

Lesson 3: Supervised Learning – Part 1

◇ Introduction

In the previous lesson, we explored the different types of machine learning — supervised, unsupervised, and reinforcement learning. In this lesson, we'll take a **deep dive into Supervised Learning**, which is the most commonly used form of machine learning today.

From spam filters to stock market predictions, supervised learning is all around us. Let's explore how it works, and why it's so powerful.

◇ What is Supervised Learning?

Supervised Learning is a type of machine learning where the model is trained on a labeled dataset — meaning each input comes with a correct output.

The goal is for the model to learn the relationship between input (features) and output (labels) so that it can predict outcomes for new, unseen data.



Think of it like a student learning from a teacher. The student is given questions (input) along with the correct answers (output) during training. Later, the student is tested with new questions.

◇ Key Concepts in Supervised Learning

- **Input (Features):** These are the variables you feed into the model (e.g., size of a house, number of rooms).
 - **Output (Target/Label):** This is what you want the model to predict (e.g., house price).
 - **Training Data:** A dataset that includes both inputs and known outputs.
 - **Testing Data:** A separate dataset used to evaluate how well the model learned
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◇ Types of Supervised Learning



1. Regression

Definition: Predicting continuous values.

Example: Predicting temperature, price, or age.

Common Algorithms: Linear Regression, Decision Tree Regressor, Random Forest Regressor.



2. Classification

Definition: Predicting categorical values.

Example: Spam or not spam, disease or no disease, cat or dog.

Common Algorithms: Logistic Regression, K-Nearest Neighbors, Decision Tree Classifier, Support Vector Machines.

◇ Outro

To Recap, in this lesson you learned

- Supervised learning involves training a model using labeled data.
- It's divided into **regression** and **classification** tasks.
- Supervised learning powers many real-world applications — from healthcare to finance and beyond.

In the next lesson, we'll continue with **Supervised Learning – Part 2**, where we explore popular supervised algorithms, how they work under the hood, and how to choose the right one for your problem.