What Is Machine Learning?

Machine learning (ML) is a branch of artificial intelligence that enables computers to learn from data—without being explicitly programmed. Instead of following rigid instructions, ML systems analyze patterns and improve their performance with experience.

Imagine teaching a child to recognize birds. You show examples—photos, sounds, movements—and eventually, they learn to identify birds without needing a checklist. ML works similarly: it uses data to train models that make predictions or decisions.

How It Works

The process typically involves:

1. **Data Collection:** Huge volumes of relevant data are gathered.
2. **Training a Model:** This data is used to teach the algorithm what patterns to recognize.
3. **Evaluation:** The model is tested with new data to check its accuracy.
4. **Improvement:** Based on the results, the model is refined.

Types of Machine Learning

- **Supervised Learning:** The model learns from labeled data (e.g., emails marked "spam" or "not spam").
- **Unsupervised Learning:** Finds hidden patterns in unlabeled data (e.g., grouping customers by behavior).
- **Reinforcement Learning:** The model learns by trial and error, receiving feedback—like training a robot to walk.