

## Exercise set #6

You do not have to hand in your solutions to the exercises and they will **not** be graded. However, there will be four short tests during the semester. You need to reach  $\geq 40\%$  of the total points in order to be admitted to the final exam (Klausur). The tests are held at the start of a lecture (room 25.22.U1.74) at the following dates:

Test 1: Thursday, 6 November 2025, 10:30-10:45

Test 2: Thursday, 27 November 2025, 10:30-10:45

Test 3: Thursday, 11 December 2025, 10:30-10:45

Test 4: Thursday, 15 January 2026, 10:30-10:45

Please ask questions in the RocketChat

The exercises are discussed every Wednesday, 14:30-16:00 in room 25.12.02.33.

### 1. TD control

Implement Sarsa, Q-learning and expected Sarsa and apply them to the cliff walking environment from the lecture. The goal is to recreate Figure 6.3 from the textbook<sup>1</sup>, which compares different learning rates. Follow the instructions in the Jupyter notebook `td-control.ipynb`.

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Exercises by Stefan Harmeling, used with permission

<sup>1</sup><http://incompleteideas.net/book/the-book-2nd.html>