Model Development Phase Template

Date	July 2024
Team ID	739971
Project Title	Estimating the Stock keeping units using Machine Learning
Maximum Marks	10 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 a summary and training and validation performance metrics for multiple models, presented through respective screenshots.

Initial Model Training Code (5 marks):

Paste the screenshot of the model training code

Model Validation and Evaluation Report (5 marks):

Model	Summary	Training and Validation Performance Metrics

Model 1	Linear regression model typically include mean square error,R2 score to evaluate its predictive performance and generalization capability.	**Linear Regression Model**
		
		``python
		from sklearn.linear_model import LinearRegression
		from sklearn.metrics import mean_squared_error,r2_score
		
		lr=LinearRegression()
		lr.fit(x_train,y_train)
		pred=lr.predict(x_test)
		print("Mean Squared Error:",mean_squared_error(y_test,pred))
		print("R2 Score:",r2_score(y_test,pred))
		``
		
		Mean Squared Error: 3103.1409991414653
		R2 Score: 0.05424514437673167

| Model 2 | Random forest regression model often encompass mean square error, recall, R2 score to measure its prediction quality and robustness. | **Random Forest Regressor**

 ```python
from sklearn.ensemble import RandomForestRegressor
from sklearn.metrics import mean_squared_error,r2_score

model=RandomForestRegressor()

model.fit(x_train,y_train)
pred=model.predict(x_test)

print("Mean Squared Error:",mean_squared_error(y_test,pred))
print("R2 Score:",r2_score(y_test,pred))

Mean Squared Error: 892.5601685747586
R2 Score: 0.7279713962082139
``` |

| Model 3 | Decision tree regression model commonly include accuracy, precision, recall, R2 score which help assess the model's prediction accuracy and generalizability. | Decision Tree Regressor

```python
from sklearn.tree import DecisionTreeRegressor
from sklearn.metrics import accuracy_score
dt=DecisionTreeRegressor()
dt.fit(x_train,y_train)
pred=dt.predict(x_test)
print("Mean Squared Error:",mean_squared_error(y_test,pred))
print("R2 Score:",r2_score(y_test,pred))
print(accuracy_score(pred,y_test))
```

Mean Squared Error: 1610.1784215784216
R2 Score: 0.5092604361036386
0.031302031302031304 |