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ANN – SL 2

Prac 5

Code –

import numpy as np

from sklearn.neural\_network import MLPClassifier

# Define training data

X\_train = np.array([

# Number 0

[

[1, 1, 1],

[1, 0, 1],

[1, 0, 1],

[1, 0, 1],

[1, 1, 1]

],

# Number 1

[

[0, 1, 0],

[0, 1, 0],

[0, 1, 0],

[0, 1, 0],

[0, 1, 0]

],

# Number 2

[

[1, 1, 1],

[0, 0, 1],

[1, 1, 1],

[1, 0, 0],

[1, 1, 1]

],

# Number 39

[

[1, 1, 1],

[1, 0, 1],

[1, 1, 1],

[0, 0, 1],

[1, 1, 1]

]

])

# Flatten the 5x3 matrices into 1D arrays (15 features)

X\_train\_flat = X\_train.reshape(len(X\_train),-1)

y\_train = [0, 1, 2, 39]

# Create the model

clf = MLPClassifier(hidden\_layer\_sizes=(10,),activation='relu', max\_iter=1000, random\_state=1)

clf.fit(X\_train\_flat, y\_train)

X\_test = np.array([

# Number 1

[

[0, 1, 0],

[0, 1, 0],

[0, 1, 0],

[0, 1, 0],

[0, 1, 0]

],

# Number 2

[

[1, 1, 1],

[0, 0, 1],

[1, 1, 1],

[1, 0, 0],

[1, 1, 1]

],

# Number 39

[

[1, 1, 1],

[1, 0, 1],

[1, 1, 1],

[0, 0, 1],

[1, 1, 1]

],

# Number 0

[

[1, 1, 1],

[1, 0, 1],

[1, 0, 1],

[1, 0, 1],

[1, 1, 1]

]

])

X\_test\_flat = X\_test.reshape(len(X\_test),-1)

predictions = clf.predict(X\_test\_flat)

for i,pred in enumerate(predictions):

print(f"Test {i+1}: Predicted No. is {pred}")

Output –

