

Final Project for Exam

Marius Lindauer



Reminder: Final Grading

- Implement a larger project (worth 1 – 2 weeks full time)
 - ▶ You can propose your own project idea!
 - ★ Hand-in a short summary of the idea and we will provide feedback regarding feasibility
 - ▶ Teamwork (at most 3) again possible
 - ★ Larger team → larger scope of the project
- “Exam”
 - ▶ First 15 minutes: Present your project idea and results in the
 - ★ Of course, everyone will present the project on their own
 - ▶ Second 15min: We will ask further questions about your project and how it relates to stuff you learned in the lecture.
- You will have the choice between a virtual and on-site exam.

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 - ▶ see next slides

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 - Proposal should include:
 - ▶ Scope and main objective
 - ▶ Which open-source frameworks you plan to use
 - ★ both for RL agents and for benchmark envs
 - ▶ Amount for compute resources you will use
 - ★ unfortunately, we cannot provide compute resources to you
 - ★ if required, use free services such as Google Colab
 - ▶ Rough time frame / milestones
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 - ▶ Fill out [ML reproducibility check list], in particular the last 3 blocks
 - Hand in: source code, ML reproducibility check list and PDF presentation with at most 5 slides (excl. title slide)
 - ▶ Proper code documentation; PEP8
 - ▶ Send us an invitation to a GitHub Repo
 - ▶ Us: eimer@tnt.uni-hannover.de, schubert@tnt.uni-hannover.de

Option I: New Env

- Propose a new & interesting benchmark environment / application for RL (incl. state, action, reward, transition, ...)
 - ▶ Use OpenAI-Gym env API
 - Minimal requirement: An RL agent (of your choice) can learn something reasonable
 - ▶ That is, it performs better than a static or random policy
 - ▶ You can use already implemented RL algorithms
 - ▶ We will provide a list of recommended RL agents
 - Further goals could include:
 - ▶ Impact of state or action space (e.g., size or encoding)
 - ▶ Reward signal or reward shaping
 - ▶ Does the Markov assumption hold true?
- ~> Environment should not be too trivial (e.g., a small maze)

Option II: RL Agent

- Implement an RL agent from scratch
 - ▶ Don't use existing implementations!
- Minimal requirement: Your RL agent can learn a reasonable policy on a RL benchmark (of your choice)
 - ▶ That is, it performs better than a static or random policy
 - ▶ You can use already implemented RL benchmark envs
 - ▶ We will provide a list of recommended RL envs
- Further goals could include:
 - ▶ Variants of different algorithm components (e.g., experience replay)
 - ▶ Hyperparameter sensitivity study
 - ▶ Comparison against other baselines

- Proposal Deadline: Jan 28th (AoE)
 - ▶ Submit earlier to get feedback sooner!
- Feedback for proposal: latest Feb 3rd
- Results Deadline: March 17th (AoE)
- Exam: March 22nd - March 26th (in the mornings)
 - ▶ We will send you a link for registration to one of the possible slots

Questions?