

## Model Development Phase Template

Date	14 July 2024
Team ID	740073
Project Title	Exploratory Analysis of Rain Fall Data in India for Agriculture
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:

```
# checking the accuracy score
print("Xgboost:",metrics.accuracy_score(y_train,p1))
print("Rand_forest:",metrics.accuracy_score(y_train,p2))
#print("SVM:",metrics.accuracy_score(y_train,p3))
print("Dtree:",metrics.accuracy_score(y_train,p4))
print("GBM:",metrics.accuracy_score(y_train,p5))
print("log:",metrics.accuracy_score(y_train,p6))
```

Model	Classification Report	F1 Score	Confusion Matrix
Random Forest	<pre># checking the accuracy score print("Xgboost:",metrics.accuracy_score(y_train,p1)) print("Rand_forest:",metrics.accuracy_score(y_train,p2)) #print("SVM:",metrics.accuracy_score(y_train,p3)) print("Dtree:",metrics.accuracy_score(y_train,p4)) print("GBM:",metrics.accuracy_score(y_train,p5)) print("log:",metrics.accuracy_score(y_train,p6))</pre> <p>Xgboost: 0.8421731060085247  Rand_forest: 0.9999914065722535  Dtree: 1.0  GBM: 0.8469510518355562  log: 0.8369483019386773</p>	99%	----

## Model Validation and evaluation report:

Decision Tree	<pre># checking the accuracy score print("Xgboost:",metrics.accuracy_score(y_train,p1)) print("Rand_forest:",metrics.accuracy_score(y_train,p2)) #print("SVM:",metrics.accuracy_score(y_train,p3)) print("Dtree:",metrics.accuracy_score(y_train,p4)) print("GBM:",metrics.accuracy_score(y_train,p5)) print("log:",metrics.accuracy_score(y_train,p6))</pre> <p>Xgboost: 0.8421731060085247  Rand_forest: 0.9999914065722535  Dtree: 1.0  GBM: 0.8469510518355562  log: 0.8369483019386773</p>	100%	<pre>y_pred = Dtree.predict(x_te) conf_matrix = metrics.confusion_matrix(y_test,y_pred) print(conf_matrix)</pre> <p>[[19224 3333]  [ 3088 3447]]</p>
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LOG	<pre># checking the accuracy score print("Xgboost:",metrics.accuracy_score(y_train,p1)) print("Rand_forest:",metrics.accuracy_score(y_train,p2)) #print("SVM:",metrics.accuracy_score(y_train,p3)) print("Dtree:",metrics.accuracy_score(y_train,p4)) print("GBM:",metrics.accuracy_score(y_train,p5)) print("log:",metrics.accuracy_score(y_train,p6))</pre> <p>Xgboost: 0.8421731060085247 Rand_forest: 0.9999914065722535 Dtree: 1.0 GBM: 0.8469510518355562 log: 0.8369483019386773</p>	83%	---
Gradient Boosting	<pre># checking the accuracy score print("Xgboost:",metrics.accuracy_score(y_train,p1)) print("Rand_forest:",metrics.accuracy_score(y_train,p2)) #print("SVM:",metrics.accuracy_score(y_train,p3)) print("Dtree:",metrics.accuracy_score(y_train,p4)) print("GBM:",metrics.accuracy_score(y_train,p5)) print("log:",metrics.accuracy_score(y_train,p6))</pre> <p>Xgboost: 0.8421731060085247 Rand_forest: 0.9999914065722535 Dtree: 1.0 GBM: 0.8469510518355562 log: 0.8369483019386773</p>	84%	---