# **IIT Kanpur Intensive Training School (ITS) on PYTHON for Machine Learning, Neural Networks and Deep Learning**

# **2nd to 22nd December 2023**

**Assignment #1**

1. Siri, Alexa are examples of
   1. Pattern Recognition
   2. Data Mining
   3. Artificial Intelligence
   4. Linear Regression
2. In test-train split, the fraction of data set aside for testing is typically
3. Consider the matrix

Its inverse is

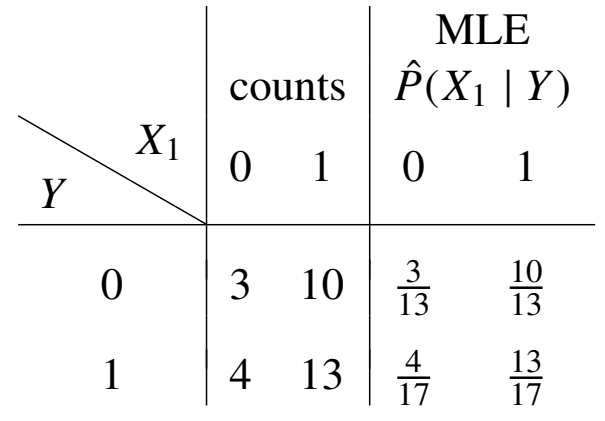
1. For the linear regression problem , the regression coefficients are given as
2. Consider the least squares (LS) problem below

The regression coefficient vector is given as

1. Logistic regression is well suited for
   1. Linear Approximation
   2. Gaussian clustering
   3. Binary classification
   4. Dimensionality reduction
2. The logistic function is defined as
3. The update rule for logistic regression is given as
4. PDF of a Gaussian random vector is given as
5. Consider the **Gaussian classification** problem. The two classes are distributed as

The discriminant function to choose is given as

1. The **SVC** problem is given as
2. Using the Naïve Bayes assumption, can be expressed as
3. The posterior probability is given as
4. Consider the data table given below



The quantity can be evaluated using Laplace smoothing as

1. The means cost-function to minimize is given as