Bagging_and_Boosting_p3

November 1, 2025

Read a supervised dataset and use bagging and boosting technique to classify the dataset. Indicate the performance of the model.

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from sklearn.datasets import load_iris
from sklearn.model_selection import train_test_split
from sklearn.ensemble import BaggingClassifier, AdaBoostClassifier
from sklearn.tree import DecisionTreeClassifier
from sklearn.metrics import accuracy_score

# Load dataset
X, y = load_iris(return_X_y=True)
X_train, X_test, y_train, y_test = train_test_split(X, y, test_size=0.3,␣
 ↪random_state=42)

# Bagging
bag = BaggingClassifier(DecisionTreeClassifier(), n_estimators=50,␣
 ↪random_state=42)
bag.fit(X_train, y_train)

# Boosting (AdaBoost)
boost = AdaBoostClassifier(DecisionTreeClassifier(max_depth=1),␣
 ↪n_estimators=50, random_state=42)
boost.fit(X_train, y_train)

# Predictions & Accuracy
bag_acc = accuracy_score(y_test, bag.predict(X_test))
boost_acc = accuracy_score(y_test, boost.predict(X_test))

print(f"Bagging Accuracy: {bag_acc:.2f}")
print(f"Boosting Accuracy: {boost_acc:.2f}")
```

```
Bagging Accuracy: 1.00
Boosting Accuracy: 1.00
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