**Experiment No.: 4**

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**Batch: MCA -B**

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**Aim**

Implement K-NN Algorithm

**Program and Output**

from math import sqrt

# calculate the Euclidean distance between two vectors

def euclidean\_distance(row1, row2):

distance = 0.0

for i in range(len(row1)-1):

distance += (row1[i] - row2[i])\*\*2

return sqrt(distance)

# Locate the most similar neighbors

def get\_neighbors(train, test\_row, num\_neighbors):

distances = list()

for train\_row in train:

dist = euclidean\_distance(test\_row, train\_row)

distances.append((train\_row, dist))

distances.sort(key=lambda tup: tup[1])

neighbors = list()

for i in range(num\_neighbors):

neighbors.append(distances[i][0])

return neighbors

# Make a classification prediction with neighbors

def predict\_classification(train, test\_row, num\_neighbors):

neighbors = get\_neighbors(train, test\_row, num\_neighbors)

output\_values = [row[-1] for row in neighbors]

prediction = max(set(output\_values), key=output\_values.count)

return prediction

# Test distance function

dataset = [[2.7810836,2.550537003,0],

[1.465489372,2.362125076,0],

[3.396561688,4.400293529,0],

[1.38807019,1.850220317,0],

[3.06407232,3.005305973,0],

[7.627531214,2.759262235,1],

[5.332441248,2.088626775,1],

[6.922596716,1.77106367,1],

[8.675418651,-0.242068655,1],

[7.673756466,3.508563011,1]]

prediction = predict\_classification(dataset, dataset[0], 3)

print('Expected %d, Got %d.' % (dataset[0][-1], prediction))

**OUTPUT**

Expected 0, Got 0.