Introduction to Artificial Intelligence - Part I

- What is Artificial Intelligence?
- History of AI
- Why Learn AI?
- Applications of AI in Daily Life | Real-World Examples of AI
- Key Concepts and Terminology
- Types of Artificial Intelligence
- AI Agents and Environments

Introduction to Artificial Intelligence - Part II

- Problem Solving in AI
- Search Algorithms in AI
- Local Search Algorithms
- Adversarial Search in AI
- Constraint Satisfaction Problems
- Knowledge Representation in Artificial Intelligence
- Reasoning and Planning in AI
- Generative AI

Getting Started with Python

- What is Programming?
- Overview of Popular Programming Languages
- Why Python for AI?
- Installing Python + Jupyter notebook
- Writing your first Python program
- Basic Python Syntax
- Variables in Python
- Data Types in Python
- Operators in Python
- Functions & Modules in Python
- Conditional Statements
- Loops in Python

Introduction to Libraries

- What are Libraries in Python?
- Common Python Libraries for AI
- NumPy: Basics and Operations
- Pandas: Data Handling and Manipulation
- Matplotlib: Basic Plotting and Visualization
- Installing and Managing Python Libraries
- Practical Examples Using AI Libraries

Data and AI

● What is Data and Its Importance in AI
● How Data is Collected?
● Data Manipulation with Python - Basics
● Data Manipulation with Python Libraries
Introduction to Machine Learning
● What is Machine Learning?
● Machine Learning Key Concepts & Terminologies
● Difference Between AI and machine learning
● Types of Machine Learning (Supervised, Unsupervised, Reinforcement)
● Basic Machine Learning Workflow
● Introduction to Datasets, Dataset Examples
Understanding Features and Labels

Mathematics for AI/ ML

● Basic Arithmetic and Algebra | Variables and Constants
● Solving Linear Equations
● Graphing Linear Functions
● Introduction to Statistics
● Measures of Central Tendency (Mean, Median, Mode)
● Variance and Standard Deviation
● Correlation vs. Causation
● Probability Basics | Events and Outcomes
● Conditional Probability
● Bayes' Theorem
● Linear Algebra Basics | Introduction to Vectors and Matrices
● Matrix Addition and Multiplication
● Eigenvalues and Eigenvectors
● Calculus Basics | Understanding Derivatives and Their Applications
● Integration Basics
● Application of Calculus in Optimization Problems

Machine Learning Algorithms [Part-I] - Linear
Regression and Classification

● Definition and Purpose of Linear Regression
● Real-world Examples (e.g., Predicting House Prices)
● Definition and Purpose of Classification
● Real-world example (e.g., sorting fruits into categories)
● Introduction to K-Nearest Neighbors (KNN) in Classification

Machine Learning Algorithms [Part-II] - Decision Trees and Clustering

- Definition and Purpose of Decision Trees
- Real-world example (e.g., making decisions based on weather)
- Definition and Purpose of Clustering
- Real-world example (e.g., grouping similar types of animals)
- Introduction to K-Means Clustering

AI Career Path

- Different Roles in AI
- Required Skills and Qualifications