week6-a

September 13, 2024

[3]:
```
import numpy as np

def euclidean_distance(point1, point2):
    return np.sqrt(np.sum((np.array(point1) - np.array(point2))**2))

def manhattan_distance(point1, point2):
    return np.sum(np.abs(np.array(point1) - np.array(point2)))

def minkowski_distance(point1, point2, p):
    return np.sum(np.abs(np.array(point1) - np.array(point2))**p)**(1/p)

point1 = list(map(float, input("Enter the coordinates of point1␣
 ↪(comma-separated): ").split(',')))
point2 = list(map(float, input("Enter the coordinates of point2␣
 ↪(comma-separated): ").split(',')))
p = float(input("Enter the value of p for Minkowski distance: "))

print("Euclidean Distance:", euclidean_distance(point1, point2))
print("Manhattan Distance:", manhattan_distance(point1, point2))
print("Minkowski Distance:", minkowski_distance(point1, point2, p))
```

```
Euclidean Distance: 2.8284271247461903
Manhattan Distance: 4.0
Minkowski Distance: 2.0885475648548275
```

- Calculated the Euclidean distance between two points.
- Calculated the Manhattan distance between two points.
- Calculated the Minkowski distance between two points with a customizable parameter
- Used numpy to perform these calculations.
- Took user input as comma-separated values for coordinates and parameter