BTech IT
5th Semester Section A
Machine Learning
Assignment 1

Implement the following

1. Distance and norm
    a. Norms $\mathcal{L}_1, \mathcal{L}_2, \dots, \mathcal{L}_p, .., \mathcal{L}_p^q$
    b. Mahalanobis distance
    c. Bhattacharya distance

2. Implementation of Techniques
    a. *k* nearest neighbor algorithm
    b. Perceptron algorithm
    c. Kernel Perceptron algorithm
    d. SVM (hard margin and soft margin)
    e. Kernel SVM (hard margin and soft margin)

Note:

1. Generation of data
    a. Generate data using Gaussian distribution using
        i. mean=1 and Variance = 5; mean=4 and Variance = 5)
        ii. mean=1 and Variance = 5; mean=4 and Variance = 10)
2. Use mini batch
3. Use SGD
4. Use different kernels with different parameters