Model Development Phase Template

Date	15 March 2024
Team ID	SWTID1749710222
Project Title	Unlocking Silent Signals: Decoding Body Language with Mediapipe
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.

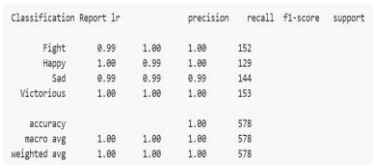
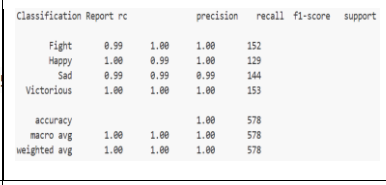
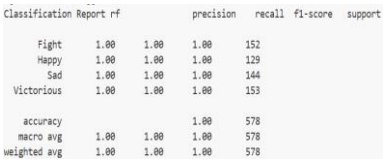
Initial Model Training Code:

data_analysis.py > ...

```python
import pandas as pd
import matplotlib.pyplot as plt
from sklearn.model_selection import train_test_split  # Correct import
from sklearn.metrics import accuracy_score,confusion_matrix,classification_report
# Load dataset
df = pd.read_csv(r"Dataset\coords.csv", header=None)

# Assign column names
# Assuming first column is class label and rest are features
df.columns = ['class'] + [f'feature_{i}' for i in range(1, df.shape[1])]

# Display first few rows
print("Head of dataset:")
print(df.head())

print("\nLast 5 rows:")
print(df.tail())

# Show original class distribution
print("\nOriginal class distribution:")
print(df['class'].value_counts())
```

```
22
23  # Balance the dataset (undersample to smallest class count)
24  min_count = df['class'].value_counts().min()
25  balanced_df = df.groupby('class').apply(lambda x: x.sample(min_count)).reset_index(drop=True)
26
27  # Show balanced class distribution
28  print("\nBalanced class distribution:")
29  print(balanced_df['class'].value_counts())
30
31  # Separate features and target
32  X = balanced_df.drop('class', axis=1)
33  y = balanced_df['class']
34
35  # Plot class distribution
36  y.value_counts().plot(kind='bar', title='Class Distribution After Balancing')
37  plt.xlabel("Emotion")
38  plt.ylabel("Count")
39  plt.grid(True)
40  plt.show()
41
42  X_train, X_test, y_train, y_test = train_test_split(X, y, test_size=0.2, random_state=1234)
43
```

Model Validation and Evaluation Report:

Model	Classification Report	Accuracy	Confusion Matrix
Logistic Regression	Confusion Matrix lr [[152 0 0 0] [0 128 1 0] [1 0 143 0] [0 0 0 153]]	Accuracy lr 0.996539792387	
Ridge Classifier	Confusion Matrix rc [[152 0 0 0] [0 128 1 0] [1 0 143 0] [0 0 0 153]]	Accuracy rc 0.996539792387	
Random Forest Classifier	Confusion Matrix rf [[152 0 0 0] [0 129 0 0] [0 0 144 0] [0 0 0 153]]	Accuracy rf 1.0	
Gradient Boosting Classifier	Confusion Matrix gb [[152 0 0 0] [0 129 0 0] [0 0 144 0] [0 0 0 153]]	Accuracy gb 1.0