Model Development Phase Template

Date	June 22,2024
Team ID	739995
Project Title	Prediction Of Full Load Electrical Power Output Of a Base Load Operated Combined Cycle Power Plant Using Machine Learning
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.linear_model import LinearRegression
```

```
model=LinearRegression()
```

```
model.fit(x_train,y_train)
```

```
▾ LinearRegression
LinearRegression()
```

```
y_pred=model.predict(x_test)
print("predicted values:",y_pred)
```

```
predicted values: [455.59846369 438.68009712 434.119178   ... 472.39913842 476.10393901
 442.00430919]
```

```
from sklearn.metrics import accuracy_score,r2_score
```

```
acc=r2_score(y_test,y_pred)
print("accuracy of model:",acc)
```

```
accuracy of model: 0.9275484963869204
```

```
from sklearn.ensemble import RandomForestRegressor
model = RandomForestRegressor()
model.fit(x_train, y_train)
y_pred = model.predict(x_test)
print("Predicted values:", y_pred)
acc = r2_score(y_test, y_pred)
print("Accuracy of model:", acc)
```

```
Predicted values: [455.1219 435.8077 435.6454 ... 474.0157 479.3935 443.2402]
Accuracy of model: 0.9616357617053436
```

```
from sklearn.tree import DecisionTreeRegressor
model = DecisionTreeRegressor()
model.fit(x_train, y_train)
y_pred = model.predict(x_test)
print("Predicted values:", y_pred)
acc = r2_score(y_test, y_pred)
print("Accuracy of model:", acc)
```

```
Predicted values: [456.57 436.96 436.42 ... 472.54 473.73 446.11]
Accuracy of model: 0.9304562906115501
```

Model Validation and Evaluation Report:

Model	Classification Report	F1 Scor e
Random Forest	```from sklearn.ensemble import RandomForestRegressor model = RandomForestRegressor() model.fit(x_train, y_train) y_pred = model.predict(x_test) print("Predicted values:", y_pred) acc = r2_score(y_test, y_pred) print("Accuracy of model:", acc)``` Predicted values: [455.1219 435.8077 435.6454 ... 474.0157 479.3935 443.2402] Accuracy of model: 0.9616357617053436	96%

Decision Tree	```python
from sklearn.tree import DecisionTreeRegressor
model = DecisionTreeRegressor()
model.fit(x_train, y_train)
y_pred = model.predict(x_test)
print("Predicted values:", y_pred)
acc = r2_score(y_test, y_pred)
print("Accuracy of model:", acc)
```
Predicted values: [456.57 436.96 436.42 ... 472.54 473.73 446.11]
Accuracy of model: 0.9304562906115501 | 93% |
| Linear Regression | ```python
from sklearn.linear_model import LinearRegression

model=LinearRegression()

model.fit(x_train,y_train)

▾ LinearRegression
LinearRegression()

y_pred=model.predict(x_test)
print("predicted values:",y_pred)
```
predicted values: [455.59846369 438.68009212 434.119178 ... 472.39913842 476.10493901
442.00430919]
```python
from sklearn.metrics import accuracy_score,r2_score

acc=r2_score(y_test,y_pred)
print("accuracy of model:",acc)
```
accuracy of model: 0.9275484963869204 | 92% |