

Reinforcement Learning

IA318

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Reinforcement Learning

Inspired by the behavior of animals (including humans!)

- ▶ **Online** learning, by **trial and error**
- ▶ Selection of the best **exploration-exploitation** trade-off
- ▶ Many applications: robotics, medicine, recommender systems, games, etc.



Outline

1. **Dynamic programming**, T. Bonald
2. **TD learning**, T. Bonald
3. **Q-learning**, T. Bonald
4. **Bandit algorithms**, C. Vernade
5. **Contextual bandits**^{*}, C. Vernade
6. **Monte-Carlo tree search**, C. Vernade
7. **Online recommendation**^{*}, T. Wohlfarth

Each block (except the last) = 1 lecture + 1 lab

2 graded labs ^{*}

Information & Evaluation

- ▶ **Moodle**

<https://moodle.r2.enst.fr/>

For general information, slides, notebooks, etc.

- ▶ **Evaluation**

Graded labs (50%)

Final quiz (50%)

References

Olivier Sigaud

Course on [Reinforcement Learning](#) (slides, videos)

David Silver

Course on [Reinforcement Learning](#) (slides)

Richard Sutton and Andrew Barto

Book [Reinforcement Learning: An Introduction](#) (2015)