Model Development Phase Template

Date	18 June 2024
Team ID	739991
Project Title	Smart Home Temperature
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:

```
#importing and model building the LinearRegression
from sklearn.linear_model import LinearRegression
from sklearn.metrics import r2_score
lir=LinearRegression()
lir.fit(x_train_scaled,y_train)
x_test_scaled.shape
pred=lir.predict(x_test_scaled)
r2_score(pred,y_test)
```

```
#imprting and model building the RandomForestRegressor
from sklearn.ensemble import RandomForestRegressor
rf=RandomForestRegressor()
rf.fit(x_train,y_train)
x_train.shape
x_test.shape
pred=rf.predict(x_test)
pred
from sklearn.metrics import r2_score
r2_score(y_test,pred)
```

```
#importning and model building the lightgbm
import lightgbm as lgb
lg=lgb.LGBMRegressor()
lg.fit(x_train,y_train)
pred=lg.predict(x_test)
r2_score(y_test,pred)
```

```
#importing and model building the XGBRegressor
import lightgbm as lgb
xg=xgb.XGBRegressor()
xg.fit(x_train,y_train)
pred=xg.predict(x_test)
r2_score(y_test,pred)
```

Model Validation and Evaluation Report:

Model	Classification Report	F1 Score	Confusion Matrix
Linear Regression	-0.4426495167688036	44%	-

Random Forest	0.873384878414834	87%	-
LGBM Regressor	0.8569554082913747	85%	-
XGB Regressor	0.8547022627762138	85%	-