



Module PMRF-ISSS003/II/2025

Basic Mathematics for Data Science

Name of the PMRF student

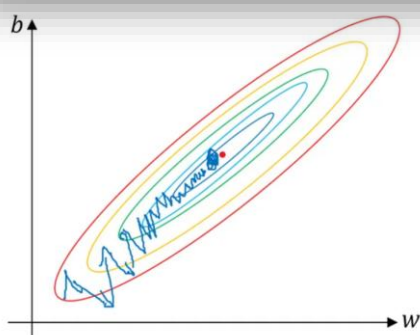
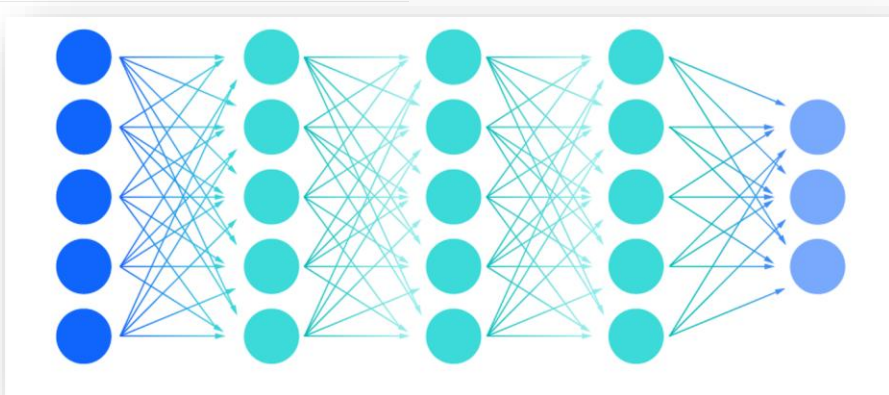
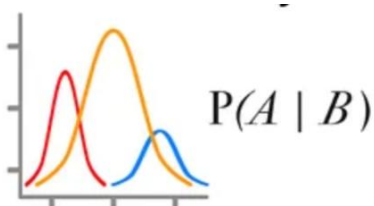
Azhar Gafoor CTP

Required background of the students taught

Any engineering or science discipline with basic mathematics knowledge (linear algebra and calculus).

$$d = \sqrt{(x_2 - x_1)^2 + (y_2 - y_1)^2}$$

[matrix]



Details of the content of the module

The course is an introduction to the fundamental mathematical concepts that are essential in data science. It will cover key topics in areas such as linear algebra, probability, statistics, and optimization, all of which form the foundation for understanding and applying various data science techniques and algorithms.

1. Basics of Data Science.
 - Typology of problems.
 - Structured thinking for solving data science problems.
2. Linear Algebra.
 - Matrices and their properties.
 - Eigenvalues and eigenvectors.
 - Introduction to projection and hyperplanes.
3. Probability and Statistics.
 - Probability distributions.
 - Density functions.
 - Statistics and sampling distributions.
4. Optimization.
 - Unconstrained and constrained optimization.
 - Gradient descent methods.
5. Introduction to Data Science Methods.
 - Regression and classification problems.

Schedule of the module

Course duration: 03/02/25 to 11/04/25 (tentative)

Lecture: Monday and Wednesday. 8:00 PM to 9:30 PM

Tutorial/Discussion: 2 hours per week

Meeting link : Will be shared later

Contact email ID: issf.forum@gmail.com

Registration link:

<https://forms.gle/izaYRap2c2SWM9Vf9>

