Machine Learning

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Introduction

- Machine Learning (ML) enables computers to learn from data without explicit programming. It focuses on developing algorithms that can learn and make predictions or decisions.

Section 1: How Machine Learning Works

- ML algorithms identify patterns in data to build predictive models. These models are then used to make predictions on new, unseen data. More data generally results in more accurate models.

Section 2: Types of Machine Learning

- * **Supervised Learning:** Trains on *labeled* data. Example: Predicting house prices based on size and location.
- * **Unsupervised Learning:** Finds hidden patterns in *unlabeled* data. Example: Customer segmentation based on purchasing behavior.
- * **Reinforcement Learning:** Learns through trial and error, receiving rewards or penalties. Example: Training a self-driving car.

Example

- **Fraud Detection:** Machine learning models analyze transaction data to identify potentially fraudulent activities, flagging them for review.

Summary

- Machine learning empowers computers to learn from data.
- Key types include supervised, unsupervised, and reinforcement learning.
- Big data and powerful computing have driven the growth of ML and its widespread adoption.