

Model Development Phase Template

Date	21 June 2024
Team ID	TMID739650
Project Title	Startup prophet
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:

```
#RANDOM FOREST MODEL
from sklearn.ensemble import RandomForestClassifier
rf=RandomForestClassifier()
rf.fit(x_bal,y_bal)
rftest=rf.predict(x_test)
rftrain=rf.predict(x_train)
print(confusion_matrix(rftest,y_test))
print(confusion_matrix(rftrain,y_train))
print(classification_report(rftest,y_test))
print(classification_report(rftrain,y_train))
```

#LOGISTIC REGRESSION

```
from sklearn.linear_model import LogisticRegression
lr=LogisticRegression()
lr.fit(x_bal,y_bal)
y_pred=lr.predict(x_test)
```

```
from sklearn.metrics import confusion_matrix,accuracy_score,classification_report
print(confusion_matrix(y_test,y_pred))
print(classification_report(y_test,y_pred))
```

#SUPPORT VECTOR MACHINE

```
from sklearn.svm import SVC
svm=SVC(kernel='rbf',C=2.0,random_state=42)
svm.fit(x_bal,y_bal)
y_predict=svm.predict(x_test)
```

```
print(confusion_matrix(y_test,y_predict))
print(classification_report(y_test,y_predict))
```

Model	Classification Report	F1 Score	Confusion Matrix
Random Forest	<pre> [[163 7] [7 182]] [[410 12] [17 396]] precision recall f1-score support 0 0.96 0.96 0.96 170 1 0.96 0.96 0.96 189 accuracy 0.96 macro avg 0.96 weighted avg 0.96 precision recall f1-score support 0 0.96 0.97 0.97 422 1 0.97 0.96 0.96 413 accuracy 0.97 macro avg 0.97 weighted avg 0.97 </pre>	97%	<pre> [[163 7] [7 182]] [[410 12] [17 396]] </pre>

Model Validation and Evaluation Report:

Logistic Regression	<pre> [[136 34] [56 133]] precision recall f1-score support 0 0.71 0.80 0.75 170 1 0.80 0.70 0.75 189 accuracy 0.75 macro avg 0.75 weighted avg 0.75 </pre>	75%	<pre> [[136 34] [56 133]] </pre>
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SVM	<pre>[[135 35] [30 159]]</pre> <table><thead><tr><th></th><th>precision</th><th>recall</th><th>f1-score</th><th>support</th></tr></thead><tbody><tr><td>0</td><td>0.82</td><td>0.79</td><td>0.81</td><td>170</td></tr><tr><td>1</td><td>0.82</td><td>0.84</td><td>0.83</td><td>189</td></tr><tr><td>accuracy</td><td></td><td></td><td>0.82</td><td>359</td></tr><tr><td>macro avg</td><td>0.82</td><td>0.82</td><td>0.82</td><td>359</td></tr><tr><td>weighted avg</td><td>0.82</td><td>0.82</td><td>0.82</td><td>359</td></tr></tbody></table>		precision	recall	f1-score	support	0	0.82	0.79	0.81	170	1	0.82	0.84	0.83	189	accuracy			0.82	359	macro avg	0.82	0.82	0.82	359	weighted avg	0.82	0.82	0.82	359	82%	<pre>[[135 35] [30 159]]</pre>
	precision	recall	f1-score	support																													
0	0.82	0.79	0.81	170																													
1	0.82	0.84	0.83	189																													
accuracy			0.82	359																													
macro avg	0.82	0.82	0.82	359																													
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