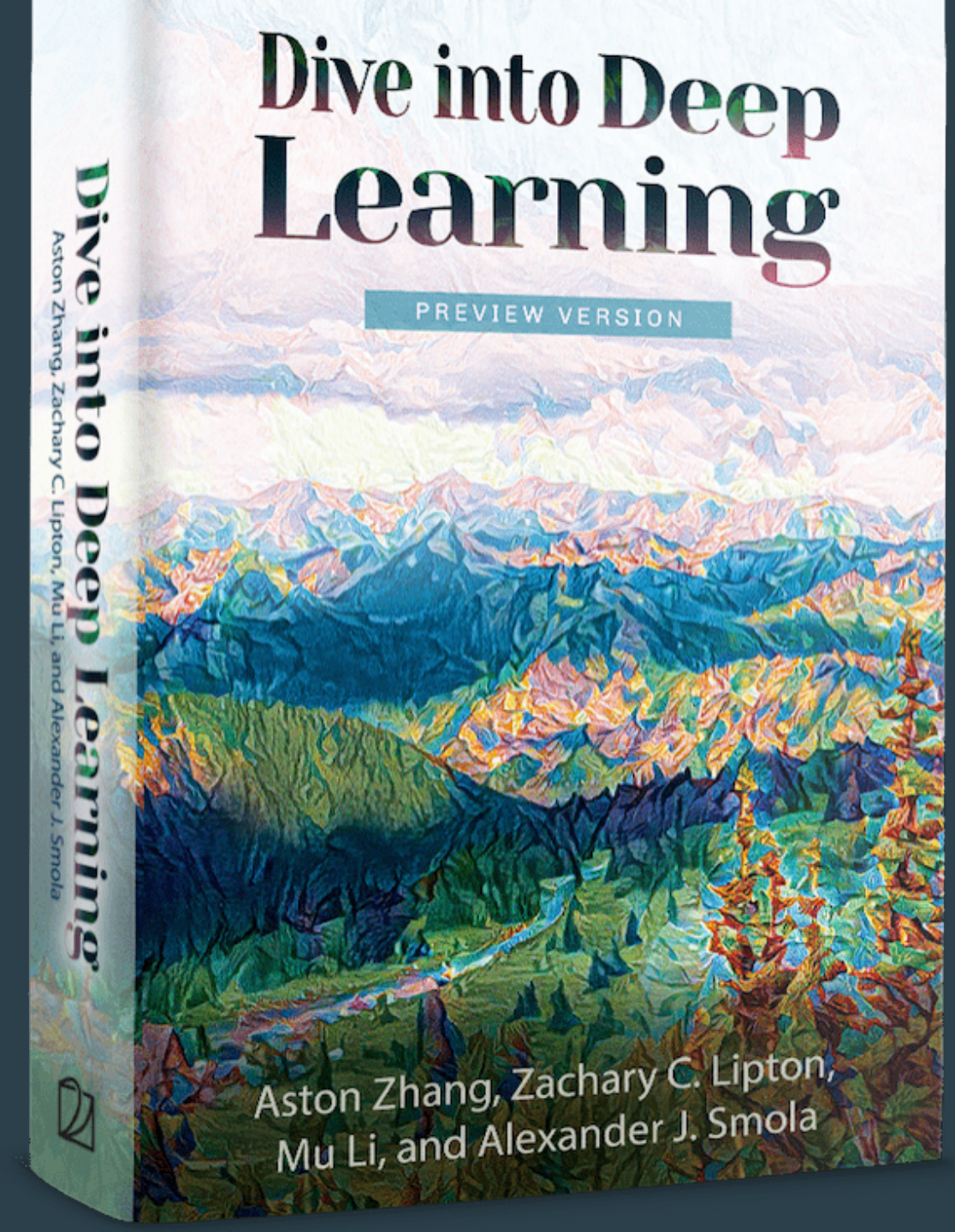
PGWAD

BLOCKCHAIN+AI

DeepLearning



Reference book

Introduction

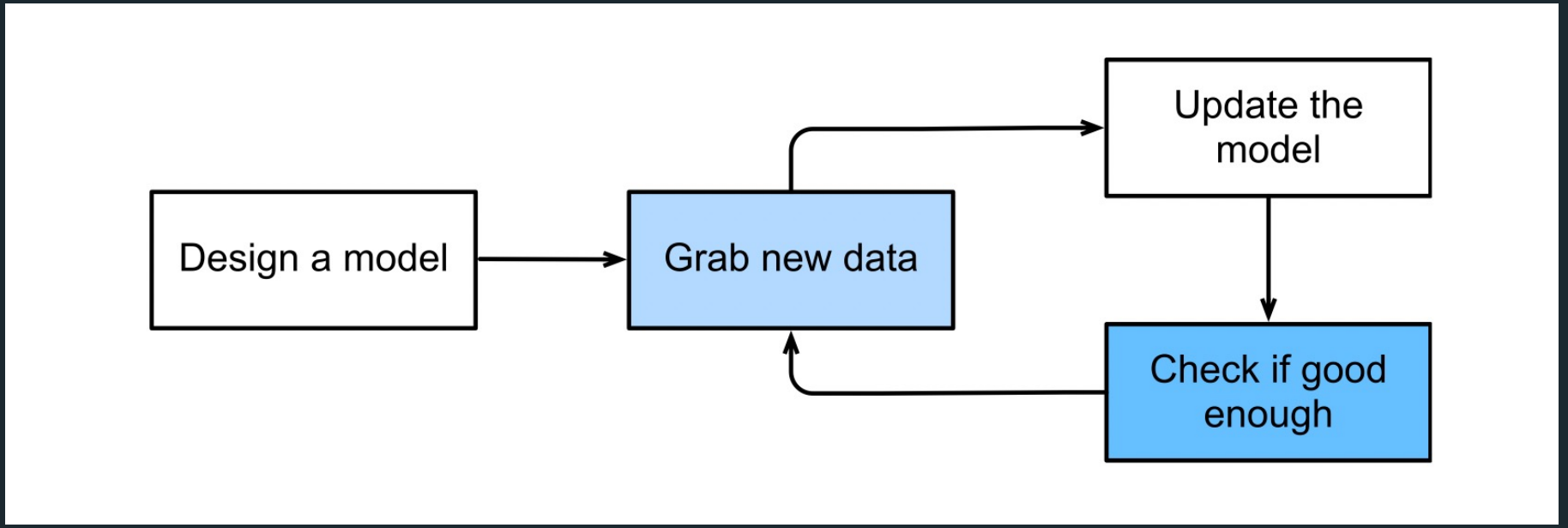
- Ecommerce example
  - users interact with the application
  - application interacts with a commercial-grade
  - application spells out in methodical detail the appropriate action
- Machine Learning
  - powerful techniques that can learn from experience
  - its performance improves with availability of data
- Deeplearning: a powerful set of techniques

Hey Siri

- Very difficult to code
- define a flexible program whose behavior is determined by a number of *parameters*
- Fixing the parameters, we call the program a *model*
- uses our dataset to choose the parameters is called a *learning algorithm*.
- need a different family of models entirely if we want to deal with fundamentally different inputs or outputs,

learning

learning is the process by which we discover the right setting of the knobs



Supervised Learning

The data that we can learn from.

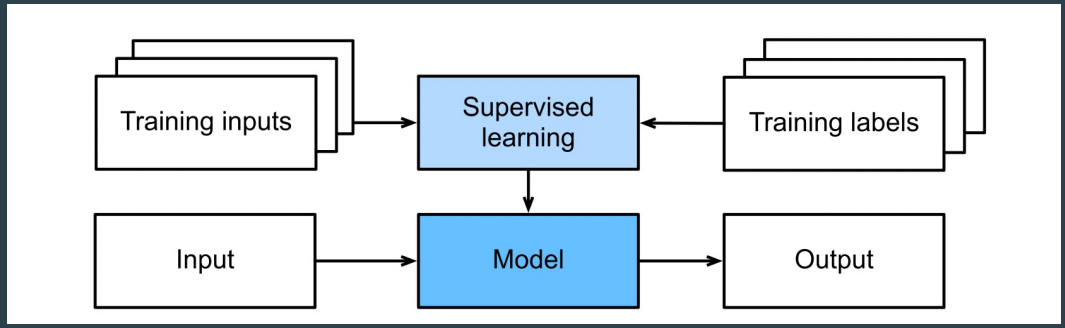
A model of how to transform the data.

An objective function that quantifies how well (or badly) the model is doing.

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

Kinds of Machine Learning: Supervised Learning

- Regression
- Classification
- Tagging
- Search
- Recommender Systems
- Sequence Learning
- Tagging and Parsing



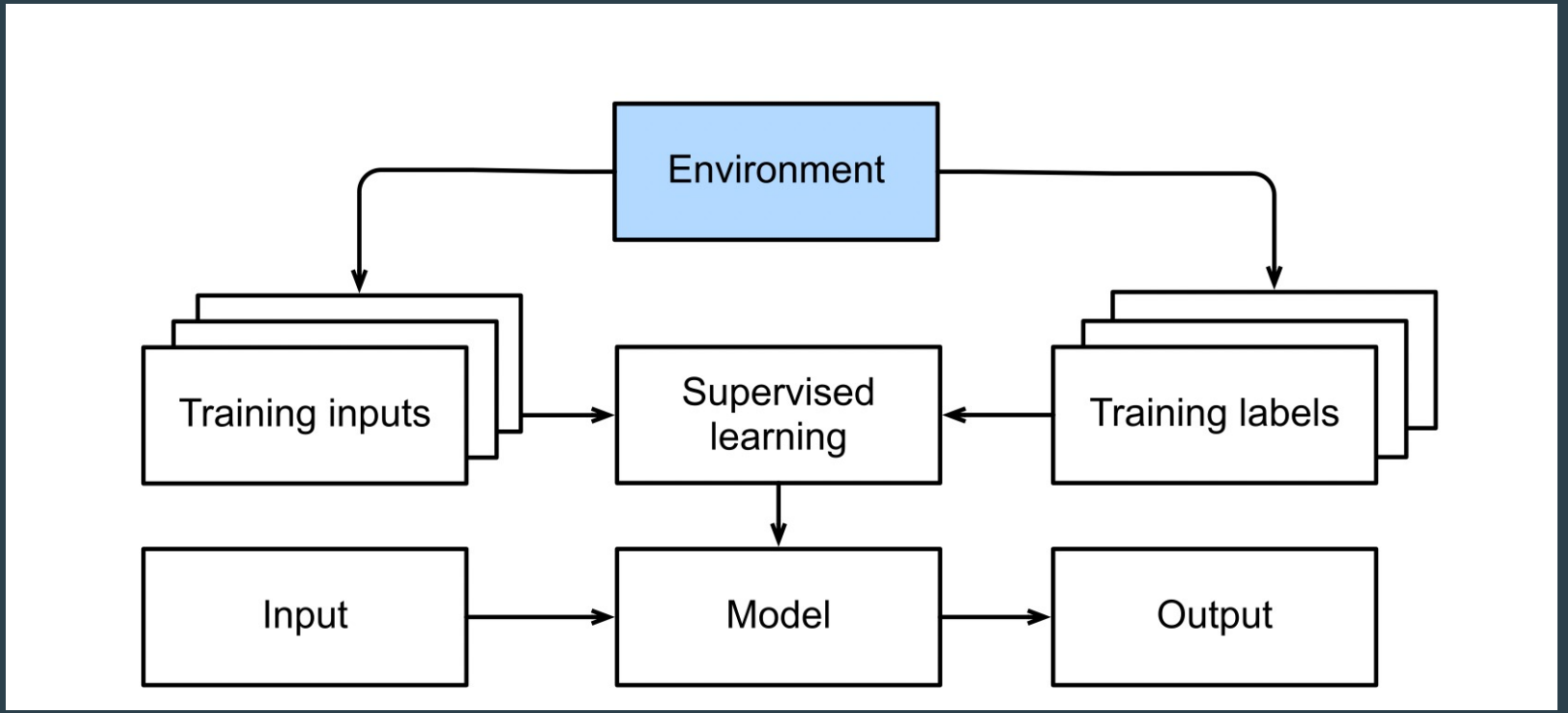
Unsupervised Learning

- Can we find a small number of prototypes that accurately summarize the data?

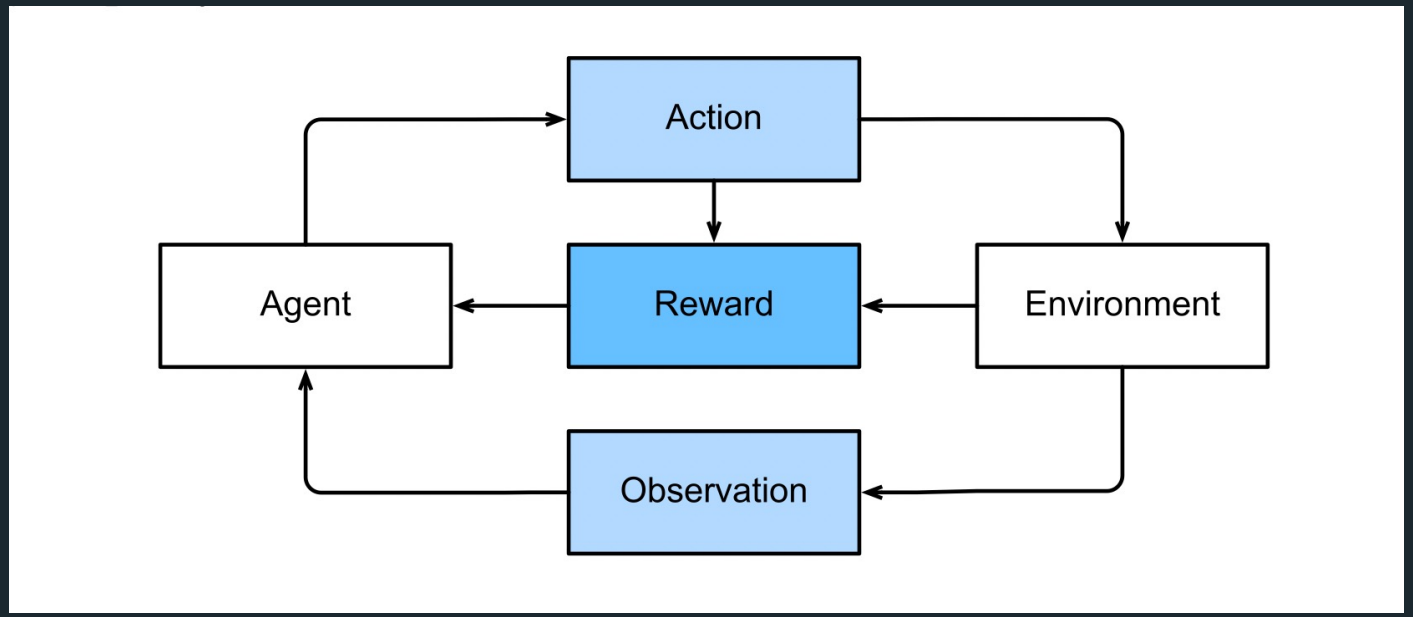
- self-supervised learning leverages unlabeled data to provide supervision in training, such as by predicting some withheld part of the data using other parts.

Interacting with environment

- Offline learning



Reinforcement learning



summary

Machine learning studies how computer systems can leverage experience (often data) to improve performance at specific tasks. It combines ideas from statistics, data mining, and optimization. Often, it is used as a means of implementing AI solutions.

As a class of machine learning, representational learning focuses on how to automatically find the appropriate way to represent data. Deep learning is multi-level representation learning through learning many layers of transformations.

Deeplearningreplacesnotonlytheshallowmodelsattheendoftraditionalmachinelearning pipelines, but also the labor-intensive process of feature engineering.

Much of the recent progress in deep learning has been triggered by an abundance of data arising from cheap sensors and Internet-scale applications, and by significant progress in computation, mostly through GPUs.

Whole system optimization is a key component in obtaining high performance. The avail- ability of efficient deep learning frameworks has made design and implementation of this