Artificial Intelligence Lab 11

Tasks Name: AYIZA WAQAR

SapID: 44529

Batch: BSCS-6 th semester

Lab Instructor: Mam Ayesha Akram

Naive Bayes Algorithm:

Implement the naive Bayes algorithm on the dataset shared via the given link.

Dataset: https://tinyurl.com/y2r9vzde

lab 11.py > ...

```python
import pandas as pd
from sklearn.model_selection import train_test_split
from sklearn.preprocessing import LabelEncoder, StandardScaler
from sklearn.naive_bayes import GaussianNB
from sklearn.metrics import confusion_matrix, accuracy_score, classification_report

# Load dataset
dataset = pd.read_csv('iris.csv')

# Encode categorical variables
label_encoders = {}
for column in dataset.columns:
    if dataset[column].dtype == 'object':
        le = LabelEncoder()
        dataset[column] = le.fit_transform(dataset[column])
        label_encoders[column] = le


X = dataset.drop('Salary', axis=1)  # All except target
y = dataset['Salary']               # Target variable

# Train/test split
X_train, X_test, y_train, y_test = train_test_split(X, y, test_size=0.25, random_state=0)


scaler = StandardScaler()
X_train = scaler.fit_transform(X_train)
X_test = scaler.transform(X_test)

# Train Naive Bayes model
classifier = GaussianNB()
classifier.fit(X_train, y_train)

# Predict and evaluate
y_pred = classifier.predict(X_test)

cm = confusion_matrix(y_test, y_pred)
acc = accuracy_score(y_test, y_pred)
```

```python
# Predict and evaluate
y_pred = classifier.predict(X_test)

cm = confusion_matrix(y_test, y_pred)
acc = accuracy_score(y_test, y_pred)
report = classification_report(y_test, y_pred)

print("✅ Confusion Matrix:\n", cm)
print("\n✅ Accuracy Score:", acc)
print("\n✅ Classification Report:\n", report)
```

PROBLEMS OUTPUT DEBUG CONSOLE TERMINAL PORTS

```
PS C:\Users\DELL\Documents\semester 6th\AL LAB\lab 11>  c:; cd 'c:\Users\DELL\Do
indowsApps\python3.11.exe' 'c:\Users\DELL\.vscode\extensions\ms-python.debugpy-2
cuments\semester 6th\AL LAB\lab 11\lab 11.py'
✅ Confusion Matrix:
 [[4904 1255]
 [ 728 1254]]

✅ Accuracy Score: 0.7564181304508045

✅ Classification Report:
              precision    recall  f1-score   support

           0       0.87      0.80      0.83      6159
           1       0.50      0.63      0.56      1982

    accuracy                           0.76      8141
   macro avg       0.69      0.71      0.70      8141
weighted avg       0.78      0.76      0.77      8141

PS C:\Users\DELL\Documents\semester 6th\AL LAB\lab 11>
```