MATHEMATICS FOR MACHINE LEARNING

LAB 2 – 5%

Use Python to answer the following questions.

Please Hand in pdf and python file to Dropbox

Unless otherwise stated always use the Euclidean distance

1) Find the Manhattan norm of the vector v= (2,3,4,5)

2) Compute the distance between the two points a=(1,2,3) and b=(-1,-1,0)

3) Compute the angle between the two vectors v=(1,2) and w=(-1,-1)

4) Show that these two vectors are orthogonal v=(4,-2,3,5) and w = (-1,1,2,0)

5) Find any unit vector orthogonal to v=(2,3,4)

6) Find the vector projection of a=(1,2,3) onto b = (3,-4,1)

7) Find the projection of the vector (1,1,1) onto the xy plane

8) Create 2 random vectors in R^4 and find the angle between them.

9) Find the distance between the point (1,-2,4) and the plane 3x + 2y+ 6z = 5