

Boston Dataset Experiment

```
Best Hyperparameters: {'max_depth': 10, 'max_features': 3, 'n_estimators': 100}
```

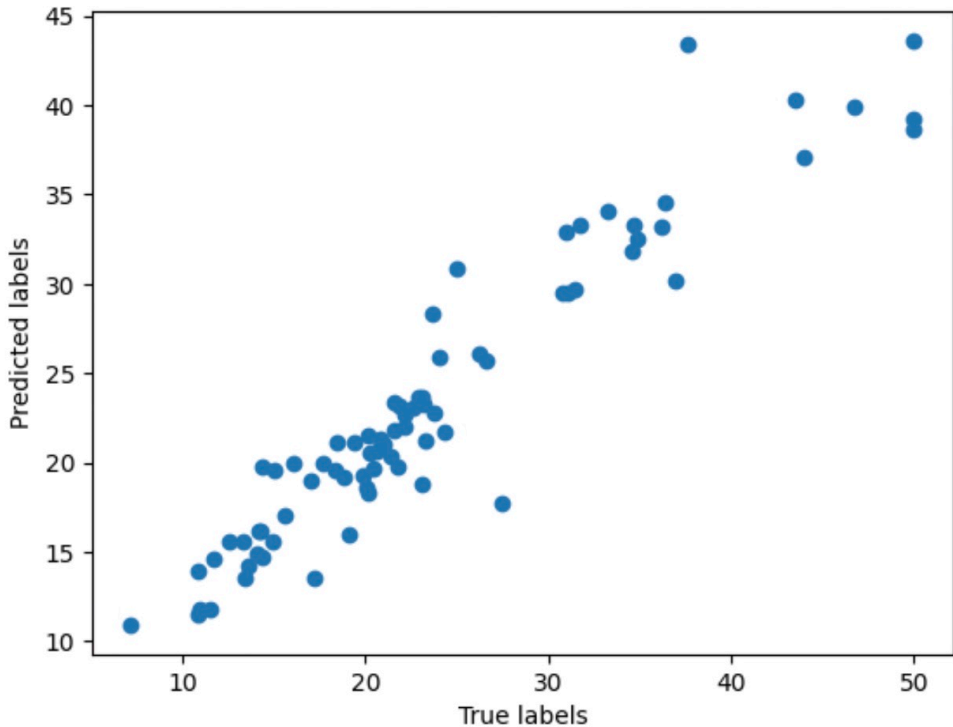
```
RandomForestRegressor
```

```
RandomForestRegressor(max_depth=10, max_features=3, random_state=42)
```

```
'External Validation Set' Mean Squared Error: 11.893096132989067
```

```
'Test' Mean Squared Error: 11.647533249222937
```

Scatter Plot



Breast Cancer Dataset Experiment

Hyperparameter tuning for Custom Adaboost

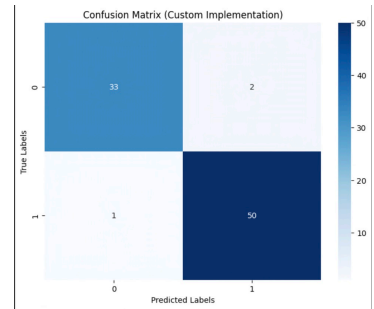
```
Best number of weak learners: 100
Accuracy for best number of weak learners: 0.9882352941176471
```

Classification report and confusion matrix for Custom Adaboost

```
Custom Implementation:
Best Number of Weak Learners (n_estimators): 100
Classification Report:
              precision    recall  f1-score   support

     0           0.97       0.94      0.96         35
     1           0.96       0.98      0.97         51

 accuracy          0.97
 macro avg         0.97      0.96      0.96         86
 weighted avg      0.97      0.97      0.97         86
```



Classification report and confusion matrix for SK Adaboost

```
SKLearn AdaBoost Classifier:
Best Number of Weak Learners (n_estimators): 150
Classification Report:
              precision    recall  f1-score   support

     0           0.97       0.91      0.94         35
     1           0.94       0.98      0.96         51

 accuracy          0.96
 macro avg         0.96      0.95      0.95         86
 weighted avg      0.95      0.95      0.95         86
```

