

Model Development Phase Template

Date	12 March 2024
Team ID	740048
Project Title	Air Quality Index Analyzer Using ML
Maximum Marks	4 Marks

Initial Model Training Code, Model Validation and Evaluation Report

The initial model training code will be showcased in the future through a screenshot. The model validation and evaluation report will include classification reports, accuracy, and confusion matrices for multiple models, presented through respective screenshots.

Initial Model Training Code:

```
from sklearn.model_selection import train_test_split
x_train,x_test,y_train,y_test=train_test_split(x,y,test_size=0.2,random_state=0)
```

Model Validation and Evaluation Report:

Model	Classification Report	Accuracy
Random forest classifier	<pre>from sklearn.ensemble import RandomForestRegressor rf_regressor = RandomForestRegressor(random_state=42,n_estimators=20) rf_regressor.fit(X_train,y_train) * RandomForestRegressor RandomForestRegressor(n_estimators=20, random_state=42) print("R2 Score :{}".format(rf_regressor.score(X_test,y_test))) R2 Score :0.88494541200992</pre>	<pre>-----Random Forest Regressor----- R2 Score is : 0.888464414152618</pre>
Decision Tree classifier	<p>Model Building</p> <pre>from sklearn.tree import DecisionTreeRegressor dt=DecisionTreeRegressor(random_state=42) dt.fit(X_train,y_train) * DecisionTreeRegressor DecisionTreeRegressor(random_state=42) print("R2 Score :{}".format(dt.score(X_test,y_test))) R2 Score :0.8070208658711717</pre>	<pre>-----Decision Tree Regressor----- R2 Score is : 0.7944373542615825</pre>

<p>Extra Tree classifier</p>	<pre>from sklearn.ensemble import ExtraTreesRegressor et_regressor = ExtraTreesRegressor(n_estimators=100, max_depth=10, random_state=23) et_regressor.fit(X_train, y_train) * ExtraTreesRegressor ExtraTreesRegressor(max_depth=10, random_state=23) print("R2 Score : {}".format(et_regressor.score(X_test, y_test))) R2 Score :0.8988213124566164</pre>	<pre>-----Extra Trees Regression----- R2 Score is : 0.8937335681153357</pre>
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