Linear Algebra

- Introduction to Matrices
- Vector spaces, including dimensions, Euclidean spaces, closure properties and axioms
- Eigenvalues and Eigenvectors, including how to find Eigenvalues and the corresponding Eigenvectors

K Nearest Neighbors

- K-Nearest Neighbor Algorithm
- Eager Vs Lazy learners
- How does the KNN algorithm work?
- How do you decide the number of neighbors in KNN?
- Weighted knn, ball tree, kd tree, lsh forest, cosine hashing
- Curse of Dimensionality
- Pros and Cons of KNN
- How to improve KNN performance
- Hyper parameters of knn

Linear Regression

- Simple Linear Regression:
- Estimating the Coefficients
- Assessing the Coefficient Estimates

CNN Architecture

- Padding, Stride, Pooling
- LeNet5
- Alex Net
- Vgg 16 and Vgg 19
- Inception Net
- ResNet
- Xception
- Mobile Net
- Efficient Net
- Pre trained Model Introduction

Transfer Learning

- Intro To Transfer Learning
- Transfer learning Concepts (When and Why)
- Transfer Learning Coding
- Hyper Parameter Tuning [Random Search, Hyperband, Bayesian optimization]

Gemini

- Getting Started with Gemini
- How to obtain an API key for Gemini.
- Overview of the Gemini API and accessing its features.
- Detailed exploration of different Gemini models.
- Selecting and initializing the right model for specific tasks.
- Step-by-step project to create an AI-powered chatbot using Gemini

LLaMA

- Introduction of LLaMA .
- Comparison with other large language models like GPT-3 and GPT-4.
- Key features and capabilities of LLaMA
- Understanding the Model Architecture of LLaMA.
- Discussion on model sizes and capabilities.
- Environment setup: Installing necessary libraries and tools
- Accessing LLaMA models: Overview of the download process and setup on local machines or cloud platforms (Meta LLaMa).
- Intro to the architecture of LLaMA models
- Understanding the differences between LLaMA model variants (8B, 13B, 30B, and 70B parameters)
- Implementing text generation using LLaMA