Model Development Phase Template

Date	09 JULY 2024
Team ID	SWTID1720190579
Project Title	Early Prediction Of Chronic Kidney Disease 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:

```
#KNN
import numpy as np
import pandas as pd
from sklearn.neighbors import KNeighborsClassifier
from sklearn.model_selection import train_test_split
from sklearn.metrics import accuracy_score, classification_report, confusion_matrix

# Sample data (replace with your actual data)
# x = ...
# y = ...

# Ensure x and y are numpy arrays or pandas DataFrame/Series
x = np.array(x)
y = np.array(y)

# Training the model
x_train, x_test, y_train, y_test = train_test_split(x, y, test_size=0.2, random_state=0)
knn = KNeighborsClassifier()
knn.fit(x_train, y_train)
```

```
# Test the model
pred = knn.predict(x_test)

# Calculate the accuracy
accuracy = accuracy_score(y_test, pred)
print(f"Accuracy: {accuracy}")
```

```
#Naive Bayes

#Initializing the Naive Bayes model
from sklearn.naive_bayes import GaussianNB
nb=GaussianNB()

#Train the model
nb.fit(x_train,y_train)

#test the model
pred=nb.predict(x_test)
pred
```

```
# Evaluate the Model performance
from sklearn import metrics
metrics.confusion_matrix(y_test,pred)

print(metrics.classification_report(y_test,pred))
```

```python
#SVM

import pandas as pd
from sklearn.model_selection import train_test_split
from sklearn.svm import SVC
from sklearn.metrics import accuracy_score, classification_report
from sklearn.preprocessing import StandardScaler

# Split the data into training and testing sets
X_train, X_test, y_train, y_test = train_test_split(x, y, test_size=0.2, random_state=42)

# Scale the features using StandardScaler
scaler = StandardScaler()
X_train = scaler.fit_transform(X_train)
X_test = scaler.transform(X_test)

# Create an SVM classifier object
svm = SVC()

# Train the model
svm.fit(X_train, y_train)

# Make predictions on the test set
y_pred = svm.predict(X_test)

# Calculate the accuracy score
accuracy = accuracy_score(y_test, y_pred)
print("Accuracy:", accuracy)
```

```
# Logistic Regression

import pandas as pd
from sklearn.model_selection import train_test_split
from sklearn.linear_model import LogisticRegression
from sklearn.metrics import accuracy_score, classification_report
from sklearn.preprocessing import StandardScaler

X_train, X_test, y_train, y_test = train_test_split(x, y, test_size=0.2, random_state=42)
scaler = StandardScaler()
X_train = scaler.fit_transform(X_train)
X_test = scaler.transform(X_test)

logreg = LogisticRegression()
logreg.fit(X_train, y_train)

y_pred = logreg.predict(X_test)
accuracy = accuracy_score(y_test, y_pred)
print("Accuracy:", accuracy)
report = classification_report(y_test, y_pred)
print("Classification Report:")
print(report)
```

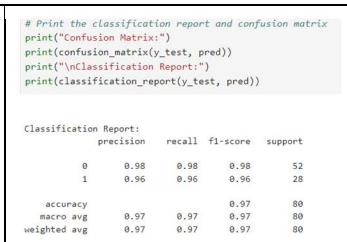
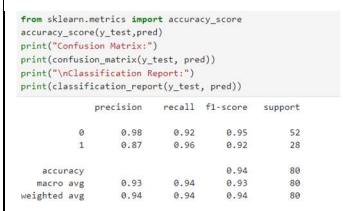
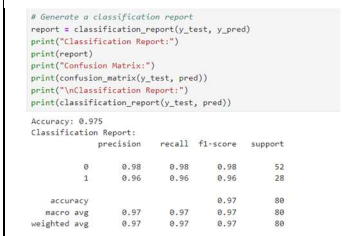
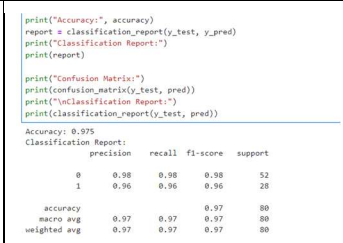
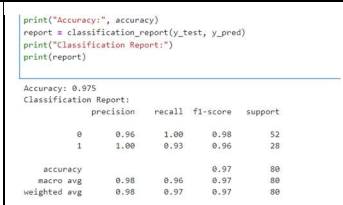
```
import pandas as pd
from sklearn.model_selection import train_test_split
from sklearn.tree import DecisionTreeClassifier
from sklearn.metrics import accuracy_score, classification_report

decision_tree = DecisionTreeClassifier()
decision_tree.fit(X_train, y_train)

y_pred = decision_tree.predict(X_test)
accuracy = accuracy_score(y_test, y_pred)
print("Accuracy:", accuracy)
```

Model Validation and Evaluation Report:

Model	Classification Report	F1 Score	Confusion Matrix

KNN		97%	Accuracy: 0.975 Confusion Matrix: [[51 1] [1 27]]
Naive Bayes		96%	Confusion Matrix: [[48 4] [1 27]]
SVM		97%	Confusion Matrix: [[33 19] [16 12]]
Logistic Regression		97%	Confusion Matrix: [[33 19] [16 12]]
Decision tree		97%	Confusion Matrix: [[33 19] [16 12]]