



## Download Roadmap

### 1. Prerequisites

- Basic Math: Linear Algebra, Probability, Statistics
- Python Programming
- Basic Data Structures & Algorithms
- Git & Version Control

### 2. Python for Data Science

- Numpy
- Pandas
- Matplotlib / Seaborn
- Jupyter Notebooks

### 3. Data Preprocessing

- Data Cleaning
- Handling Missing Values
- Feature Engineering
- Data Normalization & Standardization

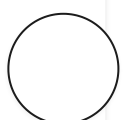
### Exploratory Data Analysis (EDA)

- Data Visualization
- Correlation & Trends
- Univariate & Multivariate Analysis

### 5. Supervised Learning

- Linear & Logistic Regression
- Decision Trees
- Random Forests
- Gradient Boosting (XGBoost, LightGBM)
- Support Vector Machines (SVM)
- Model Evaluation: Accuracy, Precision, Recall, F1-Score

### 6. Unsupervised Learning



- Clustering (K-Means, Hierarchical)
- Dimensionality Reduction (PCA, t-SNE)
- Anomaly Detection

## 7. Model Deployment

- Model Serialization (Pickle, Joblib)
- Creating APIs with Flask or FastAPI
- Docker Basics
- Cloud Platforms (AWS, GCP, Azure)
- CI/CD Basics

## 8. Deep Learning Basics

- Neural Networks
- Backpropagation
- Activation Functions
- Overfitting, Underfitting
- Libraries: TensorFlow, Keras, PyTorch

## 9. Advanced Topics

- Transfer Learning
- Reinforcement Learning
- Natural Language Processing (NLP)
- Computer Vision (CV)
- Model Explainability (SHAP, LIME)