

Model Development Phase Template

Date	22 June 2024
Team ID	739657
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 Score
Random Forest	<pre> 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) </pre> <p>Predicted values: [455.1219 435.8077 435.6454 ... 474.0157 479.3935 443.2402] Accuracy of model: 0.9616357617053436</p>	96%

Decision Tree	<pre> 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) </pre> <p>  Predicted values: [456.57 436.96 436.42 ... 472.54 473.73 446.11] Accuracy of model: 0.9304562906115501 </p>	93%
Linear Regression	<pre> [] 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: [455.59846509 458.68009712 454.119178 ... 472.39915842 476.10934901 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 </pre>	92%