* **Adaboost Ensemble Learning :-**

**Code:-**

from sklearn.ensemble import AdaBoostClassifier

from sklearn.tree import DecisionTreeClassifier

from sklearn.datasets import load\_digits

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

from sklearn.metrics import accuracy\_score

# Load the dataset (you can replace this with your own dataset)

digits = load\_digits()

X, y = digits.data, digits.target

# Split the data into training and testing sets

X\_train, X\_test, y\_train, y\_test = train\_test\_split(X, y, test\_size=0.2, random\_state=42)

# Individual Decision Tree (Weak Classifier)

tree\_classifier = DecisionTreeClassifier(max\_depth=3)

tree\_classifier.fit(X\_train, y\_train)

# Predictions using the individual Decision Tree

y\_tree\_pred = tree\_classifier.predict(X\_test)

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

print(f'Accuracy of Individual Decision Tree: {accuracy\_tree:.2%}')

# Adaboost Ensemble of Decision Trees

adaboost\_classifier = AdaBoostClassifier(base\_estimator=DecisionTreeClassifier(max\_depth=1), n\_estimators=50, random\_state=42)

adaboost\_classifier.fit(X\_train, y\_train)

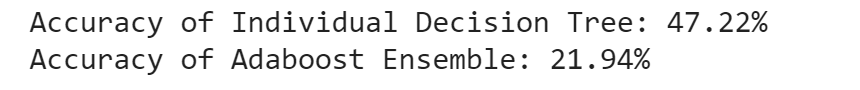
# Predictions using the Adaboost Ensemble

y\_adaboost\_pred = adaboost\_classifier.predict(X\_test)

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

print(f'Accuracy of Adaboost Ensemble: {accuracy\_adaboost:.2%}')

**Output:-**

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