1. **What is ML?**

Machine Learning (ML) is a subfield of artificial intelligence (AI) that focuses on developing algorithms that enable computers to learn from and make decisions or predictions based on data—without being explicitly programmed for every specific task.

**Key Concepts:**

•Learning from Data: ML models identify patterns and relationships in data.

•Improvement over Time: As more data becomes available, models can improve their accuracy.

•Automation of Decision-Making: Once trained, an ML model can make decisions or predictions on new, unseen data.

1. **What is Supervised ML algo?**

Supervised Machine Learning (Supervised ML) is a type of machine learning where the algorithm is trained on a labeled dataset. This means each training example comes with an input and a correct output (label), and the algorithm learns to map inputs to outputs.

**Key Characteristics:**

• Labeled Data: Each example in the training set includes both the input data and the desired output.

•Goal: Learn a function that maps inputs to outputs accurately.

•Evaluation: The model’s performance is measured based on how well it predicts outputs on unseen data.

**How It Works:**

1.Training Phase: The model sees input-output pairs and learns the relationship.

2.Testing Phase: The model is tested on new inputs to see how well it generalizes.

1. **What is Regression and Classification?**

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| Feature | Regression | Classification |
| Purpose | Predict continuous/numeric values | Predict discrete categories or classes |
| Output Type | Continuous (e.g., 4.5, 123.7) | Categorical (e.g., Yes/No, Cat/Dog) |
| Examples | House price prediction, temperature forecast | Email spam detection, image labeling |
| Evaluation Metrics | MSE, RMSE, MAE, R² | Accuracy, Precision, Recall, F1-score |
| Algorithms | Linear Regression, SVR, Ridge Regression | Logistic Regression, Decision Trees, SVM |
| Target Variable | Numerical | Class label (nominal or ordinal) |
| Graph Output | Line or curve fitting to data points | Decision boundary separating classes |