

Supervised Learning

Overview of Supervised Learning

Supervised learning is a machine learning approach where models learn from labeled training data. Each example provides correct outputs, allowing the model to map inputs to expected outcomes.

It is widely used in classification and regression tasks.

How It Works

The process begins with collecting labeled data. The model analyzes patterns between features and labels and adjusts internal parameters to minimize prediction errors.

During evaluation, performance metrics such as accuracy, precision, and mean squared error help determine model reliability.

Common Algorithms

Examples of supervised learning algorithms include decision trees, support vector machines, logistic regression, and random forests.

Deep learning models like convolutional neural networks can also be applied to supervised tasks.

Applications

Supervised learning powers spam detection, medical diagnosis, sentiment analysis, and many real-world predictive systems.

Its versatility makes it foundational in artificial intelligence development.