
MA722 - Foundations of Machine Learning Algorithms

Lab Problems - 1

1. Define two vectors *vector a* and *vector b*
 - Compute the vector addition.
 - Compute the scalar multiplication, for any given scalar value α as the input.
 - Find the length of the vectors.
 - Compute the dot product.
 - Compute the cross product.
2. Define two $m \times n$ matrices *matrix A* and *matrix B*
 - Compute the matrix addition
 - Compute the matrix multiplication. If the matrices cannot be multiplied, print the output as 'Invalid input'.
 - Compute the transpose of both matrices.
 - Compute the rank and nullity of *matrix A* and *matrix B*
3. For an $n \times n$ matrix A as input:
 - Compute the inverse of A. If it is not invertible, print the output as 'The matrix is not invertible'.
 - Compute the determinant of the matrix.
 - Compute eigen values and eigen vectors of A
4. Define two arrays x and y. Plot x over y using line chart, bar chart, histogram, scatter plot, box plot and pie chart. Do the scatter plot by taking two random datasets.
