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Machine Learning Assignment-11

Hidden Markov Model

CODE:

import numpy as np

from hmmlearn import hmm

from sklearn.datasets import load\_iris

from sklearn.preprocessing import LabelEncoder

data = load\_iris()

X = data.data

y = data.target

encoder = LabelEncoder()

y\_encoded = encoder.fit\_transform(y)

n\_components = len(np.unique(y\_encoded))

model = hmm.GaussianHMM(n\_components=n\_components, covariance\_type="full", n\_iter=100)

model.fit(X)

hidden\_states = model.predict(X)

print("Hidden States Prediction:")

print(hidden\_states)

print("\nTransition Matrix:")

print(model.transmat\_)

print("\nMeans and Covariances of Each Hidden State:")

for i in range(n\_components):

    print(f"State {i}")

    print("Mean:", model.means\_[i])

    print("Covariance:", model.covars\_[i])

OUTPUT:  
