import pandas as pd

from sklearn.datasets import load\_iris

from sklearn.model\_selection import train\_test\_split

from sklearn.metrics import accuracy\_score, classification\_report, confusion\_matrix

from sklearn.ensemble import AdaBoostClassifier, GradientBoostingClassifier

from xgboost import XGBClassifier

iris = load\_iris()

X, y = iris.data, iris.target

X\_train, X\_test, y\_train, y\_test = train\_test\_split(

X, y, test\_size=0.2, random\_state=42, stratify=y

)

models = {

"AdaBoost": AdaBoostClassifier(n\_estimators=100, random\_state=42),

"GradientBoosting": GradientBoostingClassifier(n\_estimators=100, random\_state=42),

"XGBoost": XGBClassifier(use\_label\_encoder=False, eval\_metric='mlogloss', random\_state=42)

}

results = {}

for name, model in models.items():

model.fit(X\_train, y\_train)

y\_pred = model.predict(X\_test)

acc = accuracy\_score(y\_test, y\_pred)

report = classification\_report(y\_test, y\_pred, target\_names=iris.target\_names)

cm = confusion\_matrix(y\_test, y\_pred)

results[name] = {

"Accuracy": acc,

"Classification Report": report,

"Confusion Matrix": cm

}

for model\_name, metrics in results.items():

print("="\*60)

print(f"Model: {model\_name}")

print("Accuracy:", metrics["Accuracy"])

print("\nClassification Report:\n", metrics["Classification Report"])

print("Confusion Matrix:\n", metrics["Confusion Matrix"])  
  
  
Output:-

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Model: AdaBoost

Accuracy: 0.9333333333333333

Classification Report:

precision recall f1-score support

setosa 1.00 1.00 1.00 10

versicolor 0.90 0.90 0.90 10

virginica 0.90 0.90 0.90 10

accuracy 0.93 30

macro avg 0.93 0.93 0.93 30

weighted avg 0.93 0.93 0.93 30

Confusion Matrix:

[[10 0 0]

[ 0 9 1]

[ 0 1 9]]

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Model: GradientBoosting

Accuracy: 0.9666666666666667

Classification Report:

precision recall f1-score support

setosa 1.00 1.00 1.00 10

versicolor 1.00 0.90 0.95 10

virginica 0.91 1.00 0.95 10

accuracy 0.97 30

macro avg 0.97 0.97 0.97 30

weighted avg 0.97 0.97 0.97 30

Confusion Matrix:

[[10 0 0]

[ 0 9 1]

[ 0 0 10]]

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Model: XGBoost

Accuracy: 0.9333333333333333

Classification Report:

precision recall f1-score support

setosa 1.00 1.00 1.00 10

versicolor 0.90 0.90 0.90 10

virginica 0.90 0.90 0.90 10

accuracy 0.93 30

macro avg 0.93 0.93 0.93 30

weighted avg 0.93 0.93 0.93 30

Confusion Matrix:

[[10 0 0]

[ 0 9 1]

[ 0 1 9]]