
                   else if X[1] <= 384.0
                     then {value: 27.0, samples: 1}
                     else {value: 38.333333333333336, samples: 3}
             else {value: 60.0, samples: 1}
         else if X[4] <= 4.5
           then {value: 45.0, samples: 1}
           else if X[0] <= 53.5
             then {value: 114.0, samples: 1}
```

else {value: 132.0, samples: 1}
            else if X[0] <= 87.5
                then {value: 138.0, samples: 1}
                else {value: 198.0, samples: 1}
        else if X[2] <= 28000.0
            then if X[0] <= 45.0
                then {value: 173.0, samples: 1}
                else {value: 208.0, samples: 1}
            else {value: 405.0, samples: 1}

This is the evaluation for mse:
1400.21875

Fold 4
Regression Tree:

 if X[0] <= 24.5
    then {value: 1144.0, samples: 1}
    else if X[3] <= 80.0
        then if X[2] <= 14000.0
            then if X[2] <= 2500.0
                then if X[4] <= 6.0
                    then if X[1] <= 518.0
                        then {value: 11.0, samples: 3}
                        else {value: 18.25, samples: 4}
                    else {value: 36.0, samples: 1}
                else if X[3] <= 12.0
                    then if X[3] <= 1.0
                        then if X[0] <= 560.0
                            then if X[0] <= 80.5
                                then {value: 24.0, samples: 3}
                                else {value: 34.25, samples: 4}
                            else {value: 16.0, samples: 1}
                        else if X[5] <= 22.0
                            then if X[1] <= 384.0
                                then {value: 27.0, samples: 1}
                                else if X[3] <= 6.0
                                    then {value: 43.333333333333336, samples: 3}
                                    else {value: 34.333333333333336, samples: 3}
                            else {value: 62.0, samples: 1}
                    else {value: 60.0, samples: 2}
            else if X[0] <= 38.0
                then {value: 179.0, samples: 2}
                else if X[0] <= 56.5
                    then {value: 110.0, samples: 2}
                    else {value: 132.0, samples: 1}
        else if X[0] <= 75.5
            then {value: 405.0, samples: 1}
            else {value: 198.0, samples: 1}

This is the evaluation for mse:
1585.9105902777778

Fold 5
Regression Tree:

```
if X[0] <= 24.5
    then {value: 1144.0, samples: 1}
    else if X[1] <= 3310.0
        then if X[5] <= 25.0
            then if X[3] <= 1.0
                then if X[2] <= 2500.0
                    then {value: 13.0, samples: 3}
                    else if X[0] <= 325.0
                        then if X[0] <= 80.5
                            then {value: 24.0, samples: 2}
                            else {value: 33.666666666666664, samples: 3}
                        else {value: 19.0, samples: 2}
                else if X[0] <= 96.0
                    then if X[0] <= 62.5
                        then {value: 37.666666666666664, samples: 3}
                        else {value: 57.333333333333336, samples: 3}
                    else if X[5] <= 7.0
                        then if X[2] <= 4500.0
                            then {value: 40.0, samples: 3}
                            else {value: 29.5, samples: 2}
                        else if X[4] <= 2.0
                            then {value: 35.0, samples: 1}
                            else {value: 20.5, samples: 2}
            else if X[0] <= 87.5
                then {value: 114.0, samples: 1}
                else {value: 198.0, samples: 1}
        else if X[2] <= 28000.0
            then if X[0] <= 60.5
                then if X[0] <= 38.0
                    then {value: 179.0, samples: 2}
                    else if X[1] <= 4620.0
                        then {value: 135.0, samples: 2}
                        else {value: 106.0, samples: 1}
                else {value: 208.0, samples: 1}
            else {value: 405.0, samples: 1}
```

This is the evaluation for mse:
362.36805555555554

This is the Average Evaluation for the Cross Validation

23001.476022376544
For These Hyper-Parameters: 350 and 0.5
Fold 1

Regression Tree:

```
if X[1] <= 3310.0
  then if X[5] <= 25.0
    then if X[2] <= 2500.0
      then if X[4] <= 6.0
        then if X[0] <= 221.5
          then if X[0] <= 185.0
            then {value: 18.0, samples: 2}
            else {value: 24.0, samples: 1}
          else {value: 8.0, samples: 2}
        else {value: 36.0, samples: 1}
      else if X[3] <= 2.0
        then if X[0] <= 560.0
          then if X[0] <= 80.5
            then {value: 24.0, samples: 3}
            else {value: 34.25, samples: 4}
          else {value: 16.0, samples: 1}
        else if X[2] <= 6000.0
          then if X[0] <= 122.5
            then if X[5] <= 13.5
              then {value: 22.0, samples: 1}
              else {value: 32.0, samples: 1}
            else {value: 37.5, samples: 2}
          else if X[4] <= 2.0
            then if X[3] <= 10.0
              then {value: 50.0, samples: 1}
              else {value: 60.0, samples: 2}
            else if X[3] <= 18.0
              then if X[0] <= 62.5
                then if X[1] <= 1500.0
                  then {value: 36.0, samples: 1}
                  else {value: 45.0, samples: 1}
                else {value: 62.0, samples: 1}
              else {value: 32.0, samples: 2}
    else if X[0] <= 87.5
      then {value: 114.0, samples: 1}
      else {value: 198.0, samples: 1}
  else if X[2] <= 26485.0
    then if X[0] <= 60.0
      then if X[0] <= 38.0
        then {value: 185.0, samples: 1}
        else if X[0] <= 53.0
          then {value: 138.0, samples: 1}
          else {value: 106.0, samples: 1}
      else {value: 208.0, samples: 1}
    else {value: 405.0, samples: 1}
```

This is the evaluation for mse:
60819.625

Fold 2
Regression Tree:

if X[0] <= 24.5
   then {value: 1144.0, samples: 1}
   else if X[4] <= 20.0
      then if X[4] <= 5.0
         then if X[3] <= 1.0
            then if X[4] <= 2.0
               then if X[0] <= 70.0
                  then {value: 22.5, samples: 2}
                  else if X[0] <= 143.5
                     then {value: 12.0, samples: 1}
                     else if X[0] <= 501.5
                        then {value: 24.0, samples: 1}
                        else {value: 17.0, samples: 2}
               else if X[0] <= 217.5
                  then {value: 29.5, samples: 2}
                  else {value: 22.0, samples: 1}
            else if X[2] <= 6500.0
               then if X[5] <= 7.0
                  then if X[1] <= 384.0
                     then {value: 27.0, samples: 1}
                     else {value: 40.0, samples: 3}
                  else if X[5] <= 17.0
                     then {value: 20.5, samples: 2}
                     else {value: 33.5, samples: 2}
               else if X[1] <= 1500.0
                  then if X[0] <= 105.0
                     then {value: 34.0, samples: 2}
                     else {value: 60.0, samples: 1}
                  else if X[3] <= 6.0
                     then {value: 50.0, samples: 1}
                     else {value: 61.0, samples: 2}
      else if X[3] <= 31.0
         then if X[2] <= 13240.0
            then {value: 34.0, samples: 2}
            else if X[0] <= 60.5
               then if X[0] <= 56.5
                  then if X[0] <= 53.0
                     then {value: 114.0, samples: 1}
                     else {value: 106.0, samples: 1}
                  else {value: 132.0, samples: 1}
               else {value: 208.0, samples: 1}
         else if X[0] <= 75.5
            then {value: 173.0, samples: 1}
            else {value: 198.0, samples: 1}
      else {value: 405.0, samples: 1}

This is the evaluation for mse:
1440.361111111111

Fold 3
Regression Tree:

```
if X[0] <= 24.5
   then {value: 1144.0, samples: 1}
   else if X[4] <= 7.0
      then if X[1] <= 3000.0
         then if X[2] <= 2500.0
            then if X[1] <= 518.0
               then if X[0] <= 165.0
                  then {value: 17.0, samples: 1}
                  else {value: 8.0, samples: 2}
               else if X[0] <= 125.5
                  then {value: 12.0, samples: 1}
                  else if X[1] <= 884.0
                     then {value: 18.5, samples: 2}
                     else {value: 24.0, samples: 1}
            else if X[0] <= 96.0
               then if X[0] <= 65.5
                  then if X[0] <= 53.0
                     then if X[1] <= 1500.0
                        then {value: 36.0, samples: 1}
                        else {value: 45.0, samples: 1}
                     else {value: 21.0, samples: 1}
                  else if X[3] <= 6.0
                     then {value: 50.0, samples: 1}
                     else {value: 61.0, samples: 2}
               else if X[0] <= 600.0
                  then if X[5] <= 5.5
                     then {value: 38.0, samples: 2}
                     else if X[2] <= 3750.0
                        then {value: 38.0, samples: 2}
                        else if X[0] <= 325.0
                           then if X[5] <= 7.0
                              then if X[1] <= 1500.0
                                 then if X[2] <= 5500.0
                                    then {value: 27.0, samples: 1}
                                    else {value: 32.5, samples: 2}
                                 else {value: 40.0, samples: 1}
                              else if X[5] <= 13.5
                                 then {value: 22.0, samples: 1}
                                 else {value: 32.0, samples: 2}
                           else {value: 22.0, samples: 1}
                  else {value: 16.0, samples: 1}
         else if X[0] <= 53.5
            then {value: 138.0, samples: 1}
            else {value: 132.0, samples: 1}
      else if X[2] <= 28000.0
```

then if X[2] <= 18485.0
    then if X[0] <= 75.5
        then {value: 185.0, samples: 1}
        else {value: 198.0, samples: 1}
    else if X[0] <= 41.0
        then {value: 173.0, samples: 1}
        else {value: 106.0, samples: 1}
else {value: 405.0, samples: 1}

This is the evaluation for mse:
8205.5

Fold 4
Regression Tree:

if X[0] <= 24.5
  then {value: 1144.0, samples: 1}
  else if X[1] <= 3310.0
    then if X[2] <= 24000.0
      then if X[2] <= 2500.0
        then if X[4] <= 6.0
          then if X[1] <= 518.0
            then if X[0] <= 165.0
              then {value: 17.0, samples: 1}
              else {value: 8.0, samples: 2}
            else if X[0] <= 125.5
              then {value: 12.0, samples: 1}
              else if X[1] <= 884.0
                then {value: 18.5, samples: 2}
                else {value: 24.0, samples: 1}
          else {value: 36.0, samples: 1}
        else if X[2] <= 11240.0
          then if X[3] <= 1.0
            then if X[0] <= 325.0
              then if X[0] <= 80.5
                then {value: 25.5, samples: 2}
                else {value: 34.25, samples: 4}
              else {value: 22.0, samples: 1}
            else if X[2] <= 4500.0
              then if X[5] <= 12.5
                then {value: 40.0, samples: 3}
                else {value: 33.5, samples: 2}
              else if X[0] <= 210.0
                then {value: 33.333333333333336, samples: 3}
                else {value: 27.0, samples: 1}
          else if X[0] <= 80.0
            then {value: 45.0, samples: 1}
            else {value: 60.0, samples: 1}
      else {value: 114.0, samples: 1}
    else if X[0] <= 60.5

then if X[0] <= 38.0
            then if X[2] <= 20000.0
                then {value: 185.0, samples: 1}
                else {value: 173.0, samples: 1}
            else if X[1] <= 4620.0
                then if X[0] <= 53.5
                    then {value: 138.0, samples: 1}
                    else {value: 132.0, samples: 1}
                else {value: 106.0, samples: 1}
        else {value: 208.0, samples: 1}

This is the evaluation for mse:
10391.253472222223

Fold 5
Regression Tree:

if X[0] <= 24.5
    then {value: 1144.0, samples: 1}
    else if X[1] <= 3310.0
        then if X[5] <= 25.0
            then if X[2] <= 7000.0
                then if X[2] <= 2500.0
                    then if X[4] <= 5.5
                        then if X[3] <= 4.0
                            then if X[1] <= 160.0
                                then {value: 10.0, samples: 1}
                                else if X[0] <= 87.0
                                    then {value: 12.0, samples: 1}
                                    else {value: 17.5, samples: 2}
                            else {value: 6.0, samples: 1}
                        else {value: 36.0, samples: 1}
                    else if X[0] <= 110.0
                        then if X[0] <= 53.0
                            then {value: 27.0, samples: 1}
                            else {value: 21.5, samples: 2}
                        else if X[0] <= 310.0
                            then if X[5] <= 13.0
                                then {value: 40.0, samples: 2}
                                else {value: 35.5, samples: 2}
                            else if X[2] <= 5500.0
                                then {value: 24.5, samples: 2}
                                else {value: 33.0, samples: 1}
                else if X[3] <= 2.0
                    then if X[5] <= 3.0
                        then {value: 36.0, samples: 1}
                        else if X[0] <= 428.0
                            then {value: 24.0, samples: 1}
                            else {value: 16.0, samples: 1}
                    else if X[0] <= 62.5

then if X[1] <= 2310.0
                        then {value: 45.0, samples: 1}
                        else {value: 32.0, samples: 1}
                    else if X[3] <= 6.0
                        then {value: 50.0, samples: 1}
                        else {value: 60.666666666666664, samples: 3}
            else if X[0] <= 87.5
                then {value: 114.0, samples: 1}
                else {value: 198.0, samples: 1}
        else if X[2] <= 28000.0
            then if X[1] <= 4620.0
                then if X[0] <= 53.5
                    then {value: 138.0, samples: 1}
                    else {value: 132.0, samples: 1}
                else if X[0] <= 45.0
                    then if X[2] <= 20000.0
                        then {value: 185.0, samples: 1}
                        else {value: 173.0, samples: 1}
                    else {value: 208.0, samples: 1}
            else {value: 405.0, samples: 1}

This is the evaluation for mse:
1497.3472222222222

This is the Average Evaluation for the Cross Validation

16470.81736111111
For These Hyper-Parameters: 350 and 1.0
Fold 1
Regression Tree:

 if X[0] <= 24.5
    then {value: 1144.0, samples: 1}
    else if X[1] <= 3000.0
        then if X[5] <= 25.0
            then if X[3] <= 10.0
                then if X[1] <= 1500.0
                    then if X[5] <= 4.5
                        then if X[0] <= 520.0
                            then {value: 6.0, samples: 1}
                            else {value: 17.0, samples: 2}
                        else if X[0] <= 97.5
                            then {value: 14.5, samples: 2}
                            else if X[1] <= 518.0
                                then if X[1] <= 384.0
                                    then {value: 30.0, samples: 2}
                                    else {value: 38.0, samples: 2}
                                else if X[0] <= 136.0
                                    then {value: 32.0, samples: 1}
                                    else {value: 21.666666666666668, samples: 3}

else if X[5] <= 22.0
  then if X[5] <= 7.0
    then if X[0] <= 158.5
      then {value: 50.0, samples: 1}
      else {value: 40.0, samples: 1}
    else if X[5] <= 13.5
      then {value: 23.0, samples: 2}
      else {value: 33.5, samples: 2}
  else {value: 62.0, samples: 1}
  else if X[0] <= 71.0
    then {value: 45.0, samples: 1}
    else {value: 60.0, samples: 2}
  else if X[0] <= 87.5
    then {value: 114.0, samples: 1}
    else {value: 198.0, samples: 1}
  else if X[2] <= 28000.0
    then if X[0] <= 60.5
      then if X[0] <= 38.0
        then if X[2] <= 20000.0
          then {value: 185.0, samples: 1}
          else {value: 173.0, samples: 1}
        else if X[1] <= 4620.0
          then {value: 135.0, samples: 2}
          else {value: 106.0, samples: 1}
      else {value: 208.0, samples: 1}
    else {value: 405.0, samples: 1}

This is the evaluation for mse:
352.1882716049383

Fold 2
Regression Tree:

if X[0] <= 24.5
  then {value: 1144.0, samples: 1}
  else if X[0] <= 38.0
    then if X[2] <= 28000.0
      then if X[2] <= 20000.0
        then {value: 185.0, samples: 1}
        else {value: 173.0, samples: 1}
      else {value: 405.0, samples: 1}
    else if X[2] <= 14000.0
      then if X[3] <= 1.0
        then if X[2] <= 2500.0
          then if X[4] <= 5.5
            then if X[1] <= 160.0
              then {value: 10.0, samples: 1}
              else if X[0] <= 87.0
                then {value: 12.0, samples: 1}
                else {value: 19.666666666666668, samples: 3}

else {value: 36.0, samples: 1}
                else if X[0] <= 80.5
                    then {value: 24.0, samples: 2}
                    else {value: 34.25, samples: 4}
            else if X[2] <= 6500.0
                then if X[1] <= 384.0
                    then {value: 27.0, samples: 1}
                    else if X[5] <= 12.5
                        then {value: 40.0, samples: 3}
                        else {value: 33.5, samples: 2}
                else if X[0] <= 62.5
                    then {value: 34.0, samples: 2}
                    else if X[0] <= 96.0
                        then if X[3] <= 6.0
                            then {value: 50.0, samples: 1}
                            else {value: 61.0, samples: 2}
                        else if X[0] <= 105.0
                            then {value: 32.0, samples: 1}
                            else {value: 60.0, samples: 1}
        else if X[4] <= 4.5
            then {value: 45.0, samples: 1}
            else if X[0] <= 56.5
                then {value: 110.0, samples: 2}
                else {value: 132.0, samples: 1}

This is the evaluation for mse:
5093.263888888889

Fold 3
Regression Tree:

 if X[0] <= 24.5
    then {value: 1144.0, samples: 1}
    else if X[1] <= 4620.0
        then if X[3] <= 48.5
            then if X[2] <= 14000.0
                then if X[2] <= 2500.0
                    then if X[1] <= 518.0
                        then {value: 8.0, samples: 2}
                        else if X[0] <= 125.5
                            then {value: 12.0, samples: 1}
                            else {value: 20.333333333333332, samples: 3}
                    else if X[3] <= 1.0
                        then if X[0] <= 315.0
                            then if X[0] <= 128.0
                                then {value: 24.0, samples: 3}
                                else {value: 36.0, samples: 2}
                            else {value: 19.0, samples: 2}
                        else if X[2] <= 6500.0
                            then if X[0] <= 110.0

then if X[5] <= 13.5
                        then {value: 22.0, samples: 1}
                        else {value: 32.0, samples: 1}
                    else if X[1] <= 384.0
                        then {value: 27.0, samples: 1}
                        else {value: 38.333333333333336, samples: 3}
                else if X[0] <= 62.5
                    then {value: 34.0, samples: 2}
                    else if X[0] <= 96.0
                        then if X[3] <= 6.0
                            then {value: 50.0, samples: 1}
                            else {value: 61.0, samples: 2}
                        else if X[0] <= 105.0
                            then {value: 32.0, samples: 1}
                            else {value: 60.0, samples: 1}
            else if X[4] <= 4.5
                then {value: 45.0, samples: 1}
                else if X[0] <= 53.5
                    then {value: 114.0, samples: 1}
                    else {value: 132.0, samples: 1}
        else if X[0] <= 87.5
            then {value: 138.0, samples: 1}
            else {value: 198.0, samples: 1}
    else if X[0] <= 45.0
        then {value: 405.0, samples: 1}
        else {value: 208.0, samples: 1}

This is the evaluation for mse:
14219.472222222223

Fold 4
Regression Tree:

 if X[0] <= 24.5
    then {value: 1144.0, samples: 1}
    else if X[1] <= 3310.0
        then if X[5] <= 25.0
            then if X[2] <= 2500.0
                then if X[4] <= 6.0
                    then if X[1] <= 518.0
                        then if X[0] <= 165.0
                            then {value: 17.0, samples: 1}
                            else {value: 8.0, samples: 2}
                        else {value: 18.5, samples: 2}
                    else {value: 36.0, samples: 1}
                else if X[3] <= 31.0
                    then if X[3] <= 1.0
                        then if X[0] <= 325.0
                            then if X[0] <= 80.5
                                then {value: 24.0, samples: 3}

else {value: 34.25, samples: 4}
else {value: 19.0, samples: 2}
else if X[2] <= 13240.0
then if X[0] <= 110.0
then if X[0] <= 102.5
then {value: 33.333333333333336, samples: 3}
else {value: 22.0, samples: 1}
else {value: 38.75, samples: 4}
else {value: 45.0, samples: 1}
else {value: 60.0, samples: 1}
else if X[0] <= 87.5
then {value: 114.0, samples: 1}
else {value: 198.0, samples: 1}
else if X[0] <= 60.5
then if X[0] <= 38.0
then if X[2] <= 20000.0
then {value: 185.0, samples: 1}
else {value: 173.0, samples: 1}
else if X[1] <= 4620.0
then {value: 135.0, samples: 2}
else {value: 106.0, samples: 1}
else {value: 208.0, samples: 1}

This is the evaluation for mse:
7084.764756944444

Fold 5
Regression Tree:

if X[1] <= 3310.0
then if X[3] <= 143.0
then if X[2] <= 2500.0
then if X[4] <= 6.0
then if X[0] <= 221.5
then if X[0] <= 128.5
then {value: 14.5, samples: 2}
else {value: 21.5, samples: 2}
else {value: 8.0, samples: 2}
else {value: 36.0, samples: 1}
else if X[2] <= 11240.0
then if X[3] <= 1.0
then if X[0] <= 325.0
then if X[0] <= 80.5
then {value: 24.0, samples: 3}
else {value: 34.25, samples: 4}
else {value: 19.0, samples: 2}
else if X[0] <= 96.0
then if X[0] <= 62.5
then {value: 34.0, samples: 2}
else if X[0] <= 83.5

```
                    then {value: 62.0, samples: 1}
                    else {value: 50.0, samples: 1}
                else if X[5] <= 7.0
                    then if X[1] <= 1500.0
                        then {value: 29.5, samples: 2}
                        else {value: 40.0, samples: 2}
                    else if X[5] <= 13.5
                        then {value: 22.0, samples: 1}
                        else {value: 32.0, samples: 1}
            else {value: 60.0, samples: 1}
        else {value: 198.0, samples: 1}
    else if X[2] <= 28000.0
        then if X[0] <= 60.0
            then if X[0] <= 38.0
                then if X[2] <= 20000.0
                    then {value: 185.0, samples: 1}
                    else {value: 173.0, samples: 1}
                else if X[0] <= 53.0
                    then {value: 138.0, samples: 1}
                    else {value: 106.0, samples: 1}
            else {value: 208.0, samples: 1}
        else {value: 405.0, samples: 1}
```

This is the evaluation for mse:
68782.15625

This is the Average Evaluation for the Cross Validation

19106.369077932097
For These Hyper-Parameters: 350 and 1.5
Fold 1
Regression Tree:

```
 if X[0] <= 24.5
    then {value: 1144.0, samples: 1}
    else if X[1] <= 3310.0
        then if X[5] <= 25.0
            then if X[2] <= 2500.0
                then if X[4] <= 6.0
                    then if X[1] <= 518.0
                        then if X[0] <= 165.0
                            then {value: 17.0, samples: 1}
                            else {value: 8.0, samples: 2}
                        else if X[0] <= 125.5
                            then {value: 12.0, samples: 1}
                            else {value: 20.333333333333332, samples: 3}
                    else {value: 36.0, samples: 1}
                else if X[3] <= 1.0
                    then if X[0] <= 550.0
                        then if X[0] <= 80.5
```

then {value: 25.5, samples: 2}
                    else {value: 34.666666666666664, samples: 3}
                else {value: 16.0, samples: 1}
            else if X[3] <= 31.0
                then if X[3] <= 18.0
                    then if X[5] <= 21.5
                        then if X[5] <= 17.5
                            then {value: 40.2, samples: 5}
                            else {value: 32.0, samples: 1}
                        else {value: 62.0, samples: 1}
                    else {value: 32.0, samples: 2}
                else {value: 60.0, samples: 1}
        else if X[0] <= 87.5
            then {value: 114.0, samples: 1}
            else {value: 198.0, samples: 1}
    else if X[2] <= 28000.0
        then if X[0] <= 60.0
            then if X[0] <= 38.0
                then if X[2] <= 20000.0
                    then {value: 185.0, samples: 1}
                    else {value: 173.0, samples: 1}
                else if X[0] <= 53.0
                    then {value: 138.0, samples: 1}
                    else {value: 106.0, samples: 1}
            else {value: 208.0, samples: 1}
        else {value: 405.0, samples: 1}

This is the evaluation for mse:
206.89246913580246

Fold 2
Regression Tree:

 if X[1] <= 3310.0
    then if X[5] <= 25.0
        then if X[2] <= 2500.0
            then if X[4] <= 5.5
                then if X[3] <= 4.0
                    then {value: 16.2, samples: 5}
                    else {value: 6.0, samples: 1}
                else {value: 36.0, samples: 1}
            else if X[2] <= 11240.0
                then if X[3] <= 1.0
                    then if X[0] <= 325.0
                        then if X[0] <= 128.0
                            then {value: 22.5, samples: 2}
                            else {value: 35.0, samples: 3}
                        else {value: 19.0, samples: 2}
                    else if X[0] <= 96.0
                        then if X[0] <= 62.5

then {value: 34.0, samples: 2}
                    else if X[0] <= 83.5
                        then {value: 62.0, samples: 1}
                        else {value: 50.0, samples: 1}
                else if X[0] <= 110.0
                    then if X[0] <= 102.5
                        then {value: 32.0, samples: 1}
                        else if X[5] <= 13.5
                            then {value: 22.0, samples: 1}
                            else {value: 32.0, samples: 1}
                    else if X[1] <= 384.0
                        then {value: 27.0, samples: 1}
                        else {value: 38.333333333333336, samples: 3}
            else {value: 60.0, samples: 1}
        else if X[0] <= 87.5
            then {value: 114.0, samples: 1}
            else {value: 198.0, samples: 1}
    else if X[2] <= 26485.0
        then if X[0] <= 60.5
            then if X[0] <= 41.0
                then {value: 185.0, samples: 1}
                else if X[0] <= 56.5
                    then {value: 106.0, samples: 1}
                    else {value: 132.0, samples: 1}
            else {value: 208.0, samples: 1}
        else {value: 405.0, samples: 1}

This is the evaluation for mse:
60877.364197530864

Fold 3
Regression Tree:

 if X[0] <= 24.5
   then {value: 1144.0, samples: 1}
   else if X[1] <= 3310.0
     then if X[3] <= 144.0
       then if X[2] <= 7000.0
         then if X[0] <= 97.5
           then if X[0] <= 70.0
             then {value: 24.0, samples: 2}
             else {value: 14.5, samples: 2}
           else if X[0] <= 325.0
             then if X[3] <= 3.0
               then {value: 35.25, samples: 4}
               else if X[2] <= 3000.0
                 then {value: 19.0, samples: 1}
                 else if X[0] <= 122.5
                   then {value: 27.0, samples: 2}
                   else if X[0] <= 272.5

then {value: 37.5, samples: 2}
                    else {value: 27.0, samples: 1}
                else {value: 20.0, samples: 2}
            else if X[0] <= 500.0
                then if X[0] <= 62.5
                    then if X[2] <= 13240.0
                        then {value: 34.0, samples: 2}
                        else {value: 45.0, samples: 1}
                    else if X[0] <= 96.0
                        then if X[3] <= 6.0
                            then {value: 50.0, samples: 1}
                            else {value: 61.0, samples: 2}
                        else if X[2] <= 10000.0
                            then {value: 34.0, samples: 2}
                            else {value: 60.0, samples: 1}
                    else {value: 16.0, samples: 1}
                else {value: 198.0, samples: 1}
        else if X[2] <= 28000.0
            then if X[1] <= 4620.0
                then {value: 135.0, samples: 2}
                else if X[0] <= 45.0
                    then if X[2] <= 20000.0
                        then {value: 185.0, samples: 1}
                        else {value: 173.0, samples: 1}
                    else {value: 208.0, samples: 1}
            else {value: 405.0, samples: 1}

This is the evaluation for mse:
2007.640625

Fold 4
Regression Tree:

 if X[0] <= 24.5
    then {value: 1144.0, samples: 1}
    else if X[4] <= 7.0
        then if X[2] <= 14000.0
            then if X[3] <= 12.0
                then if X[2] <= 2500.0
                    then if X[1] <= 518.0
                        then if X[0] <= 165.0
                            then {value: 17.0, samples: 1}
                            else {value: 8.0, samples: 2}
                        else if X[0] <= 125.5
                            then {value: 12.0, samples: 1}
                            else {value: 20.333333333333332, samples: 3}
                    else if X[3] <= 1.0
                        then if X[5] <= 16.0
                            then if X[0] <= 565.0
                                then if X[1] <= 628.0

then {value: 33.0, samples: 1}
                    else {value: 23.5, samples: 4}
                else {value: 16.0, samples: 1}
            else {value: 34.0, samples: 2}
        else if X[0] <= 98.5
            then {value: 50.0, samples: 1}
            else if X[0] <= 110.0
                then {value: 22.0, samples: 1}
                else if X[1] <= 384.0
                    then {value: 27.0, samples: 1}
                    else {value: 38.75, samples: 4}
        else {value: 60.0, samples: 2}
    else if X[1] <= 3000.0
        then if X[2] <= 24000.0
            then {value: 45.0, samples: 1}
            else {value: 114.0, samples: 1}
        else {value: 135.0, samples: 2}
    else if X[0] <= 60.0
        then if X[0] <= 41.0
            then if X[2] <= 20000.0
                then {value: 185.0, samples: 1}
                else {value: 173.0, samples: 1}
            else {value: 106.0, samples: 1}
        else {value: 203.0, samples: 2}

This is the evaluation for mse:
11071.15625

Fold 5
Regression Tree:

 if X[0] <= 24.5
    then {value: 1144.0, samples: 1}
    else if X[3] <= 96.5
        then if X[1] <= 3310.0
            then if X[2] <= 24000.0
                then if X[2] <= 7000.0
                    then if X[5] <= 4.5
                        then {value: 8.0, samples: 2}
                        else if X[5] <= 17.0
                            then if X[0] <= 214.0
                                then {value: 22.6, samples: 5}
                                else if X[3] <= 2.0
                                    then if X[0] <= 325.0
                                        then {value: 33.0, samples: 1}
                                        else {value: 22.0, samples: 1}
                                    else if X[1] <= 384.0
                                        then {value: 27.0, samples: 1}
                                        else {value: 40.0, samples: 2}
                            else {value: 34.2, samples: 5}

```
                    else if X[0] <= 65.5
                        then if X[2] <= 13240.0
                            then if X[0] <= 53.0
                                then {value: 34.0, samples: 2}
                                else {value: 24.0, samples: 1}
                            else {value: 45.0, samples: 1}
                        else if X[0] <= 96.0
                            then if X[3] <= 6.0
                                then {value: 50.0, samples: 1}
                                else {value: 61.0, samples: 2}
                            else if X[2] <= 10000.0
                                then {value: 34.0, samples: 2}
                                else {value: 60.0, samples: 1}
                    else {value: 114.0, samples: 1}
                else if X[0] <= 38.0
                    then {value: 173.0, samples: 1}
                    else if X[1] <= 4620.0
                        then {value: 135.0, samples: 2}
                        else {value: 106.0, samples: 1}
            else {value: 405.0, samples: 1}
```

This is the evaluation for mse:
6783.435

This is the Average Evaluation for the Cross Validation

16189.297708333334
For These Hyper-Parameters: 350 and 2.0
Fold 1
Regression Tree:

```
 if X[0] <= 24.5
   then {value: 1144.0, samples: 1}
   else if X[1] <= 3310.0
     then if X[5] <= 25.0
       then if X[2] <= 7000.0
         then if X[5] <= 4.5
           then {value: 8.0, samples: 2}
           else if X[0] <= 97.5
             then {value: 16.666666666666668, samples: 3}
             else if X[1] <= 518.0
               then {value: 36.333333333333336, samples: 3}
               else if X[5] <= 17.0
                 then {value: 21.75, samples: 4}
                 else {value: 33.333333333333336, samples: 3}
         else if X[0] <= 65.5
           then if X[2] <= 13240.0
             then {value: 28.0, samples: 2}
             else {value: 45.0, samples: 1}
           else if X[0] <= 155.0
```

then if X[3] <= 6.0
                        then {value: 50.0, samples: 1}
                        else {value: 60.666666666666664, samples: 3}
                    else {value: 36.0, samples: 1}
            else if X[0] <= 87.5
                then {value: 114.0, samples: 1}
                else {value: 198.0, samples: 1}
        else if X[2] <= 28000.0
            then if X[0] <= 60.5
                then if X[0] <= 38.0
                    then if X[2] <= 20000.0
                        then {value: 185.0, samples: 1}
                        else {value: 173.0, samples: 1}
                    else if X[1] <= 4620.0
                        then {value: 135.0, samples: 2}
                        else {value: 106.0, samples: 1}
                else {value: 208.0, samples: 1}
            else {value: 405.0, samples: 1}

This is the evaluation for mse:
249.84104938271605

Fold 2
Regression Tree:

 if X[0] <= 24.5
    then {value: 1144.0, samples: 1}
    else if X[3] <= 96.5
        then if X[2] <= 12000.0
            then if X[2] <= 2500.0
                then if X[1] <= 518.0
                    then {value: 11.0, samples: 3}
                    else {value: 18.25, samples: 4}
                else if X[3] <= 1.0
                    then if X[2] <= 3500.0
                        then {value: 36.0, samples: 1}
                        else {value: 22.0, samples: 4}
                    else if X[0] <= 96.0
                        then if X[0] <= 62.5
                            then {value: 36.0, samples: 1}
                            else if X[3] <= 6.0
                                then {value: 50.0, samples: 1}
                                else {value: 61.0, samples: 2}
                        else if X[0] <= 110.0
                            then {value: 28.666666666666668, samples: 3}
                            else if X[1] <= 384.0
                                then {value: 27.0, samples: 1}
                                else {value: 38.75, samples: 4}
            else if X[1] <= 3000.0
                then if X[2] <= 24000.0

then {value: 45.0, samples: 1}
                  else {value: 114.0, samples: 1}
               else if X[0] <= 38.0
                  then {value: 173.0, samples: 1}
                  else if X[1] <= 4620.0
                     then {value: 135.0, samples: 2}
                     else {value: 106.0, samples: 1}
      else if X[0] <= 75.5
         then {value: 405.0, samples: 1}
         else {value: 198.0, samples: 1}

This is the evaluation for mse:
1398.641975308642

Fold 3
Regression Tree:

 if X[0] <= 24.5
    then {value: 1144.0, samples: 1}
    else if X[1] <= 3310.0
       then if X[3] <= 143.0
          then if X[2] <= 11240.0
             then if X[2] <= 2500.0
                then if X[4] <= 6.0
                   then if X[1] <= 518.0
                      then {value: 11.0, samples: 3}
                      else {value: 20.333333333333332, samples: 3}
                   else {value: 36.0, samples: 1}
                else if X[3] <= 1.0
                   then if X[0] <= 325.0
                      then if X[0] <= 80.5
                         then {value: 24.0, samples: 3}
                         else {value: 34.25, samples: 4}
                      else {value: 19.0, samples: 2}
                   else if X[2] <= 4500.0
                      then {value: 38.75, samples: 4}
                      else {value: 31.75, samples: 4}
             else if X[0] <= 80.0
                then {value: 45.0, samples: 1}
                else {value: 60.0, samples: 1}
          else {value: 198.0, samples: 1}
       else if X[0] <= 60.5
          then if X[0] <= 38.0
             then if X[2] <= 20000.0
                then {value: 185.0, samples: 1}
                else {value: 173.0, samples: 1}
             else if X[1] <= 4620.0
                then {value: 135.0, samples: 2}
                else {value: 106.0, samples: 1}
          else {value: 208.0, samples: 1}

This is the evaluation for mse:
7628.344618055556

Fold 4
Regression Tree:

```
if X[1] <= 4620.0
   then if X[3] <= 48.5
     then if X[2] <= 24000.0
        then if X[2] <= 2500.0
           then if X[4] <= 6.0
              then if X[1] <= 518.0
                 then {value: 6.0, samples: 1}
                 else {value: 16.333333333333332, samples: 3}
              else {value: 36.0, samples: 1}
           else if X[3] <= 1.0
              then if X[0] <= 325.0
                 then if X[0] <= 80.5
                    then {value: 25.5, samples: 2}
                    else {value: 34.25, samples: 4}
                 else {value: 19.0, samples: 2}
              else if X[2] <= 6500.0
                 then if X[0] <= 110.0
                    then {value: 27.0, samples: 2}
                    else if X[1] <= 384.0
                       then {value: 27.0, samples: 1}
                       else {value: 38.75, samples: 4}
                 else if X[4] <= 2.0
                    then {value: 56.666666666666664, samples: 3}
                    else if X[3] <= 18.0
                       then if X[0] <= 62.5
                          then {value: 40.5, samples: 2}
                          else {value: 62.0, samples: 1}
                       else {value: 32.0, samples: 2}
        else {value: 114.0, samples: 1}
     else if X[0] <= 87.5
        then {value: 138.0, samples: 1}
        else {value: 198.0, samples: 1}
   else if X[2] <= 26485.0
     then if X[0] <= 45.0
        then {value: 185.0, samples: 1}
        else {value: 208.0, samples: 1}
     else {value: 405.0, samples: 1}
```

This is the evaluation for mse:
71028.40972222222

Fold 5
Regression Tree:

```
if X[0] <= 24.5
   then {value: 1144.0, samples: 1}
   else if X[1] <= 3310.0
      then if X[2] <= 22000.0
         then if X[3] <= 1.0
            then if X[0] <= 340.0
               then if X[0] <= 97.5
                  then if X[0] <= 70.0
                     then {value: 24.0, samples: 2}
                     else {value: 14.5, samples: 2}
                  else if X[0] <= 201.5
                     then {value: 34.666666666666664, samples: 3}
                     else {value: 26.333333333333332, samples: 3}
               else {value: 14.666666666666666, samples: 3}
            else if X[2] <= 6500.0
               then if X[0] <= 110.0
                  then {value: 27.0, samples: 2}
                  else if X[0] <= 272.5
                     then {value: 38.333333333333336, samples: 3}
                     else {value: 27.0, samples: 1}
               else if X[0] <= 62.5
                  then {value: 34.0, samples: 2}
                  else if X[0] <= 96.0
                     then if X[3] <= 6.0
                        then {value: 50.0, samples: 1}
                        else {value: 61.0, samples: 2}
                     else if X[0] <= 105.0
                        then {value: 32.0, samples: 1}
                        else {value: 60.0, samples: 1}
         else {value: 114.0, samples: 1}
      else if X[2] <= 28000.0
         then if X[0] <= 60.5
            then if X[0] <= 41.0
               then if X[2] <= 20000.0
                  then {value: 185.0, samples: 1}
                  else {value: 173.0, samples: 1}
               else if X[0] <= 56.5
                  then {value: 106.0, samples: 1}
                  else {value: 132.0, samples: 1}
            else {value: 208.0, samples: 1}
         else {value: 405.0, samples: 1}
```

This is the evaluation for mse:
3540.0138888888887

This is the Average Evaluation for the Cross Validation

16769.050250771605
For These Hyper-Parameters: 350 and 2.5

Fold 1
Regression Tree:

 if X[0] <= 24.5
   then {value: 1144.0, samples: 1}
   else if X[3] <= 80.0
     then if X[1] <= 3930.0
       then if X[2] <= 24000.0
         then if X[2] <= 7000.0
           then if X[5] <= 4.5
             then {value: 11.333333333333334, samples: 3}
             else if X[0] <= 94.5
               then if X[0] <= 70.0
                 then {value: 24.0, samples: 2}
                 else {value: 12.0, samples: 1}
               else if X[1] <= 1500.0
                 then if X[1] <= 518.0
                   then {value: 34.0, samples: 4}
                   else {value: 24.25, samples: 4}
                 else {value: 37.333333333333336, samples: 3}
          else if X[0] <= 65.5
           then if X[2] <= 13240.0
             then {value: 30.666666666666668, samples: 3}
             else {value: 45.0, samples: 1}
           else if X[0] <= 96.0
             then {value: 57.333333333333336, samples: 3}
             else if X[0] <= 105.0
               then {value: 32.0, samples: 1}
               else {value: 60.0, samples: 1}
        else {value: 114.0, samples: 1}
      else if X[0] <= 60.0
        then if X[0] <= 41.0
          then {value: 185.0, samples: 1}
          else {value: 106.0, samples: 1}
        else {value: 208.0, samples: 1}
    else if X[0] <= 75.5
      then {value: 405.0, samples: 1}
      else {value: 198.0, samples: 1}

This is the evaluation for mse:
528.846450617284

Fold 2
Regression Tree:

 if X[1] <= 3310.0
   then if X[2] <= 24000.0
     then if X[3] <= 10.0
       then if X[2] <= 2500.0
         then if X[4] <= 6.0

```
            then if X[1] <= 518.0
                then {value: 11.5, samples: 2}
                else {value: 20.333333333333332, samples: 3}
            else {value: 36.0, samples: 1}
        else if X[0] <= 600.0
            then if X[2] <= 7000.0
                then if X[0] <= 122.5
                    then {value: 25.5, samples: 4}
                    else if X[0] <= 310.0
                        then {value: 37.0, samples: 3}
                        else if X[0] <= 365.0
                            then {value: 27.333333333333332, samples: 3}
                            else {value: 40.0, samples: 1}
                else if X[1] <= 1500.0
                    then {value: 36.0, samples: 2}
                    else {value: 50.0, samples: 1}
            else {value: 16.0, samples: 1}
        else if X[4] <= 2.0
            then {value: 60.0, samples: 2}
            else if X[2] <= 13240.0
                then {value: 32.0, samples: 2}
                else {value: 45.0, samples: 1}
    else {value: 114.0, samples: 1}
  else if X[0] <= 60.5
    then if X[0] <= 38.0
        then {value: 179.0, samples: 2}
        else if X[1] <= 4620.0
            then {value: 135.0, samples: 2}
            else {value: 106.0, samples: 1}
    else {value: 208.0, samples: 1}
```

This is the evaluation for mse:
112333.46604938273

Fold 3
Regression Tree:

```
if X[0] <= 24.5
   then {value: 1144.0, samples: 1}
   else if X[2] <= 28000.0
     then if X[1] <= 3310.0
        then if X[3] <= 144.0
           then if X[2] <= 2500.0
              then if X[4] <= 6.0
                 then {value: 13.666666666666666, samples: 6}
                 else {value: 36.0, samples: 1}
              else if X[3] <= 1.0
                 then if X[0] <= 550.0
                    then if X[0] <= 80.5
                       then {value: 22.5, samples: 2}
```

else {value: 34.666666666666664, samples: 3}
                else {value: 16.0, samples: 1}
            else if X[2] <= 6000.0
                then if X[0] <= 110.0
                    then {value: 27.0, samples: 2}
                    else {value: 38.333333333333336, samples: 3}
                else if X[4] <= 2.0
                    then {value: 56.666666666666664, samples: 3}
                    else if X[3] <= 18.0
                        then if X[0] <= 62.5
                            then {value: 40.5, samples: 2}
                            else {value: 62.0, samples: 1}
                        else {value: 32.0, samples: 2}
        else {value: 198.0, samples: 1}
    else if X[0] <= 38.0
        then {value: 179.0, samples: 2}
        else if X[1] <= 4620.0
            then {value: 135.0, samples: 2}
            else {value: 106.0, samples: 1}
    else {value: 405.0, samples: 1}

This is the evaluation for mse:
11938.309027777777

Fold 4
Regression Tree:

 if X[0] <= 24.5
    then {value: 1144.0, samples: 1}
    else if X[4] <= 20.0
        then if X[2] <= 14000.0
            then if X[3] <= 144.0
                then if X[2] <= 2500.0
                    then {value: 16.666666666666668, samples: 6}
                    else if X[3] <= 12.0
                        then if X[5] <= 22.0
                            then if X[0] <= 600.0
                                then if X[0] <= 110.0
                                    then {value: 26.25, samples: 4}
                                    else if X[0] <= 272.5
                                        then {value: 37.75, samples: 4}
                                        else if X[0] <= 365.0
                                            then {value: 27.333333333333332, samples: 3}
                                            else {value: 40.0, samples: 1}
                                else {value: 16.0, samples: 1}
                            else if X[0] <= 90.0
                                then {value: 62.0, samples: 1}
                                else {value: 34.0, samples: 2}
                        else if X[0] <= 71.0
                            then {value: 32.0, samples: 1}

else {value: 60.0, samples: 2}
                else {value: 198.0, samples: 1}
            else if X[0] <= 60.5
                then if X[0] <= 38.0
                    then {value: 173.0, samples: 1}
                    else if X[2] <= 18485.0
                        then {value: 135.0, samples: 2}
                        else {value: 110.0, samples: 2}
                else {value: 208.0, samples: 1}
        else {value: 405.0, samples: 1}

This is the evaluation for mse:
1275.2803819444443

Fold 5
Regression Tree:

 if X[0] <= 24.5
    then {value: 1144.0, samples: 1}
    else if X[3] <= 27.0
        then if X[1] <= 3000.0
            then if X[2] <= 24000.0
                then if X[2] <= 2500.0
                    then if X[4] <= 5.5
                        then if X[0] <= 221.5
                            then {value: 17.666666666666668, samples: 3}
                            else {value: 8.0, samples: 2}
                        else {value: 36.0, samples: 1}
                    else if X[3] <= 1.0
                        then if X[0] <= 325.0
                            then if X[0] <= 80.5
                                then {value: 24.0, samples: 3}
                                else {value: 34.25, samples: 4}
                            else {value: 19.0, samples: 2}
                        else if X[5] <= 22.0
                            then if X[0] <= 96.0
                                then if X[1] <= 1500.0
                                    then {value: 36.0, samples: 1}
                                    else {value: 47.5, samples: 2}
                                else if X[0] <= 110.0
                                    then {value: 27.0, samples: 2}
                                    else if X[0] <= 272.5
                                        then {value: 38.333333333333336, samples: 3}
                                        else {value: 27.0, samples: 1}
                            else {value: 62.0, samples: 1}
                else {value: 114.0, samples: 1}
            else if X[0] <= 41.5
                then {value: 185.0, samples: 1}
                else {value: 132.0, samples: 1}
        else if X[2] <= 28000.0

then if X[4] <= 4.5
    then {value: 138.0, samples: 1}
    else if X[0] <= 45.0
        then {value: 173.0, samples: 1}
        else {value: 203.0, samples: 2}
  else {value: 405.0, samples: 1}

This is the evaluation for mse:
5764.847222222223

This is the Average Evaluation for the Cross Validation

26368.149826388893
For These Hyper-Parameters: 400 and 0.5
Fold 1
Regression Tree:

if X[0] <= 24.5
  then {value: 1144.0, samples: 1}
  else if X[1] <= 3000.0
    then if X[5] <= 25.0
      then if X[2] <= 2500.0
        then if X[4] <= 6.0
          then if X[1] <= 518.0
            then if X[0] <= 165.0
              then {value: 17.0, samples: 1}
              else {value: 8.0, samples: 2}
            else if X[0] <= 125.5
              then {value: 12.0, samples: 1}
              else if X[1] <= 884.0
                then {value: 18.5, samples: 2}
                else {value: 24.0, samples: 1}
          else {value: 36.0, samples: 1}
        else if X[2] <= 10000.0
          then if X[0] <= 87.5
            then if X[0] <= 62.5
              then {value: 36.0, samples: 1}
              else {value: 62.0, samples: 1}
            else if X[0] <= 600.0
              then if X[2] <= 3750.0
                then {value: 38.0, samples: 2}
                else if X[0] <= 325.0
                  then if X[0] <= 122.5
                    then if X[0] <= 102.5
                      then {value: 32.0, samples: 1}
                      else if X[5] <= 13.5
                        then {value: 22.0, samples: 1}
                        else {value: 32.0, samples: 1}
                    else if X[0] <= 272.5
                      then {value: 37.0, samples: 3}

else if X[2] <= 5500.0
                            then {value: 27.0, samples: 1}
                            else {value: 33.0, samples: 1}
                        else {value: 22.0, samples: 1}
                    else {value: 16.0, samples: 1}
                else if X[0] <= 80.0
                    then {value: 45.0, samples: 1}
                    else {value: 60.0, samples: 1}
            else if X[0] <= 87.5
                then {value: 114.0, samples: 1}
                else {value: 198.0, samples: 1}
        else if X[0] <= 60.5
            then if X[0] <= 38.0
                then if X[2] <= 20000.0
                    then {value: 185.0, samples: 1}
                    else {value: 173.0, samples: 1}
                else if X[1] <= 4620.0
                    then if X[0] <= 53.5
                        then {value: 138.0, samples: 1}
                        else {value: 132.0, samples: 1}
                    else {value: 106.0, samples: 1}
            else {value: 208.0, samples: 1}

This is the evaluation for mse:
6208.333333333333

Fold 2
Regression Tree:

 if X[0] <= 24.5
   then {value: 1144.0, samples: 1}
   else if X[1] <= 4620.0
     then if X[3] <= 144.0
       then if X[1] <= 3310.0
         then if X[2] <= 2750.0
           then if X[4] <= 5.5
             then if X[1] <= 640.0
               then if X[0] <= 165.0
                 then {value: 17.0, samples: 1}
                 else {value: 8.0, samples: 2}
               else if X[0] <= 851.5
                 then {value: 24.0, samples: 1}
                 else {value: 18.0, samples: 1}
             else {value: 36.0, samples: 1}
           else if X[3] <= 10.0
             then if X[3] <= 1.0
               then if X[0] <= 560.0
                 then if X[0] <= 80.5
                   then {value: 24.0, samples: 3}
                   else {value: 33.666666666666664, samples: 3}

else {value: 16.0, samples: 1}
else if X[5] <= 7.0
then if X[1] <= 384.0
then {value: 27.0, samples: 1}
else if X[1] <= 1500.0
then {value: 38.0, samples: 2}
else if X[0] <= 103.5
then {value: 50.0, samples: 1}
else {value: 40.0, samples: 2}
else if X[5] <= 13.5
then {value: 22.0, samples: 1}
else {value: 33.5, samples: 2}
else if X[4] <= 2.0
then {value: 60.0, samples: 2}
else if X[2] <= 13240.0
then {value: 32.0, samples: 2}
else {value: 45.0, samples: 1}
else {value: 132.0, samples: 1}
else {value: 198.0, samples: 1}
else if X[2] <= 28000.0
then if X[0] <= 45.0
then {value: 173.0, samples: 1}
else {value: 208.0, samples: 1}
else {value: 405.0, samples: 1}

This is the evaluation for mse:
1840.4228395061727

Fold 3
Regression Tree:

if X[1] <= 3310.0
then if X[5] <= 25.0
then if X[2] <= 2500.0
then if X[4] <= 6.0
then if X[4] <= 2.0
then if X[0] <= 925.0
then {value: 9.333333333333334, samples: 3}
else {value: 18.0, samples: 1}
else {value: 18.0, samples: 2}
else {value: 36.0, samples: 1}
else if X[3] <= 1.0
then if X[0] <= 325.0
then if X[0] <= 80.5
then {value: 24.0, samples: 3}
else {value: 34.25, samples: 4}
else if X[0] <= 565.0
then {value: 22.0, samples: 1}
else {value: 16.0, samples: 1}
else if X[0] <= 96.0

then if X[0] <= 62.5
                        then {value: 34.0, samples: 2}
                        else if X[3] <= 6.0
                            then {value: 50.0, samples: 1}
                            else {value: 61.0, samples: 2}
                    else if X[5] <= 7.0
                        then if X[2] <= 4500.0
                            then {value: 40.0, samples: 2}
                            else {value: 29.5, samples: 2}
                        else {value: 22.0, samples: 1}
            else if X[0] <= 87.5
                then {value: 114.0, samples: 1}
                else {value: 198.0, samples: 1}
        else if X[2] <= 28000.0
            then if X[0] <= 60.0
                then if X[0] <= 38.0
                    then if X[2] <= 20000.0
                        then {value: 185.0, samples: 1}
                        else {value: 173.0, samples: 1}
                    else if X[0] <= 53.0
                        then {value: 138.0, samples: 1}
                        else {value: 106.0, samples: 1}
                else {value: 208.0, samples: 1}
            else {value: 405.0, samples: 1}

This is the evaluation for mse:
68541.54513888889

Fold 4
Regression Tree:

 if X[0] <= 24.5
    then {value: 1144.0, samples: 1}
    else if X[4] <= 20.0
        then if X[1] <= 3310.0
            then if X[5] <= 25.0
                then if X[2] <= 7000.0
                    then if X[0] <= 97.5
                        then if X[0] <= 70.0
                            then if X[0] <= 53.0
                                then {value: 27.0, samples: 1}
                                else {value: 21.0, samples: 1}
                            else {value: 14.5, samples: 2}
                        else if X[1] <= 1500.0
                            then if X[5] <= 17.5
                                then if X[1] <= 390.0
                                    then if X[2] <= 5500.0
                                        then {value: 27.0, samples: 1}
                                        else {value: 33.0, samples: 1}
                                    else {value: 21.666666666666668, samples: 3}

else {value: 34.666666666666664, samples: 3}
                    else if X[5] <= 12.5
                        then {value: 40.0, samples: 2}
                        else {value: 33.5, samples: 2}
                else if X[0] <= 65.5
                    then if X[2] <= 13240.0
                        then if X[0] <= 53.0
                            then {value: 34.0, samples: 2}
                            else {value: 24.0, samples: 1}
                        else {value: 45.0, samples: 1}
                    else if X[0] <= 155.0
                        then if X[3] <= 6.0
                            then {value: 50.0, samples: 1}
                            else {value: 60.666666666666664, samples: 3}
                        else {value: 36.0, samples: 1}
            else if X[0] <= 87.5
                then {value: 114.0, samples: 1}
                else {value: 198.0, samples: 1}
        else if X[0] <= 38.0
            then if X[2] <= 20000.0
                then {value: 185.0, samples: 1}
                else {value: 173.0, samples: 1}
            else if X[1] <= 4620.0
                then if X[0] <= 53.5
                    then {value: 138.0, samples: 1}
                    else {value: 132.0, samples: 1}
                else {value: 106.0, samples: 1}
    else {value: 405.0, samples: 1}

This is the evaluation for mse:
1604.2222222222224

Fold 5
Regression Tree:

 if X[0] <= 24.5
   then {value: 1144.0, samples: 1}
   else if X[1] <= 3310.0
     then if X[2] <= 24000.0
       then if X[2] <= 2500.0
         then if X[1] <= 518.0
           then {value: 8.0, samples: 2}
           else if X[0] <= 125.5
             then {value: 12.0, samples: 1}
             else if X[1] <= 884.0
               then {value: 18.5, samples: 2}
               else {value: 24.0, samples: 1}
         else if X[3] <= 1.0
           then if X[5] <= 16.0
             then if X[0] <= 565.0

then {value: 23.5, samples: 4}
    else {value: 16.0, samples: 1}
  else {value: 34.0, samples: 2}
else if X[2] <= 6000.0
  then if X[0] <= 110.0
    then if X[5] <= 13.5
      then {value: 22.0, samples: 1}
      else {value: 32.0, samples: 1}
    else if X[5] <= 13.0
      then {value: 40.0, samples: 3}
      else {value: 35.0, samples: 1}
    else if X[4] <= 2.0
      then if X[3] <= 10.0
        then {value: 50.0, samples: 1}
        else {value: 60.0, samples: 2}
      else if X[3] <= 10.0
        then {value: 62.0, samples: 1}
        else if X[2] <= 13240.0
          then {value: 32.0, samples: 2}
          else {value: 45.0, samples: 1}
  else {value: 114.0, samples: 1}
else if X[2] <= 26485.0
  then if X[0] <= 60.5
    then if X[0] <= 38.0
      then {value: 185.0, samples: 1}
      else if X[1] <= 4620.0
        then if X[0] <= 53.5
          then {value: 138.0, samples: 1}
          else {value: 132.0, samples: 1}
        else {value: 106.0, samples: 1}
    else {value: 208.0, samples: 1}
  else {value: 405.0, samples: 1}

This is the evaluation for mse:
3583.6875

This is the Average Evaluation for the Cross Validation

16355.642206790124
For These Hyper-Parameters: 400 and 1.0
Fold 1
Regression Tree:

 if X[0] <= 24.5
   then {value: 1144.0, samples: 1}
   else if X[3] <= 96.5
     then if X[1] <= 3000.0
       then if X[2] <= 24000.0
         then if X[2] <= 2500.0
           then if X[4] <= 6.0

then if X[1] <= 518.0
                       then if X[0] <= 165.0
                          then {value: 17.0, samples: 1}
                          else {value: 6.0, samples: 1}
                       else if X[0] <= 125.5
                          then {value: 12.0, samples: 1}
                          else {value: 20.333333333333332, samples: 3}
                    else {value: 36.0, samples: 1}
                 else if X[3] <= 1.0
                    then if X[0] <= 325.0
                       then if X[0] <= 80.5
                          then {value: 24.0, samples: 3}
                          else {value: 34.25, samples: 4}
                       else {value: 19.0, samples: 2}
                    else if X[5] <= 22.0
                       then if X[3] <= 28.0
                          then if X[5] <= 3.5
                             then {value: 60.0, samples: 1}
                             else if X[0] <= 96.0
                                then if X[1] <= 1500.0
                                   then {value: 36.0, samples: 1}
                                   else {value: 47.5, samples: 2}
                                else if X[3] <= 6.0
                                   then {value: 40.0, samples: 2}
                                   else {value: 33.5, samples: 2}
                          else {value: 60.0, samples: 1}
                       else {value: 62.0, samples: 1}
              else {value: 114.0, samples: 1}
           else if X[0] <= 38.0
              then {value: 173.0, samples: 1}
              else if X[1] <= 4620.0
                 then {value: 135.0, samples: 2}
                 else {value: 106.0, samples: 1}
        else {value: 405.0, samples: 1}

This is the evaluation for mse:
6073.194444444444

Fold 2
Regression Tree:

 if X[0] <= 24.5
   then {value: 1144.0, samples: 1}
   else if X[1] <= 4620.0
     then if X[3] <= 47.5
        then if X[2] <= 13240.0
           then if X[2] <= 2500.0
              then if X[4] <= 5.5
                 then if X[1] <= 640.0
                    then if X[0] <= 165.0

```
                    then {value: 17.0, samples: 1}
                    else {value: 8.0, samples: 2}
                else {value: 21.0, samples: 2}
            else {value: 36.0, samples: 1}
        else if X[2] <= 7000.0
            then if X[0] <= 110.0
                then if X[5] <= 13.5
                    then {value: 23.333333333333332, samples: 3}
                    else {value: 32.0, samples: 2}
                else if X[0] <= 310.0
                    then {value: 37.75, samples: 4}
                    else if X[0] <= 365.0
                        then {value: 24.5, samples: 2}
                        else {value: 40.0, samples: 1}
                else if X[1] <= 1500.0
                    then {value: 34.666666666666664, samples: 3}
                    else if X[0] <= 62.5
                        then {value: 32.0, samples: 1}
                        else if X[0] <= 83.5
                            then {value: 62.0, samples: 1}
                            else {value: 50.0, samples: 1}
            else if X[4] <= 4.5
                then {value: 45.0, samples: 1}
                else if X[0] <= 53.5
                    then {value: 114.0, samples: 1}
                    else {value: 132.0, samples: 1}
        else if X[0] <= 87.5
            then {value: 138.0, samples: 1}
            else {value: 198.0, samples: 1}
    else if X[2] <= 26485.0
        then if X[0] <= 45.0
            then {value: 185.0, samples: 1}
            else {value: 208.0, samples: 1}
        else {value: 405.0, samples: 1}
```

This is the evaluation for mse:
1330.7191358024693

Fold 3
Regression Tree:

```
if X[1] <= 3310.0
    then if X[3] <= 144.0
        then if X[3] <= 10.0
            then if X[5] <= 4.5
                then if X[0] <= 575.0
                    then {value: 8.0, samples: 2}
                    else {value: 16.0, samples: 1}
                else if X[2] <= 2500.0
                    then if X[4] <= 6.0
```

```
            then if X[0] <= 128.5
                then {value: 14.5, samples: 2}
                else {value: 21.5, samples: 2}
            else {value: 36.0, samples: 1}
        else if X[3] <= 1.0
            then if X[1] <= 884.0
                then {value: 34.5, samples: 2}
                else if X[5] <= 16.0
                    then {value: 23.5, samples: 4}
                    else {value: 32.0, samples: 1}
            else if X[0] <= 98.5
                then if X[0] <= 71.0
                    then {value: 36.0, samples: 1}
                    else {value: 50.0, samples: 1}
                else if X[0] <= 110.0
                    then if X[5] <= 13.5
                        then {value: 22.0, samples: 1}
                        else {value: 32.0, samples: 1}
                    else if X[0] <= 272.5
                        then {value: 38.333333333333336, samples: 3}
                        else {value: 27.0, samples: 1}
        else if X[0] <= 71.0
            then if X[1] <= 2310.0
                then {value: 45.0, samples: 1}
                else {value: 32.0, samples: 1}
            else {value: 60.0, samples: 2}
        else {value: 198.0, samples: 1}
    else if X[2] <= 28000.0
        then if X[0] <= 60.0
            then if X[0] <= 38.0
                then if X[2] <= 20000.0
                    then {value: 185.0, samples: 1}
                    else {value: 173.0, samples: 1}
                else if X[0] <= 53.0
                    then {value: 138.0, samples: 1}
                    else {value: 106.0, samples: 1}
            else {value: 208.0, samples: 1}
        else {value: 405.0, samples: 1}
```

This is the evaluation for mse:
69180.375

Fold 4
Regression Tree:

```
 if X[0] <= 24.5
   then {value: 1144.0, samples: 1}
   else if X[1] <= 3310.0
     then if X[5] <= 25.0
        then if X[3] <= 2.0
```

then if X[2] <= 2500.0
          then if X[1] <= 160.0
            then {value: 10.0, samples: 1}
            else if X[0] <= 87.0
              then {value: 12.0, samples: 1}
              else {value: 19.666666666666668, samples: 3}
          else if X[0] <= 325.0
            then if X[0] <= 128.0
              then {value: 22.5, samples: 2}
              else {value: 35.0, samples: 3}
            else {value: 19.0, samples: 2}
        else if X[2] <= 6500.0
          then if X[0] <= 196.0
            then if X[5] <= 17.0
              then {value: 20.5, samples: 2}
              else {value: 32.0, samples: 1}
            else if X[1] <= 384.0
              then {value: 27.0, samples: 1}
              else {value: 40.0, samples: 2}
          else if X[0] <= 62.5
            then {value: 34.0, samples: 2}
            else if X[0] <= 96.0
              then if X[3] <= 6.0
                then {value: 50.0, samples: 1}
                else {value: 61.0, samples: 2}
              else if X[0] <= 105.0
                then {value: 32.0, samples: 1}
                else {value: 60.0, samples: 1}
      else if X[0] <= 87.5
        then {value: 114.0, samples: 1}
        else {value: 198.0, samples: 1}
    else if X[2] <= 28000.0
      then if X[0] <= 60.5
        then if X[0] <= 41.0
          then if X[2] <= 20000.0
            then {value: 185.0, samples: 1}
            else {value: 173.0, samples: 1}
          else if X[0] <= 56.5
            then {value: 106.0, samples: 1}
            else {value: 132.0, samples: 1}
        else {value: 208.0, samples: 1}
      else {value: 405.0, samples: 1}

This is the evaluation for mse:
374.19097222222223

Fold 5
Regression Tree:

 if X[0] <= 24.5

```
                    then {value: 1144.0, samples: 1}
                else if X[1] <= 3310.0
                    then if X[5] <= 25.0
                        then if X[2] <= 2750.0
                            then if X[4] <= 6.0
                                then if X[1] <= 518.0
                                    then {value: 8.0, samples: 2}
                                    else {value: 16.333333333333332, samples: 3}
                                else {value: 36.0, samples: 1}
                            else if X[3] <= 1.0
                                then if X[0] <= 560.0
                                    then if X[0] <= 80.5
                                        then {value: 25.5, samples: 2}
                                        else {value: 33.666666666666664, samples: 3}
                                    else {value: 16.0, samples: 1}
                                else if X[2] <= 6500.0
                                    then if X[0] <= 110.0
                                        then if X[5] <= 13.5
                                            then {value: 22.0, samples: 1}
                                            else {value: 32.0, samples: 1}
                                        else if X[1] <= 384.0
                                            then {value: 27.0, samples: 1}
                                            else {value: 38.75, samples: 4}
                                    else if X[4] <= 2.0
                                        then {value: 60.0, samples: 2}
                                        else if X[3] <= 10.0
                                            then {value: 62.0, samples: 1}
                                            else if X[2] <= 13240.0
                                                then {value: 32.0, samples: 2}
                                                else {value: 45.0, samples: 1}
                        else if X[0] <= 87.5
                            then {value: 114.0, samples: 1}
                            else {value: 198.0, samples: 1}
                    else if X[0] <= 60.5
                        then if X[0] <= 38.0
                            then if X[2] <= 20000.0
                                then {value: 185.0, samples: 1}
                                else {value: 173.0, samples: 1}
                            else if X[1] <= 4620.0
                                then {value: 135.0, samples: 2}
                                else {value: 106.0, samples: 1}
                        else {value: 208.0, samples: 1}
```

This is the evaluation for mse:
6862.697916666667

This is the Average Evaluation for the Cross Validation

16764.23549382716
For These Hyper-Parameters: 400 and 1.5

Fold 1
Regression Tree:

```
if X[0] <= 24.5
   then {value: 1144.0, samples: 1}
   else if X[3] <= 80.0
      then if X[1] <= 3000.0
         then if X[2] <= 24000.0
            then if X[2] <= 2500.0
               then if X[4] <= 6.0
                  then if X[4] <= 2.0
                     then if X[0] <= 925.0
                        then {value: 9.333333333333334, samples: 3}
                        else {value: 18.0, samples: 1}
                     else {value: 18.0, samples: 2}
                  else {value: 36.0, samples: 1}
               else if X[3] <= 10.0
                  then if X[5] <= 7.0
                     then if X[1] <= 384.0
                        then {value: 30.0, samples: 2}
                        else if X[0] <= 71.0
                           then {value: 31.5, samples: 2}
                           else if X[0] <= 103.5
                              then {value: 50.0, samples: 1}
                              else {value: 39.0, samples: 4}
                     else if X[5] <= 14.0
                        then {value: 22.333333333333332, samples: 3}
                        else {value: 34.333333333333336, samples: 3}
                  else if X[4] <= 2.0
                     then {value: 60.0, samples: 2}
                     else if X[0] <= 75.0
                        then {value: 45.0, samples: 1}
                        else {value: 32.0, samples: 1}
            else {value: 114.0, samples: 1}
         else if X[0] <= 41.5
            then if X[2] <= 20000.0
               then {value: 185.0, samples: 1}
               else {value: 173.0, samples: 1}
            else {value: 132.0, samples: 1}
      else if X[0] <= 75.5
         then {value: 405.0, samples: 1}
         else {value: 198.0, samples: 1}
```

This is the evaluation for mse:
903.1111111111111

Fold 2
Regression Tree:

```
if X[0] <= 24.5
```

then {value: 1144.0, samples: 1}
        else if X[2] <= 13240.0
          then if X[2] <= 2500.0
            then if X[4] <= 6.0
              then if X[0] <= 221.5
                then {value: 18.0, samples: 4}
                else {value: 8.0, samples: 2}
              else {value: 36.0, samples: 1}
            else if X[0] <= 325.0
              then if X[2] <= 7000.0
                then if X[0] <= 110.0
                  then if X[5] <= 13.5
                    then {value: 24.5, samples: 2}
                    else {value: 32.0, samples: 2}
                  else if X[0] <= 310.0
                    then {value: 37.75, samples: 4}
                    else {value: 30.0, samples: 2}
                else if X[0] <= 65.5
                  then if X[0] <= 53.0
                    then {value: 34.0, samples: 2}
                    else {value: 24.0, samples: 1}
                  else if X[0] <= 146.0
                    then if X[0] <= 83.5
                      then {value: 62.0, samples: 1}
                      else {value: 50.0, samples: 1}
                    else {value: 36.0, samples: 1}
              else {value: 19.0, samples: 2}
          else if X[3] <= 96.5
            then if X[0] <= 60.5
              then if X[0] <= 38.0
                then {value: 185.0, samples: 1}
                else if X[2] <= 18485.0
                  then {value: 135.0, samples: 2}
                  else {value: 110.0, samples: 2}
              else {value: 208.0, samples: 1}
            else {value: 405.0, samples: 1}

This is the evaluation for mse:
3889.034722222222

Fold 3
Regression Tree:

 if X[0] <= 24.5
   then {value: 1144.0, samples: 1}
   else if X[1] <= 3310.0
     then if X[3] <= 144.0
       then if X[2] <= 7000.0
         then if X[2] <= 2500.0
           then if X[4] <= 6.0

then if X[1] <= 518.0
   then {value: 6.0, samples: 1}
   else if X[0] <= 125.5
     then {value: 12.0, samples: 1}
     else {value: 20.333333333333332, samples: 3}
  else {value: 36.0, samples: 1}
else if X[2] <= 3750.0
  then {value: 38.0, samples: 2}
  else if X[3] <= 6.0
   then if X[1] <= 628.0
     then {value: 30.0, samples: 2}
     else {value: 21.5, samples: 2}
   else {value: 33.5, samples: 2}
else if X[3] <= 2.0
  then if X[5] <= 3.0
   then {value: 36.0, samples: 1}
   else {value: 20.0, samples: 2}
  else if X[4] <= 2.0
   then if X[3] <= 10.0
     then {value: 50.0, samples: 1}
     else {value: 60.0, samples: 2}
   else if X[3] <= 18.0
     then if X[0] <= 62.5
       then {value: 40.5, samples: 2}
       else {value: 62.0, samples: 1}
     else {value: 32.0, samples: 2}
else {value: 198.0, samples: 1}
else if X[2] <= 28000.0
  then if X[0] <= 60.5
   then if X[0] <= 38.0
     then if X[2] <= 20000.0
       then {value: 185.0, samples: 1}
       else {value: 173.0, samples: 1}
     else if X[1] <= 4620.0
       then {value: 135.0, samples: 2}
       else {value: 106.0, samples: 1}
   else {value: 208.0, samples: 1}
  else {value: 405.0, samples: 1}

This is the evaluation for mse:
939.78125

Fold 4
Regression Tree:

if X[1] <= 3310.0
  then if X[5] <= 25.0
   then if X[3] <= 1.0
     then if X[0] <= 340.0
       then if X[0] <= 97.5

then {value: 22.25, samples: 4}
                else if X[0] <= 325.0
                    then if X[4] <= 4.5
                        then if X[2] <= 3000.0
                            then {value: 24.0, samples: 1}
                            else {value: 33.666666666666664, samples: 3}
                        else {value: 36.0, samples: 2}
                    else {value: 22.0, samples: 1}
            else {value: 14.666666666666666, samples: 3}
        else if X[2] <= 6500.0
            then if X[0] <= 110.0
                then {value: 27.0, samples: 2}
                else if X[1] <= 384.0
                    then {value: 27.0, samples: 1}
                    else {value: 40.0, samples: 3}
            else if X[4] <= 2.0
                then if X[3] <= 10.0
                    then {value: 50.0, samples: 1}
                    else {value: 60.0, samples: 2}
                else if X[3] <= 10.0
                    then {value: 62.0, samples: 1}
                    else if X[2] <= 13240.0
                        then {value: 32.0, samples: 2}
                        else {value: 45.0, samples: 1}
        else if X[0] <= 87.5
            then {value: 114.0, samples: 1}
            else {value: 198.0, samples: 1}
    else if X[0] <= 60.0
        then if X[0] <= 38.0
            then if X[2] <= 20000.0
                then {value: 185.0, samples: 1}
                else {value: 173.0, samples: 1}
            else if X[0] <= 53.0
                then {value: 138.0, samples: 1}
                else {value: 106.0, samples: 1}
        else {value: 208.0, samples: 1}

This is the evaluation for mse:
124968.0078125

Fold 5
Regression Tree:

 if X[0] <= 24.5
   then {value: 1144.0, samples: 1}
   else if X[4] <= 20.0
     then if X[4] <= 5.0
       then if X[1] <= 3000.0
         then if X[2] <= 2750.0
           then if X[1] <= 518.0

then if X[0] <= 165.0
                            then {value: 17.0, samples: 1}
                            else {value: 8.0, samples: 2}
                        else if X[0] <= 125.5
                            then {value: 12.0, samples: 1}
                            else {value: 20.333333333333332, samples: 3}
                    else if X[3] <= 1.0
                        then if X[5] <= 16.0
                            then {value: 21.5, samples: 4}
                            else {value: 32.0, samples: 1}
                        else if X[2] <= 6000.0
                            then if X[0] <= 110.0
                                then {value: 27.0, samples: 2}
                                else {value: 38.75, samples: 4}
                            else if X[4] <= 2.0
                                then {value: 60.0, samples: 2}
                                else if X[5] <= 20.0
                                    then if X[1] <= 1500.0
                                        then {value: 34.0, samples: 2}
                                        else {value: 45.0, samples: 1}
                                    else {value: 62.0, samples: 1}
                else {value: 138.0, samples: 1}
            else if X[0] <= 60.5
                then if X[2] <= 13240.0
                    then {value: 32.0, samples: 1}
                    else if X[0] <= 38.0
                        then {value: 173.0, samples: 1}
                        else if X[0] <= 56.5
                            then {value: 110.0, samples: 2}
                            else {value: 132.0, samples: 1}
                else {value: 203.0, samples: 2}
        else {value: 405.0, samples: 1}

This is the evaluation for mse:
7063.6015625

This is the Average Evaluation for the Cross Validation

27552.707291666662
For These Hyper-Parameters: 400 and 2.0
Fold 1
Regression Tree:

 if X[0] <= 24.5
    then {value: 1144.0, samples: 1}
    else if X[1] <= 3310.0
        then if X[5] <= 25.0
            then if X[2] <= 2500.0
                then if X[4] <= 5.5
                    then if X[3] <= 4.0

```
                    then {value: 16.2, samples: 5}
                    else {value: 6.0, samples: 1}
                else {value: 36.0, samples: 1}
            else if X[3] <= 1.0
                then if X[0] <= 325.0
                    then {value: 32.0, samples: 4}
                    else {value: 19.0, samples: 2}
                else if X[5] <= 3.5
                    then {value: 60.0, samples: 1}
                    else if X[1] <= 1500.0
                        then {value: 33.75, samples: 4}
                        else if X[1] <= 2310.0
                            then if X[5] <= 22.0
                                then {value: 40.0, samples: 4}
                                else {value: 62.0, samples: 1}
                            else {value: 32.0, samples: 1}
        else if X[0] <= 87.5
            then {value: 114.0, samples: 1}
            else {value: 198.0, samples: 1}
    else if X[2] <= 28000.0
        then if X[0] <= 60.5
            then if X[0] <= 41.0
                then if X[2] <= 20000.0
                    then {value: 185.0, samples: 1}
                    else {value: 173.0, samples: 1}
                else if X[0] <= 56.5
                    then {value: 106.0, samples: 1}
                    else {value: 132.0, samples: 1}
            else {value: 208.0, samples: 1}
        else {value: 405.0, samples: 1}
```

This is the evaluation for mse:
253.55555555555554

Fold 2
Regression Tree:

```
 if X[0] <= 24.5
    then {value: 1144.0, samples: 1}
    else if X[1] <= 3310.0
        then if X[2] <= 24000.0
            then if X[2] <= 2500.0
                then if X[4] <= 2.0
                    then {value: 9.0, samples: 2}
                    else {value: 18.0, samples: 2}
                else if X[3] <= 1.0
                    then if X[0] <= 560.0
                        then if X[0] <= 80.5
                            then {value: 24.0, samples: 3}
                            else {value: 34.25, samples: 4}
```

else {value: 16.0, samples: 1}
                else if X[2] <= 6000.0
                    then if X[0] <= 110.0
                        then {value: 27.0, samples: 2}
                        else {value: 38.333333333333336, samples: 3}
                    else if X[4] <= 2.0
                        then if X[3] <= 10.0
                            then {value: 50.0, samples: 1}
                            else {value: 60.0, samples: 2}
                        else if X[3] <= 18.0
                            then if X[0] <= 62.5
                                then {value: 40.5, samples: 2}
                                else {value: 62.0, samples: 1}
                            else {value: 32.0, samples: 2}
            else {value: 114.0, samples: 1}
        else if X[2] <= 28000.0
            then if X[1] <= 4620.0
                then {value: 135.0, samples: 2}
                else if X[0] <= 45.0
                    then if X[2] <= 20000.0
                        then {value: 185.0, samples: 1}
                        else {value: 173.0, samples: 1}
                    else {value: 208.0, samples: 1}
            else {value: 405.0, samples: 1}

This is the evaluation for mse:
4089.969907407407

Fold 3
Regression Tree:

 if X[2] <= 14000.0
    then if X[3] <= 144.0
        then if X[3] <= 1.0
            then if X[5] <= 15.0
                then if X[1] <= 884.0
                    then {value: 15.25, samples: 4}
                    else if X[5] <= 3.5
                        then {value: 36.0, samples: 1}
                        else if X[2] <= 3000.0
                            then if X[0] <= 143.5
                                then {value: 12.0, samples: 1}
                                else {value: 24.0, samples: 1}
                            else {value: 23.5, samples: 4}
                else {value: 34.0, samples: 2}
            else if X[5] <= 7.0
                then if X[3] <= 12.0
                    then if X[1] <= 384.0
                        then {value: 27.0, samples: 1}
                        else {value: 41.2, samples: 5}

else {value: 60.0, samples: 2}
            else if X[5] <= 17.0
                then {value: 20.5, samples: 2}
                else {value: 32.0, samples: 2}
        else {value: 198.0, samples: 1}
    else if X[3] <= 96.5
        then if X[0] <= 60.5
            then if X[0] <= 38.0
                then if X[2] <= 20000.0
                    then {value: 185.0, samples: 1}
                    else {value: 173.0, samples: 1}
                else if X[2] <= 18485.0
                    then {value: 135.0, samples: 2}
                    else {value: 110.0, samples: 2}
            else {value: 208.0, samples: 1}
        else {value: 405.0, samples: 1}

This is the evaluation for mse:
69684.0128125

Fold 4
Regression Tree:

 if X[0] <= 24.5
    then {value: 1144.0, samples: 1}
    else if X[3] <= 48.5
        then if X[2] <= 13240.0
            then if X[2] <= 2500.0
                then if X[4] <= 6.0
                    then if X[1] <= 518.0
                        then {value: 11.0, samples: 3}
                        else {value: 18.25, samples: 4}
                    else {value: 36.0, samples: 1}
                else if X[3] <= 31.0
                    then if X[3] <= 1.0
                        then if X[0] <= 325.0
                            then if X[0] <= 80.5
                                then {value: 22.5, samples: 2}
                                else {value: 34.25, samples: 4}
                            else {value: 19.0, samples: 2}
                        else if X[0] <= 96.0
                            then if X[0] <= 62.5
                                then {value: 32.0, samples: 1}
                                else if X[0] <= 83.5
                                    then {value: 62.0, samples: 1}
                                    else {value: 50.0, samples: 1}
                            else if X[0] <= 110.0
                                then {value: 28.666666666666668, samples: 3}
                                else if X[1] <= 384.0
                                    then {value: 27.0, samples: 1}

else {value: 38.333333333333336, samples: 3}
                else {value: 60.0, samples: 1}
            else if X[0] <= 38.0
                then {value: 185.0, samples: 1}
                else if X[2] <= 18485.0
                    then {value: 45.0, samples: 1}
                    else {value: 110.0, samples: 2}
        else if X[0] <= 87.5
            then {value: 138.0, samples: 1}
            else {value: 198.0, samples: 1}

This is the evaluation for mse:
11203.350694444445

Fold 5
Regression Tree:

if X[0] <= 24.5
    then {value: 1144.0, samples: 1}
    else if X[3] <= 27.0
        then if X[1] <= 3000.0
            then if X[2] <= 7000.0
                then if X[5] <= 4.5
                    then {value: 11.333333333333334, samples: 3}
                    else if X[5] <= 17.0
                        then if X[0] <= 214.0
                            then {value: 22.6, samples: 5}
                            else if X[3] <= 2.0
                                then {value: 27.5, samples: 2}
                                else if X[1] <= 384.0
                                    then {value: 27.0, samples: 1}
                                    else {value: 40.0, samples: 2}
                        else {value: 34.75, samples: 4}
                else if X[3] <= 2.0
                    then if X[0] <= 128.0
                        then {value: 24.0, samples: 1}
                        else {value: 36.0, samples: 1}
                    else if X[3] <= 20.0
                        then if X[0] <= 62.5
                            then {value: 40.5, samples: 2}
                            else if X[3] <= 6.0
                                then {value: 50.0, samples: 1}
                                else {value: 61.0, samples: 2}
                        else {value: 32.0, samples: 1}
            else {value: 132.0, samples: 1}
        else if X[2] <= 28000.0
            then if X[5] <= 7.0
                then {value: 60.0, samples: 1}
                else if X[0] <= 60.0
                    then if X[0] <= 38.0

then {value: 173.0, samples: 1}
                    else if X[0] <= 53.0
                        then {value: 138.0, samples: 1}
                        else {value: 106.0, samples: 1}
                else {value: 203.0, samples: 2}
            else {value: 405.0, samples: 1}

This is the evaluation for mse:
2702.8803125000004

This is the Average Evaluation for the Cross Validation

17586.753856481482
For These Hyper-Parameters: 400 and 2.5
Fold 1
Regression Tree:

 if X[3] <= 96.5
    then if X[1] <= 3310.0
        then if X[2] <= 24000.0
            then if X[2] <= 6500.0
                then if X[5] <= 4.5
                    then {value: 8.0, samples: 2}
                    else if X[2] <= 2500.0
                        then if X[4] <= 6.0
                            then {value: 20.0, samples: 3}
                            else {value: 36.0, samples: 1}
                        else if X[0] <= 110.0
                            then {value: 28.25, samples: 4}
                            else if X[0] <= 310.0
                                then {value: 37.75, samples: 4}
                                else if X[0] <= 365.0
                                    then {value: 24.5, samples: 2}
                                    else {value: 40.0, samples: 1}
                else if X[0] <= 65.5
                    then if X[2] <= 13240.0
                        then {value: 30.666666666666668, samples: 3}
                        else {value: 45.0, samples: 1}
                    else if X[0] <= 96.0
                        then {value: 57.333333333333336, samples: 3}
                        else if X[0] <= 105.0
                            then {value: 32.0, samples: 1}
                            else {value: 60.0, samples: 1}
            else {value: 114.0, samples: 1}
        else if X[0] <= 38.0
            then {value: 179.0, samples: 2}
            else if X[1] <= 4620.0
                then {value: 135.0, samples: 2}
                else {value: 106.0, samples: 1}
    else {value: 405.0, samples: 1}

This is the evaluation for mse:
66908.3125

Fold 2
Regression Tree:

```
if X[0] <= 24.5
    then {value: 1144.0, samples: 1}
    else if X[4] <= 20.0
        then if X[3] <= 20.0
            then if X[1] <= 3000.0
                then if X[2] <= 2500.0
                    then {value: 16.666666666666668, samples: 6}
                    else if X[3] <= 2.0
                        then if X[0] <= 560.0
                            then if X[0] <= 80.5
                                then {value: 24.0, samples: 3}
                                else {value: 34.25, samples: 4}
                            else {value: 16.0, samples: 1}
                        else if X[2] <= 6500.0
                            then {value: 34.8, samples: 5}
                            else if X[0] <= 62.5
                                then {value: 36.0, samples: 1}
                                else {value: 57.333333333333336, samples: 3}
                else {value: 132.0, samples: 1}
            else if X[0] <= 60.0
                then if X[2] <= 13240.0
                    then {value: 32.0, samples: 1}
                    else if X[0] <= 38.0
                        then {value: 173.0, samples: 1}
                        else if X[2] <= 18485.0
                            then {value: 138.0, samples: 1}
                            else {value: 110.0, samples: 2}
                else {value: 203.0, samples: 2}
        else {value: 405.0, samples: 1}
```

This is the evaluation for mse:
5934.946728395062

Fold 3
Regression Tree:

```
if X[0] <= 24.5
    then {value: 1144.0, samples: 1}
    else if X[1] <= 4620.0
        then if X[3] <= 144.0
            then if X[1] <= 3310.0
                then if X[2] <= 7000.0
                    then if X[5] <= 4.5
```

```
                    then {value: 11.333333333333334, samples: 3}
                    else if X[0] <= 97.5
                        then if X[0] <= 70.0
                            then {value: 24.0, samples: 2}
                            else {value: 14.5, samples: 2}
                        else if X[5] <= 17.0
                            then if X[4] <= 2.0
                                then if X[0] <= 159.0
                                    then {value: 40.0, samples: 1}
                                    else {value: 28.0, samples: 3}
                                else {value: 21.0, samples: 3}
                            else {value: 34.0, samples: 4}
                else if X[0] <= 500.0
                    then if X[0] <= 62.5
                        then {value: 37.666666666666664, samples: 3}
                        else if X[0] <= 96.0
                            then {value: 61.0, samples: 2}
                            else if X[2] <= 10000.0
                                then {value: 34.0, samples: 2}
                                else {value: 60.0, samples: 1}
                    else {value: 16.0, samples: 1}
                else {value: 132.0, samples: 1}
            else {value: 198.0, samples: 1}
        else if X[2] <= 28000.0
            then if X[0] <= 45.0
                then {value: 179.0, samples: 2}
                else {value: 208.0, samples: 1}
            else {value: 405.0, samples: 1}
```

This is the evaluation for mse:
2135.0694444444443

Fold 4
Regression Tree:

```
 if X[0] <= 24.5
    then {value: 1144.0, samples: 1}
    else if X[4] <= 7.0
        then if X[2] <= 14000.0
            then if X[2] <= 2500.0
                then if X[1] <= 518.0
                    then {value: 11.0, samples: 3}
                    else {value: 18.25, samples: 4}
                else if X[3] <= 12.0
                    then if X[3] <= 1.0
                        then if X[0] <= 325.0
                            then if X[0] <= 128.0
                                then {value: 22.5, samples: 2}
                                else {value: 35.0, samples: 3}
                            else {value: 19.0, samples: 2}
```

```
                    else if X[5] <= 7.0
                        then {value: 41.2, samples: 5}
                        else if X[5] <= 13.5
                            then {value: 22.0, samples: 1}
                            else {value: 33.5, samples: 2}
                else if X[4] <= 2.0
                    then {value: 60.0, samples: 2}
                    else {value: 32.0, samples: 1}
            else if X[3] <= 18.0
                then {value: 45.0, samples: 1}
                else if X[1] <= 3000.0
                    then {value: 114.0, samples: 1}
                    else {value: 138.0, samples: 1}
        else if X[2] <= 3500.0
            then {value: 36.0, samples: 1}
            else if X[0] <= 60.0
                then if X[0] <= 41.0
                    then {value: 185.0, samples: 1}
                    else {value: 106.0, samples: 1}
                else {value: 203.0, samples: 2}
```

This is the evaluation for mse:
7839.17375

Fold 5
Regression Tree:

```
 if X[0] <= 24.5
   then {value: 1144.0, samples: 1}
   else if X[1] <= 3310.0
     then if X[5] <= 25.0
        then if X[3] <= 1.0
           then if X[5] <= 14.0
              then if X[2] <= 3000.0
                 then {value: 15.0, samples: 2}
                 else if X[5] <= 3.0
                    then {value: 36.0, samples: 1}
                    else {value: 23.833333333333332, samples: 6}
              else {value: 34.0, samples: 2}
           else if X[0] <= 96.0
              then if X[0] <= 62.5
                 then {value: 38.5, samples: 2}
                 else {value: 57.333333333333336, samples: 3}
              else if X[2] <= 2250.0
                 then {value: 6.0, samples: 1}
                 else if X[0] <= 110.0
                    then {value: 27.0, samples: 2}
                    else if X[1] <= 384.0
                       then {value: 27.0, samples: 1}
                       else {value: 38.75, samples: 4}
```

else if X[0] <= 87.5
            then {value: 114.0, samples: 1}
            else {value: 198.0, samples: 1}
        else if X[2] <= 28000.0
            then if X[0] <= 60.5
                then if X[0] <= 38.0
                    then {value: 179.0, samples: 2}
                    else if X[1] <= 4620.0
                        then {value: 135.0, samples: 2}
                        else {value: 106.0, samples: 1}
                else {value: 208.0, samples: 1}
            else {value: 405.0, samples: 1}

This is the evaluation for mse:
175.40625

This is the Average Evaluation for the Cross Validation

16598.581734567902
For These Hyper-Parameters: 450 and 0.5
Fold 1
Regression Tree:

 if X[3] <= 31.0
    then if X[2] <= 13240.0
        then if X[2] <= 2750.0
            then if X[4] <= 6.0
                then if X[1] <= 518.0
                    then if X[0] <= 165.0
                        then {value: 17.0, samples: 1}
                        else {value: 8.0, samples: 2}
                    else if X[0] <= 125.5
                        then {value: 12.0, samples: 1}
                        else if X[1] <= 884.0
                            then {value: 18.5, samples: 2}
                            else {value: 24.0, samples: 1}
                else {value: 36.0, samples: 1}
            else if X[3] <= 1.0
                then if X[0] <= 325.0
                    then if X[0] <= 80.5
                        then {value: 22.5, samples: 2}
                        else {value: 33.666666666666664, samples: 3}
                    else if X[0] <= 565.0
                        then {value: 22.0, samples: 1}
                        else {value: 16.0, samples: 1}
                else if X[0] <= 96.0
                    then if X[0] <= 62.5
                        then {value: 34.0, samples: 2}
                        else if X[0] <= 83.5
                            then {value: 62.0, samples: 1}

else {value: 50.0, samples: 1}
                    else if X[0] <= 110.0
                        then if X[0] <= 102.5
                            then {value: 32.0, samples: 1}
                            else if X[5] <= 13.5
                                then {value: 22.0, samples: 1}
                                else {value: 32.0, samples: 1}
                            else if X[3] <= 6.0
                                then {value: 40.0, samples: 2}
                                else {value: 35.0, samples: 1}
            else if X[4] <= 4.5
                then {value: 45.0, samples: 1}
                else if X[0] <= 56.5
                    then if X[0] <= 53.0
                        then {value: 114.0, samples: 1}
                        else {value: 106.0, samples: 1}
                    else {value: 132.0, samples: 1}
        else if X[2] <= 28000.0
            then if X[4] <= 4.5
                then {value: 138.0, samples: 1}
                else if X[0] <= 75.5
                    then {value: 173.0, samples: 1}
                    else {value: 198.0, samples: 1}
            else {value: 405.0, samples: 1}

This is the evaluation for mse:
62742.85493827161

Fold 2
Regression Tree:

if X[0] <= 24.5
    then {value: 1144.0, samples: 1}
    else if X[1] <= 3310.0
        then if X[2] <= 24000.0
            then if X[2] <= 7000.0
                then if X[2] <= 2500.0
                    then if X[4] <= 6.0
                        then if X[1] <= 518.0
                            then if X[0] <= 165.0
                                then {value: 17.0, samples: 1}
                                else {value: 8.0, samples: 2}
                            else if X[0] <= 125.5
                                then {value: 12.0, samples: 1}
                                else if X[1] <= 884.0
                                    then {value: 18.5, samples: 2}
                                    else {value: 24.0, samples: 1}
                        else {value: 36.0, samples: 1}
                    else if X[5] <= 5.5
                        then {value: 40.0, samples: 1}

```
                    else if X[5] <= 13.5
                        then if X[5] <= 7.0
                            then if X[3] <= 6.0
                                then if X[0] <= 325.0
                                    then {value: 27.0, samples: 2}
                                    else {value: 22.0, samples: 1}
                                else {value: 40.0, samples: 1}
                            else {value: 21.5, samples: 2}
                        else {value: 33.333333333333336, samples: 3}
                else if X[0] <= 65.5
                    then if X[2] <= 13240.0
                        then if X[0] <= 53.0
                            then {value: 34.0, samples: 2}
                            else {value: 24.0, samples: 1}
                        else {value: 45.0, samples: 1}
                    else if X[0] <= 96.0
                        then if X[3] <= 6.0
                            then {value: 50.0, samples: 1}
                            else {value: 61.0, samples: 2}
                        else if X[0] <= 105.0
                            then {value: 32.0, samples: 1}
                            else {value: 60.0, samples: 1}
            else {value: 114.0, samples: 1}
        else if X[1] <= 4620.0
            then if X[0] <= 53.5
                then {value: 138.0, samples: 1}
                else {value: 132.0, samples: 1}
            else if X[0] <= 45.0
                then {value: 185.0, samples: 1}
                else {value: 208.0, samples: 1}
```

This is the evaluation for mse:
9881.987654320988

Fold 3
Regression Tree:

```
 if X[0] <= 24.5
    then {value: 1144.0, samples: 1}
    else if X[4] <= 7.0
        then if X[1] <= 3000.0
            then if X[2] <= 2500.0
                then if X[4] <= 2.0
                    then if X[0] <= 870.0
                        then if X[0] <= 162.0
                            then {value: 12.0, samples: 1}
                            else {value: 6.0, samples: 1}
                        else {value: 18.0, samples: 1}
                    else {value: 18.0, samples: 2}
                else if X[3] <= 1.0
```

```
        then if X[0] <= 325.0
          then if X[0] <= 80.5
            then {value: 24.0, samples: 3}
            else {value: 34.25, samples: 4}
          else if X[0] <= 565.0
            then {value: 22.0, samples: 1}
            else {value: 16.0, samples: 1}
        else if X[2] <= 6500.0
          then if X[0] <= 110.0
            then {value: 22.0, samples: 1}
            else if X[1] <= 384.0
              then {value: 27.0, samples: 1}
              else if X[5] <= 13.0
                then {value: 40.0, samples: 3}
                else {value: 35.0, samples: 1}
          else if X[0] <= 62.5
            then if X[1] <= 1500.0
              then {value: 36.0, samples: 1}
              else {value: 45.0, samples: 1}
            else if X[3] <= 6.0
              then {value: 50.0, samples: 1}
              else {value: 60.666666666666664, samples: 3}
      else {value: 132.0, samples: 1}
    else if X[2] <= 28000.0
      then if X[0] <= 60.0
        then if X[0] <= 41.0
          then if X[2] <= 20000.0
            then {value: 185.0, samples: 1}
            else {value: 173.0, samples: 1}
          else {value: 106.0, samples: 1}
        else if X[0] <= 94.5
          then {value: 208.0, samples: 1}
          else {value: 198.0, samples: 1}
      else {value: 405.0, samples: 1}
```

This is the evaluation for mse:
4722.347222222223

Fold 4
Regression Tree:

```
 if X[0] <= 24.5
   then {value: 1144.0, samples: 1}
   else if X[1] <= 3310.0
     then if X[5] <= 25.0
       then if X[2] <= 2500.0
         then if X[4] <= 6.0
           then if X[0] <= 221.5
             then if X[0] <= 125.5
               then {value: 12.0, samples: 1}
```

else {value: 21.5, samples: 2}
else {value: 8.0, samples: 2}
else {value: 36.0, samples: 1}
else if X[3] <= 1.0
then if X[0] <= 560.0
then if X[0] <= 128.0
then if X[0] <= 53.0
then {value: 27.0, samples: 1}
else {value: 21.0, samples: 1}
else {value: 35.0, samples: 3}
else {value: 16.0, samples: 1}
else if X[2] <= 6500.0
then if X[1] <= 384.0
then {value: 27.0, samples: 1}
else if X[5] <= 12.5
then {value: 40.0, samples: 3}
else {value: 33.5, samples: 2}
else if X[0] <= 62.5
then {value: 34.0, samples: 2}
else if X[0] <= 96.0
then if X[3] <= 6.0
then {value: 50.0, samples: 1}
else {value: 61.0, samples: 2}
else if X[0] <= 105.0
then {value: 32.0, samples: 1}
else {value: 60.0, samples: 1}
else if X[0] <= 87.5
then {value: 114.0, samples: 1}
else {value: 198.0, samples: 1}
else if X[2] <= 28000.0
then if X[0] <= 60.0
then if X[0] <= 38.0
then if X[2] <= 20000.0
then {value: 185.0, samples: 1}
else {value: 173.0, samples: 1}
else if X[0] <= 53.0
then {value: 138.0, samples: 1}
else {value: 106.0, samples: 1}
else {value: 208.0, samples: 1}
else {value: 405.0, samples: 1}

This is the evaluation for mse:
193.125

Fold 5
Regression Tree:

if X[0] <= 24.5
then {value: 1144.0, samples: 1}
else if X[1] <= 3310.0

```
then if X[5] <= 25.0
  then if X[3] <= 10.0
    then if X[1] <= 384.0
      then if X[0] <= 335.0
        then if X[0] <= 205.0
          then {value: 17.0, samples: 1}
          else if X[2] <= 5500.0
            then {value: 27.0, samples: 1}
            else {value: 33.0, samples: 1}
        else if X[0] <= 575.0
          then {value: 10.0, samples: 1}
          else {value: 16.0, samples: 1}
      else if X[0] <= 950.0
        then if X[1] <= 884.0
          then {value: 37.333333333333336, samples: 3}
          else if X[0] <= 277.5
            then if X[0] <= 214.0
              then if X[5] <= 13.5
                then if X[5] <= 3.5
                  then {value: 36.0, samples: 1}
                  else {value: 24.25, samples: 4}
                else {value: 33.0, samples: 3}
              else {value: 40.0, samples: 1}
            else {value: 22.0, samples: 1}
        else {value: 18.0, samples: 1}
      else if X[4] <= 2.0
        then {value: 60.0, samples: 2}
        else if X[2] <= 13240.0
          then {value: 32.0, samples: 2}
          else {value: 45.0, samples: 1}
    else if X[0] <= 87.5
      then {value: 114.0, samples: 1}
      else {value: 198.0, samples: 1}
  else if X[2] <= 28000.0
    then if X[0] <= 60.5
      then if X[0] <= 38.0
        then if X[2] <= 20000.0
          then {value: 185.0, samples: 1}
          else {value: 173.0, samples: 1}
        else if X[1] <= 4620.0
          then if X[0] <= 53.5
            then {value: 138.0, samples: 1}
            else {value: 132.0, samples: 1}
          else {value: 106.0, samples: 1}
      else {value: 208.0, samples: 1}
    else {value: 405.0, samples: 1}
```

This is the evaluation for mse:
421.08767361111114

This is the Average Evaluation for the Cross Validation

15592.280497685186
For These Hyper-Parameters: 450 and 1.0
Fold 1
Regression Tree:

```
if X[0] <= 24.5
    then {value: 1144.0, samples: 1}
    else if X[2] <= 28000.0
        then if X[1] <= 3310.0
            then if X[3] <= 144.0
                then if X[3] <= 10.0
                    then if X[2] <= 2500.0
                        then if X[4] <= 6.0
                            then if X[1] <= 518.0
                                then {value: 8.0, samples: 2}
                                else if X[0] <= 125.5
                                    then {value: 12.0, samples: 1}
                                    else {value: 20.333333333333332, samples: 3}
                            else {value: 36.0, samples: 1}
                        else if X[0] <= 325.0
                            then if X[2] <= 7000.0
                                then if X[0] <= 110.0
                                    then if X[5] <= 13.5
                                        then {value: 23.333333333333332, samples: 3}
                                        else {value: 32.0, samples: 2}
                                    else if X[0] <= 310.0
                                        then {value: 37.0, samples: 3}
                                        else {value: 27.0, samples: 1}
                                else if X[1] <= 1500.0
                                    then {value: 36.0, samples: 2}
                                    else {value: 50.0, samples: 1}
                            else {value: 19.0, samples: 2}
                    else if X[0] <= 71.0
                        then if X[1] <= 2310.0
                            then {value: 45.0, samples: 1}
                            else {value: 32.0, samples: 1}
                        else {value: 60.0, samples: 2}
                else {value: 198.0, samples: 1}
            else if X[0] <= 38.0
                then if X[2] <= 20000.0
                    then {value: 185.0, samples: 1}
                    else {value: 173.0, samples: 1}
                else if X[1] <= 4620.0
                    then {value: 135.0, samples: 2}
                    else {value: 106.0, samples: 1}
        else {value: 405.0, samples: 1}
```

This is the evaluation for mse:
10806.222222222223

Fold 2
Regression Tree:

```
if X[1] <= 3930.0
  then if X[5] <= 25.0
    then if X[3] <= 10.0
      then if X[5] <= 15.0
        then if X[2] <= 2750.0
          then if X[0] <= 221.5
            then if X[0] <= 146.5
              then {value: 14.5, samples: 2}
              else {value: 24.0, samples: 1}
            else {value: 6.0, samples: 1}
          else if X[3] <= 1.0
            then if X[5] <= 3.0
              then {value: 36.0, samples: 1}
              else if X[0] <= 565.0
                then if X[1] <= 628.0
                  then {value: 33.0, samples: 1}
                  else {value: 23.5, samples: 4}
                else {value: 16.0, samples: 1}
            else if X[5] <= 7.0
              then if X[1] <= 384.0
                then {value: 27.0, samples: 1}
                else {value: 39.0, samples: 4}
              else {value: 22.0, samples: 1}
        else if X[0] <= 90.0
          then {value: 62.0, samples: 1}
          else {value: 34.75, samples: 4}
      else if X[4] <= 2.0
        then {value: 60.0, samples: 2}
        else if X[2] <= 13240.0
          then {value: 32.0, samples: 2}
          else {value: 45.0, samples: 1}
    else if X[0] <= 87.5
      then {value: 114.0, samples: 1}
      else {value: 198.0, samples: 1}
  else if X[2] <= 28000.0
    then if X[0] <= 45.0
      then if X[2] <= 20000.0
        then {value: 185.0, samples: 1}
        else {value: 173.0, samples: 1}
      else {value: 208.0, samples: 1}
    else {value: 405.0, samples: 1}
```

This is the evaluation for mse:
63057.17361111111

Fold 3

Regression Tree:

```
if X[0] <= 24.5
    then {value: 1144.0, samples: 1}
    else if X[1] <= 3310.0
        then if X[2] <= 24000.0
            then if X[3] <= 1.0
                then if X[0] <= 340.0
                    then if X[5] <= 15.0
                        then if X[5] <= 7.0
                            then if X[1] <= 628.0
                                then {value: 33.0, samples: 1}
                                else {value: 24.333333333333332, samples: 3}
                            else {value: 20.666666666666668, samples: 3}
                        else {value: 34.0, samples: 2}
                    else {value: 14.666666666666666, samples: 3}
                else if X[2] <= 6500.0
                    then if X[5] <= 7.0
                        then if X[1] <= 384.0
                            then {value: 27.0, samples: 1}
                            else {value: 40.0, samples: 3}
                        else if X[5] <= 17.0
                            then {value: 20.5, samples: 2}
                            else {value: 32.0, samples: 1}
                    else if X[4] <= 2.0
                        then if X[3] <= 10.0
                            then {value: 50.0, samples: 1}
                            else {value: 60.0, samples: 2}
                        else if X[3] <= 18.0
                            then if X[0] <= 62.5
                                then if X[1] <= 1500.0
                                    then {value: 36.0, samples: 1}
                                    else {value: 45.0, samples: 1}
                                else {value: 62.0, samples: 1}
                            else {value: 32.0, samples: 2}
            else {value: 114.0, samples: 1}
        else if X[0] <= 60.5
            then if X[0] <= 38.0
                then {value: 185.0, samples: 1}
                else if X[1] <= 4620.0
                    then {value: 135.0, samples: 2}
                    else {value: 106.0, samples: 1}
            else {value: 208.0, samples: 1}
```

This is the evaluation for mse:
9694.652777777777

Fold 4
Regression Tree:

```
if X[0] <= 24.5
   then {value: 1144.0, samples: 1}
   else if X[4] <= 20.0
      then if X[2] <= 14000.0
         then if X[3] <= 144.0
            then if X[2] <= 2500.0
               then if X[4] <= 6.0
                  then if X[4] <= 2.0
                     then if X[0] <= 925.0
                        then {value: 9.333333333333334, samples: 3}
                        else {value: 18.0, samples: 1}
                     else {value: 18.0, samples: 2}
                  else {value: 36.0, samples: 1}
               else if X[3] <= 1.0
                  then if X[0] <= 325.0
                     then if X[0] <= 128.0
                        then {value: 24.0, samples: 1}
                        else {value: 35.0, samples: 3}
                     else {value: 22.0, samples: 1}
                  else if X[2] <= 6500.0
                     then if X[1] <= 384.0
                        then {value: 27.0, samples: 1}
                        else if X[5] <= 12.5
                           then {value: 40.0, samples: 3}
                           else {value: 33.5, samples: 2}
                     else if X[0] <= 62.5
                        then {value: 34.0, samples: 2}
                        else if X[0] <= 96.0
                           then if X[3] <= 6.0
                              then {value: 50.0, samples: 1}
                              else {value: 61.0, samples: 2}
                           else if X[0] <= 105.0
                              then {value: 32.0, samples: 1}
                              else {value: 60.0, samples: 1}
            else {value: 198.0, samples: 1}
         else if X[0] <= 60.5
            then if X[0] <= 38.0
               then {value: 173.0, samples: 1}
               else if X[2] <= 18485.0
                  then {value: 135.0, samples: 2}
                  else {value: 110.0, samples: 2}
            else {value: 208.0, samples: 1}
      else {value: 405.0, samples: 1}

This is the evaluation for mse:
1112.638888888889

Fold 5
Regression Tree:
```

```
if X[0] <= 24.5
  then {value: 1144.0, samples: 1}
  else if X[4] <= 7.0
    then if X[2] <= 12000.0
      then if X[2] <= 2500.0
        then if X[1] <= 518.0
          then if X[0] <= 165.0
            then {value: 17.0, samples: 1}
            else {value: 8.0, samples: 2}
          else if X[0] <= 125.5
            then {value: 12.0, samples: 1}
            else {value: 20.333333333333332, samples: 3}
        else if X[3] <= 2.0
          then if X[0] <= 560.0
            then if X[0] <= 80.5
              then {value: 24.0, samples: 3}
              else {value: 34.25, samples: 4}
            else {value: 16.0, samples: 1}
          else if X[0] <= 96.0
            then if X[0] <= 83.5
              then {value: 62.0, samples: 1}
              else {value: 50.0, samples: 1}
            else if X[0] <= 122.5
              then if X[0] <= 102.5
                then {value: 32.0, samples: 1}
                else if X[5] <= 13.5
                  then {value: 22.0, samples: 1}
                  else {value: 32.0, samples: 1}
              else {value: 38.333333333333336, samples: 3}
      else if X[1] <= 3000.0
        then if X[2] <= 24000.0
          then {value: 45.0, samples: 1}
          else {value: 114.0, samples: 1}
        else {value: 135.0, samples: 2}
    else if X[2] <= 28000.0
      then if X[0] <= 60.0
        then if X[0] <= 41.0
          then if X[2] <= 20000.0
            then {value: 185.0, samples: 1}
            else {value: 173.0, samples: 1}
          else {value: 106.0, samples: 1}
        else if X[0] <= 94.5
          then {value: 208.0, samples: 1}
          else {value: 198.0, samples: 1}
      else {value: 405.0, samples: 1}
```

This is the evaluation for mse:
4281.446180555556

This is the Average Evaluation for the Cross Validation

17790.426736111112
For These Hyper-Parameters: 450 and 1.5
Fold 1
Regression Tree:

```
if X[0] <= 24.5
   then {value: 1144.0, samples: 1}
   else if X[4] <= 5.0
      then if X[1] <= 3000.0
         then if X[3] <= 1.0
            then if X[2] <= 3000.0
               then if X[0] <= 276.5
                  then if X[0] <= 146.5
                     then {value: 14.5, samples: 2}
                     else {value: 24.0, samples: 1}
                  else {value: 10.0, samples: 1}
               else if X[0] <= 325.0
                  then {value: 29.666666666666668, samples: 3}
                  else {value: 19.0, samples: 2}
            else if X[2] <= 6000.0
               then if X[5] <= 7.0
                  then {value: 40.0, samples: 3}
                  else if X[5] <= 17.0
                     then {value: 20.5, samples: 2}
                     else {value: 33.5, samples: 2}
               else if X[4] <= 2.0
                  then if X[3] <= 10.0
                     then {value: 50.0, samples: 1}
                     else {value: 60.0, samples: 2}
                  else if X[5] <= 20.0
                     then if X[1] <= 1500.0
                        then {value: 34.0, samples: 2}
                        else {value: 45.0, samples: 1}
                     else {value: 62.0, samples: 1}
         else {value: 138.0, samples: 1}
      else if X[0] <= 60.5
         then if X[2] <= 13240.0
            then {value: 32.0, samples: 1}
            else if X[0] <= 38.0
               then if X[2] <= 20000.0
                  then {value: 185.0, samples: 1}
                  else {value: 173.0, samples: 1}
               else if X[0] <= 56.5
                  then {value: 110.0, samples: 2}
                  else {value: 132.0, samples: 1}
         else if X[0] <= 94.5
            then {value: 208.0, samples: 1}
            else {value: 198.0, samples: 1}
```

This is the evaluation for mse:
11980.37037037037

Fold 2
Regression Tree:

```
if X[1] <= 3310.0
  then if X[5] <= 25.0
    then if X[2] <= 7000.0
      then if X[2] <= 2500.0
        then if X[4] <= 6.0
          then if X[1] <= 518.0
            then if X[0] <= 165.0
              then {value: 17.0, samples: 1}
              else {value: 8.0, samples: 2}
            else if X[0] <= 125.5
              then {value: 12.0, samples: 1}
              else {value: 20.333333333333332, samples: 3}
          else {value: 36.0, samples: 1}
        else if X[0] <= 85.5
          then {value: 24.0, samples: 2}
          else if X[0] <= 310.0
            then {value: 37.0, samples: 3}
            else if X[0] <= 365.0
              then {value: 27.333333333333332, samples: 3}
              else {value: 40.0, samples: 1}
      else if X[0] <= 62.5
        then if X[2] <= 13240.0
          then {value: 34.0, samples: 2}
          else {value: 45.0, samples: 1}
        else if X[0] <= 96.0
          then {value: 61.0, samples: 2}
          else if X[2] <= 10000.0
            then {value: 34.0, samples: 2}
            else {value: 60.0, samples: 1}
    else if X[0] <= 87.5
      then {value: 114.0, samples: 1}
      else {value: 198.0, samples: 1}
  else if X[2] <= 26485.0
    then if X[0] <= 60.5
      then if X[0] <= 38.0
        then {value: 185.0, samples: 1}
        else if X[1] <= 4620.0
          then {value: 135.0, samples: 2}
          else {value: 106.0, samples: 1}
      else {value: 208.0, samples: 1}
    else {value: 405.0, samples: 1}
```

This is the evaluation for mse:
60788.22222222222

Fold 3
Regression Tree:

```
if X[0] <= 24.5
   then {value: 1144.0, samples: 1}
   else if X[3] <= 31.0
      then if X[1] <= 3310.0
         then if X[2] <= 24000.0
            then if X[2] <= 2500.0
               then if X[4] <= 5.5
                  then if X[3] <= 4.0
                     then {value: 16.2, samples: 5}
                     else {value: 6.0, samples: 1}
                  else {value: 36.0, samples: 1}
               else if X[3] <= 2.0
                  then if X[0] <= 550.0
                     then if X[0] <= 80.5
                        then {value: 24.0, samples: 3}
                        else {value: 34.666666666666664, samples: 3}
                     else {value: 16.0, samples: 1}
                  else if X[0] <= 96.0
                     then if X[0] <= 62.5
                        then if X[2] <= 13240.0
                           then {value: 34.0, samples: 2}
                           else {value: 45.0, samples: 1}
                        else if X[0] <= 83.5
                           then {value: 62.0, samples: 1}
                           else {value: 50.0, samples: 1}
                     else if X[0] <= 122.5
                        then {value: 28.666666666666668, samples: 3}
                        else if X[1] <= 384.0
                           then {value: 27.0, samples: 1}
                           else {value: 38.333333333333336, samples: 3}
            else {value: 114.0, samples: 1}
         else if X[0] <= 60.5
            then if X[0] <= 56.5
               then {value: 106.0, samples: 1}
               else {value: 132.0, samples: 1}
            else {value: 208.0, samples: 1}
      else if X[2] <= 28000.0
         then if X[0] <= 75.5
            then {value: 173.0, samples: 1}
            else {value: 198.0, samples: 1}
         else {value: 405.0, samples: 1}
```

This is the evaluation for mse:
3481.5555555555557

Fold 4

Regression Tree:

if X[0] <= 24.5
    then {value: 1144.0, samples: 1}
    else if X[1] <= 3310.0
        then if X[2] <= 24000.0
            then if X[2] <= 7000.0
                then if X[5] <= 4.0
                    then if X[0] <= 870.0
                        then {value: 6.0, samples: 1}
                        else {value: 18.0, samples: 1}
                    else if X[5] <= 17.0
                        then if X[5] <= 7.0
                            then if X[1] <= 1500.0
                                then if X[2] <= 5500.0
                                    then {value: 24.333333333333332, samples: 3}
                                    else {value: 33.0, samples: 1}
                                else if X[0] <= 82.5
                                    then {value: 27.0, samples: 1}
                                    else {value: 40.0, samples: 2}
                            else {value: 20.666666666666668, samples: 3}
                        else {value: 34.2, samples: 5}
                else if X[3] <= 2.0
                    then if X[5] <= 3.0
                        then {value: 36.0, samples: 1}
                        else {value: 20.0, samples: 2}
                    else if X[0] <= 62.5
                        then if X[1] <= 2310.0
                            then {value: 45.0, samples: 1}
                            else {value: 32.0, samples: 1}
                        else if X[3] <= 6.0
                            then {value: 50.0, samples: 1}
                            else {value: 60.666666666666664, samples: 3}
            else {value: 114.0, samples: 1}
        else if X[2] <= 28000.0
            then if X[1] <= 4620.0
                then {value: 135.0, samples: 2}
                else if X[0] <= 45.0
                    then if X[2] <= 20000.0
                        then {value: 185.0, samples: 1}
                        else {value: 173.0, samples: 1}
                    else {value: 208.0, samples: 1}
            else {value: 405.0, samples: 1}

This is the evaluation for mse:
4820.527222222223

Fold 5
Regression Tree:

```
if X[0] <= 24.5
   then {value: 1144.0, samples: 1}
   else if X[0] <= 38.0
      then if X[2] <= 28000.0
         then if X[2] <= 20000.0
            then {value: 185.0, samples: 1}
            else {value: 173.0, samples: 1}
         else {value: 405.0, samples: 1}
      else if X[3] <= 48.5
         then if X[1] <= 3620.0
            then if X[2] <= 2500.0
               then if X[4] <= 6.0
                  then if X[4] <= 2.0
                     then if X[0] <= 925.0
                        then {value: 9.333333333333334, samples: 3}
                        else {value: 18.0, samples: 1}
                     else {value: 18.0, samples: 2}
                  else {value: 36.0, samples: 1}
               else if X[3] <= 12.0
                  then if X[3] <= 1.0
                     then if X[0] <= 325.0
                        then if X[0] <= 80.5
                           then {value: 24.0, samples: 3}
                           else {value: 34.25, samples: 4}
                        else {value: 19.0, samples: 2}
                     else if X[5] <= 7.0
                        then if X[1] <= 384.0
                           then {value: 27.0, samples: 1}
                           else if X[1] <= 1500.0
                              then {value: 38.0, samples: 2}
                              else if X[0] <= 103.5
                                 then {value: 50.0, samples: 1}
                                 else {value: 40.0, samples: 2}
                        else {value: 27.0, samples: 2}
                  else if X[4] <= 2.0
                     then {value: 60.0, samples: 2}
                     else {value: 32.0, samples: 1}
            else {value: 106.0, samples: 1}
         else if X[0] <= 87.5
            then {value: 138.0, samples: 1}
            else {value: 198.0, samples: 1}
```

This is the evaluation for mse:
2454.0138888888887

This is the Average Evaluation for the Cross Validation

16704.937851851853
For These Hyper-Parameters: 450 and 2.0
Fold 1

Regression Tree:

if X[0] <= 24.5
   then {value: 1144.0, samples: 1}
   else if X[1] <= 3310.0
     then if X[2] <= 24000.0
      then if X[2] <= 2500.0
       then if X[4] <= 6.0
        then if X[1] <= 518.0
         then {value: 11.0, samples: 3}
         else {value: 18.25, samples: 4}
        else {value: 36.0, samples: 1}
       else if X[3] <= 10.0
        then if X[0] <= 560.0
         then if X[2] <= 7000.0
          then if X[0] <= 80.5
           then {value: 24.0, samples: 2}
           else {value: 34.375, samples: 8}
          else if X[1] <= 1500.0
           then {value: 36.0, samples: 2}
           else {value: 50.0, samples: 1}
         else {value: 16.0, samples: 1}
        else if X[0] <= 71.0
         then if X[1] <= 2310.0
          then {value: 45.0, samples: 1}
          else {value: 32.0, samples: 1}
         else {value: 60.0, samples: 2}
      else {value: 114.0, samples: 1}
     else if X[2] <= 28000.0
      then if X[0] <= 60.0
       then if X[0] <= 38.0
        then {value: 173.0, samples: 1}
        else if X[0] <= 53.0
         then {value: 138.0, samples: 1}
         else {value: 106.0, samples: 1}
       else {value: 208.0, samples: 1}
      else {value: 405.0, samples: 1}

This is the evaluation for mse:
2422.8802083333335

Fold 2
Regression Tree:

if X[3] <= 96.5
   then if X[2] <= 14000.0
     then if X[2] <= 2500.0
      then if X[0] <= 221.5
       then {value: 17.666666666666668, samples: 3}
       else {value: 8.0, samples: 2}

else if X[3] <= 1.0
   then if X[5] <= 16.0
      then {value: 22.0, samples: 5}
      else {value: 34.0, samples: 2}
   else if X[2] <= 6500.0
      then if X[0] <= 110.0
         then {value: 27.0, samples: 2}
         else if X[1] <= 384.0
            then {value: 27.0, samples: 1}
            else {value: 38.75, samples: 4}
      else if X[0] <= 62.5
         then {value: 34.0, samples: 2}
         else if X[0] <= 96.0
            then if X[3] <= 6.0
               then {value: 50.0, samples: 1}
               else {value: 61.0, samples: 2}
            else if X[0] <= 105.0
               then {value: 32.0, samples: 1}
               else {value: 60.0, samples: 1}
else if X[0] <= 38.0
   then {value: 185.0, samples: 1}
   else if X[2] <= 18485.0
      then {value: 135.0, samples: 2}
      else {value: 110.0, samples: 2}
else if X[0] <= 75.5
   then {value: 405.0, samples: 1}
   else {value: 198.0, samples: 1}

This is the evaluation for mse:
62747.0987654321

Fold 3
Regression Tree:

if X[0] <= 24.5
   then {value: 1144.0, samples: 1}
   else if X[1] <= 3310.0
      then if X[5] <= 25.0
         then if X[2] <= 7000.0
            then if X[5] <= 4.5
               then {value: 11.333333333333334, samples: 3}
               else if X[0] <= 110.0
                  then {value: 18.0, samples: 4}
                  else if X[0] <= 146.0
                     then {value: 38.0, samples: 2}
                     else if X[1] <= 518.0
                        then {value: 33.333333333333336, samples: 3}
                        else {value: 21.666666666666668, samples: 3}
         else if X[3] <= 4.0
            then if X[5] <= 3.0

then {value: 36.0, samples: 1}
                        else {value: 20.0, samples: 2}
                    else if X[4] <= 2.0
                        then {value: 60.0, samples: 2}
                        else if X[3] <= 18.0
                            then if X[0] <= 62.5
                                then {value: 40.5, samples: 2}
                                else {value: 62.0, samples: 1}
                            else {value: 32.0, samples: 2}
                else if X[0] <= 87.5
                    then {value: 114.0, samples: 1}
                    else {value: 198.0, samples: 1}
        else if X[2] <= 28000.0
            then if X[0] <= 60.5
                then if X[0] <= 41.0
                    then if X[2] <= 20000.0
                        then {value: 185.0, samples: 1}
                        else {value: 173.0, samples: 1}
                    else if X[0] <= 56.5
                        then {value: 106.0, samples: 1}
                        else {value: 132.0, samples: 1}
                else {value: 208.0, samples: 1}
            else {value: 405.0, samples: 1}

This is the evaluation for mse:
368.44444444444446

Fold 4
Regression Tree:

 if X[0] <= 24.5
    then {value: 1144.0, samples: 1}
    else if X[1] <= 3000.0
        then if X[3] <= 144.0
            then if X[0] <= 96.0
                then if X[3] <= 2.0
                    then {value: 25.5, samples: 2}
                    else if X[0] <= 62.5
                        then {value: 45.0, samples: 1}
                        else if X[3] <= 6.0
                            then {value: 50.0, samples: 1}
                            else {value: 61.0, samples: 2}
                else if X[5] <= 4.5
                    then if X[0] <= 220.0
                        then {value: 36.0, samples: 1}
                        else if X[0] <= 575.0
                            then {value: 8.0, samples: 2}
                            else {value: 17.0, samples: 2}
                    else if X[2] <= 2500.0
                        then if X[0] <= 146.0

then {value: 36.0, samples: 1}
                        else {value: 21.5, samples: 2}
                    else if X[2] <= 3750.0
                        then {value: 38.0, samples: 2}
                        else if X[0] <= 325.0
                            then if X[0] <= 110.0
                                then {value: 29.5, samples: 4}
                                else if X[0] <= 272.5
                                    then {value: 38.333333333333336, samples: 3}
                                    else {value: 30.0, samples: 2}
                            else {value: 22.0, samples: 1}
                else {value: 198.0, samples: 1}
        else if X[0] <= 60.5
            then if X[0] <= 38.0
                then if X[2] <= 20000.0
                    then {value: 185.0, samples: 1}
                    else {value: 173.0, samples: 1}
                else if X[1] <= 4620.0
                    then {value: 135.0, samples: 2}
                    else {value: 106.0, samples: 1}
            else {value: 208.0, samples: 1}

This is the evaluation for mse:
7460.71875

Fold 5
Regression Tree:

 if X[0] <= 24.5
    then {value: 1144.0, samples: 1}
    else if X[1] <= 3310.0
        then if X[5] <= 25.0
            then if X[2] <= 7000.0
                then if X[2] <= 2500.0
                    then if X[4] <= 6.0
                        then {value: 16.5, samples: 4}
                        else {value: 36.0, samples: 1}
                    else if X[0] <= 122.5
                        then if X[5] <= 13.5
                            then {value: 23.333333333333332, samples: 3}
                            else {value: 32.0, samples: 2}
                        else if X[3] <= 2.0
                            then if X[0] <= 325.0
                                then {value: 34.5, samples: 2}
                                else {value: 22.0, samples: 1}
                            else {value: 38.333333333333336, samples: 3}
                else if X[0] <= 65.5
                    then if X[2] <= 13240.0
                        then {value: 30.666666666666668, samples: 3}
                        else {value: 45.0, samples: 1}

else if X[3] <= 20.0
                        then if X[0] <= 155.0
                            then if X[3] <= 6.0
                                then {value: 50.0, samples: 1}
                                else {value: 61.0, samples: 2}
                            else {value: 36.0, samples: 1}
                        else {value: 32.0, samples: 1}
                else if X[0] <= 87.5
                    then {value: 114.0, samples: 1}
                    else {value: 198.0, samples: 1}
            else if X[2] <= 28000.0
                then if X[1] <= 4620.0
                    then {value: 135.0, samples: 2}
                    else if X[0] <= 45.0
                        then if X[2] <= 20000.0
                            then {value: 185.0, samples: 1}
                            else {value: 173.0, samples: 1}
                        else {value: 208.0, samples: 1}
                else {value: 405.0, samples: 1}

This is the evaluation for mse:
1525.3715277777778

This is the Average Evaluation for the Cross Validation

14904.90273919753
For These Hyper-Parameters: 450 and 2.5
Fold 1
Regression Tree:

 if X[0] <= 24.5
    then {value: 1144.0, samples: 1}
    else if X[1] <= 3310.0
        then if X[3] <= 144.0
            then if X[2] <= 2500.0
                then if X[4] <= 6.0
                    then if X[1] <= 518.0
                        then {value: 11.0, samples: 3}
                        else {value: 18.25, samples: 4}
                    else {value: 36.0, samples: 1}
                else if X[3] <= 12.0
                    then if X[0] <= 600.0
                        then if X[5] <= 5.5
                            then {value: 37.333333333333336, samples: 3}
                            else if X[2] <= 3750.0
                                then {value: 38.0, samples: 2}
                                else if X[3] <= 2.0
                                    then {value: 21.5, samples: 2}
                                    else if X[0] <= 165.0
                                        then {value: 27.0, samples: 2}

else if X[0] <= 272.5
    then {value: 40.0, samples: 1}
    else {value: 27.0, samples: 1}
  else {value: 16.0, samples: 1}
else if X[4] <= 2.0
  then {value: 60.0, samples: 2}
  else {value: 32.0, samples: 2}
else {value: 198.0, samples: 1}
else if X[2] <= 28000.0
  then if X[0] <= 60.5
    then if X[0] <= 38.0
      then {value: 179.0, samples: 2}
      else if X[1] <= 4620.0
        then {value: 135.0, samples: 2}
        else {value: 106.0, samples: 1}
    else {value: 208.0, samples: 1}
  else {value: 405.0, samples: 1}

This is the evaluation for mse:
1016.1111111111111

Fold 2
Regression Tree:

if X[0] <= 24.5
  then {value: 1144.0, samples: 1}
  else if X[4] <= 5.0
    then if X[1] <= 3000.0
      then if X[2] <= 2750.0
        then {value: 14.0, samples: 5}
        else if X[3] <= 1.0
          then if X[0] <= 325.0
            then if X[0] <= 80.5
              then {value: 24.0, samples: 3}
              else {value: 32.5, samples: 2}
            else {value: 19.0, samples: 2}
          else if X[2] <= 6500.0
            then if X[0] <= 110.0
              then {value: 22.0, samples: 1}
              else if X[1] <= 384.0
                then {value: 27.0, samples: 1}
                else {value: 38.75, samples: 4}
            else if X[0] <= 62.5
              then {value: 45.0, samples: 1}
              else if X[3] <= 6.0
                then {value: 50.0, samples: 1}
                else {value: 60.666666666666664, samples: 3}
      else {value: 138.0, samples: 1}
    else if X[0] <= 60.5
      then if X[2] <= 13240.0

then {value: 32.0, samples: 1}
             else if X[0] <= 38.0
                then {value: 179.0, samples: 2}
                else if X[0] <= 56.5
                   then {value: 110.0, samples: 2}
                   else {value: 132.0, samples: 1}
          else {value: 203.0, samples: 2}

This is the evaluation for mse:
11997.003086419754

Fold 3
Regression Tree:

 if X[0] <= 24.5
    then {value: 1144.0, samples: 1}
    else if X[4] <= 20.0
       then if X[3] <= 27.0
          then if X[2] <= 12000.0
             then if X[3] <= 1.0
                then if X[5] <= 15.0
                   then if X[2] <= 3000.0
                      then {value: 17.75, samples: 4}
                      else if X[0] <= 325.0
                         then {value: 30.0, samples: 4}
                         else {value: 19.0, samples: 2}
                   else {value: 34.666666666666664, samples: 3}
                else if X[5] <= 22.0
                   then if X[2] <= 2750.0
                      then {value: 19.0, samples: 1}
                      else if X[0] <= 96.0
                         then if X[0] <= 71.0
                            then {value: 36.0, samples: 1}
                            else {value: 50.0, samples: 1}
                         else {value: 34.333333333333336, samples: 6}
                   else {value: 62.0, samples: 1}
             else if X[4] <= 4.5
                then {value: 45.0, samples: 1}
                else if X[0] <= 53.5
                   then {value: 114.0, samples: 1}
                   else {value: 132.0, samples: 1}
          else if X[0] <= 60.0
             then if X[1] <= 3310.0
                then {value: 32.0, samples: 1}
                else if X[0] <= 38.0
                   then {value: 173.0, samples: 1}
                   else if X[0] <= 53.0
                      then {value: 138.0, samples: 1}
                      else {value: 106.0, samples: 1}
             else {value: 203.0, samples: 2}

else {value: 405.0, samples: 1}

This is the evaluation for mse:
3330.3828125

Fold 4
Regression Tree:

if X[4] <= 20.0
  then if X[1] <= 3310.0
    then if X[5] <= 25.0
      then if X[2] <= 2500.0
        then if X[4] <= 4.5
          then if X[0] <= 221.5
            then {value: 18.0, samples: 2}
            else {value: 8.0, samples: 2}
          else {value: 36.0, samples: 1}
        else if X[3] <= 2.0
          then if X[0] <= 560.0
            then if X[0] <= 80.5
              then {value: 24.0, samples: 3}
              else {value: 34.25, samples: 4}
            else {value: 16.0, samples: 1}
          else if X[2] <= 6500.0
            then if X[0] <= 122.5
              then {value: 27.0, samples: 2}
              else if X[1] <= 384.0
                then {value: 27.0, samples: 1}
                else {value: 38.333333333333336, samples: 3}
            else if X[4] <= 2.0
              then {value: 56.666666666666664, samples: 3}
              else if X[3] <= 18.0
                then if X[0] <= 62.5
                  then {value: 40.5, samples: 2}
                  else {value: 62.0, samples: 1}
                else {value: 32.0, samples: 2}
      else if X[0] <= 87.5
        then {value: 114.0, samples: 1}
        else {value: 198.0, samples: 1}
    else if X[0] <= 60.5
      then if X[0] <= 41.0
        then {value: 185.0, samples: 1}
        else if X[0] <= 56.5
          then {value: 106.0, samples: 1}
          else {value: 132.0, samples: 1}
      else {value: 208.0, samples: 1}
  else {value: 405.0, samples: 1}

This is the evaluation for mse:
68446.765625

Fold 5
Regression Tree:

```
 if X[0] <= 24.5
    then {value: 1144.0, samples: 1}
    else if X[1] <= 3000.0
       then if X[2] <= 24000.0
          then if X[2] <= 7000.0
             then if X[2] <= 2500.0
                then if X[4] <= 6.0
                   then if X[1] <= 518.0
                      then {value: 11.0, samples: 3}
                      else {value: 18.25, samples: 4}
                   else {value: 36.0, samples: 1}
                else if X[0] <= 110.0
                   then if X[5] <= 13.5
                      then {value: 23.333333333333332, samples: 3}
                      else {value: 32.0, samples: 2}
                   else if X[0] <= 325.0
                      then {value: 36.8, samples: 5}
                      else {value: 22.0, samples: 1}
             else if X[3] <= 2.0
                then {value: 30.0, samples: 2}
                else if X[4] <= 2.0
                   then {value: 56.666666666666664, samples: 3}
                   else if X[5] <= 20.0
                      then {value: 37.666666666666664, samples: 3}
                      else {value: 62.0, samples: 1}
          else {value: 114.0, samples: 1}
       else if X[2] <= 28000.0
          then if X[0] <= 38.0
             then {value: 179.0, samples: 2}
             else {value: 138.0, samples: 1}
          else {value: 405.0, samples: 1}
```

This is the evaluation for mse:
4182.6849999999995

This is the Average Evaluation for the Cross Validation

17794.589527006174
For These Hyper-Parameters: 500 and 0.5
Fold 1
Regression Tree:

```
 if X[0] <= 24.5
    then {value: 1144.0, samples: 1}
    else if X[4] <= 20.0
       then if X[1] <= 3310.0
```

then if X[5] <= 25.0
  then if X[2] <= 7000.0
    then if X[2] <= 2500.0
      then if X[4] <= 5.5
        then if X[3] <= 4.0
          then if X[0] <= 87.0
            then {value: 12.0, samples: 1}
            else if X[1] <= 884.0
              then {value: 17.5, samples: 2}
              else {value: 24.0, samples: 1}
          else {value: 6.0, samples: 1}
        else {value: 36.0, samples: 1}
      else if X[0] <= 110.0
        then if X[5] <= 13.5
          then if X[0] <= 53.0
            then {value: 27.0, samples: 1}
            else {value: 21.5, samples: 2}
          else {value: 32.0, samples: 2}
        else if X[3] <= 1.0
          then if X[0] <= 325.0
            then {value: 34.5, samples: 2}
            else {value: 22.0, samples: 1}
          else if X[3] <= 6.0
            then {value: 40.0, samples: 2}
            else {value: 35.0, samples: 1}
    else if X[0] <= 65.5
      then if X[2] <= 13240.0
        then if X[0] <= 53.0
          then {value: 34.0, samples: 2}
          else {value: 24.0, samples: 1}
        else {value: 45.0, samples: 1}
      else {value: 60.666666666666664, samples: 3}
  else if X[0] <= 87.5
    then {value: 114.0, samples: 1}
    else {value: 198.0, samples: 1}
else if X[0] <= 38.0
  then if X[2] <= 20000.0
    then {value: 185.0, samples: 1}
    else {value: 173.0, samples: 1}
  else if X[1] <= 4620.0
    then if X[0] <= 53.5
      then {value: 138.0, samples: 1}
      else {value: 132.0, samples: 1}
    else {value: 106.0, samples: 1}
else {value: 405.0, samples: 1}

This is the evaluation for mse:
1595.817901234568

Fold 2
Regression Tree:

if X[0] <= 24.5
  then {value: 1144.0, samples: 1}
  else if X[3] <= 27.0
      then if X[0] <= 38.0
        then {value: 185.0, samples: 1}
        else if X[2] <= 2500.0
          then if X[4] <= 6.0
            then if X[1] <= 518.0
              then if X[0] <= 165.0
                then {value: 17.0, samples: 1}
                else {value: 8.0, samples: 2}
              else if X[0] <= 125.5
                then {value: 12.0, samples: 1}
                else if X[1] <= 884.0
                    then {value: 18.5, samples: 2}
                    else {value: 24.0, samples: 1}
            else {value: 36.0, samples: 1}
          else if X[3] <= 1.0
            then if X[0] <= 315.0
              then if X[0] <= 80.5
                then {value: 21.0, samples: 1}
                else {value: 34.666666666666664, samples: 3}
              else if X[0] <= 565.0
                then {value: 22.0, samples: 1}
                else {value: 16.0, samples: 1}
            else if X[2] <= 6500.0
              then if X[0] <= 110.0
                then if X[5] <= 13.5
                    then {value: 22.0, samples: 1}
                    else {value: 32.0, samples: 1}
                else if X[1] <= 384.0
                    then {value: 27.0, samples: 1}
                    else if X[5] <= 13.0
                        then {value: 40.0, samples: 3}
                        else {value: 35.0, samples: 1}
              else if X[3] <= 20.0
                then if X[0] <= 62.5
                    then if X[1] <= 1500.0
                        then {value: 36.0, samples: 1}
                        else {value: 45.0, samples: 1}
                    else if X[3] <= 6.0
                        then {value: 50.0, samples: 1}
                        else {value: 61.0, samples: 2}
                else {value: 32.0, samples: 1}
    else if X[4] <= 4.5
      then {value: 138.0, samples: 1}
      else if X[0] <= 45.0
        then {value: 173.0, samples: 1}
        else if X[0] <= 94.5
          then {value: 208.0, samples: 1}

else {value: 198.0, samples: 1}

This is the evaluation for mse:
13388.777777777777

Fold 3
Regression Tree:

 if X[0] <= 24.5
    then {value: 1144.0, samples: 1}
    else if X[2] <= 14000.0
       then if X[3] <= 144.0
          then if X[2] <= 2750.0
             then if X[4] <= 6.0
                then if X[1] <= 518.0
                   then {value: 8.0, samples: 2}
                   else if X[0] <= 125.5
                      then {value: 12.0, samples: 1}
                      else {value: 18.5, samples: 2}
                else {value: 36.0, samples: 1}
             else if X[3] <= 1.0
                then if X[0] <= 325.0
                   then if X[0] <= 128.0
                      then {value: 25.5, samples: 2}
                      else {value: 34.5, samples: 2}
                   else if X[0] <= 565.0
                      then {value: 22.0, samples: 1}
                      else {value: 16.0, samples: 1}
                else if X[2] <= 6500.0
                   then if X[0] <= 110.0
                      then {value: 22.0, samples: 1}
                      else if X[1] <= 384.0
                         then {value: 27.0, samples: 1}
                         else if X[5] <= 13.0
                            then {value: 40.0, samples: 3}
                            else {value: 35.0, samples: 1}
                   else if X[3] <= 20.0
                      then if X[3] <= 6.0
                         then {value: 50.0, samples: 1}
                         else {value: 61.0, samples: 2}
                      else if X[3] <= 31.0
                         then {value: 32.0, samples: 2}
                         else {value: 60.0, samples: 1}
          else {value: 198.0, samples: 1}
       else if X[3] <= 96.5
          then if X[0] <= 60.5
             then if X[0] <= 38.0
                then if X[2] <= 20000.0
                   then {value: 185.0, samples: 1}
                   else {value: 173.0, samples: 1}

else if X[2] <= 18485.0
                  then if X[0] <= 53.5
                     then {value: 138.0, samples: 1}
                     else {value: 132.0, samples: 1}
                  else if X[0] <= 53.0
                     then {value: 114.0, samples: 1}
                     else {value: 106.0, samples: 1}
               else {value: 208.0, samples: 1}
            else {value: 405.0, samples: 1}

This is the evaluation for mse:
1193.75

Fold 4
Regression Tree:

 if X[0] <= 24.5
   then {value: 1144.0, samples: 1}
   else if X[3] <= 96.5
      then if X[1] <= 3310.0
         then if X[2] <= 24000.0
            then if X[2] <= 2500.0
               then if X[1] <= 160.0
                  then {value: 10.0, samples: 1}
                  else if X[0] <= 87.0
                     then {value: 12.0, samples: 1}
                     else if X[1] <= 884.0
                        then {value: 18.0, samples: 3}
                        else {value: 24.0, samples: 1}
               else if X[3] <= 31.0
                  then if X[0] <= 600.0
                     then if X[3] <= 1.0
                        then if X[0] <= 80.5
                           then {value: 24.0, samples: 3}
                           else {value: 34.25, samples: 4}
                        else if X[0] <= 96.0
                           then if X[0] <= 71.0
                              then if X[2] <= 13240.0
                                 then {value: 34.0, samples: 2}
                                 else {value: 45.0, samples: 1}
                              else {value: 50.0, samples: 1}
                           else if X[0] <= 110.0
                              then if X[0] <= 102.5
                                 then {value: 32.0, samples: 1}
                                 else if X[5] <= 13.5
                                    then {value: 22.0, samples: 1}
                                    else {value: 32.0, samples: 1}
                              else if X[1] <= 384.0
                                 then {value: 27.0, samples: 1}
                                 else {value: 40.0, samples: 3}

else {value: 16.0, samples: 1}
                    else {value: 60.0, samples: 1}
                else {value: 114.0, samples: 1}
            else if X[0] <= 60.5
                then if X[1] <= 4620.0
                    then if X[0] <= 53.5
                        then {value: 138.0, samples: 1}
                        else {value: 132.0, samples: 1}
                    else {value: 106.0, samples: 1}
                else {value: 208.0, samples: 1}
        else if X[0] <= 75.5
            then {value: 405.0, samples: 1}
            else {value: 198.0, samples: 1}

This is the evaluation for mse:
1620.1328125

Fold 5
Regression Tree:

 if X[1] <= 3310.0
   then if X[2] <= 24000.0
     then if X[1] <= 646.0
        then if X[5] <= 5.0
           then if X[0] <= 575.0
              then {value: 8.0, samples: 2}
              else {value: 16.0, samples: 1}
           else if X[4] <= 6.0
              then if X[0] <= 243.5
                 then {value: 18.0, samples: 2}
                 else if X[2] <= 5500.0
                    then {value: 27.0, samples: 1}
                    else {value: 33.0, samples: 1}
              else {value: 36.0, samples: 1}
        else if X[3] <= 2.0
           then if X[5] <= 16.0
              then if X[5] <= 3.5
                 then {value: 36.0, samples: 1}
                 else {value: 23.6, samples: 5}
              else {value: 34.0, samples: 2}
           else if X[4] <= 2.0
              then if X[0] <= 125.0
                 then if X[3] <= 10.0
                    then {value: 50.0, samples: 1}
                    else {value: 60.0, samples: 2}
                 else {value: 35.0, samples: 1}
              else if X[3] <= 18.0
                 then if X[5] <= 21.5
                    then if X[2] <= 12000.0
                       then if X[0] <= 165.0

then {value: 34.0, samples: 2}
                                else {value: 40.0, samples: 1}
                           else {value: 45.0, samples: 1}
                        else {value: 62.0, samples: 1}
                     else {value: 32.0, samples: 2}
         else {value: 114.0, samples: 1}
      else if X[2] <= 28000.0
        then if X[0] <= 60.5
           then if X[0] <= 41.0
              then if X[2] <= 20000.0
                 then {value: 185.0, samples: 1}
                 else {value: 173.0, samples: 1}
              else if X[0] <= 56.5
                 then {value: 106.0, samples: 1}
                 else {value: 132.0, samples: 1}
           else {value: 208.0, samples: 1}
        else {value: 405.0, samples: 1}

This is the evaluation for mse:
71803.69

This is the Average Evaluation for the Cross Validation

17920.43369830247
For These Hyper-Parameters: 500 and 1.0
Fold 1
Regression Tree:

 if X[1] <= 3310.0
   then if X[5] <= 25.0
      then if X[2] <= 7000.0
         then if X[5] <= 4.5
            then {value: 8.0, samples: 2}
            else if X[0] <= 97.5
               then if X[0] <= 67.0
                  then {value: 27.0, samples: 1}
                  else {value: 14.5, samples: 2}
               else if X[0] <= 325.0
                  then if X[0] <= 110.0
                     then if X[5] <= 13.5
                        then {value: 22.0, samples: 1}
                        else {value: 32.0, samples: 2}
                     else if X[1] <= 1500.0
                        then if X[0] <= 164.0
                           then {value: 36.0, samples: 1}
                           else if X[2] <= 5500.0
                              then {value: 25.5, samples: 2}
                              else {value: 33.0, samples: 1}
                        else {value: 38.333333333333336, samples: 3}
                  else {value: 22.0, samples: 1}

```
            else if X[0] <= 500.0
                then if X[1] <= 2310.0
                    then if X[0] <= 96.0
                        then if X[0] <= 62.5
                            then {value: 45.0, samples: 1}
                            else if X[3] <= 6.0
                                then {value: 50.0, samples: 1}
                                else {value: 61.0, samples: 2}
                        else if X[2] <= 10000.0
                            then {value: 34.0, samples: 2}
                            else {value: 60.0, samples: 1}
                    else {value: 32.0, samples: 1}
                else {value: 16.0, samples: 1}
        else if X[0] <= 87.5
            then {value: 114.0, samples: 1}
            else {value: 198.0, samples: 1}
    else if X[2] <= 28000.0
        then if X[1] <= 4620.0
            then {value: 135.0, samples: 2}
            else if X[0] <= 45.0
                then if X[2] <= 20000.0
                    then {value: 185.0, samples: 1}
                    else {value: 173.0, samples: 1}
                else {value: 208.0, samples: 1}
        else {value: 405.0, samples: 1}
```

This is the evaluation for mse:
61962.166666666664

Fold 2
Regression Tree:

```
 if X[0] <= 24.5
   then {value: 1144.0, samples: 1}
   else if X[4] <= 20.0
     then if X[1] <= 3310.0
       then if X[5] <= 25.0
         then if X[2] <= 7000.0
           then if X[1] <= 518.0
             then {value: 36.333333333333336, samples: 3}
             else if X[2] <= 2500.0
               then {value: 20.333333333333332, samples: 3}
               else if X[0] <= 110.0
                 then if X[5] <= 13.5
                   then {value: 23.333333333333332, samples: 3}
                   else {value: 32.0, samples: 2}
                 else if X[0] <= 315.0
                   then {value: 38.666666666666664, samples: 3}
                   else {value: 22.0, samples: 1}
             else if X[0] <= 65.5
```

then if X[2] <= 13240.0
    then if X[0] <= 53.0
        then {value: 34.0, samples: 2}
        else {value: 24.0, samples: 1}
    else {value: 45.0, samples: 1}
    else if X[0] <= 96.0
        then {value: 61.0, samples: 2}
        else if X[2] <= 10000.0
            then {value: 34.0, samples: 2}
            else {value: 60.0, samples: 1}
    else if X[0] <= 87.5
        then {value: 114.0, samples: 1}
        else {value: 198.0, samples: 1}
    else if X[0] <= 38.0
        then if X[2] <= 20000.0
            then {value: 185.0, samples: 1}
            else {value: 173.0, samples: 1}
        else if X[1] <= 4620.0
            then {value: 135.0, samples: 2}
            else {value: 106.0, samples: 1}
    else {value: 405.0, samples: 1}

This is the evaluation for mse:
1445.1481481481483

Fold 3
Regression Tree:

 if X[0] <= 24.5
    then {value: 1144.0, samples: 1}
    else if X[3] <= 80.0
        then if X[1] <= 3930.0
            then if X[2] <= 2500.0
                then if X[4] <= 6.0
                    then if X[1] <= 518.0
                        then if X[0] <= 165.0
                            then {value: 17.0, samples: 1}
                            else {value: 8.0, samples: 2}
                        else if X[0] <= 125.5
                            then {value: 12.0, samples: 1}
                            else {value: 20.333333333333332, samples: 3}
                    else {value: 36.0, samples: 1}
                else if X[3] <= 1.0
                    then if X[0] <= 325.0
                        then if X[0] <= 80.5
                            then {value: 24.0, samples: 3}
                            else {value: 34.25, samples: 4}
                        else {value: 19.0, samples: 2}
                    else if X[3] <= 31.0
                        then if X[1] <= 384.0

then {value: 27.0, samples: 1}
                    else if X[3] <= 18.0
                        then if X[0] <= 103.5
                            then if X[1] <= 1500.0
                                then {value: 36.0, samples: 1}
                                else {value: 47.5, samples: 2}
                            else {value: 38.75, samples: 4}
                        else {value: 32.0, samples: 2}
                    else {value: 60.0, samples: 1}
            else if X[0] <= 60.0
                then if X[0] <= 41.0
                    then {value: 173.0, samples: 1}
                    else {value: 106.0, samples: 1}
                else {value: 208.0, samples: 1}
        else if X[0] <= 75.5
            then {value: 405.0, samples: 1}
            else {value: 198.0, samples: 1}

This is the evaluation for mse:
1194.4921875

Fold 4
Regression Tree:

 if X[0] <= 24.5
    then {value: 1144.0, samples: 1}
    else if X[2] <= 14000.0
        then if X[3] <= 143.0
            then if X[2] <= 2500.0
                then if X[4] <= 6.0
                    then if X[1] <= 518.0
                        then if X[0] <= 165.0
                            then {value: 17.0, samples: 1}
                            else {value: 8.0, samples: 2}
                        else if X[0] <= 125.5
                            then {value: 12.0, samples: 1}
                            else {value: 20.333333333333332, samples: 3}
                    else {value: 36.0, samples: 1}
                else if X[2] <= 11240.0
                    then if X[3] <= 2.0
                        then if X[0] <= 560.0
                            then if X[0] <= 128.0
                                then {value: 24.0, samples: 3}
                                else {value: 35.0, samples: 3}
                            else {value: 16.0, samples: 1}
                        else if X[0] <= 98.5
                            then if X[0] <= 62.5
                                then {value: 34.0, samples: 2}
                                else if X[0] <= 83.5
                                    then {value: 62.0, samples: 1}

else {value: 50.0, samples: 1}
                else if X[0] <= 122.5
                    then if X[5] <= 13.5
                        then {value: 22.0, samples: 1}
                        else {value: 32.0, samples: 1}
                    else if X[1] <= 384.0
                        then {value: 27.0, samples: 1}
                        else {value: 38.333333333333336, samples: 3}
                else {value: 60.0, samples: 1}
        else {value: 198.0, samples: 1}
    else if X[0] <= 60.5
        then if X[0] <= 38.0
            then {value: 185.0, samples: 1}
            else if X[2] <= 18485.0
                then {value: 135.0, samples: 2}
                else {value: 110.0, samples: 2}
        else {value: 208.0, samples: 1}

This is the evaluation for mse:
7166.625

Fold 5
Regression Tree:

 if X[0] <= 24.5
    then {value: 1144.0, samples: 1}
    else if X[1] <= 3000.0
        then if X[2] <= 24000.0
            then if X[2] <= 2500.0
                then if X[4] <= 2.0
                    then if X[0] <= 925.0
                        then {value: 9.333333333333334, samples: 3}
                        else {value: 18.0, samples: 1}
                    else {value: 18.0, samples: 2}
                else if X[3] <= 1.0
                    then if X[5] <= 16.0
                        then {value: 20.75, samples: 4}
                        else {value: 34.0, samples: 2}
                    else if X[2] <= 6500.0
                        then if X[0] <= 110.0
                            then if X[5] <= 13.5
                                then {value: 22.0, samples: 1}
                                else {value: 32.0, samples: 1}
                            else if X[1] <= 384.0
                                then {value: 27.0, samples: 1}
                                else {value: 38.333333333333336, samples: 3}
                        else if X[4] <= 2.0
                            then if X[3] <= 10.0
                                then {value: 50.0, samples: 1}
                                else {value: 60.0, samples: 2}

else if X[5] <= 20.0
                    then if X[1] <= 1500.0
                        then {value: 34.0, samples: 2}
                        else {value: 45.0, samples: 1}
                    else {value: 62.0, samples: 1}
            else {value: 114.0, samples: 1}
        else if X[2] <= 28000.0
            then if X[0] <= 60.5
                then if X[0] <= 38.0
                    then if X[2] <= 20000.0
                        then {value: 185.0, samples: 1}
                        else {value: 173.0, samples: 1}
                    else if X[1] <= 4620.0
                        then {value: 135.0, samples: 2}
                        else {value: 106.0, samples: 1}
                else {value: 208.0, samples: 1}
            else {value: 405.0, samples: 1}

This is the evaluation for mse:
3888.0720486111113

This is the Average Evaluation for the Cross Validation

15131.300810185183
For These Hyper-Parameters: 500 and 1.5
Fold 1
Regression Tree:

 if X[0] <= 24.5
    then {value: 1144.0, samples: 1}
    else if X[1] <= 3310.0
        then if X[2] <= 24000.0
            then if X[3] <= 6.0
                then if X[0] <= 97.5
                    then if X[0] <= 70.0
                        then {value: 24.0, samples: 3}
                        else {value: 14.5, samples: 2}
                    else if X[0] <= 600.0
                        then if X[1] <= 884.0
                            then if X[1] <= 384.0
                                then {value: 30.0, samples: 2}
                                else {value: 37.333333333333336, samples: 3}
                            else if X[0] <= 201.5
                                then {value: 34.0, samples: 2}
                                else {value: 23.0, samples: 2}
                        else {value: 17.0, samples: 2}
                else if X[3] <= 31.0
                    then if X[5] <= 3.5
                        then {value: 60.0, samples: 1}
                        else if X[3] <= 18.0

then if X[5] <= 22.0
                       then {value: 39.0, samples: 4}
                       else {value: 62.0, samples: 1}
                    else {value: 32.0, samples: 2}
                 else {value: 60.0, samples: 1}
              else {value: 114.0, samples: 1}
        else if X[2] <= 28000.0
           then if X[0] <= 60.0
              then if X[0] <= 38.0
                 then if X[2] <= 20000.0
                    then {value: 185.0, samples: 1}
                    else {value: 173.0, samples: 1}
                 else if X[0] <= 53.0
                    then {value: 138.0, samples: 1}
                    else {value: 106.0, samples: 1}
              else {value: 208.0, samples: 1}
           else {value: 405.0, samples: 1}

This is the evaluation for mse:
2785.5833333333335

Fold 2
Regression Tree:

 if X[4] <= 5.0
    then if X[1] <= 3000.0
       then if X[2] <= 3000.0
          then if X[4] <= 2.0
             then if X[0] <= 925.0
                then {value: 9.333333333333334, samples: 3}
                else {value: 18.0, samples: 1}
             else {value: 18.0, samples: 2}
          else if X[2] <= 7000.0
             then if X[0] <= 110.0
                then if X[5] <= 13.5
                   then {value: 23.333333333333332, samples: 3}
                   else {value: 32.0, samples: 2}
                else if X[0] <= 272.5
                   then {value: 38.333333333333336, samples: 3}
                   else {value: 30.0, samples: 2}
             else if X[3] <= 2.0
                then if X[0] <= 128.0
                   then {value: 24.0, samples: 1}
                   else {value: 36.0, samples: 1}
                else if X[4] <= 2.0
                   then if X[3] <= 10.0
                      then {value: 50.0, samples: 1}
                      else {value: 60.0, samples: 2}
                   else if X[3] <= 10.0
                      then {value: 62.0, samples: 1}

else if X[0] <= 75.0
   then {value: 45.0, samples: 1}
   else {value: 32.0, samples: 1}
else {value: 138.0, samples: 1}
else if X[4] <= 20.0
then if X[0] <= 60.5
then if X[0] <= 38.0
then if X[2] <= 20000.0
then {value: 185.0, samples: 1}
else {value: 173.0, samples: 1}
else if X[0] <= 56.5
then {value: 110.0, samples: 2}
else {value: 132.0, samples: 1}
else if X[0] <= 94.5
then {value: 208.0, samples: 1}
else {value: 198.0, samples: 1}
else {value: 405.0, samples: 1}

This is the evaluation for mse:
67349.7901234568

Fold 3
Regression Tree:

if X[0] <= 24.5
then {value: 1144.0, samples: 1}
else if X[1] <= 4620.0
then if X[3] <= 48.5
then if X[2] <= 14000.0
then if X[2] <= 7000.0
then if X[5] <= 4.5
then {value: 8.0, samples: 2}
else if X[0] <= 97.5
then {value: 21.666666666666668, samples: 3}
else if X[1] <= 518.0
then {value: 36.333333333333336, samples: 3}
else if X[5] <= 17.0
then if X[4] <= 2.0
then if X[0] <= 159.0
then {value: 40.0, samples: 1}
else {value: 24.0, samples: 1}
else {value: 21.0, samples: 3}
else {value: 33.75, samples: 4}
else if X[3] <= 2.0
then if X[5] <= 3.0
then {value: 36.0, samples: 1}
else {value: 20.0, samples: 2}
else if X[0] <= 62.5
then {value: 34.0, samples: 2}
else if X[3] <= 6.0

then {value: 50.0, samples: 1}
                    else {value: 60.666666666666664, samples: 3}
            else if X[4] <= 4.5
               then {value: 45.0, samples: 1}
               else if X[0] <= 53.5
                  then {value: 114.0, samples: 1}
                  else {value: 132.0, samples: 1}
         else if X[0] <= 87.5
            then {value: 138.0, samples: 1}
            else {value: 198.0, samples: 1}
      else if X[0] <= 45.0
         then {value: 405.0, samples: 1}
         else {value: 208.0, samples: 1}

This is the evaluation for mse:
14261.416666666666

Fold 4
Regression Tree:

 if X[0] <= 24.5
   then {value: 1144.0, samples: 1}
   else if X[3] <= 80.0
      then if X[2] <= 14000.0
         then if X[2] <= 2500.0
            then if X[4] <= 6.0
               then if X[1] <= 518.0
                  then {value: 8.0, samples: 2}
                  else if X[0] <= 125.5
                     then {value: 12.0, samples: 1}
                     else {value: 20.333333333333332, samples: 3}
               else {value: 36.0, samples: 1}
            else if X[2] <= 11240.0
               then if X[3] <= 31.0
                  then if X[0] <= 600.0
                     then if X[3] <= 1.0
                        then if X[0] <= 315.0
                           then if X[0] <= 80.5
                              then {value: 25.5, samples: 2}
                              else {value: 34.666666666666664, samples: 3}
                           else {value: 22.0, samples: 1}
                        else if X[5] <= 7.0
                           then if X[1] <= 1500.0
                              then if X[1] <= 384.0
                                 then {value: 27.0, samples: 1}
                                 else {value: 36.0, samples: 3}
                              else if X[0] <= 103.5
                                 then {value: 50.0, samples: 1}
                                 else {value: 40.0, samples: 2}
                           else if X[5] <= 13.5

then {value: 22.0, samples: 1}
                              else {value: 32.0, samples: 2}
                          else {value: 16.0, samples: 1}
                      else {value: 60.0, samples: 1}
                  else {value: 60.0, samples: 1}
            else if X[0] <= 38.0
               then if X[2] <= 20000.0
                  then {value: 185.0, samples: 1}
                  else {value: 173.0, samples: 1}
               else if X[0] <= 56.5
                  then {value: 110.0, samples: 2}
                  else {value: 132.0, samples: 1}
         else if X[0] <= 75.5
            then {value: 405.0, samples: 1}
            else {value: 198.0, samples: 1}

This is the evaluation for mse:
1489.53125

Fold 5
Regression Tree:

 if X[0] <= 24.5
    then {value: 1144.0, samples: 1}
    else if X[1] <= 3310.0
       then if X[3] <= 143.0
          then if X[2] <= 2500.0
             then if X[4] <= 6.0
                then if X[1] <= 518.0
                   then if X[0] <= 165.0
                      then {value: 17.0, samples: 1}
                      else {value: 8.0, samples: 2}
                   else if X[0] <= 125.5
                      then {value: 12.0, samples: 1}
                      else {value: 20.333333333333332, samples: 3}
                else {value: 36.0, samples: 1}
             else if X[3] <= 1.0
                then if X[0] <= 325.0
                   then if X[0] <= 178.0
                      then {value: 21.0, samples: 1}
                      else {value: 34.5, samples: 2}
                   else {value: 19.0, samples: 2}
                else if X[0] <= 96.0
                   then if X[0] <= 62.5
                      then if X[2] <= 13240.0
                         then {value: 34.0, samples: 2}
                         else {value: 45.0, samples: 1}
                      else if X[0] <= 83.5
                         then {value: 62.0, samples: 1}
                         else {value: 50.0, samples: 1}

else if X[0] <= 110.0
then {value: 28.666666666666668, samples: 3}
else if X[1] <= 384.0
then {value: 27.0, samples: 1}
else {value: 38.75, samples: 4}
else {value: 198.0, samples: 1}
else if X[0] <= 60.5
then if X[0] <= 38.0
then if X[2] <= 20000.0
then {value: 185.0, samples: 1}
else {value: 173.0, samples: 1}
else if X[1] <= 4620.0
then {value: 135.0, samples: 2}
else {value: 106.0, samples: 1}
else {value: 208.0, samples: 1}

This is the evaluation for mse:
7479.378472222223

This is the Average Evaluation for the Cross Validation

18673.139969135802
For These Hyper-Parameters: 500 and 2.0
Fold 1
Regression Tree:

if X[0] <= 24.5
then {value: 1144.0, samples: 1}
else if X[4] <= 5.0
then if X[2] <= 2750.0
then if X[1] <= 518.0
then {value: 8.0, samples: 2}
else {value: 16.333333333333332, samples: 3}
else if X[3] <= 1.0
then if X[0] <= 560.0
then {value: 26.25, samples: 4}
else {value: 16.0, samples: 1}
else if X[2] <= 6500.0
then if X[0] <= 110.0
then {value: 27.0, samples: 2}
else if X[1] <= 384.0
then {value: 27.0, samples: 1}
else {value: 38.75, samples: 4}
else if X[4] <= 2.0
then {value: 60.0, samples: 2}
else if X[5] <= 20.0
then if X[1] <= 1500.0
then {value: 34.0, samples: 2}
else {value: 45.0, samples: 1}
else {value: 62.0, samples: 1}

else if X[0] <= 212.5
            then if X[0] <= 60.5
                then if X[2] <= 13240.0
                    then {value: 32.0, samples: 1}
                    else if X[0] <= 38.0
                        then if X[2] <= 20000.0
                            then {value: 185.0, samples: 1}
                            else {value: 173.0, samples: 1}
                        else if X[0] <= 56.5
                            then {value: 110.0, samples: 2}
                            else {value: 132.0, samples: 1}
                else {value: 203.0, samples: 2}
            else {value: 36.0, samples: 1}

This is the evaluation for mse:
9798.10725308642

Fold 2
Regression Tree:

 if X[0] <= 24.5
    then {value: 1144.0, samples: 1}
    else if X[3] <= 96.5
        then if X[2] <= 14000.0
            then if X[2] <= 2500.0
                then if X[4] <= 6.0
                    then if X[0] <= 221.5
                        then {value: 18.0, samples: 4}
                        else {value: 8.0, samples: 2}
                    else {value: 36.0, samples: 1}
                else if X[3] <= 2.0
                    then if X[0] <= 325.0
                        then if X[0] <= 80.5
                            then {value: 22.5, samples: 2}
                            else {value: 34.25, samples: 4}
                        else {value: 19.0, samples: 2}
                    else if X[2] <= 6500.0
                        then {value: 33.5, samples: 4}
                        else if X[0] <= 62.5
                            then {value: 34.0, samples: 2}
                            else if X[0] <= 96.0
                                then if X[3] <= 6.0
                                    then {value: 50.0, samples: 1}
                                    else {value: 61.0, samples: 2}
                                else if X[0] <= 105.0
                                    then {value: 32.0, samples: 1}
                                    else {value: 60.0, samples: 1}
            else if X[0] <= 38.0
                then {value: 185.0, samples: 1}
                else if X[1] <= 3000.0

then {value: 114.0, samples: 1}
                        else {value: 135.0, samples: 2}
            else if X[0] <= 75.5
                then {value: 405.0, samples: 1}
                else {value: 198.0, samples: 1}

This is the evaluation for mse:
1266.9791666666667

Fold 3
Regression Tree:

 if X[0] <= 24.5
    then {value: 1144.0, samples: 1}
    else if X[3] <= 27.0
        then if X[1] <= 3000.0
            then if X[2] <= 24000.0
                then if X[2] <= 2500.0
                    then if X[4] <= 6.0
                        then if X[1] <= 518.0
                            then {value: 11.5, samples: 2}
                            else {value: 20.333333333333332, samples: 3}
                        else {value: 36.0, samples: 1}
                    else if X[3] <= 1.0
                        then if X[0] <= 325.0
                            then if X[0] <= 80.5
                                then {value: 24.0, samples: 3}
                                else {value: 34.25, samples: 4}
                            else {value: 19.0, samples: 2}
                        else if X[2] <= 6000.0
                            then if X[0] <= 110.0
                                then {value: 22.0, samples: 1}
                                else {value: 40.0, samples: 3}
                            else if X[3] <= 20.0
                                then if X[0] <= 62.5
                                    then {value: 45.0, samples: 1}
                                    else if X[3] <= 6.0
                                        then {value: 50.0, samples: 1}
                                        else {value: 61.0, samples: 2}
                                else {value: 32.0, samples: 1}
                else {value: 114.0, samples: 1}
            else if X[0] <= 41.5
                then {value: 185.0, samples: 1}
                else {value: 132.0, samples: 1}
        else if X[2] <= 28000.0
            then if X[0] <= 60.0
                then if X[0] <= 38.0
                    then {value: 173.0, samples: 1}
                    else if X[0] <= 53.0
                        then {value: 138.0, samples: 1}

else {value: 106.0, samples: 1}
else {value: 203.0, samples: 2}
else {value: 405.0, samples: 1}

This is the evaluation for mse:
4016.4618055555557

Fold 4
Regression Tree:

if X[0] <= 24.5
  then {value: 1144.0, samples: 1}
  else if X[4] <= 20.0
    then if X[1] <= 3310.0
      then if X[5] <= 25.0
        then if X[2] <= 7000.0
          then if X[3] <= 1.0
            then if X[5] <= 15.0
              then if X[2] <= 3000.0
                then {value: 16.2, samples: 5}
                else {value: 23.333333333333332, samples: 3}
              else {value: 34.0, samples: 2}
            else if X[0] <= 110.0
              then {value: 27.0, samples: 2}
              else if X[1] <= 384.0
                then {value: 27.0, samples: 1}
                else {value: 38.333333333333336, samples: 3}
          else if X[0] <= 62.5
            then if X[2] <= 13240.0
              then {value: 34.0, samples: 2}
              else {value: 45.0, samples: 1}
            else if X[0] <= 96.0
              then if X[3] <= 6.0
                then {value: 50.0, samples: 1}
                else {value: 61.0, samples: 2}
              else if X[2] <= 10000.0
                then {value: 34.0, samples: 2}
                else {value: 60.0, samples: 1}
        else if X[0] <= 87.5
          then {value: 114.0, samples: 1}
          else {value: 198.0, samples: 1}
      else if X[0] <= 60.5
        then if X[0] <= 38.0
          then {value: 173.0, samples: 1}
          else if X[1] <= 4620.0
            then {value: 135.0, samples: 2}
            else {value: 106.0, samples: 1}
        else {value: 208.0, samples: 1}
    else {value: 405.0, samples: 1}

This is the evaluation for mse:
260.9305555555556

Fold 5
Regression Tree:

```
if X[1] <= 3310.0
   then if X[2] <= 2500.0
      then if X[4] <= 6.0
         then if X[1] <= 518.0
            then {value: 11.0, samples: 3}
            else {value: 18.25, samples: 4}
         else {value: 36.0, samples: 1}
      else if X[3] <= 31.0
         then if X[0] <= 600.0
            then if X[3] <= 1.0
               then if X[0] <= 325.0
                  then if X[0] <= 80.5
                     then {value: 25.5, samples: 2}
                     else {value: 34.25, samples: 4}
                  else {value: 22.0, samples: 1}
               else if X[0] <= 98.5
                  then if X[0] <= 71.0
                     then if X[2] <= 13240.0
                        then {value: 34.0, samples: 2}
                        else {value: 45.0, samples: 1}
                     else {value: 50.0, samples: 1}
                  else if X[0] <= 110.0
                     then {value: 27.0, samples: 2}
                     else if X[1] <= 384.0
                        then {value: 27.0, samples: 1}
                        else {value: 38.75, samples: 4}
            else {value: 16.0, samples: 1}
         else {value: 60.0, samples: 1}
   else if X[2] <= 28000.0
      then if X[0] <= 60.0
         then if X[0] <= 38.0
            then if X[2] <= 20000.0
               then {value: 185.0, samples: 1}
               else {value: 173.0, samples: 1}
            else if X[0] <= 53.0
               then {value: 138.0, samples: 1}
               else {value: 106.0, samples: 1}
         else {value: 208.0, samples: 1}
      else {value: 405.0, samples: 1}
```

This is the evaluation for mse:
71485.03125

This is the Average Evaluation for the Cross Validation

17365.50200617284
For These Hyper-Parameters: 500 and 2.5
Fold 1
Regression Tree:

if X[0] <= 24.5
   then {value: 1144.0, samples: 1}
   else if X[1] <= 3310.0
      then if X[3] <= 143.0
         then if X[2] <= 2500.0
            then if X[4] <= 6.0
               then {value: 16.666666666666668, samples: 6}
               else {value: 36.0, samples: 1}
            else if X[5] <= 12.0
               then if X[5] <= 7.0
                  then if X[0] <= 600.0
                     then if X[1] <= 384.0
                        then {value: 30.0, samples: 2}
                        else if X[0] <= 107.5
                           then {value: 31.666666666666668, samples: 3}
                           else {value: 39.0, samples: 4}
                     else {value: 16.0, samples: 1}
                  else {value: 22.333333333333332, samples: 3}
               else if X[0] <= 90.0
                  then if X[0] <= 62.5
                     then if X[1] <= 2310.0
                        then {value: 45.0, samples: 1}
                        else {value: 32.0, samples: 1}
                     else {value: 62.0, samples: 1}
                  else {value: 34.0, samples: 2}
         else {value: 198.0, samples: 1}
      else if X[2] <= 28000.0
         then if X[0] <= 60.0
            then if X[0] <= 38.0
               then {value: 179.0, samples: 2}
               else if X[0] <= 53.0
                  then {value: 138.0, samples: 1}
                  else {value: 106.0, samples: 1}
            else {value: 208.0, samples: 1}
         else {value: 405.0, samples: 1}

This is the evaluation for mse:
824.9629629629629

Fold 2
Regression Tree:

if X[4] <= 20.0
   then if X[2] <= 14000.0

then if X[3] <= 144.0
    then if X[2] <= 2500.0
      then if X[4] <= 5.5
        then {value: 12.6, samples: 5}
        else {value: 36.0, samples: 1}
      else if X[3] <= 12.0
        then if X[3] <= 1.0
          then if X[0] <= 325.0
            then if X[0] <= 80.5
              then {value: 22.5, samples: 2}
              else {value: 34.25, samples: 4}
            else {value: 19.0, samples: 2}
          else if X[0] <= 98.5
            then {value: 50.0, samples: 1}
            else if X[0] <= 110.0
              then {value: 27.0, samples: 2}
              else if X[1] <= 384.0
                then {value: 27.0, samples: 1}
                else {value: 38.75, samples: 4}
        else if X[4] <= 2.0
          then {value: 60.0, samples: 2}
          else {value: 32.0, samples: 1}
    else {value: 198.0, samples: 1}
  else if X[0] <= 38.0
    then {value: 179.0, samples: 2}
    else if X[2] <= 18485.0
      then {value: 135.0, samples: 2}
      else {value: 110.0, samples: 2}
else {value: 405.0, samples: 1}

This is the evaluation for mse:
62706.2411111111

Fold 3
Regression Tree:

if X[0] <= 24.5
  then {value: 1144.0, samples: 1}
  else if X[1] <= 3310.0
    then if X[5] <= 25.0
      then if X[2] <= 7000.0
        then if X[2] <= 2750.0
          then if X[4] <= 6.0
            then if X[1] <= 518.0
              then {value: 6.0, samples: 1}
              else {value: 18.25, samples: 4}
            else {value: 36.0, samples: 1}
          else if X[0] <= 110.0
            then if X[5] <= 13.5
              then {value: 23.333333333333332, samples: 3}

else {value: 32.0, samples: 2}
              else if X[3] <= 1.0
                 then {value: 27.5, samples: 2}
                 else if X[1] <= 384.0
                    then {value: 27.0, samples: 1}
                    else {value: 38.75, samples: 4}
          else if X[0] <= 455.0
             then if X[0] <= 62.5
                then {value: 37.666666666666664, samples: 3}
                else if X[3] <= 6.0
                   then {value: 50.0, samples: 1}
                   else {value: 60.666666666666664, samples: 3}
             else {value: 16.0, samples: 1}
       else if X[0] <= 87.5
          then {value: 114.0, samples: 1}
          else {value: 198.0, samples: 1}
    else if X[1] <= 4620.0
       then {value: 135.0, samples: 2}
       else if X[0] <= 45.0
          then {value: 179.0, samples: 2}
          else {value: 208.0, samples: 1}

This is the evaluation for mse:
7861.725694444444

Fold 4
Regression Tree:

 if X[0] <= 24.5
    then {value: 1144.0, samples: 1}
    else if X[0] <= 38.0
       then {value: 405.0, samples: 1}
       else if X[1] <= 3310.0
          then if X[2] <= 24000.0
             then if X[2] <= 2500.0
                then if X[4] <= 6.0
                   then if X[1] <= 518.0
                      then {value: 11.0, samples: 3}
                      else {value: 18.25, samples: 4}
                   else {value: 36.0, samples: 1}
                else if X[3] <= 1.0
                   then if X[0] <= 325.0
                      then if X[0] <= 80.5
                         then {value: 25.5, samples: 2}
                         else {value: 34.25, samples: 4}
                      else {value: 19.0, samples: 2}
                   else if X[2] <= 6000.0
                      then if X[0] <= 110.0
                         then {value: 22.0, samples: 1}
                         else {value: 38.333333333333336, samples: 3}

else if X[4] <= 2.0
  then {value: 56.666666666666664, samples: 3}
  else if X[3] <= 18.0
    then if X[0] <= 62.5
      then {value: 40.5, samples: 2}
      else {value: 62.0, samples: 1}
    else {value: 32.0, samples: 2}
else {value: 114.0, samples: 1}
else if X[0] <= 60.5
  then if X[0] <= 56.5
    then {value: 106.0, samples: 1}
    else {value: 132.0, samples: 1}
  else {value: 208.0, samples: 1}

This is the evaluation for mse:
16124.114583333332

Fold 5
Regression Tree:

if X[0] <= 24.5
  then {value: 1144.0, samples: 1}
  else if X[1] <= 3310.0
    then if X[5] <= 25.0
      then if X[2] <= 7000.0
        then if X[2] <= 1500.0
          then {value: 11.0, samples: 3}
          else if X[5] <= 17.0
            then if X[0] <= 365.0
              then {value: 23.333333333333332, samples: 6}
              else {value: 40.0, samples: 1}
            else {value: 33.75, samples: 4}
        else if X[0] <= 65.5
          then if X[2] <= 13240.0
            then {value: 30.666666666666668, samples: 3}
            else {value: 45.0, samples: 1}
          else if X[0] <= 96.0
            then {value: 57.333333333333336, samples: 3}
            else if X[2] <= 10000.0
              then {value: 34.0, samples: 2}
              else {value: 60.0, samples: 1}
      else if X[0] <= 87.5
        then {value: 114.0, samples: 1}
        else {value: 198.0, samples: 1}
    else if X[2] <= 28000.0
      then if X[0] <= 60.5
        then if X[0] <= 38.0
          then {value: 179.0, samples: 2}
          else if X[1] <= 4620.0
            then {value: 135.0, samples: 2}

else {value: 106.0, samples: 1}
                else {value: 208.0, samples: 1}
            else {value: 405.0, samples: 1}

This is the evaluation for mse:
276.5277777777778

This is the Average Evaluation for the Cross Validation

17558.714425925922
Fold 1
Regression Tree:

 if X[2] <= 14000.0
    then if X[3] <= 144.0
       then if X[2] <= 2500.0
          then if X[4] <= 6.0
             then if X[1] <= 518.0
                then if X[0] <= 165.0
                   then {value: 17.0, samples: 1}
                   else {value: 6.0, samples: 1}
                else if X[0] <= 125.5
                   then {value: 12.0, samples: 1}
                   else if X[1] <= 884.0
                      then {value: 18.5, samples: 2}
                      else {value: 24.0, samples: 1}
             else {value: 36.0, samples: 1}
          else if X[2] <= 11240.0
             then if X[3] <= 31.0
                then if X[3] <= 1.0
                   then if X[0] <= 80.5
                      then {value: 22.5, samples: 2}
                      else if X[0] <= 315.0
                         then {value: 34.666666666666664, samples: 3}
                         else {value: 22.0, samples: 1}
                   else if X[1] <= 384.0
                      then {value: 27.0, samples: 1}
                      else if X[3] <= 6.0
                         then if X[0] <= 103.5
                            then {value: 50.0, samples: 1}
                            else {value: 40.0, samples: 2}
                         else if X[0] <= 182.5
                            then {value: 33.4, samples: 5}
                            else {value: 40.0, samples: 1}
                else {value: 60.0, samples: 1}
             else {value: 60.0, samples: 1}
          else {value: 198.0, samples: 1}
       else if X[0] <= 60.5
          then if X[0] <= 38.0
             then if X[2] <= 20000.0

then {value: 185.0, samples: 1}
        else {value: 173.0, samples: 1}
      else if X[2] <= 18485.0
        then if X[0] <= 53.5
            then {value: 138.0, samples: 1}
            else {value: 132.0, samples: 1}
        else if X[0] <= 53.0
            then {value: 114.0, samples: 1}
            else {value: 106.0, samples: 1}
    else {value: 208.0, samples: 1}

This is the evaluation for mse:
111828.35222222222

Fold 2
Regression Tree:

 if X[0] <= 24.5
   then {value: 1144.0, samples: 1}
   else if X[1] <= 3310.0
     then if X[3] <= 144.0
       then if X[3] <= 1.0
         then if X[0] <= 325.0
           then if X[0] <= 107.5
             then if X[0] <= 53.0
                then {value: 27.0, samples: 1}
                else {value: 19.0, samples: 2}
             else if X[0] <= 201.5
                then {value: 36.0, samples: 2}
                else if X[0] <= 251.5
                   then {value: 24.0, samples: 1}
                   else {value: 34.5, samples: 2}
           else if X[1] <= 160.0
             then {value: 10.0, samples: 1}
             else if X[0] <= 565.0
                then {value: 22.0, samples: 1}
                else {value: 17.0, samples: 2}
         else if X[0] <= 98.5
           then if X[0] <= 62.5
             then if X[2] <= 13240.0
                then {value: 34.0, samples: 2}
                else {value: 45.0, samples: 1}
             else if X[3] <= 6.0
                then {value: 50.0, samples: 1}
                else {value: 61.0, samples: 2}
           else if X[5] <= 7.0
             then {value: 40.0, samples: 3}
             else if X[5] <= 17.0
                then {value: 20.5, samples: 2}
                else {value: 33.5, samples: 2}

else {value: 198.0, samples: 1}
           else if X[2] <= 26485.0
              then if X[0] <= 60.5
                 then if X[0] <= 38.0
                    then {value: 185.0, samples: 1}
                    else if X[1] <= 4620.0
                       then if X[0] <= 53.5
                          then {value: 138.0, samples: 1}
                          else {value: 132.0, samples: 1}
                       else {value: 106.0, samples: 1}
                 else {value: 208.0, samples: 1}
              else {value: 405.0, samples: 1}

This is the evaluation for mse:
770.7777777777778

Fold 3
Regression Tree:

 if X[0] <= 24.5
    then {value: 1144.0, samples: 1}
    else if X[1] <= 3310.0
       then if X[5] <= 25.0
          then if X[2] <= 2750.0
             then if X[4] <= 5.5
                then if X[3] <= 4.0
                   then if X[1] <= 160.0
                      then {value: 10.0, samples: 1}
                      else if X[0] <= 87.0
                         then {value: 12.0, samples: 1}
                         else {value: 17.5, samples: 2}
                   else {value: 6.0, samples: 1}
                else {value: 36.0, samples: 1}
             else if X[3] <= 1.0
                then if X[0] <= 560.0
                   then if X[0] <= 80.5
                      then {value: 24.0, samples: 3}
                      else {value: 32.5, samples: 2}
                   else {value: 16.0, samples: 1}
                else if X[2] <= 6500.0
                   then if X[0] <= 110.0
                      then if X[5] <= 13.5
                         then {value: 22.0, samples: 1}
                         else {value: 32.0, samples: 1}
                      else if X[1] <= 384.0
                         then {value: 27.0, samples: 1}
                         else {value: 40.0, samples: 2}
                   else if X[4] <= 2.0
                      then {value: 60.0, samples: 2}
                      else if X[3] <= 18.0

then if X[0] <= 62.5
   then if X[1] <= 1500.0
     then {value: 36.0, samples: 1}
     else {value: 45.0, samples: 1}
   else {value: 62.0, samples: 1}
  else {value: 32.0, samples: 2}
else if X[0] <= 87.5
  then {value: 114.0, samples: 1}
  else {value: 198.0, samples: 1}
else if X[2] <= 28000.0
  then if X[0] <= 60.5
   then if X[0] <= 38.0
    then if X[2] <= 20000.0
     then {value: 185.0, samples: 1}
     else {value: 173.0, samples: 1}
    else if X[1] <= 4620.0
     then if X[0] <= 53.5
      then {value: 138.0, samples: 1}
      else {value: 132.0, samples: 1}
     else {value: 106.0, samples: 1}
   else {value: 208.0, samples: 1}
  else {value: 405.0, samples: 1}

This is the evaluation for mse:
58.875

Fold 4
Regression Tree:

if X[0] <= 24.5
  then {value: 1144.0, samples: 1}
  else if X[3] <= 80.0
   then if X[2] <= 18485.0
    then if X[2] <= 2500.0
     then if X[1] <= 518.0
      then if X[0] <= 165.0
       then {value: 17.0, samples: 1}
       else {value: 8.0, samples: 2}
      else if X[0] <= 125.5
       then {value: 12.0, samples: 1}
       else if X[1] <= 884.0
        then {value: 18.5, samples: 2}
        else {value: 24.0, samples: 1}
     else if X[3] <= 1.0
      then if X[0] <= 325.0
       then if X[0] <= 80.5
        then {value: 25.5, samples: 2}
        else {value: 34.25, samples: 4}
       else if X[0] <= 565.0
        then {value: 22.0, samples: 1}

else {value: 16.0, samples: 1}
                else if X[2] <= 6500.0
                    then if X[0] <= 110.0
                        then if X[5] <= 13.5
                            then {value: 22.0, samples: 1}
                            else {value: 32.0, samples: 1}
                        else if X[1] <= 384.0
                            then {value: 27.0, samples: 1}
                            else if X[5] <= 13.0
                                then {value: 40.0, samples: 3}
                                else {value: 35.0, samples: 1}
                    else if X[3] <= 20.0
                        then if X[0] <= 62.5
                            then if X[1] <= 1500.0
                                then {value: 36.0, samples: 1}
                                else {value: 45.0, samples: 1}
                            else if X[3] <= 6.0
                                then {value: 50.0, samples: 1}
                                else {value: 61.0, samples: 2}
                        else {value: 32.0, samples: 2}
            else if X[0] <= 38.0
                then {value: 173.0, samples: 1}
                else if X[0] <= 53.0
                    then {value: 114.0, samples: 1}
                    else {value: 106.0, samples: 1}
        else {value: 405.0, samples: 1}

This is the evaluation for mse:
12804.59375

Fold 5
Regression Tree:

 if X[0] <= 24.5
   then {value: 1144.0, samples: 1}
   else if X[1] <= 3000.0
     then if X[5] <= 25.0
        then if X[2] <= 7000.0
           then if X[5] <= 4.5
              then {value: 8.0, samples: 2}
              else if X[5] <= 17.5
                then if X[0] <= 214.0
                    then if X[0] <= 53.0
                        then {value: 27.0, samples: 1}
                        else if X[0] <= 94.5
                            then if X[0] <= 70.0
                                then {value: 21.0, samples: 1}
                                else {value: 12.0, samples: 1}
                            else {value: 21.666666666666668, samples: 3}
                    else if X[0] <= 272.5

```
                    then {value: 40.0, samples: 1}
                    else if X[2] <= 5500.0
                        then {value: 24.5, samples: 2}
                        else {value: 33.0, samples: 1}
                else {value: 34.75, samples: 4}
            else if X[3] <= 2.0
                then if X[5] <= 3.0
                    then {value: 36.0, samples: 1}
                    else if X[0] <= 428.0
                        then {value: 24.0, samples: 1}
                        else {value: 16.0, samples: 1}
                else if X[4] <= 2.0
                    then if X[3] <= 10.0
                        then {value: 50.0, samples: 1}
                        else {value: 60.0, samples: 2}
                    else if X[3] <= 10.0
                        then {value: 62.0, samples: 1}
                        else if X[0] <= 75.0
                            then {value: 45.0, samples: 1}
                            else {value: 32.0, samples: 1}
        else if X[0] <= 87.5
            then {value: 114.0, samples: 1}
            else {value: 198.0, samples: 1}
    else if X[2] <= 28000.0
        then if X[1] <= 4620.0
            then if X[0] <= 53.5
                then {value: 138.0, samples: 1}
                else {value: 132.0, samples: 1}
            else if X[0] <= 45.0
                then if X[2] <= 20000.0
                    then {value: 185.0, samples: 1}
                    else {value: 173.0, samples: 1}
                else {value: 208.0, samples: 1}
        else {value: 405.0, samples: 1}
```

This is the evaluation for mse:
1494.740451388889

This is the Average Evaluation for the Cross Validation

25391.46784027778
Fold 1
Regression Tree:

```
if X[0] <= 24.5
    then {value: 1144.0, samples: 1}
    else if X[1] <= 3000.0
        then if X[2] <= 24000.0
            then if X[2] <= 2500.0
                then if X[1] <= 160.0
```

```
                    then {value: 10.0, samples: 1}
                    else if X[0] <= 87.0
                        then {value: 12.0, samples: 1}
                        else {value: 19.5, samples: 4}
                else if X[3] <= 1.0
                    then if X[0] <= 560.0
                        then if X[0] <= 80.5
                            then {value: 24.0, samples: 3}
                            else {value: 34.25, samples: 4}
                        else {value: 16.0, samples: 1}
                    else if X[0] <= 96.0
                        then if X[0] <= 62.5
                            then if X[1] <= 1500.0
                                then {value: 36.0, samples: 1}
                                else {value: 45.0, samples: 1}
                            else if X[3] <= 6.0
                                then {value: 50.0, samples: 1}
                                else {value: 61.0, samples: 2}
                        else if X[2] <= 4500.0
                            then if X[3] <= 6.0
                                then {value: 40.0, samples: 2}
                                else {value: 33.5, samples: 2}
                            else {value: 29.5, samples: 2}
                else {value: 114.0, samples: 1}
        else if X[2] <= 28000.0
            then if X[0] <= 60.0
                then if X[0] <= 38.0
                    then if X[2] <= 20000.0
                        then {value: 185.0, samples: 1}
                        else {value: 173.0, samples: 1}
                    else if X[0] <= 53.0
                        then {value: 138.0, samples: 1}
                        else {value: 106.0, samples: 1}
                else {value: 208.0, samples: 1}
            else {value: 405.0, samples: 1}
```

This is the evaluation for mse:
3438.5069444444443

Fold 2
Regression Tree:

```
 if X[0] <= 24.5
   then {value: 1144.0, samples: 1}
   else if X[1] <= 3310.0
     then if X[3] <= 144.0
       then if X[3] <= 10.0
         then if X[2] <= 2750.0
           then if X[4] <= 6.0
             then if X[0] <= 221.5
```

then if X[0] <= 125.5
                then {value: 12.0, samples: 1}
                else {value: 21.5, samples: 2}
            else {value: 8.0, samples: 2}
        else {value: 36.0, samples: 1}
    else if X[0] <= 600.0
        then if X[5] <= 5.5
            then {value: 37.333333333333336, samples: 3}
            else if X[0] <= 365.0
                then if X[0] <= 80.5
                    then {value: 21.0, samples: 1}
                    else if X[0] <= 325.0
                        then if X[0] <= 122.5
                            then if X[5] <= 13.5
                                then {value: 22.0, samples: 1}
                                else {value: 32.0, samples: 2}
                            else if X[0] <= 272.5
                                then {value: 37.5, samples: 2}
                                else {value: 30.0, samples: 2}
                        else {value: 22.0, samples: 1}
                    else {value: 40.0, samples: 1}
                else {value: 16.0, samples: 1}
        else if X[0] <= 71.0
            then if X[1] <= 2310.0
                then {value: 45.0, samples: 1}
                else {value: 32.0, samples: 1}
            else {value: 60.0, samples: 2}
        else {value: 198.0, samples: 1}
    else if X[2] <= 28000.0
        then if X[0] <= 60.5
            then if X[0] <= 38.0
                then if X[2] <= 20000.0
                    then {value: 185.0, samples: 1}
                    else {value: 173.0, samples: 1}
                else if X[1] <= 4620.0
                    then {value: 135.0, samples: 2}
                    else {value: 106.0, samples: 1}
            else {value: 208.0, samples: 1}
        else {value: 405.0, samples: 1}

This is the evaluation for mse:
912.8888888888889

Fold 3
Regression Tree:

if X[3] <= 96.5
  then if X[2] <= 14000.0
    then if X[2] <= 7000.0
      then if X[2] <= 2500.0

then if X[4] <= 6.0
                    then if X[1] <= 518.0
                        then if X[0] <= 165.0
                            then {value: 17.0, samples: 1}
                            else {value: 8.0, samples: 2}
                        else if X[0] <= 125.5
                            then {value: 12.0, samples: 1}
                            else {value: 20.333333333333332, samples: 3}
                    else {value: 36.0, samples: 1}
                else if X[0] <= 122.5
                    then if X[5] <= 13.5
                        then {value: 23.333333333333332, samples: 3}
                        else {value: 32.0, samples: 1}
                    else if X[0] <= 310.0
                        then {value: 37.0, samples: 3}
                        else if X[2] <= 5500.0
                            then {value: 24.5, samples: 2}
                            else {value: 33.0, samples: 1}
            else if X[0] <= 65.5
                then if X[0] <= 53.0
                    then {value: 34.0, samples: 2}
                    else {value: 24.0, samples: 1}
                else if X[0] <= 96.0
                    then if X[3] <= 6.0
                        then {value: 50.0, samples: 1}
                        else {value: 61.0, samples: 2}
                    else if X[2] <= 10000.0
                        then {value: 34.0, samples: 2}
                        else {value: 60.0, samples: 1}
        else if X[5] <= 14.0
            then {value: 135.0, samples: 2}
            else if X[2] <= 18485.0
                then {value: 45.0, samples: 1}
                else {value: 110.0, samples: 2}
    else if X[0] <= 75.5
        then {value: 405.0, samples: 1}
        else {value: 198.0, samples: 1}

This is the evaluation for mse:
72517.00347222222

Fold 4
Regression Tree:

 if X[0] <= 24.5
    then {value: 1144.0, samples: 1}
    else if X[1] <= 3310.0
        then if X[5] <= 25.0
            then if X[2] <= 7000.0
                then if X[5] <= 4.0

```
        then if X[0] <= 870.0
            then {value: 6.0, samples: 1}
            else {value: 18.0, samples: 1}
        else if X[0] <= 97.5
            then if X[0] <= 53.0
                then {value: 27.0, samples: 1}
                else {value: 19.0, samples: 2}
            else if X[2] <= 3750.0
                then {value: 37.333333333333336, samples: 3}
                else if X[0] <= 325.0
                    then if X[0] <= 110.0
                        then if X[5] <= 13.5
                            then {value: 22.0, samples: 1}
                            else {value: 32.0, samples: 2}
                        else if X[0] <= 272.5
                            then {value: 38.333333333333336, samples: 3}
                            else {value: 30.0, samples: 2}
                    else {value: 22.0, samples: 1}
        else if X[3] <= 2.0
            then {value: 20.0, samples: 2}
            else if X[4] <= 2.0
                then if X[3] <= 10.0
                    then {value: 50.0, samples: 1}
                    else {value: 60.0, samples: 2}
                else if X[3] <= 10.0
                    then {value: 62.0, samples: 1}
                    else if X[2] <= 13240.0
                        then {value: 32.0, samples: 2}
                        else {value: 45.0, samples: 1}
    else if X[0] <= 87.5
        then {value: 114.0, samples: 1}
        else {value: 198.0, samples: 1}
else if X[0] <= 60.5
    then if X[0] <= 41.0
        then if X[2] <= 20000.0
            then {value: 185.0, samples: 1}
            else {value: 173.0, samples: 1}
        else if X[0] <= 56.5
            then {value: 106.0, samples: 1}
            else {value: 132.0, samples: 1}
    else {value: 208.0, samples: 1}
```

This is the evaluation for mse:
7044.861111111111

Fold 5
Regression Tree:

```
if X[0] <= 24.5
    then {value: 1144.0, samples: 1}
```

```
else if X[1] <= 3310.0
  then if X[5] <= 25.0
    then if X[2] <= 2500.0
      then if X[4] <= 6.0
        then if X[1] <= 518.0
          then if X[0] <= 165.0
            then {value: 17.0, samples: 1}
            else {value: 8.0, samples: 2}
          else if X[0] <= 125.5
            then {value: 12.0, samples: 1}
            else {value: 20.333333333333332, samples: 3}
        else {value: 36.0, samples: 1}
      else if X[3] <= 1.0
        then if X[0] <= 315.0
          then if X[0] <= 80.5
            then {value: 25.5, samples: 2}
            else {value: 34.666666666666664, samples: 3}
          else {value: 19.0, samples: 2}
        else if X[2] <= 11240.0
          then if X[0] <= 96.0
            then if X[0] <= 62.5
              then {value: 34.0, samples: 2}
              else if X[0] <= 83.5
                then {value: 62.0, samples: 1}
                else {value: 50.0, samples: 1}
            else if X[5] <= 7.0
              then if X[0] <= 107.5
                then {value: 32.0, samples: 1}
                else {value: 40.0, samples: 3}
              else {value: 22.0, samples: 1}
          else {value: 60.0, samples: 1}
    else if X[0] <= 87.5
      then {value: 114.0, samples: 1}
      else {value: 198.0, samples: 1}
  else if X[2] <= 28000.0
    then if X[1] <= 4620.0
      then {value: 135.0, samples: 2}
      else if X[0] <= 45.0
        then if X[2] <= 20000.0
          then {value: 185.0, samples: 1}
          else {value: 173.0, samples: 1}
        else {value: 208.0, samples: 1}
    else {value: 405.0, samples: 1}
```

This is the evaluation for mse:
1422.90625

This is the Average Evaluation for the Cross Validation

17067.23333333333

Fold 1
Regression Tree:

```
if X[1] <= 3310.0
  then if X[5] <= 25.0
    then if X[3] <= 1.0
      then if X[5] <= 15.0
        then if X[0] <= 340.0
          then if X[2] <= 1500.0
            then {value: 17.0, samples: 1}
            else if X[1] <= 628.0
              then {value: 33.0, samples: 1}
              else {value: 24.25, samples: 4}
          else {value: 14.666666666666666, samples: 3}
        else {value: 34.666666666666664, samples: 3}
      else if X[2] <= 6000.0
        then if X[5] <= 7.0
          then {value: 40.0, samples: 3}
          else if X[5] <= 17.0
            then {value: 20.5, samples: 2}
            else {value: 33.5, samples: 2}
        else if X[0] <= 62.5
          then if X[2] <= 13240.0
            then {value: 34.0, samples: 2}
            else {value: 45.0, samples: 1}
          else if X[3] <= 6.0
            then {value: 50.0, samples: 1}
            else {value: 60.666666666666664, samples: 3}
    else if X[0] <= 87.5
      then {value: 114.0, samples: 1}
      else {value: 198.0, samples: 1}
  else if X[2] <= 28000.0
    then if X[1] <= 4620.0
      then {value: 138.0, samples: 1}
      else if X[0] <= 45.0
        then if X[2] <= 20000.0
          then {value: 185.0, samples: 1}
          else {value: 173.0, samples: 1}
        else {value: 208.0, samples: 1}
    else {value: 405.0, samples: 1}
```

This is the evaluation for mse:
62111.82947530864

Fold 2
Regression Tree:

```
if X[0] <= 24.5
  then {value: 1144.0, samples: 1}
  else if X[3] <= 79.0
```

then if X[1] <= 3310.0
        then if X[2] <= 2500.0
          then if X[4] <= 6.0
            then if X[1] <= 518.0
              then if X[0] <= 165.0
                then {value: 17.0, samples: 1}
                else {value: 8.0, samples: 2}
              else if X[0] <= 125.5
                then {value: 12.0, samples: 1}
                else {value: 20.333333333333332, samples: 3}
            else {value: 36.0, samples: 1}
          else if X[3] <= 2.0
            then if X[0] <= 325.0
              then if X[0] <= 80.5
                then {value: 22.5, samples: 2}
                else {value: 34.25, samples: 4}
              else {value: 19.0, samples: 2}
            else if X[0] <= 96.0
              then if X[0] <= 62.5
                then if X[2] <= 13240.0
                  then {value: 34.0, samples: 2}
                  else {value: 45.0, samples: 1}
                else if X[0] <= 83.5
                  then {value: 62.0, samples: 1}
                  else {value: 50.0, samples: 1}
              else if X[0] <= 122.5
                then if X[0] <= 102.5
                  then {value: 32.0, samples: 1}
                  else if X[5] <= 13.5
                    then {value: 22.0, samples: 1}
                    else {value: 32.0, samples: 1}
                else if X[0] <= 272.5
                  then {value: 37.5, samples: 2}
                  else {value: 27.0, samples: 1}
        else if X[0] <= 60.5
          then if X[0] <= 56.5
            then {value: 106.0, samples: 1}
            else {value: 132.0, samples: 1}
          else {value: 208.0, samples: 1}
      else if X[0] <= 75.5
        then {value: 405.0, samples: 1}
        else {value: 198.0, samples: 1}

This is the evaluation for mse:
2031.2569444444443

Fold 3
Regression Tree:

 if X[0] <= 24.5

```
          then {value: 1144.0, samples: 1}
      else if X[3] <= 96.5
        then if X[1] <= 3310.0
          then if X[2] <= 24000.0
            then if X[2] <= 2500.0
              then if X[4] <= 6.0
                then if X[1] <= 518.0
                  then {value: 6.0, samples: 1}
                  else {value: 16.333333333333332, samples: 3}
                else {value: 36.0, samples: 1}
              else if X[3] <= 1.0
                then if X[0] <= 315.0
                  then if X[0] <= 128.0
                    then {value: 24.0, samples: 3}
                    else {value: 36.0, samples: 2}
                  else {value: 19.0, samples: 2}
                else if X[2] <= 6500.0
                  then if X[0] <= 110.0
                    then {value: 22.0, samples: 1}
                    else if X[1] <= 384.0
                      then {value: 27.0, samples: 1}
                      else {value: 38.75, samples: 4}
                  else if X[4] <= 2.0
                    then if X[3] <= 10.0
                      then {value: 50.0, samples: 1}
                      else {value: 60.0, samples: 2}
                    else if X[3] <= 18.0
                      then if X[0] <= 62.5
                        then {value: 40.5, samples: 2}
                        else {value: 62.0, samples: 1}
                      else {value: 32.0, samples: 2}
            else {value: 114.0, samples: 1}
          else if X[0] <= 38.0
            then if X[2] <= 20000.0
              then {value: 185.0, samples: 1}
              else {value: 173.0, samples: 1}
            else if X[1] <= 4620.0
              then {value: 135.0, samples: 2}
              else {value: 106.0, samples: 1}
        else {value: 405.0, samples: 1}

This is the evaluation for mse:
6726.097222222223

Fold 4
Regression Tree:

 if X[0] <= 24.5
   then {value: 1144.0, samples: 1}
   else if X[4] <= 7.0
```

then if X[2] <= 14000.0
   then if X[2] <= 7000.0
     then if X[2] <= 2500.0
      then if X[0] <= 221.5
       then {value: 18.0, samples: 4}
       else {value: 8.0, samples: 2}
      else if X[2] <= 3750.0
       then {value: 38.0, samples: 2}
       else if X[5] <= 5.5
        then {value: 40.0, samples: 1}
        else if X[5] <= 13.5
         then if X[1] <= 628.0
          then {value: 30.0, samples: 2}
          else {value: 23.0, samples: 4}
         else {value: 33.0, samples: 3}
     else if X[1] <= 1500.0
      then if X[2] <= 10000.0
       then {value: 34.666666666666664, samples: 3}
       else {value: 60.0, samples: 1}
      else {value: 61.0, samples: 2}
    else if X[1] <= 3000.0
     then if X[2] <= 24000.0
      then {value: 45.0, samples: 1}
      else {value: 114.0, samples: 1}
     else {value: 135.0, samples: 2}
   else if X[0] <= 60.0
    then if X[0] <= 41.0
     then if X[2] <= 20000.0
      then {value: 185.0, samples: 1}
      else {value: 173.0, samples: 1}
     else {value: 106.0, samples: 1}
    else {value: 203.0, samples: 2}

This is the evaluation for mse:
11177.055555555555

Fold 5
Regression Tree:

if X[0] <= 24.5
  then {value: 1144.0, samples: 1}
  else if X[2] <= 14000.0
   then if X[3] <= 144.0
    then if X[2] <= 2750.0
     then if X[4] <= 5.5
      then if X[3] <= 4.0
       then {value: 16.2, samples: 5}
       else {value: 6.0, samples: 1}
      else {value: 36.0, samples: 1}
     else if X[3] <= 1.0

```
                    then if X[0] <= 560.0
                        then if X[0] <= 80.5
                            then {value: 24.0, samples: 3}
                            else {value: 33.666666666666664, samples: 3}
                        else {value: 16.0, samples: 1}
                    else if X[2] <= 11240.0
                        then if X[3] <= 31.0
                            then if X[1] <= 384.0
                                then {value: 27.0, samples: 1}
                                else if X[3] <= 6.0
                                    then if X[0] <= 103.5
                                        then {value: 50.0, samples: 1}
                                        else {value: 40.0, samples: 2}
                                    else {value: 34.0, samples: 4}
                            else {value: 60.0, samples: 1}
                        else {value: 60.0, samples: 1}
                else {value: 198.0, samples: 1}
            else if X[3] <= 96.5
                then if X[0] <= 60.5
                    then if X[0] <= 38.0
                        then if X[2] <= 20000.0
                            then {value: 185.0, samples: 1}
                            else {value: 173.0, samples: 1}
                        else if X[2] <= 18485.0
                            then {value: 135.0, samples: 2}
                            else {value: 110.0, samples: 2}
                    else {value: 208.0, samples: 1}
                else {value: 405.0, samples: 1}
```

This is the evaluation for mse:
1167.9444444444446

This is the Average Evaluation for the Cross Validation

16642.83672839506
Fold 1
Regression Tree:

```
 if X[1] <= 3310.0
   then if X[3] <= 144.0
     then if X[2] <= 2500.0
         then {value: 13.666666666666666, samples: 6}
         else if X[3] <= 1.0
           then if X[0] <= 325.0
             then if X[0] <= 128.0
                 then {value: 22.5, samples: 2}
                 else {value: 35.0, samples: 3}
             else {value: 19.0, samples: 2}
           else if X[2] <= 6500.0
             then if X[0] <= 110.0
```

then {value: 22.0, samples: 1}
                        else if X[1] <= 384.0
                            then {value: 27.0, samples: 1}
                            else {value: 38.75, samples: 4}
                    else if X[4] <= 2.0
                        then if X[3] <= 10.0
                            then {value: 50.0, samples: 1}
                            else {value: 60.0, samples: 2}
                        else if X[3] <= 18.0
                            then if X[0] <= 62.5
                                then {value: 40.5, samples: 2}
                                else {value: 62.0, samples: 1}
                            else {value: 32.0, samples: 2}
            else {value: 198.0, samples: 1}
        else if X[2] <= 28000.0
            then if X[0] <= 38.0
                then if X[2] <= 20000.0
                    then {value: 185.0, samples: 1}
                    else {value: 173.0, samples: 1}
                else {value: 135.0, samples: 2}
            else {value: 405.0, samples: 1}

This is the evaluation for mse:
62203.45061728395

Fold 2
Regression Tree:

 if X[0] <= 24.5
    then {value: 1144.0, samples: 1}
    else if X[3] <= 80.0
        then if X[1] <= 3930.0
            then if X[2] <= 24000.0
                then if X[3] <= 2.0
                    then if X[0] <= 340.0
                        then if X[0] <= 97.5
                            then {value: 22.25, samples: 4}
                            else if X[0] <= 325.0
                                then if X[4] <= 4.5
                                    then if X[2] <= 3000.0
                                        then {value: 24.0, samples: 1}
                                        else {value: 33.666666666666664, samples: 3}
                                    else {value: 36.0, samples: 2}
                                else {value: 22.0, samples: 1}
                        else {value: 13.0, samples: 2}
                    else if X[0] <= 96.0
                        then if X[0] <= 62.5
                            then if X[2] <= 13240.0
                                then {value: 34.0, samples: 2}
                                else {value: 45.0, samples: 1}

else if X[3] <= 6.0
                        then {value: 50.0, samples: 1}
                        else {value: 61.0, samples: 2}
                    else if X[0] <= 122.5
                        then {value: 28.666666666666668, samples: 3}
                        else if X[1] <= 384.0
                            then {value: 27.0, samples: 1}
                            else {value: 38.333333333333336, samples: 3}
                else {value: 114.0, samples: 1}
            else if X[0] <= 60.0
                then if X[0] <= 41.0
                    then {value: 185.0, samples: 1}
                    else {value: 106.0, samples: 1}
                else {value: 208.0, samples: 1}
        else if X[0] <= 75.5
            then {value: 405.0, samples: 1}
            else {value: 198.0, samples: 1}

This is the evaluation for mse:
490.57484567901236

Fold 3
Regression Tree:

 if X[0] <= 24.5
    then {value: 1144.0, samples: 1}
    else if X[2] <= 14000.0
        then if X[2] <= 3000.0
            then if X[4] <= 6.0
                then if X[1] <= 518.0
                    then {value: 11.0, samples: 3}
                    else {value: 18.25, samples: 4}
                else {value: 36.0, samples: 1}
            else if X[3] <= 6.0
                then if X[0] <= 560.0
                    then if X[0] <= 80.5
                        then {value: 24.0, samples: 3}
                        else {value: 33.0, samples: 4}
                    else {value: 16.0, samples: 1}
                else if X[2] <= 6000.0
                    then if X[0] <= 122.5
                        then {value: 27.0, samples: 2}
                        else {value: 37.5, samples: 2}
                    else if X[3] <= 20.0
                        then {value: 61.0, samples: 2}
                        else if X[3] <= 31.0
                            then {value: 32.0, samples: 2}
                            else {value: 60.0, samples: 1}
        else if X[3] <= 96.5
            then if X[0] <= 60.5

then if X[0] <= 38.0
                        then if X[2] <= 20000.0
                            then {value: 185.0, samples: 1}
                            else {value: 173.0, samples: 1}
                        else if X[2] <= 18485.0
                            then {value: 135.0, samples: 2}
                            else {value: 110.0, samples: 2}
                    else {value: 208.0, samples: 1}
                else {value: 405.0, samples: 1}

This is the evaluation for mse:
4408.5390625

Fold 4
Regression Tree:

if X[0] <= 24.5
    then {value: 1144.0, samples: 1}
    else if X[1] <= 3000.0
        then if X[5] <= 25.0
            then if X[2] <= 7000.0
                then if X[2] <= 2500.0
                    then if X[4] <= 6.0
                        then {value: 16.0, samples: 6}
                        else {value: 36.0, samples: 1}
                    else if X[1] <= 884.0
                        then {value: 36.333333333333336, samples: 3}
                        else if X[5] <= 5.5
                            then {value: 40.0, samples: 1}
                            else if X[5] <= 13.5
                                then {value: 23.0, samples: 4}
                                else {value: 32.0, samples: 2}
                else if X[3] <= 2.0
                    then if X[0] <= 128.0
                        then {value: 24.0, samples: 1}
                        else {value: 36.0, samples: 1}
                    else if X[4] <= 2.0
                        then {value: 56.666666666666664, samples: 3}
                        else if X[1] <= 1500.0
                            then {value: 34.0, samples: 2}
                            else {value: 45.0, samples: 1}
            else if X[0] <= 87.5
                then {value: 114.0, samples: 1}
                else {value: 198.0, samples: 1}
        else if X[0] <= 60.5
            then if X[0] <= 38.0
                then if X[2] <= 20000.0
                    then {value: 185.0, samples: 1}
                    else {value: 173.0, samples: 1}
                else if X[1] <= 4620.0

then {value: 135.0, samples: 2}
            else {value: 106.0, samples: 1}
        else {value: 208.0, samples: 1}

This is the evaluation for mse:
6887.888888888889

Fold 5
Regression Tree:

```
 if X[0] <= 24.5
    then {value: 1144.0, samples: 1}
    else if X[4] <= 20.0
       then if X[3] <= 20.0
          then if X[1] <= 3000.0
             then if X[2] <= 2500.0
                then if X[4] <= 6.0
                   then if X[1] <= 518.0
                      then {value: 8.0, samples: 2}
                      else {value: 18.25, samples: 4}
                   else {value: 36.0, samples: 1}
                else if X[3] <= 1.0
                   then if X[0] <= 315.0
                      then {value: 32.75, samples: 4}
                      else {value: 19.0, samples: 2}
                   else if X[2] <= 6500.0
                      then if X[1] <= 384.0
                         then {value: 27.0, samples: 1}
                         else {value: 37.4, samples: 5}
                      else if X[0] <= 62.5
                         then {value: 40.5, samples: 2}
                         else if X[3] <= 6.0
                            then {value: 50.0, samples: 1}
                            else {value: 61.0, samples: 2}
             else {value: 132.0, samples: 1}
          else if X[0] <= 60.0
             then if X[2] <= 13240.0
                then {value: 32.0, samples: 1}
                else if X[0] <= 38.0
                   then {value: 173.0, samples: 1}
                   else if X[2] <= 18485.0
                      then {value: 138.0, samples: 1}
                      else {value: 110.0, samples: 2}
             else {value: 203.0, samples: 2}
       else {value: 405.0, samples: 1}
```

This is the evaluation for mse:
6653.473125

This is the Average Evaluation for the Cross Validation

16128.785307870368
Fold 1
Regression Tree:

 if X[1] <= 3310.0
   then if X[5] <= 25.0
     then if X[2] <= 7000.0
       then if X[3] <= 6.0
         then if X[1] <= 884.0
           then {value: 34.4, samples: 5}
           else if X[3] <= 1.0
             then {value: 25.2, samples: 5}
             else {value: 40.0, samples: 1}
         else if X[0] <= 203.5
           then {value: 20.5, samples: 2}
           else {value: 6.0, samples: 1}
       else if X[3] <= 2.0
         then if X[5] <= 3.0
           then {value: 36.0, samples: 1}
           else {value: 20.0, samples: 2}
         else if X[0] <= 62.5
           then {value: 37.666666666666664, samples: 3}
           else if X[3] <= 6.0
             then {value: 50.0, samples: 1}
             else {value: 60.666666666666664, samples: 3}
     else if X[0] <= 87.5
       then {value: 114.0, samples: 1}
       else {value: 198.0, samples: 1}
   else if X[2] <= 28000.0
     then if X[0] <= 60.5
       then if X[0] <= 38.0
         then {value: 179.0, samples: 2}
         else if X[1] <= 4620.0
           then {value: 135.0, samples: 2}
           else {value: 106.0, samples: 1}
       else {value: 208.0, samples: 1}
     else {value: 405.0, samples: 1}

This is the evaluation for mse:
61086.95530864197

Fold 2
Regression Tree:

 if X[0] <= 24.5
   then {value: 1144.0, samples: 1}
   else if X[1] <= 3000.0
     then if X[2] <= 24000.0
       then if X[2] <= 2500.0

```
            then if X[4] <= 6.0
               then if X[1] <= 518.0
                  then {value: 11.0, samples: 3}
                  else {value: 18.25, samples: 4}
               else {value: 36.0, samples: 1}
            else if X[3] <= 10.0
               then if X[0] <= 600.0
                  then if X[4] <= 2.0
                     then {value: 37.75, samples: 4}
                     else if X[0] <= 315.0
                        then if X[0] <= 165.0
                           then {value: 29.8, samples: 5}
                           else {value: 38.0, samples: 2}
                        else {value: 22.0, samples: 1}
                  else {value: 16.0, samples: 1}
               else if X[4] <= 2.0
                  then {value: 60.0, samples: 2}
                  else if X[0] <= 75.0
                     then {value: 45.0, samples: 1}
                     else {value: 32.0, samples: 1}
         else {value: 114.0, samples: 1}
      else if X[2] <= 26485.0
         then if X[0] <= 60.5
            then if X[0] <= 38.0
               then {value: 185.0, samples: 1}
               else if X[1] <= 4620.0
                  then {value: 135.0, samples: 2}
                  else {value: 106.0, samples: 1}
            else {value: 208.0, samples: 1}
         else {value: 405.0, samples: 1}

This is the evaluation for mse:
3295.961388888889


Fold 3
Regression Tree:

 if X[0] <= 24.5
   then {value: 1144.0, samples: 1}
   else if X[3] <= 31.0
      then if X[2] <= 13240.0
         then if X[2] <= 2500.0
            then if X[4] <= 6.0
               then {value: 13.666666666666666, samples: 6}
               else {value: 36.0, samples: 1}
            else if X[3] <= 1.0
               then if X[0] <= 325.0
                  then if X[0] <= 128.0
                     then {value: 24.0, samples: 3}
                     else {value: 35.0, samples: 3}
```

else {value: 19.0, samples: 2}
else if X[0] <= 96.0
then if X[0] <= 62.5
then {value: 34.0, samples: 2}
else {value: 56.0, samples: 2}
else if X[0] <= 110.0
then {value: 28.666666666666668, samples: 3}
else if X[1] <= 384.0
then {value: 27.0, samples: 1}
else {value: 38.75, samples: 4}
else if X[0] <= 53.5
then {value: 114.0, samples: 1}
else {value: 132.0, samples: 1}
else if X[5] <= 7.0
then {value: 60.0, samples: 1}
else if X[4] <= 4.5
then {value: 138.0, samples: 1}
else if X[0] <= 75.5
then {value: 173.0, samples: 1}
else {value: 198.0, samples: 1}

This is the evaluation for mse:
8903.819444444445

Fold 4
Regression Tree:

if X[0] <= 24.5
then {value: 1144.0, samples: 1}
else if X[1] <= 3310.0
then if X[3] <= 144.0
then if X[3] <= 1.0
then if X[2] <= 2500.0
then {value: 16.2, samples: 5}
else if X[0] <= 80.5
then {value: 22.5, samples: 2}
else if X[0] <= 325.0
then {value: 34.25, samples: 4}
else {value: 22.0, samples: 1}
else if X[2] <= 6500.0
then if X[0] <= 110.0
then {value: 27.0, samples: 2}
else if X[1] <= 384.0
then {value: 27.0, samples: 1}
else {value: 38.75, samples: 4}
else if X[4] <= 2.0
then {value: 56.666666666666664, samples: 3}
else if X[3] <= 10.0
then {value: 62.0, samples: 1}
else if X[2] <= 13240.0

then {value: 32.0, samples: 2}
                else {value: 45.0, samples: 1}
            else {value: 198.0, samples: 1}
        else if X[2] <= 28000.0
            then if X[0] <= 60.0
                then if X[0] <= 38.0
                    then {value: 179.0, samples: 2}
                    else if X[0] <= 53.0
                        then {value: 138.0, samples: 1}
                        else {value: 106.0, samples: 1}
                else {value: 208.0, samples: 1}
            else {value: 405.0, samples: 1}

This is the evaluation for mse:
1002.989375

Fold 5
Regression Tree:

 if X[0] <= 24.5
    then {value: 1144.0, samples: 1}
    else if X[1] <= 3310.0
        then if X[5] <= 25.0
            then if X[2] <= 3000.0
                then if X[4] <= 6.0
                    then if X[1] <= 518.0
                        then {value: 11.0, samples: 3}
                        else {value: 18.25, samples: 4}
                    else {value: 36.0, samples: 1}
                else if X[3] <= 2.0
                    then if X[0] <= 560.0
                        then if X[0] <= 80.5
                            then {value: 24.0, samples: 3}
                            else {value: 32.5, samples: 2}
                        else {value: 16.0, samples: 1}
                    else if X[5] <= 3.5
                        then {value: 60.0, samples: 1}
                        else if X[0] <= 96.0
                            then if X[0] <= 62.5
                                then {value: 37.666666666666664, samples: 3}
                                else {value: 56.0, samples: 2}
                            else {value: 33.2, samples: 5}
            else if X[0] <= 87.5
                then {value: 114.0, samples: 1}
                else {value: 198.0, samples: 1}
        else if X[2] <= 28000.0
            then if X[0] <= 60.5
                then if X[0] <= 41.0
                    then {value: 179.0, samples: 2}
                    else if X[0] <= 56.5

then {value: 106.0, samples: 1}
            else {value: 132.0, samples: 1}
        else {value: 208.0, samples: 1}
    else {value: 405.0, samples: 1}

This is the evaluation for mse:
213.1865625

This is the Average Evaluation for the Cross Validation

14900.582415895062

Process finished with exit code 0

COMPUTER TESTING RESULTS:

```python
#Testing Pruned and NonPruned Trees
numFolds = [1,2,3,4,5]
print('Pruned Tree Results')
ComputerTestingPrunedResults, ComputerTestingPrunedList =
CrossValidation(computerDF_80, 5, CART_algo,tree='reg',
criterion='mse', prune='criterion', maxDepth=250, minCriterion=2.0)
print('Unpruned Tree Results')
ComputerTestingNPResults, ComputerTestingNPList =
CrossValidation(computerDF_80, 5, CART_algo,tree='reg',
criterion='mse', prune='criterion', maxDepth=0, minCriterion=2.5)

ComputerDict = {'Folds': numFolds,
'Pruned':ComputerTestingPrunedList,'Non-
Pruned':ComputerTestingNPList}

finalComputerResults = pd.DataFrame(ComputerDict)

ComputerFinalFig = px.scatter(finalComputerResults, x='Folds',
y=['Pruned', 'Non-Pruned'] , title="K-Fold vs. MSE", width=800,
height=600)
ComputerFinalFig.update_traces(marker_size = 15)
ComputerFinalFig.update_yaxes(title_text = 'MSE')
ComputerFinalFig.show()
```

Output:

```
Pruned Tree Results
Fold 1
Regression Tree:
```

```
if X[2] <= 48000.0
   then if X[2] <= 18485.0
       then if X[3] <= 31.0
           then if X[2] <= 11240.0
               then if X[2] <= 4250.0
                   then if X[4] <= 2.0
                       then if X[2] <= 2500.0
                           then {value: 15.307692307692308, samples: 13}
                           else if X[2] <= 3750.0
                                then {value: 35.0, samples: 3}
                                else {value: 23.3, samples: 10}
                       else if X[0] <= 237.5
                           then {value: 28.0, samples: 12}
                           else {value: 41.0, samples: 3}
                   else if X[1] <= 384.0
                       then {value: 21.857142857142858, samples: 7}
                       else if X[3] <= 2.0
                           then if X[5] <= 48.0
                               then {value: 32.0, samples: 8}
                               else {value: 68.5, samples: 2}
                           else if X[3] <= 20.0
                               then if X[4] <= 5.0
                                   then if X[2] <= 5500.0
                                       then {value: 77.0, samples: 1}
                                       else if X[0] <= 270.0
                                           then if X[0] <= 124.0
                                               then if X[1] <= 1500.0
                                                   then {value: 40.5,
samples: 2}
                                                   else {value: 59.4,
samples: 5}
                                               else {value:
68.33333333333333, samples: 3}
                                           else {value: 40.0, samples: 1}
                                   else {value: 105.0, samples: 1}
                               else if X[0] <= 75.0
                                   then {value: 47.5, samples: 2}
                                   else {value: 29.0, samples: 2}
               else if X[1] <= 6000.0
                   then if X[5] <= 3.5
                       then {value: 138.0, samples: 1}
                       else if X[1] <= 3000.0
                           then if X[5] <= 28.0
                               then {value: 53.57142857142857, samples: 7}
                               else {value: 36.5, samples: 2}
                           else if X[3] <= 4.5
                               then {value: 132.0, samples: 1}
                               else if X[0] <= 43.5
```

```
                                    then {value: 100.0, samples: 1}
                                    else {value: 75.0, samples: 1}
                        else {value: 185.0, samples: 1}
            else if X[2] <= 3810.0
                then {value: 368.0, samples: 1}
                else if X[3] <= 96.5
                    then if X[0] <= 86.5
                        then if X[5] <= 14.0
                            then if X[0] <= 59.5
                                then if X[1] <= 6000.0
                                    then if X[4] <= 4.5
                                        then {value: 134.0, samples: 2}
                                        else if X[0] <= 33.5
                                            then {value: 133.0, samples: 1}
                                            else {value: 112.0, samples: 2}
                                    else {value: 100.0, samples: 1}
                                else {value: 93.0, samples: 1}
                            else if X[0] <= 39.0
                                then {value: 124.0, samples: 2}
                                else if X[0] <= 65.5
                                    then if X[0] <= 49.5
                                        then {value: 214.0, samples: 1}
                                        else {value: 188.0, samples: 1}
                                    else {value: 143.5, samples: 2}
                        else if X[0] <= 150.0
                            then if X[0] <= 107.0
                                then {value: 46.0, samples: 1}
                                else {value: 68.0, samples: 2}
                            else if X[0] <= 320.0
                                then {value: 109.0, samples: 1}
                                else {value: 67.0, samples: 1}
                    else if X[1] <= 4500.0
                        then if X[4] <= 8.5
                            then {value: 259.0, samples: 1}
                            else {value: 205.0, samples: 2}
                        else {value: 120.0, samples: 1}
    else if X[1] <= 12000.0
        then if X[4] <= 7.0
            then if X[3] <= 28.0
                then {value: 114.0, samples: 1}
                else {value: 140.5, samples: 2}
            else if X[3] <= 56.0
                then if X[0] <= 27.5
                    then {value: 277.0, samples: 1}
                    else {value: 215.4, samples: 5}
                else if X[0] <= 37.5
                    then {value: 370.0, samples: 1}
                    else if X[0] <= 53.5
                        then if X[0] <= 45.0
```

```
                                              then {value: 277.0, samples: 1}
                                              else {value: 307.0, samples: 1}
                                       else {value: 237.0, samples: 1}
                    else if X[0] <= 32.0
                        then if X[0] <= 24.5
                            then {value: 428.0, samples: 2}
                            else {value: 465.0, samples: 1}
                        else {value: 510.0, samples: 1}
        else if X[3] <= 80.0
            then {value: 636.0, samples: 1}
            else if X[3] <= 112.0
                then {value: 915.0, samples: 1}
                else {value: 1147.0, samples: 2}

This is the evaluation for mse:
1458.0337275817628

Fold 2
Regression Tree:

 if X[2] <= 48000.0
    then if X[3] <= 48.0
        then if X[2] <= 18485.0
            then if X[2] <= 14000.0
                then if X[2] <= 5500.0
                    then if X[2] <= 2500.0
                        then if X[4] <= 2.0
                            then {value: 14.133333333333333, samples: 15}
                            else {value: 28.25, samples: 4}
                        else if X[4] <= 3.5
                            then if X[1] <= 1500.0
                                then {value: 25.25, samples: 16}
                                else {value: 32.857142857142854, samples:
7}
                            else {value: 36.8, samples: 5}
                    else if X[3] <= 5.0
                        then if X[0] <= 510.0
                            then if X[4] <= 5.5
                                then {value: 35.833333333333336, samples:
6}
                                else {value: 61.0, samples: 1}
                            else {value: 17.2, samples: 5}
                        else if X[1] <= 1500.0
                            then if X[0] <= 105.0
                                then {value: 34.666666666666664, samples:
3}
                                else if X[2] <= 7000.0
                                    then {value: 45.0, samples: 1}
                                    else if X[3] <= 7.0
```

```
                                    then {value: 51.5, samples: 2}
                                    else {value: 65.33333333333333,
samples: 6}
                              else if X[4] <= 9.0
                                  then if X[5] <= 7.0
                                      then if X[0] <= 82.5
                                          then {value: 71.0, samples: 1}
                                          else {value: 50.0, samples: 2}
                                      else if X[5] <= 13.5
                                          then if X[0] <= 71.0
                                              then {value: 75.0, samples: 1}
                                              else {value: 107.0, samples: 2}
                                          else {value: 64.0, samples: 4}
                                  else {value: 48.666666666666664, samples:
3}
                  else if X[1] <= 3000.0
                      then if X[5] <= 4.5
                          then {value: 138.0, samples: 1}
                          else if X[0] <= 190.0
                              then {value: 65.0, samples: 5}
                              else {value: 41.0, samples: 3}
                      else if X[1] <= 6000.0
                          then if X[0] <= 58.5
                              then if X[3] <= 20.0
                                  then if X[0] <= 37.0
                                      then {value: 100.0, samples: 1}
                                      else {value: 132.0, samples: 1}
                                  else {value: 131.5, samples: 2}
                              else {value: 86.0, samples: 1}
                          else if X[0] <= 34.5
                              then {value: 132.0, samples: 1}
                              else {value: 214.0, samples: 1}
              else if X[0] <= 102.0
                  then if X[0] <= 27.5
                      then {value: 173.0, samples: 1}
                      else {value: 216.6, samples: 5}
                  else if X[5] <= 37.0
                      then {value: 134.0, samples: 1}
                      else {value: 165.0, samples: 2}
          else if X[2] <= 28000.0
              then if X[3] <= 96.5
                  then if X[4] <= 10.0
                      then if X[0] <= 66.0
                          then if X[0] <= 55.0
                              then if X[3] <= 64.5
                                  then {value: 111.0, samples: 1}
                                  else {value: 138.0, samples: 1}
                              else {value: 74.0, samples: 1}
                          else {value: 143.66666666666666, samples: 3}
```

```
                    else if X[0] <= 58.0
                        then {value: 237.0, samples: 1}
                        else {value: 188.0, samples: 1}
                else if X[0] <= 31.5
                    then {value: 321.0, samples: 2}
                    else if X[4] <= 8.5
                        then {value: 259.0, samples: 1}
                        else {value: 205.0, samples: 2}
            else if X[4] <= 12.0
                then if X[0] <= 33.0
                    then {value: 318.0, samples: 1}
                    else {value: 277.0, samples: 1}
                else if X[5] <= 28.0
                    then if X[0] <= 28.0
                        then {value: 465.0, samples: 1}
                        else {value: 510.0, samples: 1}
                    else if X[0] <= 36.5
                        then {value: 428.0, samples: 2}
                        else {value: 397.0, samples: 1}
    else if X[3] <= 80.0
        then {value: 636.0, samples: 1}
        else if X[3] <= 112.0
            then {value: 915.0, samples: 1}
            else {value: 1147.0, samples: 2}

This is the evaluation for mse:
2922.392073496065

Fold 3
Regression Tree:

 if X[2] <= 48000.0
    then if X[4] <= 7.5
        then if X[2] <= 14000.0
            then if X[3] <= 8.5
                then if X[5] <= 4.5
                    then if X[1] <= 1500.0
                        then if X[2] <= 1500.0
                            then {value: 10.571428571428571, samples: 7}
                            else {value: 19.764705882352942, samples: 17}
                        else {value: 40.5, samples: 2}
                    else if X[2] <= 4250.0
                        then if X[4] <= 3.5
                            then if X[2] <= 2750.0
                                then {value: 15.0, samples: 3}
                                else {value: 29.46153846153846, samples:
13}
                            else {value: 40.5, samples: 4}
                        else if X[5] <= 48.0
```

```
                    then if X[3] <= 2.0
                        then {value: 32.44444444444444, samples: 9}
                        else if X[2] <= 6500.0
                            then {value: 77.0, samples: 1}
                            else if X[1] <= 3000.0
                                then if X[5] <= 5.5
                                    then {value: 38.0, samples: 2}
                                    else {value: 52.25, samples: 4}
                                else {value: 75.0, samples: 1}
                    else {value: 68.5, samples: 2}
            else if X[1] <= 1500.0
                then if X[0] <= 124.0
                    then if X[2] <= 10000.0
                        then {value: 35.0, samples: 5}
                        else {value: 60.0, samples: 1}
                    else {value: 67.75, samples: 4}
                else if X[5] <= 13.5
                    then {value: 109.0, samples: 3}
                    else {value: 64.66666666666667, samples: 3}
        else if X[5] <= 32.0
            then if X[1] <= 3000.0
                then if X[2] <= 24000.0
                    then if X[5] <= 4.0
                        then {value: 138.0, samples: 1}
                        else if X[3] <= 12.0
                            then {value: 50.0, samples: 3}
                            else {value: 67.8, samples: 5}
                    else {value: 124.0, samples: 2}
                else if X[0] <= 58.5
                    then if X[3] <= 64.5
                        then if X[0] <= 53.5
                            then if X[1] <= 6000.0
                                then if X[3] <= 20.0
                                    then {value: 100.0, samples: 1}
                                    else {value: 122.0, samples: 2}
                                else {value: 100.0, samples: 1}
                            else {value: 132.0, samples: 1}
                        else {value: 139.0, samples: 2}
                    else {value: 89.5, samples: 2}
            else if X[3] <= 96.0
                then if X[0] <= 107.5
                    then {value: 144.0, samples: 1}
                    else {value: 165.0, samples: 2}
                else {value: 259.0, samples: 1}
    else if X[1] <= 12000.0
        then if X[3] <= 56.0
            then if X[2] <= 13240.0
                then if X[0] <= 44.0
                    then {value: 83.5, samples: 2}
```

```
                                else {value: 34.0, samples: 2}
                        else if X[3] <= 15.0
                            then if X[2] <= 24000.0
                                then {value: 185.0, samples: 1}
                                else {value: 277.0, samples: 1}
                            else if X[0] <= 27.5
                                then {value: 173.0, samples: 1}
                                else if X[0] <= 34.5
                                    then {value: 196.0, samples: 2}
                                    else {value: 211.0, samples: 4}
                    else if X[0] <= 80.0
                        then if X[2] <= 24000.0
                            then if X[0] <= 31.5
                                then {value: 321.0, samples: 2}
                                else {value: 212.0, samples: 1}
                            else if X[1] <= 3000.0
                                then {value: 307.0, samples: 1}
                                else if X[0] <= 30.5
                                    then {value: 318.0, samples: 1}
                                    else if X[0] <= 42.5
                                        then {value: 370.0, samples: 1}
                                        else {value: 397.0, samples: 1}
                        else {value: 120.0, samples: 1}
                else if X[0] <= 28.0
                    then if X[0] <= 24.5
                        then {value: 428.0, samples: 2}
                        else {value: 465.0, samples: 1}
                    else {value: 510.0, samples: 2}
        else if X[0] <= 26.5
            then {value: 636.0, samples: 1}
            else if X[3] <= 112.0
                then {value: 915.0, samples: 1}
                else {value: 1150.0, samples: 1}

This is the evaluation for mse:
9711.702404699694

Fold 4
Regression Tree:

 if X[2] <= 48000.0
    then if X[2] <= 18485.0
        then if X[3] <= 31.0
            then if X[1] <= 3550.0
                then if X[3] <= 8.5
                    then if X[5] <= 4.5
                        then if X[1] <= 884.0
                            then if X[2] <= 1500.0
                                then {value: 8.25, samples: 4}
```

```
                                    else {value: 18.916666666666668, samples:
12}
                            else if X[4] <= 1.5
                                then {value: 37.0, samples: 5}
                                else {value: 16.0, samples: 1}
                        else if X[2] <= 6100.0
                            then if X[0] <= 275.0
                                then {value: 29.75, samples: 20}
                                else if X[5] <= 5.5
                                    then {value: 77.0, samples: 1}
                                    else {value: 33.7, samples: 10}
                            else if X[4] <= 5.5
                                then if X[3] <= 0.5
                                    then {value: 30.666666666666668,
samples: 3}
                                    else if X[4] <= 1.5
                                        then {value: 54.57142857142857,
samples: 7}
                                        else {value: 44.0, samples: 4}
                                else {value: 68.5, samples: 2}
                    else if X[2] <= 14000.0
                        then if X[3] <= 20.0
                            then if X[0] <= 88.5
                                then {value: 105.0, samples: 1}
                                else if X[2] <= 6000.0
                                    then {value: 26.0, samples: 1}
                                    else if X[0] <= 124.0
                                        then {value: 56.0, samples: 3}
                                        else {value: 68.75, samples: 4}
                            else if X[0] <= 75.0
                                then {value: 47.5, samples: 2}
                                else {value: 29.0, samples: 2}
                        else if X[1] <= 1500.0
                            then {value: 138.0, samples: 1}
                            else {value: 70.33333333333333, samples: 3}
                else if X[1] <= 6000.0
                    then if X[0] <= 37.0
                        then {value: 100.0, samples: 1}
                        else {value: 132.0, samples: 1}
                    else {value: 185.0, samples: 1}
            else if X[0] <= 27.0
                then {value: 274.0, samples: 1}
                else if X[5] <= 10.0
                    then if X[3] <= 64.5
                        then if X[1] <= 3000.0
                            then {value: 62.333333333333336, samples: 3}
                            else {value: 93.0, samples: 3}
                        else {value: 138.0, samples: 1}
                    else if X[1] <= 6500.0
```

```
                    then if X[3] <= 48.0
                        then if X[2] <= 10000.0
                            then {value: 77.66666666667, samples: 3}
                            else {value: 121.5, samples: 2}
                        else if X[0] <= 117.5
                            then if X[0] <= 92.5
                                then {value: 143.66666666666,

samples: 3}

                                else {value: 120.0, samples: 1}
                            else {value: 198.0, samples: 1}
                        else if X[0] <= 34.5
                            then {value: 132.0, samples: 1}
                            else if X[0] <= 49.5
                                then {value: 214.0, samples: 1}
                                else {value: 188.0, samples: 1}
        else if X[1] <= 12000.0
            then if X[4] <= 7.0
                then if X[5] <= 40.0
                    then if X[3] <= 28.0
                        then {value: 114.0, samples: 1}
                        else {value: 137.0, samples: 2}
                    else {value: 189.0, samples: 1}
                else if X[3] <= 56.0
                    then if X[2] <= 28000.0
                        then if X[0] <= 37.0
                            then {value: 173.0, samples: 1}
                            else {value: 211.0, samples: 2}
                        else if X[0] <= 39.5
                            then {value: 273.0, samples: 2}
                            else {value: 208.0, samples: 1}
                    else if X[0] <= 53.5
                        then if X[0] <= 45.0
                            then if X[0] <= 37.5
                                then if X[0] <= 30.5
                                    then {value: 318.0, samples: 1}
                                    else {value: 370.0, samples: 1}
                                else {value: 277.0, samples: 1}
                            else if X[1] <= 3000.0
                                then {value: 307.0, samples: 1}
                                else {value: 397.0, samples: 1}
                        else {value: 237.0, samples: 1}
            else if X[0] <= 28.0
                then if X[0] <= 24.5
                    then {value: 428.0, samples: 2}
                    else {value: 465.0, samples: 1}
                else {value: 510.0, samples: 2}
    else if X[3] <= 112.0
        then {value: 915.0, samples: 1}
        else {value: 1147.0, samples: 2}
```

```
This is the evaluation for mse:
4811.640782828283

Fold 5
Regression Tree:

 if X[1] <= 12000.0
    then if X[3] <= 31.0
        then if X[1] <= 6000.0
            then if X[2] <= 4250.0
                then if X[2] <= 2500.0
                    then if X[4] <= 2.0
                        then {value: 15.714285714285714, samples: 14}
                        else {value: 27.0, samples: 5}
                    else if X[4] <= 3.5
                        then {value: 28.217391304347824, samples: 23}
                        else {value: 39.0, samples: 4}
                else if X[3] <= 2.0
                    then if X[4] <= 5.5
                        then if X[0] <= 510.0
                            then {value: 33.55555555555556, samples: 9}
                            else {value: 18.666666666666668, samples: 6}
                        else {value: 76.0, samples: 1}
                    else if X[2] <= 24000.0
                        then if X[1] <= 320.0
                            then {value: 27.0, samples: 1}
                            else if X[5] <= 68.0
                                then if X[0] <= 310.0
                                    then if X[3] <= 8.5
                                        then if X[1] <= 3000.0
                                            then if X[4] <= 2.0
                                                then {value:
56.833333333333336, samples: 6}

                                                else if X[5] <= 5.5
                                                    then {value: 38.0,
samples: 2}

                                                    else {value:
57.333333333333336, samples: 3}
                                            else {value: 75.0, samples: 1}
                                        else if X[1] <= 756.0
                                            then {value: 45.0, samples: 1}
                                            else {value: 64.1, samples: 10}
                                    else {value: 77.0, samples: 1}
                                else {value: 38.0, samples: 1}
                        else {value: 114.0, samples: 1}
            else if X[2] <= 24000.0
                then {value: 185.0, samples: 1}
                else {value: 277.0, samples: 1}
```

```
else if X[4] <= 7.0
   then if X[5] <= 33.0
      then if X[0] <= 59.5
         then if X[2] <= 20000.0
            then if X[3] <= 48.0
               then {value: 125.33333333333333, samples: 3}
               else {value: 105.5, samples: 2}
            else {value: 140.0, samples: 1}
         else if X[0] <= 128.0
            then if X[1] <= 3000.0
               then {value: 72.0, samples: 2}
               else {value: 89.5, samples: 2}
            else if X[0] <= 150.0
               then {value: 134.0, samples: 1}
               else {value: 109.0, samples: 1}
      else if X[3] <= 96.0
         then if X[0] <= 107.5
            then {value: 144.0, samples: 2}
            else {value: 165.0, samples: 2}
         else {value: 259.0, samples: 1}
   else if X[2] <= 28000.0
      then if X[0] <= 25.5
         then {value: 321.0, samples: 2}
         else if X[2] <= 12000.0
            then if X[0] <= 117.5
               then if X[0] <= 74.0
                  then {value: 83.5, samples: 2}
                  else {value: 120.0, samples: 1}
               else {value: 198.0, samples: 1}
            else if X[4] <= 10.0
               then if X[5] <= 20.0
                  then if X[0] <= 27.5
                     then {value: 173.0, samples: 1}
                     else {value: 137.5, samples: 2}
                  else {value: 214.0, samples: 1}
               else if X[2] <= 20000.0
                  then if X[0] <= 48.5
                     then {value: 212.0, samples: 1}
                     else {value: 188.0, samples: 1}
                  else {value: 237.0, samples: 1}
      else if X[3] <= 56.0
         then {value: 217.25, samples: 4}
         else if X[0] <= 45.0
            then if X[0] <= 37.5
               then if X[0] <= 30.5
                  then {value: 318.0, samples: 1}
                  else {value: 370.0, samples: 1}
               else {value: 277.0, samples: 1}
            else if X[1] <= 3000.0
```

```
                              then {value: 307.0, samples: 1}
                              else {value: 397.0, samples: 1}
     else if X[1] <= 24000.0
         then if X[0] <= 26.5
             then {value: 636.0, samples: 1}
             else {value: 510.0, samples: 2}
         else {value: 1144.0, samples: 1}

This is the evaluation for mse:
37301.52050837394

This is the Average Evaluation for the Cross Validation

11241.05789939595
```

```
Unpruned Tree Results
Fold 1
Regression Tree:

 if X[2] <= 48000.0
     then if X[2] <= 18485.0
         then if X[3] <= 48.0
             then if X[2] <= 11240.0
                 then if X[3] <= 27.0
                     then if X[5] <= 4.5
                         then if X[1] <= 1500.0
                             then if X[2] <= 1500.0
                                 then {value: 9.333333333333334, samples: 6}
                                 else {value: 20.7, samples: 20}
                             else {value: 41.0, samples: 2}
                         else if X[2] <= 6100.0
                             then {value: 30.333333333333332, samples: 27}
                             else if X[4] <= 5.5
                                 then if X[0] <= 53.0
                                     then if X[1] <= 1500.0
                                         then {value: 36.0, samples: 1}
                                         else {value: 71.0, samples: 1}
                                     else if X[0] <= 151.5
                                         then {value: 31.571428571428573,
samples: 7}
                                         else {value: 50.0, samples: 2}
                                 else {value: 76.0, samples: 1}
                     else if X[0] <= 107.0
                         then {value: 48.0, samples: 4}
                         else if X[0] <= 150.0
                             then {value: 68.0, samples: 2}
                             else if X[0] <= 320.0
```

```
                            then {value: 109.0, samples: 1}
                            else {value: 67.0, samples: 1}
              else if X[1] <= 3000.0
                  then if X[3] <= 8.5
                      then {value: 45.0, samples: 7}
                      else if X[0] <= 136.5
                          then {value: 66.2, samples: 5}
                          else if X[0] <= 160.0
                              then {value: 138.0, samples: 1}
                              else {value: 66.0, samples: 1}
                  else if X[3] <= 0.5
                      then {value: 185.0, samples: 1}
                      else if X[0] <= 59.5
                          then if X[3] <= 20.0
                              then if X[0] <= 37.0
                                  then {value: 100.0, samples: 1}
                                  else {value: 132.0, samples: 1}
                              else {value: 127.0, samples: 4}
                          else {value: 80.5, samples: 2}
        else if X[0] <= 31.5
            then {value: 321.0, samples: 2}
            else if X[4] <= 10.0
                then if X[0] <= 66.0
                    then if X[0] <= 55.0
                        then if X[3] <= 64.5
                            then {value: 111.0, samples: 1}
                            else {value: 138.0, samples: 1}
                        else {value: 83.5, samples: 2}
                    else if X[0] <= 92.5
                        then {value: 143.66666666666666, samples: 3}
                        else {value: 120.0, samples: 1}
                else {value: 199.33333333333334, samples: 3}
  else if X[4] <= 14.0
      then if X[4] <= 7.0
          then if X[0] <= 95.0
              then if X[0] <= 44.0
                  then {value: 140.0, samples: 1}
                  else {value: 114.0, samples: 1}
              else {value: 165.0, samples: 2}
          else if X[3] <= 48.0
              then if X[3] <= 15.0
                  then {value: 277.0, samples: 1}
                  else if X[0] <= 27.5
                      then {value: 173.0, samples: 1}
                      else {value: 203.5, samples: 4}
              else if X[0] <= 37.5
                  then {value: 370.0, samples: 1}
                  else {value: 277.0, samples: 1}
      else if X[0] <= 44.0
```

```
                    then if X[0] <= 28.0
                        then if X[0] <= 24.5
                            then {value: 428.0, samples: 2}
                            else {value: 465.0, samples: 1}
                        else {value: 510.0, samples: 2}
                    else if X[1] <= 3000.0
                        then {value: 307.0, samples: 1}
                        else {value: 397.0, samples: 1}
        else if X[3] <= 112.0
            then {value: 915.0, samples: 1}
            else {value: 1147.0, samples: 2}

This is the evaluation for mse:
3920.9798059223695

Fold 2
Regression Tree:

 if X[2] <= 48000.0
    then if X[2] <= 20000.0
        then if X[3] <= 31.0
            then if X[2] <= 9240.0
                then if X[2] <= 4500.0
                    then if X[4] <= 2.5
                        then if X[2] <= 2500.0
                            then {value: 14.307692307692308, samples: 13}
                            else {value: 24.733333333333334, samples: 15}
                        else {value: 32.588235294117645, samples: 17}
                    else if X[0] <= 510.0
                        then if X[4] <= 5.5
                            then if X[3] <= 2.0
                                then {value: 31.666666666666668, samples:
6}
                                else if X[3] <= 20.0
                                    then if X[1] <= 384.0
                                        then {value: 27.0, samples: 1}
                                        else if X[2] <= 5500.0
                                            then {value: 77.0, samples: 1}
                                            else if X[0] <= 270.0
                                                then {value: 59.5, samples:
8}
                                                else {value: 40.0, samples:
1}
                                    else {value: 29.0, samples: 2}
                            else if X[0] <= 126.5
                                then if X[0] <= 91.0
                                    then {value: 105.0, samples: 1}
                                    else {value: 76.0, samples: 1}
                                else if X[1] <= 1406.0
```

```
                              then {value: 28.0, samples: 1}
                              else {value: 61.0, samples: 1}
                    else {value: 17.666666666666668, samples: 6}
            else if X[1] <= 6000.0
                then if X[1] <= 3310.0
                    then if X[5] <= 4.0
                        then if X[0] <= 125.0
                            then {value: 60.0, samples: 1}
                            else {value: 138.0, samples: 1}
                        else if X[3] <= 12.0
                            then {value: 50.6, samples: 5}
                            else {value: 65.6, samples: 5}
                    else if X[3] <= 4.5
                        then {value: 132.0, samples: 1}
                        else {value: 87.5, samples: 2}
                else {value: 185.0, samples: 1}
        else if X[3] <= 96.5
            then if X[0] <= 86.5
                then if X[5] <= 14.0
                    then if X[0] <= 56.0
                        then if X[0] <= 44.0
                            then {value: 100.0, samples: 1}
                            else if X[4] <= 4.5
                                then {value: 134.0, samples: 2}
                                else {value: 111.0, samples: 1}
                        else {value: 89.5, samples: 2}
                    else if X[1] <= 6000.0
                        then if X[0] <= 55.0
                            then {value: 116.0, samples: 1}
                            else {value: 143.66666666666666, samples:
3}
                        else if X[0] <= 49.5
                            then {value: 214.0, samples: 1}
                            else {value: 188.0, samples: 1}
                else if X[0] <= 150.0
                    then {value: 60.666666666666664, samples: 3}
                    else if X[0] <= 320.0
                        then {value: 109.0, samples: 1}
                        else {value: 67.0, samples: 1}
            else if X[1] <= 4500.0
                then if X[4] <= 14.0
                    then {value: 266.5, samples: 2}
                    else {value: 205.0, samples: 2}
                else {value: 120.0, samples: 1}
        else if X[1] <= 12000.0
            then if X[3] <= 56.0
                then if X[4] <= 7.0
                    then if X[5] <= 40.0
                        then {value: 124.0, samples: 2}
```

```
                                else {value: 165.0, samples: 2}
                        else if X[0] <= 27.5
                            then {value: 173.0, samples: 1}
                            else {value: 216.6, samples: 5}
                else if X[5] <= 28.0
                    then if X[0] <= 48.5
                            then {value: 277.0, samples: 1}
                            else {value: 237.0, samples: 1}
                        else {value: 312.5, samples: 2}
            else if X[0] <= 28.0
                then {value: 477.0, samples: 2}
                else {value: 510.0, samples: 2}
    else if X[3] <= 80.0
        then {value: 636.0, samples: 1}
        else if X[0] <= 26.5
            then {value: 1144.0, samples: 1}
            else {value: 915.0, samples: 1}


This is the evaluation for mse:
4124.029544094863


Fold 3
Regression Tree:

 if X[2] <= 48000.0
    then if X[2] <= 18485.0
        then if X[3] <= 31.0
            then if X[2] <= 14000.0
                then if X[2] <= 4250.0
                    then if X[5] <= 4.5
                        then if X[2] <= 1500.0
                            then {value: 11.333333333333334, samples: 6}
                            else {value: 21.25, samples: 12}
                        else {value: 30.26923076923077, samples: 26}
                    else if X[3] <= 2.0
                        then if X[5] <= 48.0
                            then if X[0] <= 560.0
                                then {value: 32.77777777777778, samples: 9}
                                else {value: 18.4, samples: 5}
                            else {value: 68.5, samples: 2}
                        else if X[3] <= 20.0
                            then if X[5] <= 7.0
                                then if X[2] <= 5500.0
                                    then {value: 77.0, samples: 1}
                                    else if X[5] <= 2.5
                                        then {value: 65.5, samples: 2}
                                        else if X[1] <= 1500.0
                                            then {value:
40.333333333333336, samples: 3}
```

```
                                                else {value: 55.2, samples: 5}
                              else if X[0] <= 73.5
                                  then if X[0] <= 71.0
                                      then {value: 75.0, samples: 1}
                                      else {value: 105.0, samples: 1}
                                  else {value: 62.285714285714285,
samples: 7}
                          else {value: 42.333333333333336, samples: 3}
                  else if X[0] <= 170.0
                      then if X[1] <= 6000.0
                          then if X[0] <= 53.5
                              then if X[0] <= 33.5
                                  then {value: 100.0, samples: 1}
                                  else {value: 70.0, samples: 2}
                              else {value: 135.0, samples: 2}
                          else {value: 185.0, samples: 1}
                      else {value: 36.5, samples: 2}
              else if X[2] <= 3810.0
                  then {value: 368.0, samples: 1}
                  else if X[5] <= 11.0
                      then if X[1] <= 3000.0
                          then {value: 62.333333333333336, samples: 3}
                          else {value: 97.5, samples: 4}
                      else if X[2] <= 14000.0
                          then if X[0] <= 120.5
                              then if X[3] <= 48.0
                                  then if X[2] <= 10000.0
                                      then {value: 79.0, samples: 3}
                                      else {value: 113.0, samples: 1}
                                  else {value: 132.0, samples: 2}
                              else {value: 198.0, samples: 1}
                          else if X[0] <= 73.5
                              then if X[1] <= 6000.0
                                  then {value: 135.33333333333334, samples:
3}
                                  else if X[0] <= 34.5
                                      then {value: 132.0, samples: 1}
                                      else if X[0] <= 49.5
                                          then {value: 214.0, samples: 1}
                                          else {value: 188.0, samples: 1}
                              else {value: 259.0, samples: 1}
          else if X[4] <= 7.0
              then if X[3] <= 28.0
                  then {value: 114.0, samples: 1}
                  else {value: 138.33333333333334, samples: 3}
              else if X[3] <= 56.0
                  then if X[0] <= 27.5
                      then {value: 277.0, samples: 1}
                      else {value: 215.16666666666666, samples: 6}
```

```
                        else if X[0] <= 53.5
                            then if X[5] <= 28.0
                                then if X[0] <= 30.5
                                    then {value: 465.0, samples: 1}
                                    else {value: 370.0, samples: 1}
                                else if X[1] <= 3000.0
                                    then {value: 307.0, samples: 1}
                                    else if X[4] <= 12.0
                                        then {value: 318.0, samples: 1}
                                        else if X[0] <= 36.5
                                            then {value: 367.0, samples: 1}
                                            else {value: 397.0, samples: 1}
                            else {value: 237.0, samples: 1}
        else if X[0] <= 26.5
            then {value: 636.0, samples: 1}
            else if X[3] <= 112.0
                then {value: 915.0, samples: 1}
                else {value: 1150.0, samples: 1}

This is the evaluation for mse:
11237.809869505521

Fold 4
Regression Tree:

 if X[2] <= 48000.0
    then if X[4] <= 7.5
        then if X[3] <= 28.0
            then if X[2] <= 6100.0
                then if X[2] <= 2500.0
                    then if X[4] <= 2.0
                        then {value: 15.384615384615385, samples: 13}
                        else {value: 27.25, samples: 4}
                    else if X[5] <= 3.5
                        then {value: 23.833333333333332, samples: 6}
                        else if X[0] <= 110.0
                            then {value: 24.25, samples: 4}
                            else if X[5] <= 5.5
                                then if X[0] <= 260.0
                                    then {value: 35.0, samples: 2}
                                    else {value: 77.0, samples: 1}
                                else {value: 34.588235294117645, samples:
17}
                else if X[4] <= 5.5
                    then if X[3] <= 0.5
                        then if X[0] <= 450.0
                            then {value: 33.333333333333336, samples: 6}
                            else {value: 18.0, samples: 4}
                        else if X[3] <= 8.5
```

```
                         then {value: 51.30769230769231, samples: 13}
                         else if X[2] <= 10000.0
                             then if X[0] <= 102.5
                                 then {value: 26.0, samples: 1}
                                 else {value: 62.2, samples: 5}
                             else {value: 72.66666666666667, samples: 3}
                 else if X[2] <= 24000.0
                     then if X[5] <= 14.0
                         then {value: 102.5, samples: 2}
                         else {value: 64.0, samples: 4}
                     else {value: 114.0, samples: 1}
         else if X[2] <= 10000.0
             then if X[0] <= 150.0
                 then {value: 60.666666666666664, samples: 3}
                 else if X[0] <= 320.0
                     then {value: 109.0, samples: 1}
                     else {value: 67.0, samples: 1}
             else if X[5] <= 29.0
                 then if X[3] <= 64.5
                     then if X[3] <= 48.0
                         then {value: 126.66666666666667, samples: 3}
                         else if X[1] <= 3000.0
                             then {value: 74.0, samples: 1}
                             else {value: 96.5, samples: 2}
                     else {value: 139.0, samples: 2}
                 else if X[3] <= 96.0
                     then {value: 158.0, samples: 3}
                     else {value: 259.0, samples: 1}
     else if X[1] <= 12000.0
         then if X[2] <= 28000.0
             then if X[0] <= 25.5
                 then {value: 321.0, samples: 2}
                 else if X[2] <= 13240.0
                     then if X[1] <= 3310.0
                         then {value: 31.0, samples: 2}
                         else if X[0] <= 74.0
                             then {value: 83.5, samples: 2}
                             else {value: 120.0, samples: 1}
                     else if X[4] <= 10.0
                         then if X[0] <= 56.0
                             then if X[0] <= 34.5
                                 then if X[0] <= 27.5
                                     then {value: 179.0, samples: 2}
                                     else {value: 132.0, samples: 1}
                                 else {value: 214.0, samples: 1}
                             else {value: 143.0, samples: 1}
                         else if X[2] <= 22485.0
                             then {value: 202.66666666666666, samples:
3}
```

```
                              else {value: 237.0, samples: 1}
                else if X[3] <= 56.0
                    then if X[0] <= 27.5
                        then {value: 277.0, samples: 1}
                        else {value: 216.33333333333334, samples: 3}
                    else if X[0] <= 45.0
                        then if X[0] <= 37.5
                            then if X[0] <= 30.5
                                then {value: 318.0, samples: 1}
                                else {value: 370.0, samples: 1}
                            else {value: 277.0, samples: 1}
                        else {value: 397.0, samples: 1}
            else if X[0] <= 26.5
                then {value: 428.0, samples: 2}
                else {value: 510.0, samples: 2}
    else if X[3] <= 96.0
        then {value: 636.0, samples: 1}
        else {value: 1147.0, samples: 2}

This is the evaluation for mse:
4112.671632274506


Fold 5
Regression Tree:

 if X[2] <= 48000.0
    then if X[2] <= 18485.0
        then if X[3] <= 96.5
            then if X[3] <= 31.0
                then if X[2] <= 4250.0
                    then if X[2] <= 2500.0
                        then if X[4] <= 2.0
                            then {value: 14.5, samples: 12}
                            else {value: 28.5, samples: 6}
                        else {value: 29.227272727272727, samples: 22}
                    else if X[3] <= 0.5
                        then if X[0] <= 310.0
                            then if X[5] <= 48.0
                                then {value: 36.166666666666664, samples:
6}
                                else {value: 61.0, samples: 1}
                            else {value: 20.5, samples: 8}
                        else if X[1] <= 3310.0
                            then if X[5] <= 3.5
                                then if X[2] <= 14000.0
                                    then {value: 60.333333333333336,
samples: 3}
                                    else {value: 138.0, samples: 1}
                                else if X[1] <= 320.0
```

```
                              then {value: 27.0, samples: 1}
                              else if X[3] <= 20.0
                                  then if X[3] <= 8.5
                                      then if X[0] <= 310.0
                                          then {value:
52.07692307692308, samples: 13}

                                          else {value: 77.0, samples:
1}

                                      else if X[0] <= 88.5
                                          then {value: 105.0,
samples: 1}

                                          else {value: 65.6, samples:
5}

                                  else if X[0] <= 75.0
                                      then {value: 53.5, samples: 4}
                                      else {value: 29.0, samples: 2}
                          else if X[0] <= 63.5
                              then {value: 132.0, samples: 1}
                              else {value: 75.0, samples: 1}
                  else if X[1] <= 6000.0
                      then if X[5] <= 46.0
                          then if X[5] <= 35.0
                              then if X[4] <= 11.0
                                  then if X[0] <= 59.5
                                      then {value: 125.0, samples: 5}
                                      else if X[0] <= 110.0
                                          then {value: 80.0, samples: 2}
                                          else {value: 109.0, samples: 1}
                                  else {value: 83.5, samples: 2}
                              else {value: 144.0, samples: 2}
                          else {value: 66.0, samples: 1}
                      else if X[0] <= 39.0
                          then if X[0] <= 33.5
                              then {value: 132.0, samples: 1}
                              else {value: 100.0, samples: 1}
                          else {value: 214.0, samples: 1}
              else if X[0] <= 31.5
                  then {value: 321.0, samples: 2}
                  else if X[4] <= 8.5
                      then {value: 259.0, samples: 1}
                      else {value: 205.0, samples: 2}
          else if X[1] <= 12000.0
              then if X[4] <= 6.0
                  then if X[5] <= 37.0
                      then {value: 137.0, samples: 2}
                      else {value: 189.0, samples: 1}
                  else if X[3] <= 56.0
                      then if X[2] <= 28000.0
                          then if X[0] <= 37.0
```

```
                                then {value: 173.0, samples: 1}
                                else {value: 211.0, samples: 2}
                        else if X[0] <= 39.5
                            then if X[0] <= 27.5
                                then {value: 277.0, samples: 1}
                                else {value: 244.5, samples: 2}
                            else {value: 208.0, samples: 1}
                    else if X[0] <= 53.5
                        then if X[0] <= 45.0
                            then if X[0] <= 37.5
                                then if X[0] <= 30.5
                                    then {value: 318.0, samples: 1}
                                    else {value: 370.0, samples: 1}
                                else {value: 277.0, samples: 1}
                            else if X[1] <= 3000.0
                                then {value: 307.0, samples: 1}
                                else {value: 397.0, samples: 1}
                        else {value: 237.0, samples: 1}
            else if X[0] <= 28.0
                then if X[0] <= 24.5
                    then {value: 428.0, samples: 2}
                    else {value: 465.0, samples: 1}
                else {value: 510.0, samples: 2}
    else if X[3] <= 80.0
        then {value: 636.0, samples: 1}
        else if X[3] <= 112.0
            then {value: 915.0, samples: 1}
            else {value: 1147.0, samples: 2}

This is the evaluation for mse:
1931.9592631549658

This is the Average Evaluation for the Cross Validation

5065.490022990445

Process finished with exit code 0
```

Max Depth	Minimum Criterion	MSE
100	0.5	71496.90625
100	1	740.8090277777777
100	1.5	74346.40625
100	2	2680.183159722222
100	2.5	410.21614583333337
150	0.5	68491.05902777778
150	1	1557.295138888889
150	1.5	72133.61722222222
150	2	10329.461805555555
150	2.5	73145.08420138889
200	0.5	3476.6944444444443
200	1	1536.765625
200	1.5	8739.862777777777
200	2	4626.40625
200	2.5	920.25
250	0.5	1156.57
250	1	232.73958333333331
250	1.5	360.51649305555554
250	2	163.38888888888886
250	2.5	68908.54781250001
300	0.5	68714.96527777778
300	1	2917.2256944444443
300	1.5	68515.125
300	2	272.81944444444446
300	2.5	362.36805555555554
350	0.5	1497.3472222222222
350	1	68782.15625
350	1.5	6783.435
350	2	3540.0138888888887
350	2.5	5764.847222222223
400	0.5	3583.6875
400	1	6862.697916666667
400	1.5	7063.6015625
400	2	2702.8803125000004
400	2.5	175.40625
450	0.5	421.08767361111114
450	1	4281.446180555556
450	1.5	2454.0138888888887
450	2	1525.3715277777778
450	2.5	4182.6849999999995
500	0.5	71803.69
500	1	3888.0720486111113
500	1.5	7479.378472222223
500	2	71485.03125
500	2.5	276.5277777777778

Max Depth	Minimum Criterion	MSE
0	0.5	1494.740451388889
0	1	1422.90625
0	1.5	1167.9444444444446
0	2	6653.473125
0	2.5	213.1865625
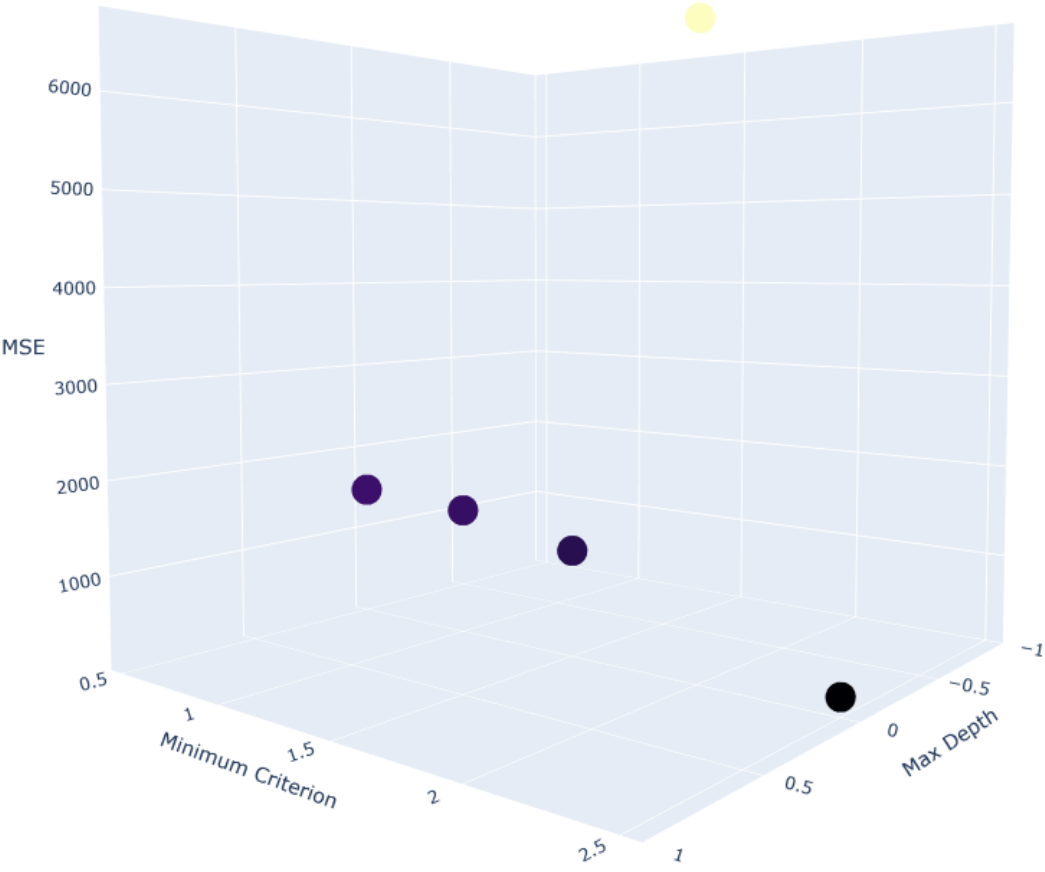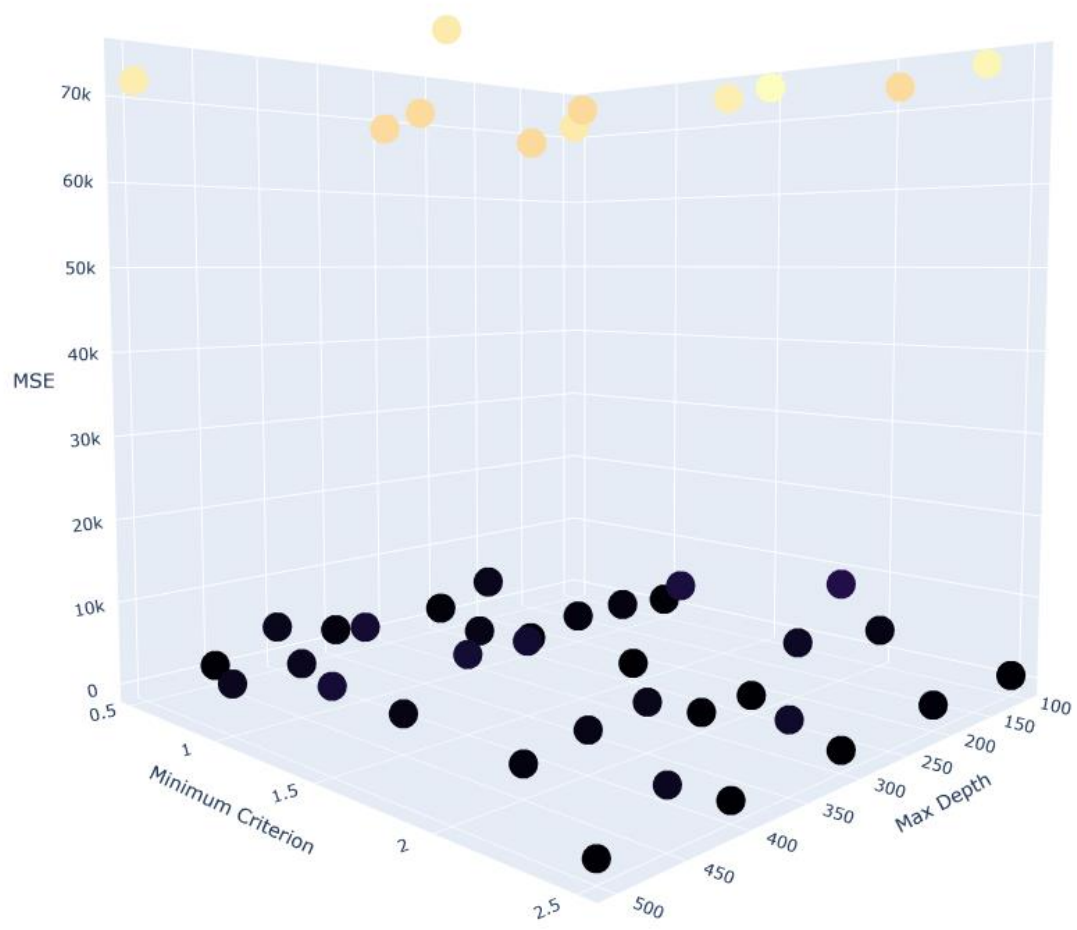
K-Fold vs. MSE
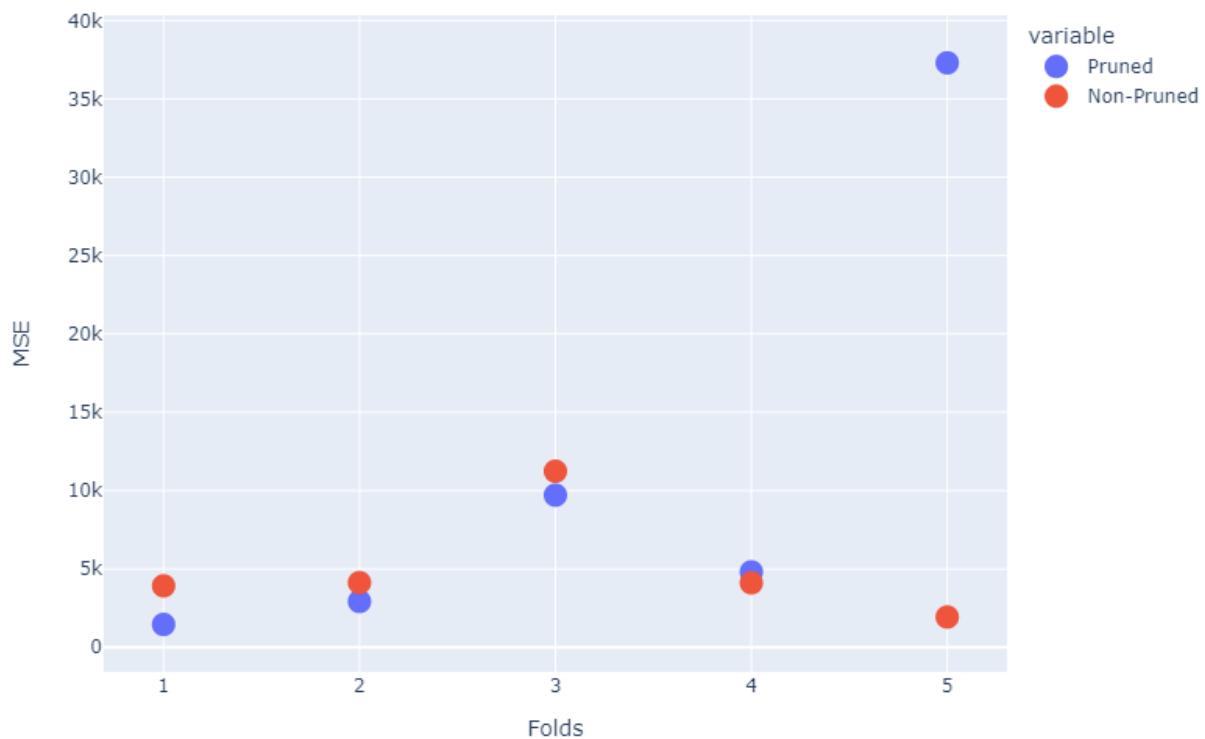
FOREST FIRE
Tuning Variables:

```python
# Cross Validation for the tuning on mse criterion
ForestTuningDepth = [x for x in range(10,100,20)]
ForestTuningMin = [x/10 for x in range(5,30,5)]

ForestTuningResults = []
for depth in ForestTuningDepth:
    for min in ForestTuningMin:
        print(f'For These Hyper-Parameters: {depth} and {min}')
        mse,ForestTuningList = CrossValidation(forestTuningNP, 5,
CART_algo, tree='reg', criterion='mse', prune='criterion',
maxDepth=depth, minCriterion=min)
        instance = (depth, min, mse)
        ForestTuningResults.append(instance)

ForestResultsDF = pd.DataFrame(ForestTuningResults, columns=['Max
Depth', 'Minimum Criterion', 'MSE'])
```

```python
ForestX = ForestResultsDF['Max Depth']
ForestY = ForestResultsDF['Minimum Criterion']
ForestZ = ForestResultsDF['MSE']


ForestTable = go.Figure(data=[go.Table(header=dict(values=['Max
Depth', 'Minimum Criterion', 'MSE']),
                                    cells =dict(values=[ForestX, ForestY,
ForestZ]))])
ForestTable.update_layout(width=800, height = 2900)
ForestTable.show()

# Figure
ForestTrace = go.Scatter3d(
  x = ForestX, y= ForestY, z = ForestZ, mode = 'markers', marker =
dict(
    size = 12,
    color = ForestZ,
    colorscale = 'Magma'
    )
  )
layout = go.Layout(title ='Forest Pruned Tree Hyper Parameter 3D
Scatter Plot')
ForestFig = go.Figure(data =[ForestTrace], layout = layout)
ForestFig.update_layout(scene = dict(
                    xaxis_title='Max Depth',
                    yaxis_title='Minimum Criterion',
                    zaxis_title='MSE'))
ForestFig.show()

# No Pruning Cross validation

ForestTuningNPResults = []
for min in ForestTuningMin:
    mse, ForestNPTuningList = CrossValidation(forestTuningNP, 5,
CART_algo, tree='reg', criterion='mse', prune='criterion',
maxDepth=0, minCriterion=min)
    instance = (0,min,mse)
    ForestTuningNPResults.append(instance)
# Table
ForestResultsNPDF = pd.DataFrame(ForestTuningNPResults, columns=['Max
Depth', 'Minimum Criterion', 'MSE'])
ForestNPX = ForestResultsNPDF['Max Depth']
ForestNPY = ForestResultsNPDF['Minimum Criterion']
ForestNPZ = ForestResultsNPDF['MSE']
```

```python
ForestTableNP = go.Figure(data=[go.Table(header=dict(values=['Max
Depth', 'Minimum Criterion', 'MSE']),
                                cells =dict(values=[ForestNPX,
ForestNPY, ForestNPZ])))])
ForestTableNP.update_layout(width = 800, height = 2900)
ForestTableNP.show()

# Figure
ForestTraceNP = go.Scatter3d(
  x = ForestNPX, y= ForestNPY, z = ForestNPZ, mode = 'markers',
marker = dict(
     size = 12,
     color = ForestNPZ,
     colorscale = 'Magma'
     )
  )
ForestLayoutNP = go.Layout(title ='Forest Unpruned Tree Hyper
Parameter 3D Scatter Plot')
ForestFigNP = go.Figure(data =[ForestTraceNP], layout=ForestLayoutNP)
ForestFigNP.update_layout(scene = dict(
                 xaxis_title='Max Depth',
                 yaxis_title='Minimum Criterion',
                 zaxis_title='MSE'))
ForestFigNP.show()
```

Max Depth	Minimum Criterion	MSE
10	0.5	384.31982119712376
10	1	192.44110183061227
10	1.5	613.7758485000977
10	2	129.97360599619992
10	2.5	68.68169002220343
30	0.5	617.477249902408
30	1	50.51945445766721
30	1.5	144.663495212275
30	2	197.75415567590449
30	2.5	73.22418328075042
50	0.5	164.31760249753793
50	1	696.5052827889108
50	1.5	645.8187709787516
50	2	69.35806976112846
50	2.5	101.73113455972222
70	0.5	121.99350770699762
70	1	549.9794525051652
70	1.5	124.57710683823204
70	2	499.74978718759496
70	2.5	147.54533499026144
90	0.5	1115.2011291843853
90	1	84.39170997980145
90	1.5	414.15978399999995
90	2	545.0992736156925
90	2.5	29.254880028117917
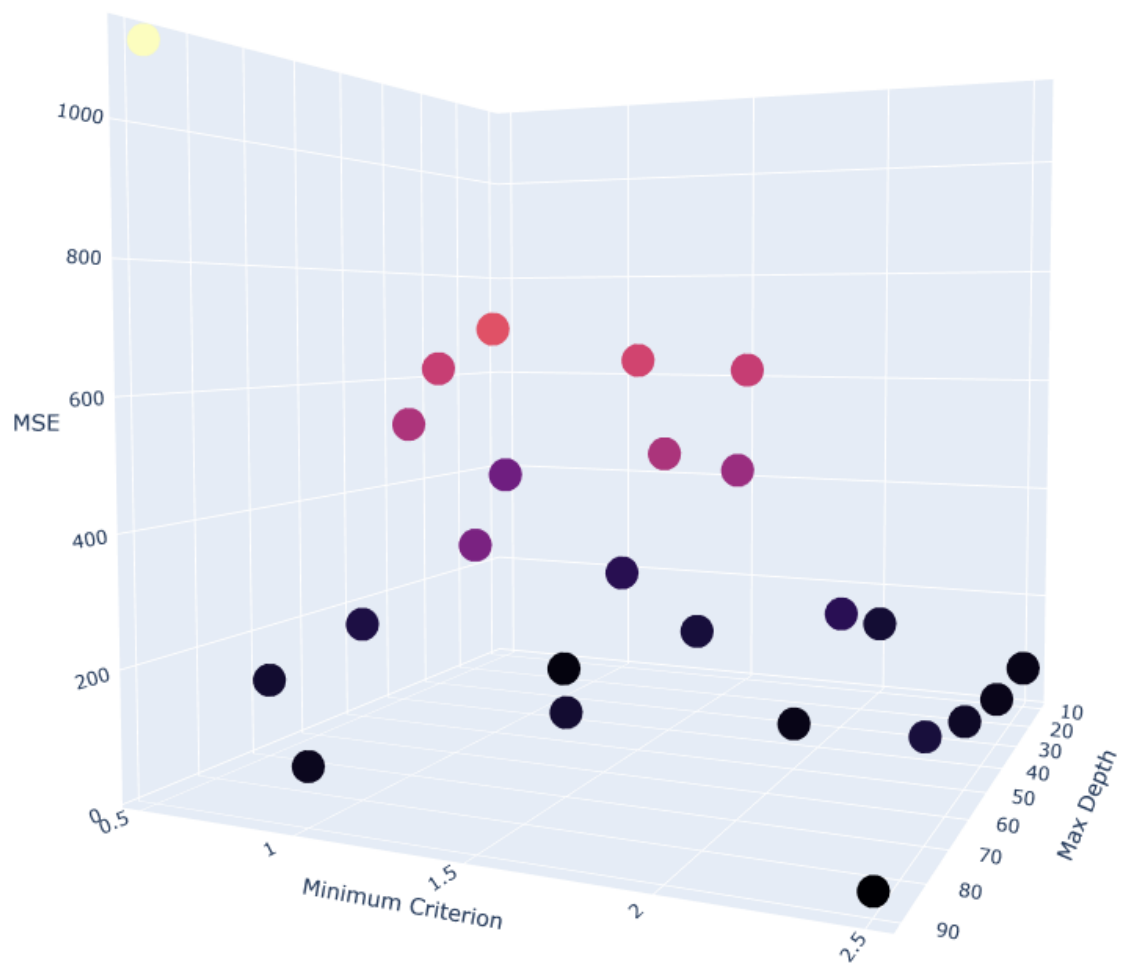
Max Depth	Minimum Criterion	MSE
0	0.5	201.79151771117606
0	1	1053.9052190965278
0	1.5	49.2940889616864
0	2	51.60587189424789
0	2.5	21.79443433479819
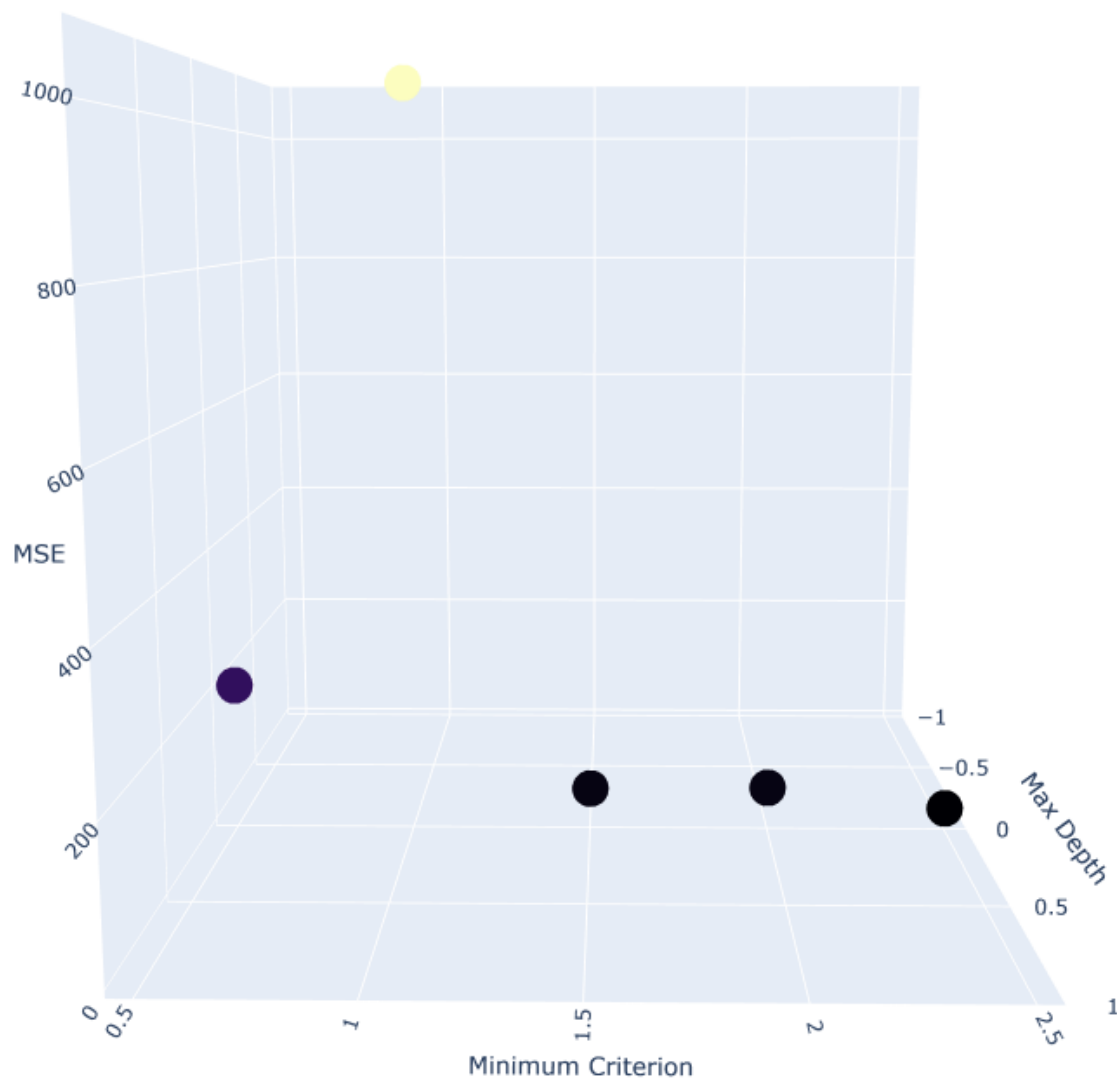
TESTING RESULTS:

```
#Testing Pruned and NonPruned Trees
numFolds = [1,2,3,4,5]
print('Pruned Tree Results')
ForestTestingPrunedResults, ForestTestingPrunedList =
CrossValidation(forestDF_80, 5, CART_algo,tree='reg',
criterion='mse', prune='criterion', maxDepth=90, minCriterion=2.5)
print('Unpruned Tree Results')
ForestTestingNPResults, ForestTestingNPList =
CrossValidation(forestDF_80, 5, CART_algo,tree='reg',
criterion='mse', prune='criterion', maxDepth=0, minCriterion=2.5)

ForestDict = {'Folds': numFolds,
```

```
'Pruned':ForestTestingPrunedList,'Non-Pruned':ForestTestingNPList}

finalForestResults = pd.DataFrame(ForestDict)

ForestFinalFig = px.scatter(finalForestResults, x='Folds',
y=['Pruned', 'Non-Pruned'] , title="K-Fold vs. MSE", width=800,
height=600)
ForestFinalFig.update_traces(marker_size = 15)
ForestFinalFig.update_yaxes(title_text = 'MSE')
ForestFinalFig.show()
```

Output:

```
Pruned Tree Results
Fold 1
Regression Tree:

 if X[8] <= 25.05
    then if X[1] <= 2.5
       then if X[6] <= 671.2
          then if X[9] <= 78.5
             then {value: 1.14375, samples: 16}
             else {value: 37.02, samples: 1}
          else if X[5] <= 129.8
             then {value: 206.91, samples: 2}
             else {value: 1.4575, samples: 4}
       else if X[0] <= 7.5
          then if X[10] <= 8.25
             then if X[0] <= 1.5
                then if X[5] <= 184.7
                   then {value: 5.510999999999999, samples: 10}
                   else if X[3] <= 4.0
                      then {value: 82.75, samples: 1}
                      else {value: 9.71, samples: 1}
                else if X[4] <= 91.05
                   then if X[4] <= 90.95
                      then if X[8] <= 10.4
                         then if X[8] <= 9.45
                            then {value: 6.147857142857142,
samples: 14}

                            else {value: 35.04, samples: 2}
                         else if X[6] <= 734.0
                            then if X[1] <= 3.5
                               then if X[2] <= 7.0
                                  then {value: 32.915, samples:
2}

                                  else {value: 0.0, samples: 5}
```

```
                                                                    else {value: 2.4633333333333334,
samples: 48}
                                                  else {value: 8.858, samples: 10}
                                        else if X[8] <= 18.5
                                            then {value: 5.868, samples: 5}
                                            else if X[8] <= 19.7
                                                    then {value: 103.39, samples: 1}
                                                    else {value: 9.684999999999999,
samples: 2}
                                else if X[4] <= 92.69999999999999
                                        then {value: 2.0302469135802466, samples: 81}
                                        else if X[1] <= 3.5
                                                then {value: 34.36, samples: 1}
                                                else if X[9] <= 21.5
                                                        then {value: 31.72, samples: 1}
                                                        else if X[8] <= 7.0
                                                                then {value: 26.0, samples: 1}
                                                                else if X[6] <= 699.1
                                                                        then {value:
1.9118181818181819, samples: 22}
                                                                                else if X[10] <= 3.8
                                                                                    then if X[7] <= 10.6
                                                                                        then {value:
5.713333333333334, samples: 3}
                                                                                        else {value: 32.31,
samples: 2}
                                                                                    else {value: 4.44875,
samples: 8}
                                    else if X[6] <= 34.6
                                        then {value: 61.13, samples: 1}
                                        else {value: 8.31625, samples: 8}
                                else if X[3] <= 5.5
                                    then if X[8] <= 24.25
                                        then if X[6] <= 672.8499999999999
                                            then {value: 2.3389473684210524, samples: 19}
                                            else if X[0] <= 8.5
                                                    then {value: 8.918000000000001, samples: 5}
                                                    else {value: 42.87, samples: 1}
                                        else if X[1] <= 6.5
                                            then {value: 105.66, samples: 1}
                                            else {value: 0.0, samples: 1}
                                    else if X[10] <= 5.35
                                        then if X[5] <= 85.65
                                            then if X[2] <= 4.5
                                                    then {value: 0.0, samples: 1}
                                                    else {value: 66.64, samples: 3}
                                            else {value: 4.442, samples: 5}
                                        else if X[2] <= 5.5
                                            then {value: 7.19, samples: 1}
```

```
                                else {value: 196.48, samples: 1}
        else if X[8] <= 25.200000000000003
            then {value: 1090.84, samples: 1}
            else if X[6] <= 725.0
                then if X[9] <= 21.5
                    then if X[0] <= 3.0
                        then {value: 0.0, samples: 1}
                        else if X[0] <= 5.0
                            then {value: 88.49, samples: 1}
                            else {value: 0.0, samples: 1}
                    else if X[8] <= 32.85
                        then if X[7] <= 17.25
                            then {value: 2.7492857142857132, samples: 28}
                            else if X[1] <= 3.5
                                then {value: 49.59, samples: 1}
                                else {value: 6.569999999999999, samples: 4}
                        else {value: 33.485, samples: 2}
                else if X[0] <= 4.0
                    then {value: 95.18, samples: 1}
                    else {value: 0.0, samples: 1}

This is the evaluation for mse:
8099.738767421589

Fold 2
Regression Tree:

 if X[8] <= 25.05
    then if X[1] <= 2.5
        then if X[6] <= 671.2
            then if X[4] <= 88.8
                then {value: 37.02, samples: 1}
                else {value: 1.2688235294117647, samples: 17}
            else if X[5] <= 133.25
                then {value: 206.91, samples: 2}
                else if X[3] <= 5.0
                    then {value: 0.0, samples: 3}
                    else {value: 174.63, samples: 1}
        else if X[0] <= 7.5
            then if X[9] <= 25.5
                then if X[3] <= 5.5
                    then {value: 8.149375, samples: 16}
                    else if X[1] <= 4.5
                        then {value: 12.115, samples: 2}
                        else {value: 154.88, samples: 1}
                else if X[1] <= 3.5
                    then if X[7] <= 7.15
                        then if X[8] <= 20.6
                            then if X[4] <= 89.94999999999999
```

```
                                then if X[9] <= 48.5
                                    then {value: 34.22666666666667,
samples: 3}

                                    else {value: 7.58, samples: 4}
                                else {value: 0.312, samples: 5}
                            else {value: 63.400000000000006, samples: 2}
                        else {value: 3.100625, samples: 16}
                else if X[6] <= 664.9
                    then {value: 2.8220652173913043, samples: 92}
                    else if X[4] <= 91.55
                        then if X[8] <= 18.5
                            then if X[7] <= 7.25
                                then {value: 1.5641176470588238,
samples: 17}

                                else if X[5] <= 109.35
                                    then {value: 39.35, samples: 1}
                                    else {value: 6.871666666666667,
samples: 6}

                            else if X[8] <= 18.85
                                then {value: 103.39, samples: 1}
                                else if X[5] <= 63.75
                                    then if X[0] <= 4.5
                                        then {value: 54.29, samples: 1}
                                        else {value: 11.16, samples: 1}
                                    else {value: 9.6425, samples: 12}
                        else {value: 4.139375, samples: 48}
            else if X[3] <= 5.5
                then if X[8] <= 24.25
                    then {value: 5.5283999999999995, samples: 25}
                    else if X[1] <= 6.5
                        then {value: 105.66, samples: 1}
                        else {value: 0.0, samples: 1}
                else if X[8] <= 19.25
                    then if X[7] <= 11.25
                        then {value: 6.369999999999999, samples: 7}
                        else {value: 71.3, samples: 1}
                    else if X[4] <= 91.80000000000001
                        then {value: 196.48, samples: 1}
                        else if X[4] <= 92.25
                            then {value: 58.3, samples: 1}
                            else {value: 4.01, samples: 2}
    else if X[8] <= 25.200000000000003
        then {value: 1090.84, samples: 1}
        else if X[5] <= 220.05
            then if X[6] <= 725.0
                then if X[9] <= 21.5
                    then if X[0] <= 5.0
                        then {value: 88.49, samples: 1}
                        else {value: 0.0, samples: 1}
```

```
                    else if X[8] <= 32.85
                        then {value: 3.455, samples: 26}
                        else {value: 33.485, samples: 2}
              else if X[1] <= 4.5
                  then {value: 2.9, samples: 2}
                  else {value: 79.64, samples: 2}
          else if X[8] <= 27.2
              then {value: 1.24, samples: 4}
              else {value: 746.28, samples: 1}
```

This is the evaluation for mse:
1758.3891931937706

Fold 3
Regression Tree:

```
 if X[8] <= 25.05
    then if X[1] <= 2.5
        then if X[6] <= 671.2
            then {value: 1.9972222222222225, samples: 18}
            else if X[6] <= 734.45
                then {value: 196.15, samples: 3}
                else {value: 2.915, samples: 2}
        else if X[0] <= 7.5
            then if X[9] <= 26.0
                then if X[3] <= 5.5
                    then {value: 8.801666666666666, samples: 12}
                    else if X[4] <= 92.1
                        then {value: 12.115, samples: 2}
                        else {value: 154.88, samples: 1}
                else if X[1] <= 3.5
                    then if X[5] <= 15.899999999999999
                        then {value: 61.13, samples: 1}
                        else if X[6] <= 761.05
                            then if X[3] <= 1.5
                                then {value: 18.904000000000003, samples:
5}
                                else {value: 4.189473684210525, samples:
19}
                            else if X[8] <= 21.25
                                then {value: 10.54, samples: 4}
                                else {value: 63.400000000000006, samples:
2}
                    else if X[0] <= 1.5
                        then if X[5] <= 129.8
                            then {value: 2.3633333333333333, samples: 6}
                            else if X[2] <= 8.5
                                then {value: 82.75, samples: 1}
                                else {value: 15.950000000000001, samples:
```

```
2}
                             else if X[4] <= 91.35
                                 then if X[8] <= 18.6
                                     then if X[9] <= 53.5
                                         then {value: 2.6611111111111114,
samples: 36}
                                             else if X[9] <= 63.0
                                                 then if X[2] <= 2.5
                                                     then {value: 51.78, samples: 1}
                                                     else if X[4] <= 91.1
                                                         then if X[0] <= 6.5
                                                             then {value: 7.247,
samples: 10}
                                                                 else {value: 37.71,
samples: 1}
                                                         else {value: 39.35,
samples: 1}
                                                 else {value: 2.8793750000000005,
samples: 16}
                                         else if X[8] <= 18.95
                                             then {value: 103.39, samples: 1}
                                             else if X[9] <= 70.5
                                                 then {value: 3.883571428571429,
samples: 14}
                                                     else if X[0] <= 3.5
                                                         then {value: 54.29, samples: 1}
                                                         else {value: 2.17, samples: 1}
                                 else if X[8] <= 7.6
                                     then {value: 26.0, samples: 1}
                                     else if X[6] <= 703.0
                                         then {value: 1.9114754098360653,
samples: 61}
                                             else if X[6] <= 714.5
                                                 then if X[1] <= 4.5
                                                     then {value: 32.31, samples: 2}
                                                     else {value:
4.856666666666665, samples: 3}
                                                 else {value: 2.631666666666667,
samples: 24}
                     else if X[3] <= 5.5
                         then if X[8] <= 24.15
                             then if X[5] <= 235.4
                                 then {value: 4.53391304347826, samples: 23}
                                 else {value: 42.87, samples: 1}
                             else if X[1] <= 6.5
                                 then {value: 105.66, samples: 1}
                                 else {value: 0.0, samples: 1}
                         else if X[8] <= 19.25
                             then if X[7] <= 11.25
```

```
                        then {value: 6.369999999999999, samples: 7}
                        else {value: 71.3, samples: 1}
                 else if X[8] <= 19.85
                        then {value: 196.48, samples: 1}
                        else if X[5] <= 83.55
                               then {value: 64.31, samples: 2}
                               else {value: 6.09, samples: 2}
     else if X[8] <= 25.200000000000003
          then {value: 1090.84, samples: 1}
          else if X[5] <= 220.05
                 then if X[2] <= 8.5
                        then if X[7] <= 19.0
                               then {value: 4.026, samples: 25}
                               else if X[0] <= 3.0
                                      then {value: 2.07, samples: 1}
                                      else {value: 49.59, samples: 1}
                        else if X[5] <= 147.35000000000002
                               then if X[9] <= 22.5
                                      then if X[0] <= 5.0
                                             then {value: 88.49, samples: 1}
                                             else {value: 0.0, samples: 1}
                                      else {value: 0.365, samples: 4}
                               else {value: 79.64, samples: 2}
                 else if X[8] <= 27.2
                        then {value: 1.24, samples: 4}
                        else {value: 746.28, samples: 1}

This is the evaluation for mse:
1230.4451448657574

Fold 4
Regression Tree:

 if X[8] <= 25.05
    then if X[1] <= 2.5
        then if X[6] <= 671.2
            then if X[9] <= 78.5
                then {value: 1.9110526315789476, samples: 19}
                else {value: 37.02, samples: 1}
            else if X[5] <= 129.8
                then {value: 206.91, samples: 2}
                else if X[2] <= 8.5
                    then {value: 174.63, samples: 1}
                    else {value: 1.9433333333333334, samples: 3}
        else if X[0] <= 8.5
            then if X[9] <= 25.5
                then if X[5] <= 108.65
                    then {value: 6.047692307692308, samples: 13}
                    else if X[3] <= 5.0
```

```
                              then {value: 14.26, samples: 3}
                              else {value: 154.88, samples: 1}
                    else if X[1] <= 3.5
                        then if X[5] <= 15.899999999999999
                            then {value: 61.13, samples: 1}
                            else if X[8] <= 21.65
                                then if X[10] <= 5.35
                                    then {value: 2.8214999999999995, samples:
20}
                                    else {value: 25.125, samples: 4}
                                else if X[6] <= 761.05
                                    then {value: 10.114, samples: 5}
                                    else {value: 63.400000000000006, samples:
2}
                        else if X[0] <= 1.5
                            then if X[5] <= 129.8
                                then {value: 1.01, samples: 6}
                                else if X[4] <= 91.6
                                    then {value: 13.87, samples: 3}
                                    else {value: 82.75, samples: 1}
                            else if X[4] <= 85.4
                                then if X[3] <= 6.5
                                    then {value: 5.1925, samples: 16}
                                    else if X[4] <= 66.0
                                        then {value: 0.0, samples: 2}
                                        else if X[8] <= 9.45
                                            then {value: 11.015, samples: 2}
                                            else {value: 53.035, samples: 2}
                                else if X[6] <= 734.0
                                    then {value: 2.668623188405797, samples:
138}
                                    else if X[5] <= 97.85
                                        then {value: 32.9575, samples: 4}
                                        else {value: 4.14125, samples: 32}
                else if X[2] <= 8.5
                    then if X[3] <= 5.5
                        then if X[5] <= 237.7
                            then {value: 0.3979999999999996, samples: 5}
                            else {value: 42.87, samples: 1}
                        else {value: 70.32, samples: 1}
                    else {value: 105.66, samples: 1}
        else if X[8] <= 25.200000000000003
            then {value: 1090.84, samples: 1}
            else if X[5] <= 220.05
                then if X[8] <= 32.85
                    then if X[6] <= 725.0
                        then if X[7] <= 19.0
                            then {value: 3.262413793103448, samples: 29}
                            else if X[0] <= 3.0
```

```
                          then {value: 1.95, samples: 1}
                          else {value: 49.59, samples: 1}
                else if X[1] <= 5.0
                     then {value: 2.9, samples: 2}
                     else {value: 64.1, samples: 1}
           else {value: 33.485, samples: 2}
        else if X[8] <= 27.2
             then {value: 1.24, samples: 4}
             else {value: 746.28, samples: 1}

This is the evaluation for mse:
1320.8909480529398

Fold 5
Regression Tree:

 if X[5] <= 220.05
    then if X[5] <= 118.45
       then if X[0] <= 7.5
          then if X[10] <= 7.8
             then if X[9] <= 54.5
                then if X[6] <= 761.05
                   then if X[8] <= 11.399999999999999
                      then if X[5] <= 51.75
                         then {value: 2.4655555555555555, samples:
9}
                         else {value: 36.85, samples: 1}
                      else {value: 2.1720754716981134, samples: 106}
                   else if X[1] <= 3.5
                      then {value: 56.04, samples: 1}
                      else {value: 6.215999999999999, samples: 5}
                else if X[8] <= 21.549999999999997
                   then if X[9] <= 62.5
                      then if X[2] <= 5.5
                         then {value: 51.78, samples: 1}
                         else if X[6] <= 732.95
                            then {value: 3.4225, samples: 4}
                            else {value: 26.3225, samples: 4}
                      else {value: 3.2976190476190474, samples: 21}
                   else {value: 54.29, samples: 1}
             else if X[1] <= 3.5
                then {value: 61.13, samples: 1}
                else {value: 12.94888888888889, samples: 9}
          else if X[3] <= 5.5
             then {value: 6.142631578947368, samples: 19}
             else if X[6] <= 484.4
                then if X[5] <= 93.0
                   then {value: 66.64, samples: 3}
                   else {value: 8.0, samples: 1}
```

```
                              else {value: 8.42, samples: 5}
            else if X[9] <= 26.5
                then if X[5] <= 121.15
                    then {value: 154.88, samples: 1}
                    else if X[9] <= 25.5
                        then if X[5] <= 135.15
                            then if X[8] <= 25.35
                                then {value: 13.709999999999999, samples: 3}
                                else if X[0] <= 3.0
                                    then {value: 26.43, samples: 1}
                                    else {value: 88.49, samples: 1}
                            else {value: 1.6771428571428573, samples: 7}
                        else {value: 52.31999999999999, samples: 2}
            else if X[10] <= 5.6
                then if X[7] <= 8.3
                    then if X[0] <= 1.5
                        then if X[5] <= 147.35000000000002
                            then {value: 14.825000000000001, samples: 2}
                            else {value: 88.965, samples: 2}
                        else if X[4] <= 91.1
                            then if X[8] <= 18.5
                                then if X[1] <= 3.0
                                    then {value: 37.02, samples: 1}
                                    else {value: 4.77, samples: 6}
                                else if X[0] <= 6.5
                                    then {value: 103.39, samples: 1}
                                    else {value: 8.6, samples: 2}
                            else {value: 1.453076923076923, samples: 13}
                        else if X[7] <= 13.850000000000001
                            then {value: 2.608055555555555, samples: 36}
                            else if X[1] <= 3.5
                                then {value: 49.59, samples: 1}
                                else {value: 6.5795, samples: 20}
                    else if X[0] <= 7.5
                        then {value: 7.376428571428571, samples: 14}
                        else {value: 196.48, samples: 1}
        else if X[8] <= 26.85
            then if X[1] <= 2.5
                then if X[3] <= 5.0
                    then {value: 0.0, samples: 1}
                    else {value: 174.63, samples: 1}
                else if X[8] <= 20.45
                    then {value: 3.482666666666667, samples: 15}
                    else if X[7] <= 7.4
                        then {value: 56.815, samples: 2}
                        else {value: 8.955714285714285, samples: 7}
            else {value: 746.28, samples: 1}

This is the evaluation for mse:
```

23219.350680630687

This is the Average Evaluation for the Cross Validation

7125.762946832949

Unpruned Tree Results
Fold 1
Regression Tree:

```
 if X[8] <= 25.0
    then if X[2] <= 8.5
        then if X[0] <= 8.5
            then if X[4] <= 85.4
                then if X[3] <= 6.5
                    then {value: 3.235, samples: 12}
                    else if X[8] <= 9.45
                        then {value: 4.3500000000000005, samples: 3}
                        else if X[0] <= 5.5
                            then {value: 53.035, samples: 2}
                            else {value: 11.16, samples: 1}
                else if X[8] <= 5.3
                    then {value: 26.0, samples: 1}
                    else if X[5] <= 187.25
                        then if X[0] <= 7.5
                            then if X[2] <= 5.5
                                then if X[2] <= 4.5
                                    then if X[5] <= 34.55
                                        then {value: 0.8927272727272727,
samples: 22}
                                        else if X[9] <= 28.0
                                            then if X[9] <= 26.5
                                                then {value: 1.265,
samples: 2}
                                                else {value:
30.25999999999998, samples: 2}
                                            else {value: 5.330769230769231,
samples: 13}
                                    else {value: 38.48, samples: 1}
                                else {value: 1.3301492537313433, samples:
67}
                            else if X[3] <= 5.5
                                then {value: 2.0481818181818183, samples:
11}
                                else if X[3] <= 6.5
                                    then if X[4] <= 93.2
                                        then {value: 71.3, samples: 1}
                                        else {value: 8.02, samples: 1}
```

```
                                                  else {value: 7.851999999999999,
samples: 5}
                            else if X[0] <= 1.5
                                  then {value: 82.75, samples: 1}
                                  else {value: 4.902631578947369, samples: 19}
                else if X[3] <= 5.5
                      then if X[2] <= 7.5
                            then {value: 0.49749999999999994, samples: 4}
                            else {value: 42.87, samples: 1}
                      else {value: 70.32, samples: 1}
            else if X[1] <= 2.5
                  then if X[7] <= 8.899999999999999
                        then {value: 206.91, samples: 2}
                        else {value: 0.0, samples: 3}
                  else if X[0] <= 8.5
                        then if X[9] <= 26.5
                              then if X[3] <= 5.0
                                    then {value: 12.167, samples: 10}
                                    else if X[1] <= 4.5
                                          then {value: 24.23, samples: 1}
                                          else {value: 154.88, samples: 1}
                              else if X[5] <= 90.65
                                    then {value: 3.292820512820513, samples: 39}
                                    else if X[8] <= 18.55
                                          then {value: 4.923333333333334, samples: 27}
                                          else if X[8] <= 18.95
                                                then if X[3] <= 3.0
                                                      then {value: 103.39, samples: 1}
                                                      else {value: 25.403333333333336,
samples: 3}
                                                else if X[5] <= 208.75
                                                      then if X[4] <= 92.0
                                                            then if X[8] <= 22.85
                                                                  then {value: 10.486, samples:
15}
                                                                  else {value: 56.04, samples: 1}
                                                            else {value: 5.1775, samples: 16}
                                                      else if X[0] <= 4.0
                                                            then {value: 70.76, samples: 1}
                                                            else {value: 0.0, samples: 1}
                        else {value: 105.66, samples: 1}
      else if X[8] <= 25.200000000000003
            then {value: 1090.84, samples: 1}
            else if X[5] <= 220.05
                  then if X[6] <= 725.0
                        then if X[7] <= 19.0
                              then if X[9] <= 21.5
                                    then if X[0] <= 3.0
                                          then {value: 0.0, samples: 1}
```

```
                            else if X[0] <= 5.0
                                then {value: 88.49, samples: 1}
                                else {value: 0.0, samples: 1}
                        else if X[8] <= 32.95
                            then {value: 3.951923076923077, samples: 26}
                            else {value: 40.54, samples: 1}
                    else {value: 49.59, samples: 1}
                else if X[0] <= 5.5
                    then {value: 79.64, samples: 2}
                    else {value: 0.0, samples: 1}
            else if X[8] <= 27.2
                then {value: 1.6533333333333333, samples: 3}
                else {value: 746.28, samples: 1}

This is the evaluation for mse:
1620.3971161730549

Fold 2
Regression Tree:

 if X[8] <= 25.05
    then if X[3] <= 5.5
        then if X[8] <= 24.25
            then if X[7] <= 7.9
                then if X[7] <= 7.75
                    then if X[2] <= 8.5
                        then if X[8] <= 13.55
                            then if X[1] <= 3.5
                                then if X[2] <= 2.5
                                    then {value: 0.0, samples: 1}
                                    else {value: 33.74, samples: 3}
                                else {value: 5.62, samples: 12}
                            else {value: 2.6392307692307693, samples: 39}
                        else if X[0] <= 5.5
                            then {value: 7.0707407407407405, samples: 27}
                            else if X[4] <= 90.8
                                then {value: 5.916363636363636, samples:
11}
                                else if X[9] <= 41.5
                                    then if X[1] <= 3.5
                                        then {value: 45.2, samples: 2}
                                        else {value: 7.338333333333334,
samples: 6}
                                    else if X[0] <= 7.0
                                        then {value: 103.39, samples: 1}
                                        else {value: 30.18, samples: 1}
                    else {value: 82.75, samples: 1}
                else {value: 3.7498850574712645, samples: 87}
            else if X[4] <= 88.5
```

```
                    then {value: 105.66, samples: 1}
                    else {value: 3.3366666666666664, samples: 3}
        else if X[1] <= 2.5
            then if X[6] <= 652.8
                then {value: 4.04, samples: 4}
                else {value: 187.785, samples: 2}
            else if X[0] <= 7.5
                then if X[9] <= 26.0
                    then if X[4] <= 92.1
                        then {value: 8.076666666666666, samples: 3}
                        else {value: 154.88, samples: 1}
                    else if X[10] <= 8.95
                        then if X[9] <= 54.0
                            then {value: 1.8718518518518519, samples: 54}
                            else if X[8] <= 21.25
                                then if X[9] <= 58.5
                                    then {value: 24.30666666666667,
samples: 3}

                                    else {value: 3.6423529411764712,
samples: 17}

                                else {value: 54.29, samples: 1}
                        else {value: 61.13, samples: 1}
                else if X[10] <= 5.15
                    then if X[10] <= 2.6500000000000004
                        then {value: 2.5075, samples: 4}
                        else if X[5] <= 90.69999999999999
                            then {value: 66.64, samples: 3}
                            else {value: 22.125, samples: 2}
                    else {value: 196.48, samples: 1}
    else if X[8] <= 25.200000000000003
        then {value: 1090.84, samples: 1}
        else if X[5] <= 220.05
            then if X[7] <= 8.149999999999999
                then if X[0] <= 3.5
                    then {value: 95.18, samples: 1}
                    else {value: 0.0, samples: 1}
                else if X[9] <= 21.5
                    then if X[0] <= 3.0
                        then {value: 0.0, samples: 1}
                        else {value: 88.49, samples: 1}
                    else if X[8] <= 32.75
                        then if X[7] <= 14.2
                            then {value: 2.6700000000000004, samples: 19}
                            else if X[1] <= 3.5
                                then {value: 49.59, samples: 1}
                                else {value: 7.578749999999999, samples: 8}
                        else {value: 33.485, samples: 2}
            else if X[8] <= 27.2
                then {value: 1.24, samples: 4}
```

```
                    else {value: 746.28, samples: 1}

This is the evaluation for mse:
2389.5917404875318

Fold 3
Regression Tree:

 if X[9] <= 27.5
    then if X[3] <= 5.5
        then if X[5] <= 132.8
            then {value: 6.016, samples: 20}
            else if X[10] <= 4.25
                then if X[8] <= 32.95
                    then {value: 8.79, samples: 8}
                    else {value: 40.54, samples: 1}
                else if X[0] <= 5.0
                    then {value: 88.49, samples: 1}
                    else {value: 0.0, samples: 1}
        else if X[0] <= 5.5
            then if X[9] <= 26.5
                then if X[1] <= 4.5
                    then {value: 12.115, samples: 2}
                    else if X[3] <= 6.5
                        then {value: 154.88, samples: 1}
                        else {value: 45.265, samples: 2}
                else {value: 4.626666666666667, samples: 9}
            else if X[4] <= 92.95
                then {value: 1090.84, samples: 1}
                else {value: 0.0, samples: 2}
    else if X[1] <= 2.5
        then if X[6] <= 671.2
            then if X[9] <= 78.5
                then {value: 1.1833333333333333, samples: 15}
                else {value: 37.02, samples: 1}
            else if X[5] <= 129.8
                then {value: 206.91, samples: 2}
                else if X[3] <= 5.0
                    then {value: 2.9074999999999998, samples: 4}
                    else if X[0] <= 1.5
                        then {value: 0.0, samples: 1}
                        else {value: 174.63, samples: 1}
        else if X[0] <= 7.5
            then if X[0] <= 1.5
                then if X[7] <= 8.1
                    then if X[5] <= 160.75
                        then if X[5] <= 91.55
                            then {value: 0.165, samples: 2}
                            else {value: 29.255000000000003, samples: 2}
```

```
                            else {value: 76.755, samples: 2}
                    else {value: 3.985555555555555, samples: 9}
                else if X[10] <= 8.95
                    then if X[1] <= 3.5
                        then if X[4] <= 94.35
                            then if X[7] <= 6.25
                                then if X[3] <= 3.0
                                    then if X[8] <= 10.4
                                        then {value: 0.0, samples: 1}
                                        else {value: 40.080000000000005,
samples: 3}
                                    else {value: 2.146666666666667,
samples: 3}
                                else {value: 3.8841176470588237, samples:
17}
                            else {value: 49.59, samples: 1}
                        else if X[4] <= 85.55000000000001
                            then if X[3] <= 6.5
                                then {value: 4.351176470588236, samples:
17}
                                else if X[10] <= 6.05
                                    then if X[0] <= 5.5
                                        then {value: 53.035, samples: 2}
                                        else {value: 13.05, samples: 1}
                                    else {value: 6.713333333333334,
samples: 3}
                            else if X[8] <= 6.8999999999999995
                                then {value: 26.0, samples: 1}
                                else if X[6] <= 731.1500000000001
                                    then {value: 2.0057983193277313,
samples: 119}
                                    else if X[5] <= 96.65
                                        then {value: 27.33666666666667,
samples: 3}
                                        else {value: 3.786206896551724,
samples: 29}
                    else if X[0] <= 4.0
                        then {value: 3.19, samples: 1}
                        else {value: 61.13, samples: 1}
            else if X[3] <= 5.5
                then if X[4] <= 84.65
                    then if X[0] <= 8.5
                        then {value: 6.074999999999999, samples: 2}
                        else {value: 105.66, samples: 1}
                    else if X[5] <= 237.7
                        then {value: 2.7009523809523808, samples: 21}
                        else if X[0] <= 8.5
                            then {value: 0.0, samples: 1}
                            else {value: 42.87, samples: 1}
```

```
                    else if X[7] <= 10.1
                        then if X[0] <= 8.5
                            then {value: 7.71625, samples: 8}
                            else if X[2] <= 6.5
                                then {value: 70.32, samples: 1}
                                else {value: 8.0, samples: 1}
                        else if X[4] <= 92.25
                            then if X[10] <= 5.35
                                then if X[3] <= 6.5
                                    then {value: 64.8, samples: 2}
                                    else {value: 0.0, samples: 1}
                                else {value: 196.48, samples: 1}
                            else {value: 4.01, samples: 2}

This is the evaluation for mse:
36097.61320214139

Fold 4
Regression Tree:

 if X[8] <= 25.05
    then if X[1] <= 2.5
        then if X[6] <= 671.2
            then if X[4] <= 88.8
                then {value: 37.02, samples: 1}
                else {value: 2.4333333333333327, samples: 15}
            else if X[5] <= 129.8
                then {value: 206.91, samples: 2}
                else if X[3] <= 5.0
                    then {value: 1.9433333333333334, samples: 3}
                    else {value: 174.63, samples: 1}
        else if X[0] <= 7.5
            then if X[9] <= 25.5
                then if X[5] <= 108.65
                    then {value: 7.048333333333333, samples: 12}
                    else if X[3] <= 5.0
                        then {value: 17.396666666666665, samples: 3}
                        else {value: 154.88, samples: 1}
                else if X[0] <= 1.5
                    then if X[5] <= 184.7
                        then {value: 6.998181818181819, samples: 11}
                        else if X[8] <= 17.2
                            then {value: 6.710000000000001, samples: 2}
                            else {value: 76.755, samples: 2}
                    else if X[4] <= 91.05
                        then if X[4] <= 90.95
                            then if X[3] <= 6.5
                                then if X[1] <= 3.5
                                    then if X[9] <= 48.5
```

```
                                                    then {value: 27.619999999999997,
samples: 4}
                                                    else {value: 0.0, samples: 2}
                                                else {value: 2.8686206896551725,
samples: 58}
                                        else if X[6] <= 70.3
                                            then {value: 51.78, samples: 1}
                                            else if X[8] <= 21.65
                                                then {value: 5.505, samples: 12}
                                                else if X[0] <= 2.5
                                                    then {value: 54.29, samples: 1}
                                                    else {value: 5.18, samples: 1}
                                    else if X[0] <= 5.5
                                        then {value: 5.112500000000001, samples: 4}
                                        else if X[9] <= 41.5
                                            then if X[1] <= 3.5
                                                then {value: 61.13, samples: 1}
                                                else {value: 8.6, samples: 2}
                                            else {value: 103.39, samples: 1}
                                else if X[8] <= 7.45
                                    then {value: 26.0, samples: 1}
                                    else if X[6] <= 703.0
                                        then {value: 1.7831343283582088, samples:
67}
                                        else if X[6] <= 714.5
                                            then if X[1] <= 4.5
                                                then {value: 32.31, samples: 2}
                                                else {value: 4.856666666666665,
samples: 3}
                                            else {value: 3.6187179487179493,
samples: 39}
                        else if X[3] <= 5.5
                            then if X[6] <= 722.4000000000001
                                then {value: 4.100499999999999, samples: 20}
                                else if X[0] <= 8.5
                                    then {value: 9.96, samples: 4}
                                    else {value: 42.87, samples: 1}
                            else if X[8] <= 19.25
                                then if X[7] <= 11.25
                                    then {value: 6.37, samples: 7}
                                    else {value: 71.3, samples: 1}
                                else if X[4] <= 91.80000000000001
                                    then {value: 196.48, samples: 1}
                                    else if X[3] <= 6.5
                                        then {value: 58.3, samples: 1}
                                        else {value: 0.0, samples: 1}
            else if X[8] <= 25.200000000000003
                then {value: 1090.84, samples: 1}
                else if X[5] <= 220.05
```

```
                then if X[6] <= 725.0
                    then if X[9] <= 22.5
                        then if X[0] <= 3.0
                            then {value: 0.0, samples: 1}
                            else if X[0] <= 5.0
                                then {value: 88.49, samples: 1}
                                else {value: 0.0, samples: 1}
                        else {value: 4.577096774193548, samples: 31}
                    else if X[1] <= 4.5
                        then {value: 2.9, samples: 2}
                        else {value: 79.64, samples: 2}
                else if X[3] <= 5.0
                    then {value: 746.28, samples: 1}
                    else {value: 1.6533333333333333, samples: 3}

This is the evaluation for mse:
7865.205981392028

Fold 5
Regression Tree:

 if X[5] <= 220.05
    then if X[4] <= 91.45
        then if X[8] <= 18.6
            then if X[10] <= 7.8
                then if X[9] <= 53.5
                    then if X[1] <= 3.5
                        then if X[8] <= 17.95
                            then {value: 5.612, samples: 5}
                            else {value: 38.48, samples: 1}
                        else {value: 2.3825581395348836, samples: 43}
                    else if X[6] <= 734.0
                        then if X[10] <= 2.9000000000000004
                            then if X[6] <= 79.55
                                then {value: 32.415, samples: 2}
                                else {value: 5.1875, samples: 4}
                            else if X[0] <= 2.5
                                then if X[8] <= 12.100000000000001
                                    then {value: 2.4275, samples: 4}
                                    else {value: 33.67, samples: 2}
                                else {value: 3.125, samples: 22}
                        else {value: 38.53, samples: 2}
                else if X[6] <= 34.6
                    then {value: 42.685, samples: 2}
                    else {value: 10.40090909090909, samples: 11}
            else if X[8] <= 18.9
                then if X[0] <= 3.5
                    then {value: 212.88, samples: 1}
                    else {value: 103.39, samples: 1}
```

```
            else if X[0] <= 8.5
                then if X[4] <= 91.30000000000001
                    then {value: 4.450606060606061, samples: 33}
                    else if X[9] <= 40.0
                        then {value: 3.425, samples: 4}
                        else {value: 196.48, samples: 1}
                else {value: 87.99, samples: 2}
        else if X[8] <= 27.75
            then if X[7] <= 6.25
                then if X[8] <= 22.85
                    then {value: 2.576, samples: 5}
                    else {value: 56.04, samples: 1}
                else if X[7] <= 10.75
                    then {value: 2.2826436781609196, samples: 87}
                    else if X[5] <= 83.44999999999999
                        then if X[1] <= 5.5
                            then {value: 10.08, samples: 3}
                            else {value: 58.3, samples: 1}
                        else if X[6] <= 703.0999999999999
                            then {value: 3.1857777777777776, samples: 45}
                            else {value: 35.88, samples: 1}
            else if X[6] <= 725.0
                then if X[8] <= 32.85
                    then if X[7] <= 19.0
                        then {value: 1.9888235294117649, samples: 17}
                        else if X[0] <= 3.0
                            then {value: 2.01, samples: 2}
                            else {value: 49.59, samples: 1}
                    else {value: 33.485, samples: 2}
                else {value: 79.64, samples: 2}
    else if X[8] <= 26.85
        then if X[10] <= 2.45
            then {value: 174.63, samples: 1}
            else if X[8] <= 20.4
                then {value: 4.165384615384616, samples: 13}
                else if X[7] <= 7.4
                    then {value: 56.815, samples: 2}
                    else {value: 7.0325, samples: 8}
        else {value: 746.28, samples: 1}

This is the evaluation for mse:
22986.063441638875

This is the Average Evaluation for the Cross Validation

14191.774296366575

Process finished with exit code 0
```