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ANN – SL2

Prac 3

Code –

import numpy as np

step\_function = lambda x: 1 if x >= 0 else 0

training\_data = [

{'input': [1, 1, 0, 0, 0, 0], 'label': 1},

{'input': [1, 1, 0, 0, 0, 1], 'label': 0},

{'input': [1, 1, 0, 0, 1, 0], 'label': 1},

{'input': [1, 1, 0, 1, 1, 1], 'label': 0},

{'input': [1, 1, 0, 1, 0, 0], 'label': 1},

{'input': [1, 1, 0, 1, 0, 1], 'label': 0},

{'input': [1, 1, 0, 1, 1, 0], 'label': 1},

{'input': [1, 1, 0, 1, 1, 1], 'label': 0},

{'input': [1, 1, 1, 0, 0, 0], 'label': 1},

{'input': [1, 1, 1, 0, 0, 1], 'label': 0},

]

weights = np.array([0, 0, 0, 0, 0, 1])

for data in training\_data:

input\_data = np.array(data['input'])

label = data['label']

output = step\_function(np.dot(input\_data, weights))

error = label - output

weights += input\_data \* error

while True:

user\_input\_value = input("Enter a Number (0-9) or type 'exit' to quit: ")

if user\_input\_value.lower() == 'exit':

break

if not user\_input\_value.isdigit() or not (0 <= int(user\_input\_value) <= 9):

print("Please enter a valid number between 0 and 9.")

continue

j = int(user\_input\_value)

input\_data = np.array([int(x) for x in list('{0:06b}'.format(j))])

output = "odd" if step\_function(np.dot(input\_data, weights)) == 0 else "even"

print(j, "is", output)

Output –

