Model Development Phase Template

Date	15 March 2024
Team ID	SWTID1720113374
Project Title	Predicting Compressive Strength Of Concrete 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.

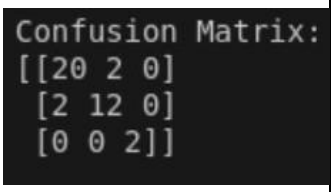
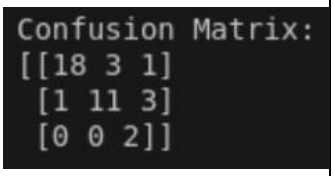
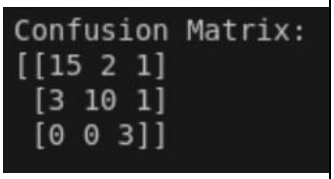
Initial Model Training Code:

```
from sklearn.linear_model import LinearRegression, Ridge, Lasso
from sklearn.model_selection import train_test_split, cross_val_score
from sklearn.metrics import mean_squared_error, r2_score
from sklearn.ensemble import RandomForestRegressor
from xgboost import XGBRegressor

from sklearn.metrics import r2_score


# Define the regression models
models = {
    'lin_reg': LinearRegression(),
    'ridge': Ridge(),
    'lasso': Lasso(),
    'rf_reg': RandomForestRegressor(n_estimators=100, random_state=42),
    'xgb_reg': XGBRegressor(),

}

for name ,model in models.items():
    model.fit(X_train_transformed,Y_train)
    y_pred = model.predict(X_test_transoformed)

    print(f"{name} : {r2_score(Y_test,y_pred)}")
```

```
lin_reg : 0.68797608607626
ridge : 0.6878535212619623
lasso : 0.644765819542793
rf_reg : 0.8821778779976575
xgb_reg : 0.9020358726873339
```

Model Validation and Evaluation Report:

Model	Classification Report	Accuracy	Confusion Matrix

Linear regression		68%	
Ridge regression		68%	
Random forest regression		88%	

Xgboost regression		90%