Linear Algebra

Linear algebra is a branch of mathematics that focuses on the study of vectors, vector spaces (also called linear spaces), linear transformations, and systems of linear equations. It provides a framework for understanding the properties and operations of these mathematical objects, which can be represented using matrices and vectors.

1) Foundational Concepts -> ML, DL, NLP, Images
   |
   Scalars, Vectors, Matrices, Mathematical, Operation of Matrices, Linear Transformations, Eige Value, Eigen Vector.

Physics, Mathematics, Computer Science Students [Data Science]

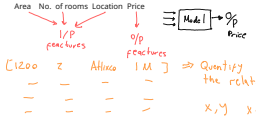
Applications of Linear Algebra

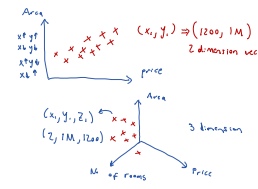
1 Data Representation And Manipulation

DATASET -> Create Model Which will be able to predict.

House price dataset

Area No. of rooms Location Price





1.2 Linear algebra works higher dimensional data.

500 dimension
↓
Dimentionality Reduction
↓
2dimension

2 Machine Learning And Artificial Intelligence

2.1 Model train

Linear Algebra -> Matrix
Multiplication -> Matrix
Arithmethic Operation

Linear Algebra-> Linear Equation -> Equation of a straight line -> ax + by + c = 0 => y = mx + c

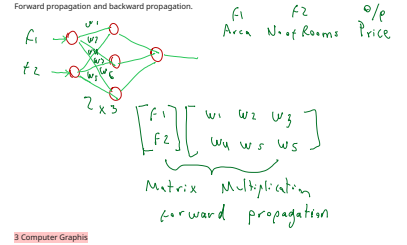
2.2 Dimensionality Reduction

PCA -> Linear Algebra -> Eigen Value And Eigen Vector

Reduce from Higher dimension -> Lower Dimension

2.3 Neural Networks

Forward propagation and backward propagation.



3 Computer Graphics

Image

→ GPU → Cores → Parallerg
Tensor flow → Tensors
→ Scaling, Rotate, Block & White
↳ linear → transporming

4 Optimization

4.1 Solving Equations : Linear Equations