

Model Development Phase Template

Date	15 july 2024
Team ID	739651
Project Title	Prediction and Analysis of Liver Patient Data 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:

Logistic Regression

```
# LogisticRegression
from sklearn.linear_model import LogisticRegression
lr = LogisticRegression()
lr.fit(x_train, y_train)
y_pred_lr = lr.predict(x_test)
y_pred_lr
```

KNeighborsClassifier

```
#KNeighborsClassifier
from sklearn.neighbors import KNeighborsClassifier
knn = KNeighborsClassifier()
knn.fit(x_train, y_train)
ypred_knn = knn.predict(x_test)
```

SVC

```
#SVC()
from sklearn.svm import SVC
svm = SVC()
svm.fit(x_train, y_train)
y_pred_svm = svm.predict(x_test)
```

RandomForestClassifier

```
from sklearn.ensemble import RandomForestClassifier

rfc = RandomForestClassifier()
rfc.fit(x_train, y_train)
ypred_rfc = rfc.predict(x_test)
```

Model Validation and Evaluation Report:

	Classification Report		Confusion Matrix
Model		Accuracy	<pre>from sklearn.metrics import confusion_matrix print(confusion_matrix(y_test, y_pred)) [[117 11] [36 9]]</pre>
Logistic Regression			

K neighbors Classifier

```
print(classification_report(y_test,y_pred))
```

	precision	recall	f1-score	support
1	0.75	0.85	0.80	128
2	0.45	0.18	0.27	47
accuracy			0.72	175
macro avg	0.60	0.55	0.55	175
weighted avg	0.67	0.72	0.68	175

```
print(classification_report(y_test,y_pred_svc))
```

	precision	recall	f1-score	support
1	0.81	0.88	0.84	128
2	0.42	0.43	0.43	47
accuracy			0.71	175
macro avg	0.61	0.62	0.61	175
weighted avg	0.71	0.71	0.71	175

```
knn_acc = accuracy_score(y_test, y_pred)
print(knn_acc)
```

0.72

```
knn_acc = accuracy_score(y_pred_knn, y_test)
print(knn_acc)
```

0.7054285714285714

```
confusion_matrix(y_test,y_pred_knn)
```

```
array([[87, 22],
       [21, 16]], dtype=int64)
```

Random Forest Classifier

SVC

```
print(classification_report(y_test,y_pred_rfc))
```

	precision	recall	f1-score	support
1	0.80	0.85	0.82	87
2	0.46	0.37	0.41	39
accuracy			0.72	127
macro avg	0.63	0.61	0.62	127
weighted avg	0.71	0.73	0.72	127

```
print(classification_report(y_test,y_pred_svc))
```

	precision	recall	f1-score	support
1	0.74	0.90	0.85	87
2	0.68	0.39	0.48	39
accuracy			0.74	127
macro avg	0.71	0.59	0.63	127
weighted avg	0.55	0.74	0.63	127

```
rft_acc = accuracy_score(y_pred_rft, y_test)
print(rft_acc)
```

0.7795353937007874

```
accuracy_score(y_pred_svc, y_test)
```

0.7439877953539374

```
confusion_matrix(y_test,y_pred_rfc)
```

```
array([[74, 13],
       [19, 11]], dtype=int64)
```

```
confusion_matrix(y_test,y_pred_svc)
```

```
array([[87,  0],
       [30,  0]], dtype=int64)
```