

Project Development Phase

Project Development – Delivery Of Sprint-3

Team ID	PNT2022TMID17967
Project Name	Project – Efficient Water Quality Analysis and Prediction using Machine Learning

Building Predictive Model:

Random Forest Regression:

```
[ ] from sklearn.ensemble import RandomForestRegressor
    regressor1 = RandomForestRegressor(n_estimators = 100, random_state = 0)
    regressor1.fit(X_train,Y_train1d)

RandomForestRegressor(random_state=0)

▶ Y_pred1 = regressor1.predict(X_test)

[ ] result1 = regressor1.score(X_test, Y_test)
    print("Accuracy - test set: %.2f%%" % (result1*100.0))

Accuracy - test set: 97.98%

[ ] from sklearn import metrics
    print('MAE:',metrics.mean_absolute_error(Y_test,Y_pred1))
    print('MSE:',metrics.mean_squared_error(Y_test,Y_pred1))
    print('RMSE:',np.sqrt(metrics.mean_squared_error(Y_test,Y_pred1)))

MAE: 0.47559899665555844
MSE: 2.012301841939794
RMSE: 1.4185562526526023
```

Linear Regression:

```
[ ] from sklearn.linear_model import LinearRegression
    regressor = LinearRegression()
    regressor.fit(X_train,Y_train)

LinearRegression()

[ ] Y_pred = regressor.predict(X_test)

[ ] result = regressor.score(X_test, Y_test)
    print("Accuracy - test set: %.2f%%" % (result))

Accuracy - test set: 0.28%

[ ] from sklearn import metrics
    print('MAE:',metrics.mean_absolute_error(Y_test,Y_pred))
    print('MSE:',metrics.mean_squared_error(Y_test,Y_pred))
    print('RMSE:',np.sqrt(metrics.mean_squared_error(Y_test,Y_pred)))

MAE: 6.837882116994348
MSE: 72.12112265184501
RMSE: 8.492415595803411
```

Decision Tree Regression:

```
[ ] from sklearn.tree import DecisionTreeRegressor
    regressor2 = DecisionTreeRegressor(random_state = 0)
    regressor2.fit(X_train, Y_train)
```

```
DecisionTreeRegressor(random_state=0)
```

```
▶ Y_pred2 = regressor2.predict(X_test)
```

```
[ ] result2 = regressor2.score(X_test, Y_test)
    print("Accuracy - test set: %.2f%%" % (result2*100.0))
```

```
Accuracy - test set: 96.39%
```

```
[ ] from sklearn import metrics
    print('MAE:',metrics.mean_absolute_error(Y_test,Y_pred2))
    print('MSE:',metrics.mean_squared_error(Y_test,Y_pred2))
    print('RMSE:',np.sqrt(metrics.mean_squared_error(Y_test,Y_pred2)))
```

```
MAE: 0.4438127090301296
MSE: 3.5931063545150494
RMSE: 1.895549090505189
```