## MODEL BUILDING

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|---|---|
| Date | 15 November 2022 |
| Team ID | PNT2022TMID46078 |
| Project Name | Efficient Water Quality Analysis and Prediction Using Machine Learning |
| Maximum Marks | 8 Marks |

**TRAIN THE MODEL:**

```
from sklearn import linear_model

from sklearn.model_selection import train_test_split

reg= linear_model.LinearRegression()

X_train, X_test, y_train, y_test = train_test_split (x,y, test_size = 0.2, random_state
=10)

reg.fit(X_train, y_train)
```

```
from sklearn import metrics

y_pred = reg.predict(X_test)

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)))

metrics.r2_score(y_test, y_pred)
```

**TEST THE MODEL:**

```
y_pred = model.predict(total)
print(y_pred)

y_pred1 = y_pred[[0][0]]

y_pred2 = y_pred1[[10][0]]


print(y_pred2)

if (y_pred2 >= 95 and y_pred2 <= 100):

    outttt ="Excellent, the Predicted value is " + str(y_pred2)


elif (y_pred2 >= 89 and y_pred2 <= 94):
    outttt = "Very good, the Predicted value is " + str(y_pred2)

elif (y_pred2 >= 80 and y_pred2 <= 88):

    outttt="Good, the Predicted value is " + str(y_pred2)

elif(y_pred2 >= 65 and y_pred2 <= 79):

    outttt = "Fair, the Predicted value is " + str(y_pred2)
```

```
elif (y_pred2 >= 45 and y_pred2 <= 64):

    outttt ="Marginal, the Predicted value is " + str(y_pred2)

else:

    outttt="Poor, the Predicted value is " + str(y_pred2)

return render_template('userhome.html', prediction=outttt)
```

**SAVE THE MODEL:**

```
import pickle



pickle.dump(reg,open('reg_rf.pkl','wb'))
print("Training process is complete Model File Saved!")
```