DATA-ANALYTICS
WINTER CAMP'24

4) Intro to Machine Learning and Regression Models

INTRODUCTION

- **Machine Learning (ML)** is a branch of **artificial intelligence** that enables computers to learn from data and improve their performance on a task without being explicitly programmed. By identifying patterns and relationships in data, ML models can make predictions, automate processes, and generate insights that drive decision-making.

- **Supervised Learning:** The model learns from labeled data, where input-output pairs are provided. Examples include predicting house prices or classifying emails as spam.
- **Unsupervised Learning:** The model uncovers hidden patterns in unlabeled data, such as grouping customers by behavior.
- **Reinforcement Learning:** The model learns by interacting with an environment, receiving feedback in the form of rewards or penalties, like training a robot to navigate a maze.

WORKING

- Machine Learning models work by identifying patterns in data to make predictions or decisions. The process typically involves:
- **Data Collection:** Gathering relevant data to train the model.
- **Feature Engineering:** Selecting or transforming variables (features) to improve model performance.
- **Training:** Feeding data into an algorithm to let the model learn patterns and relationships.
- **Validation and Testing:** Evaluating the model's performance on unseen data to ensure accuracy.
- **Prediction:** Using the trained model to make predictions or automate tasks.
- The key idea is that the model learns from data and improves over time, adapting to different problems with minimal human intervention.

RESOURCES

- **Intro to Machine Learning**
- **Regression Models**
- **Python Code Templates (for ML Regression Models)**
- **Machine Learning Specialization by Andrew Ng** (Theory)

ASSIGNMENT -2

- ☐ **Assignment -3 Link**
- ☐ **Submission Link**