In-Lab

Task 1

Training model in following steps:

```
model2 = tree.DecisionTreeRegressor()
model2.fit(X_train, y_train)
print("Decision Tree")
print("======================")
y_pred_train2 = model2.predict(X_train)
RMSE_train2 = mean_squared_error(y_train, y_pred_train2)
print("Decision Tree Train set : RMSE {}".format(RMSE_train2))

y_pred_test2 = model2.predict(X_test)
RMSE_test2 = mean_squared_error(y_test,y_pred_test2)
print("Decision Tree Test set: RMSE {}".format(RMSE_test2))
print("======================")
```

Task 2

```
x_values = np.arange(len(y_train))
plt.scatter(x_values,y_train,color='red',label='Actual')
plt.scatter(x_values,y_pred_train2,color='blue',label='Predicted')
plt.xlabel('Index or Sequence of Values')
plt.ylabel('Values')
plt.title('Actual vs Predicted Values')
plt.legend()
plt.show()
```

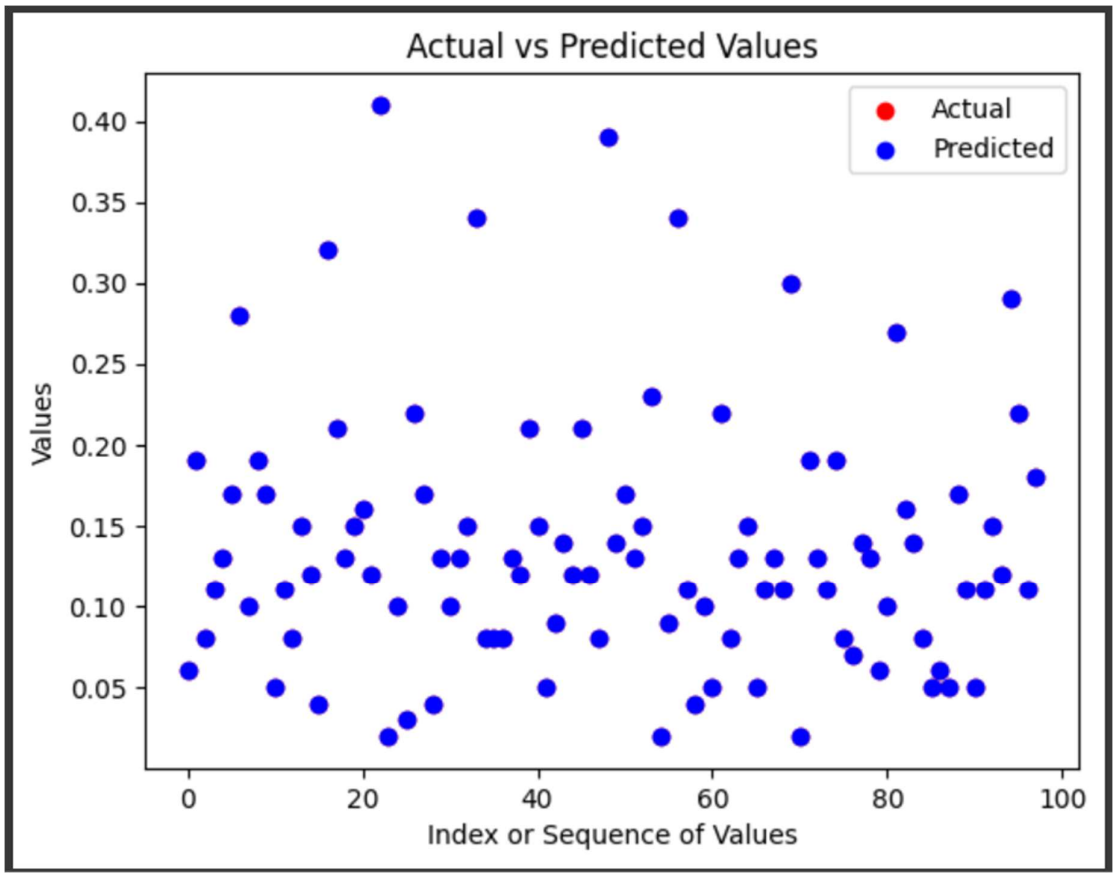

Figure 1 Training Set

Task 3

```
x_values = np.arange(len(y_test))
plt.scatter(x_values,y_test,color='red',label='Actual')
plt.scatter(x_values,y_pred_test2,color='blue',label='Predicted')
plt.xlabel('Index or Sequence of Values')
plt.ylabel('Values')
plt.title('Actual vs Predicted Values')
plt.legend()
plt.show()
```

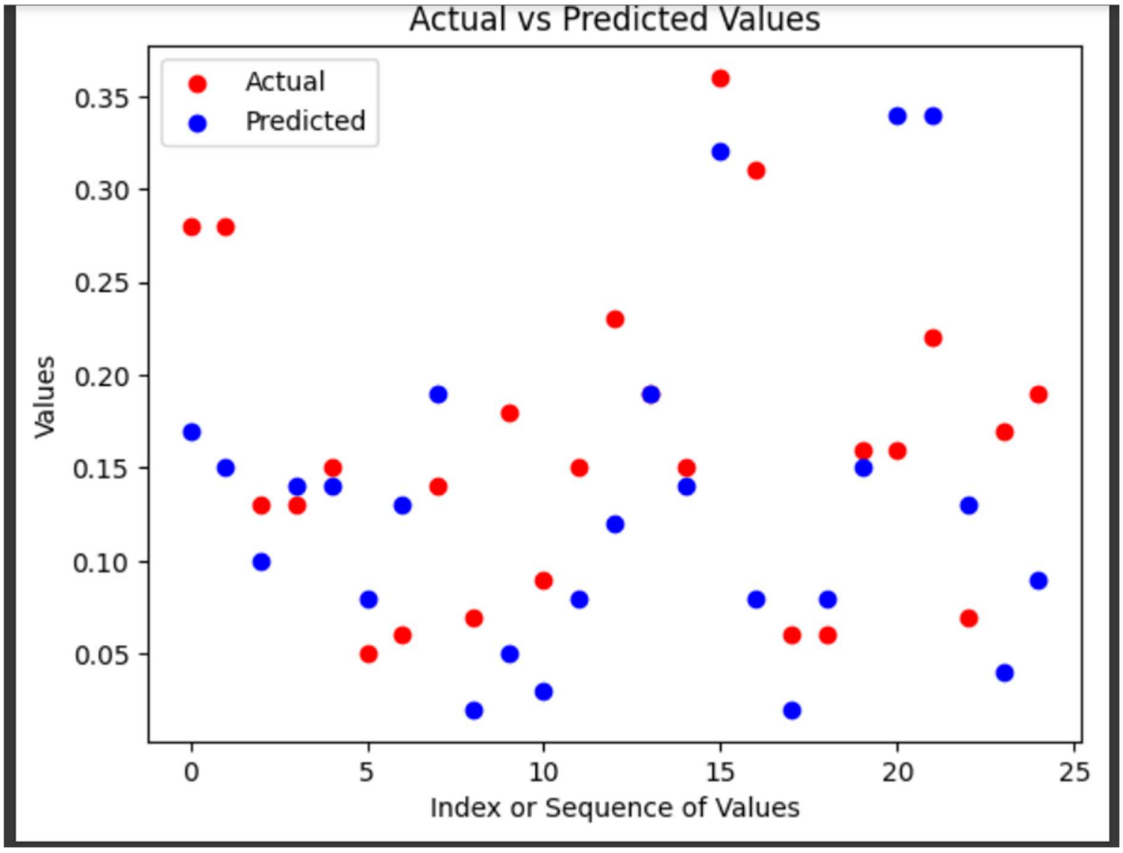

Figure 2 Test Set

Task 4

```
model3 = RandomForestRegressor()
model3.fit(X_train,y_train)
print("Random Forest Regressor")
print("=============")
y_pred_train3 = model3.predict(X_train)
RMSE_train3 = mean_squared_error(y_train,y_pred_train3)
print("Random Forest Regressor TrainSet : RMSE {}".format(RMSE_train3))
print("======================")
y_pred_test3 = model3.predict(X_test)
RMSE_test3 = mean_squared_error(y_test,y_pred_test3)
print("Random Forest Regressor TestSet: RMSE{}".format(RMSE_test3))
print("======================")
```

Task 5

```
x_values = np.arange(len(y_train))
plt.scatter(x_values,y_train,color='red',label='Actual')
plt.scatter(x_values,y_pred_train3,color='blue',label='Predicted')
```

```
plt.xlabel('Index or Sequence of Values')
plt.ylabel('Values')
plt.title('Actual vs Predicted Values')
plt.legend()
plt.show()
```

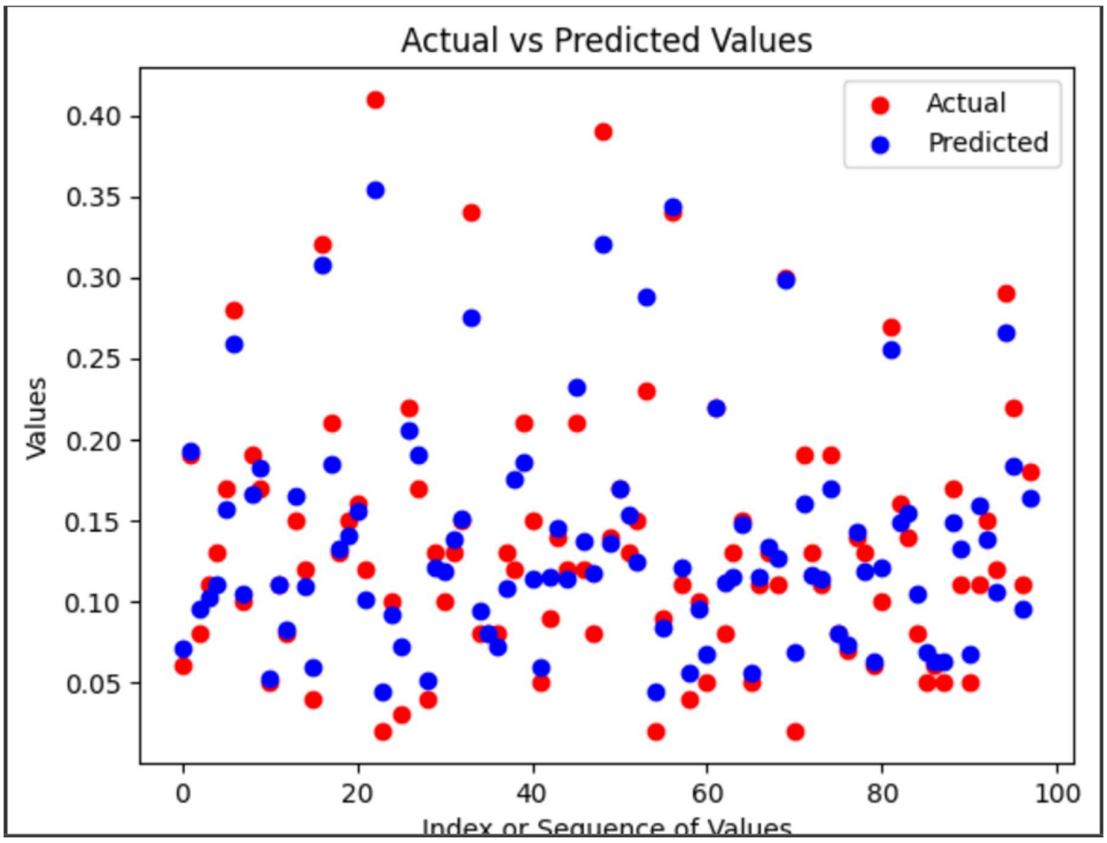

Figure 3: Training set of Random Forest Regression