Final Project for Exam

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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 $\rightarrow$ 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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- Sound scientific workflow
  - 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
- 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?

$\rightsquigarrow$ 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
- Further goals could include:
  - Variants of different algorithm components (e.g., experience replay)
  - Hyperparameter sensitivity study
  - Comparison against other baselines

Deadlines

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

Questions?