

Updated on 11/10/2024

Sign up

Training Reinforcement Learning

2 days (14 hours)

Presentation

Come and learn how to transform your data into concrete actions thanks to [Reinforcement Learning](#). Reinforcement Learning is a [Machine Learning](#) method that can be used to solve a variety of problems, such as robotic control, the inverted pendulum, telecommunications, backgammon and more.

This training course will teach you the fundamentals of a reinforcement environment. You'll discover features such as the Markov Decision Process (MDP), Bellman equations, and the field of actions and observations.

We'll also show you how the algorithms and reinforcement environment work with the Ray Rllib framework.

Our Reinforcement Learning course includes practical case studies in the implementation of a Trading robot. By the end of this course, you will have mastered the operating principle of reinforcement learning. You will be able to create a reinforcement environment in the Ray Rllib framework.

Objectives

- Know how reinforcement learning works
- Create a reinforcement environment with the Ray Rllib framework
- Optimizing a reinforcement learning process

Target audience

- Developers
- Architects
- Big Data analyst
- Data scientist & Engineer

Prerequisites

Knowledge of Python

Technical requirements

- You need a Google account to access [Colab](#)

Training organization

- Teaching team
- Teaching and technical resources
 - Trainee reception in a dedicated training room
 - Projected training materials
 - Theoretical presentations
 - Case studies
 - Indoor quiz
 - Post-training support documents available online

Follow-up system for evaluating training results

- Attendance sheets
- Oral or written questions (MCQs)
- Case studies
- Training evaluation forms

Our Reinforcement Learning training program

Introduction

- IA / ML / DL
- Supervised, unsupervised, reinforcement learning
- Examples and applications

BANDIT MANCHOT

- Principle
- Exploration / exploitation
- Simple strategies
- UCB

- Applications
- TP: Recommendation system

BASIC CONCEPTS AND FORMALISM

- Agent / Environment
- States / Actions / Awards
- MDP
- State values / pairs (state, action)
- Policy / optimal policy
- TP: labyrinth

SOLVE A MDP

- Bellman equations
- Dynamic programming
- Monte-Carlo
- TD-Learning
- On-policy vs. off-policy algorithms
- TP: labyrinth

INTRODUCTION TO RAY RLLIB

- Environment Gym
- Create an agent
- Training
- Policy use and compliance
- Algorithm configuration, saving and loading
- TP: labyrinth

CREATE YOUR OWN ENVIRONMENT

- Components of an environment
- Random environment
- Status vs. observation
- Reward shaping
- TP: trading robot

TO FIND OUT MORE

- Hyperparameter optimization
- Learning from off-line data
- Multi-agent approach
- TP: trading robot

Companies concerned

This course is aimed at both individuals and companies, large or small, wishing to train their teams in a new advanced computer technology, or to acquire specific business knowledge or modern methods.

Positioning on entry to training

Positioning at the start of training complies with Qualiopi quality criteria. As soon as registration is finalized, the learner receives a self-assessment questionnaire which enables us to assess his or her estimated level of proficiency in different types of technology, as well as his or her expectations and personal objectives for the training to come, within the limits imposed by the selected format. This questionnaire also enables us to anticipate any connection or security difficulties within the company (intra-company or virtual classroom) which could be problematic for the follow-up and smooth running of the training session.

Teaching methods

Practical course: 60% Practical, 40% Theory. Training material distributed in digital format to all participants.

Organization

The course alternates theoretical input from the trainer, supported by examples, with brainstorming sessions and group work.

Validation

At the end of the session, a multiple-choice questionnaire verifies the correct acquisition of skills.

Sanction

A certificate will be issued to each trainee who completes the course.