Likelihood Machine Learning Seminar Ⅱ

Lecture 1: Introduction

Likelihood Lab
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1. What is Machine Learning?

Machine Learning is a field of computer science that uses statistical techniques to give computer system the ability to *learn* with the help of *data*. The algorithm can master specific mission without being explicitly programmed.

2. Where can Machine Learning Algorithm be used?

Machine Learning algorithms have been widely used in both academia and industry, to name a few applications:

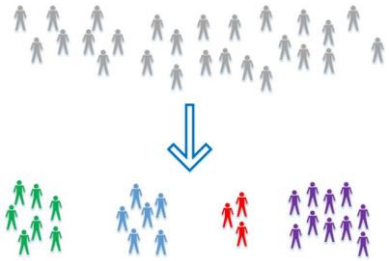
- *Computer Vision* (e.g. Object Recognition)
- *Natural Language Processing* (e.g. Translation, Sentiment Analysis)
- *Quantitative Finance* (e.g. Stock Selection, Trend Prediction)
- *Medicine* (e.g. Cancer Recognition)
- *Game* (e.g. AlphaGo, Atari)
- *Recommendation* (e.g. TaoBao, Net Ease Music)
- ……

3. Category of Machine Learning Algorithms

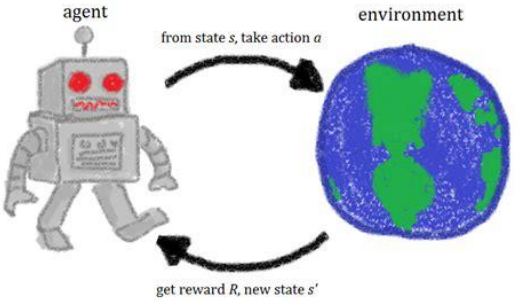
There are many categories of Machine Learning algorithms, roughly speaking:

- *Supervised Learning:* a machine learning task of learning a function that maps an input to an output based on examples of input-output pairs, which are termed as training dataset. After the algorithm analyzes the training dataset and produces an inferred function, the function can be used to map new unseen inputs.

- *Unsupervised Learning:* a machine learning task of inferring the structure of unlabeled data.



- *Reinforcement Learning:* artificial intelligence evolves gradually from the interactions between itself and the environment. It learns how to take actions in response to the changes of environment so that it can maximize the so-called cumulative reward.



4. Programming Language of this Seminar

We use Python to program the algorithms in this seminar.

- Download Python: https://www.python.org . (Recommended Version: 3.5)
- Download Python IDE: http://www.jetbrains.com/pycharm/