Model Development Phase Template

Date	4 June 2024
Team ID	SWTID1720076203
Project Title	Anemia Sense: Leveraging Machine Learning For Precise Anemia Recognitions
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:

```
import pickle
import warnings
import pandas as pd
from sklearn.model_selection import train_test_split
from sklearn.linear_model import LogisticRegression
from sklearn.ensemble import RandomForestClassifier, GradientBoostingClassifier
from sklearn.tree import DecisionTreeClassifier
from sklearn.naive_bayes import GaussianNB
from sklearn.svm import SVC
from sklearn.metrics import accuracy_score, classification_report, f1_score, confusion_matrix
```

```
# Load and split data
df = pd.read_csv("data/anemia.csv")
X = df.drop('Result', axis=1)
Y = df['Result']
x_train, x_test, y_train, y_test = train_test_split(X, Y, test_size=0.2, random_state=20)

# Train and evaluate models
models = {
    'Logistic Regression': LogisticRegression(random_state=20),
    'Random Forest': RandomForestClassifier(random_state=20),
    'Decision Tree': DecisionTreeClassifier(random_state=20),
    'Gaussian Naive Bayes': GaussianNB(),
    'SVM': SVC(random_state=20),
    'Gradient Boosting': GradientBoostingClassifier(random_state=20)
}
```

Model Validation and Evaluation Report:

Model	Classification Report	Accuracy	Confusion Matrix
Logistic Regression	Classification Report: precision recall f1-score support 0 1.00 1.00 1.00 167 1 1.00 1.00 1.00 118 accuracy 1.00 285 macro avg 1.00 1.00 1.00 285 weighted avg 1.00 1.00 1.00 285	1,0	Confusion Matrix: [[167 0] [0 118]]
Random Forest	Classification Report: precision recall f1-score support 0 1.00 1.00 1.00 167 1 1.00 1.00 1.00 118 accuracy 1.00 285 macro avg 1.00 1.00 1.00 285 weighted avg 1.00 1.00 1.00 285	1,0	Confusion Matrix: [[167 0] [0 118]]
Decision Tree	Classification Report: precision recall f1-score support 0 1.00 1.00 1.00 167 1 1.00 1.00 1.00 118 accuracy 1.00 285 macro avg 1.00 1.00 1.00 285 weighted avg 1.00 1.00 1.00 285	1,0	Confusion Matrix: [[167 0] [0 118]]
Gaussian Naive Bayes	Classification Report: precision recall f1-score support 0 0.97 0.93 0.95 167 1 0.90 0.96 0.93 118 accuracy 0.94 285 macro avg 0.94 0.94 0.94 285 weighted avg 0.94 0.94 0.94 285	0,9405	Confusion Matrix: [[155 12] [5 113]]
SVM	Classification Report: precision recall f1-score support 0 0.95 0.87 0.91 167 1 0.84 0.94 0.89 118 accuracy 0.90 285 macro avg 0.90 0.91 0.90 285 weighted avg 0.91 0.90 0.90 285	0,901	Confusion Matrix: [[146 21] [7 111]]

Gradient Boosting	Classification Report: precision recall f1-score support 0 1.00 1.00 1.00 167 1 1.00 1.00 1.00 118 accuracy 1.00 285 macro avg 1.00 1.00 1.00 285 weighted avg 1.00 1.00 1.00 285	1,0	Confusion Matrix: [[167 0] [0 118]]