Deep renforcement learning et applications

ECTS : 3

Volume horaire : 24

Description du contenu de l'enseignement :

What you will learn in this class?

- Intro and Course Overview
- Supervised Learning   behaviors
- Principles of Reinforcement Learning
- Policy Gradients
- Actor-Critic Algorithms (A2C, A3C and Soft AC)
- Value Function Methods
- Deep RL with Q-functions
- Advanced Policy Gradient (DDPG, Twin Delayed DDPG)
- Trust Region & Proximal Policy Optimization (TRPO, PPO)
- Optimal Control and Planning
- Model-Based Reinforcement Learning
- Model-Based Policy Learning
- Exploration and Stochastic Bandit in RL
- Exploration with Curiosity and Imagination
- Offline RL and Generalization issues
- Offline RL and Policy constraints

Why you should choose this course about DRL?
- DRL Is a very promising type of learning as it does not need to know the solution
- DRL Only needs the rules and good rewards
- DRL Combines the best aspects of deep learning and reinforcement learning.
- DRL has achieved impressive results in games, robotic, finance and many more fields

References
- Bertsekas, Dynamic Programming and Optimal Control,   Vols I and II
- Goodfellow, Bengio, Deep Learning
- Powell, Approximate Dynamic Programming
- Puterman, Markov Decision Processes: Discrete   Stochastic Dynamic Programming
- Sutton & Barto, Reinforcement Learning: An   Introduction
- Szepesvari, Algorithms for Reinforcement Learning

Compétence à acquérir :

WHAT YOU WILL ACQUIRE IN THIS CLASS?

- Understand principles of Deep Reinforcement Learning (DRL)
- Know main DRL algorithms
- Get some intuition about what DRL is good and not good at?
- Program DRL algorithms

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