Introduction to Deep Learning
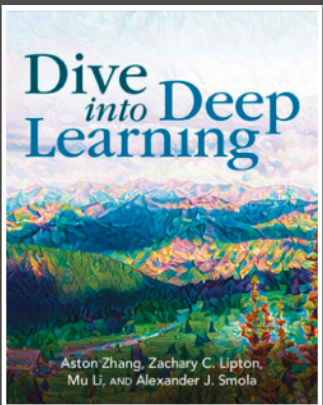
Introduction

Sungjoon Choi, Korea University

Introduction

What is Deep Learning?

Key Component

- The **data** that we can learn from

- A **model** of how to transform the data

- An **objective function** that quantifies how well the model is doing.

- An **algorithm** to adjust the model's parameters to optimize the objective function

Data

How do we **represent** the data?

Model

How do we transform an input to a corresponding target?
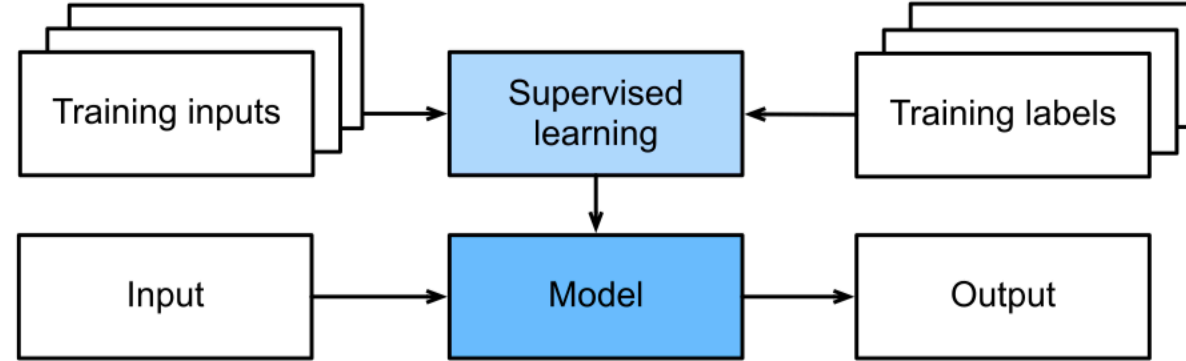
Objective Function

How can we evaluate how good our model is?

Algorithm

How can we learn (or optimize) the parameters of a neural network?

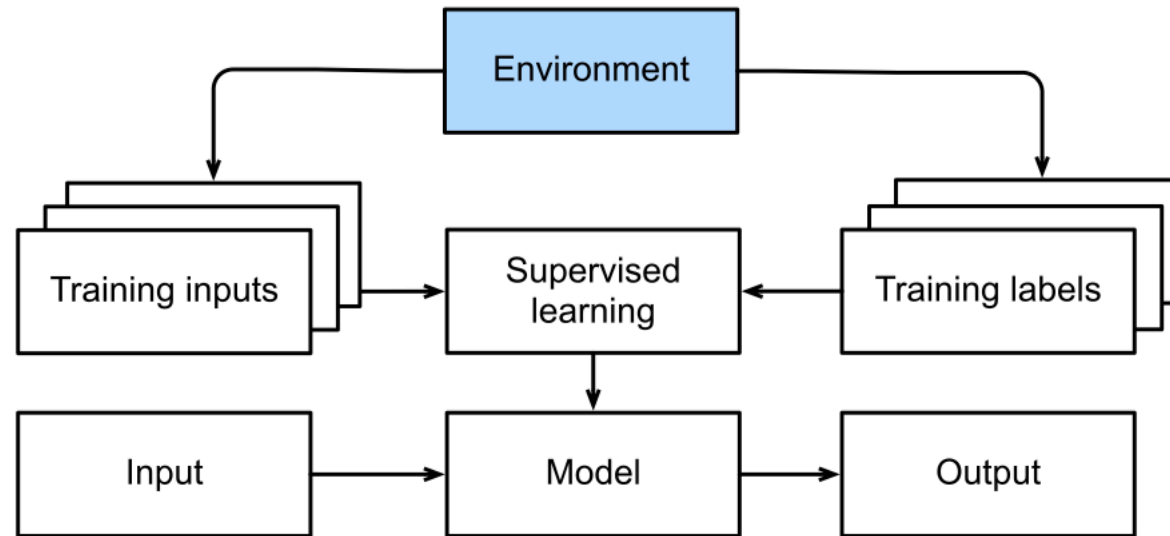# Supervised Learning

Unsupervised Learning
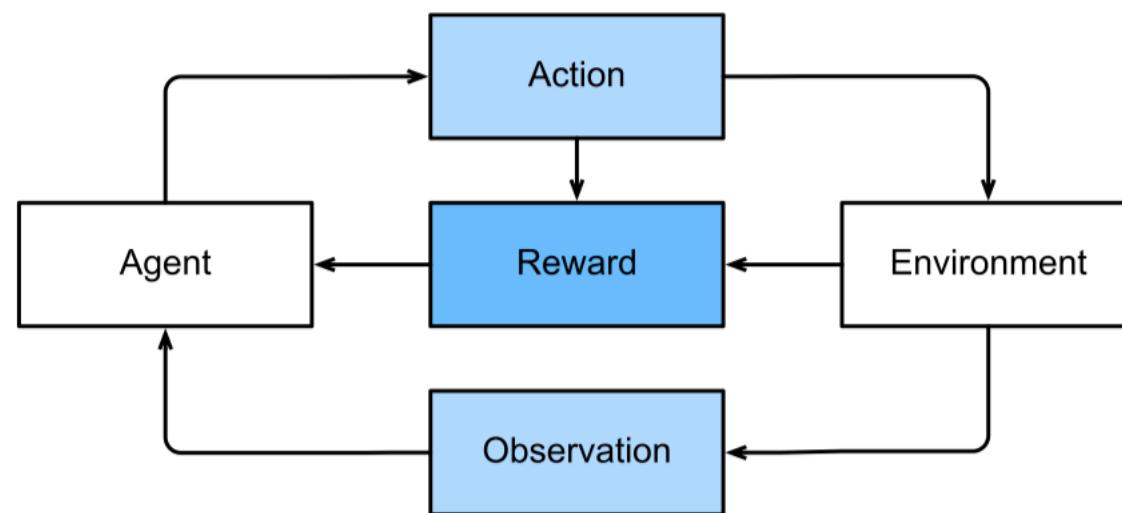
What can we learn without labels?

Self-Supervised Learning

How can we learn without labels?

System

Reinforcement Learning

Generative Pre-trained Transformer

Syllabus

- Introduction
- Linear model
- Multilayer Perceptron
- Convolutional Neural Networks
- Recurrent Neural Networks
- Attention and Transformers
- GPT Siblings
- Reinforcement Learning

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