Rubber Duck Racing

Reinforcement Learning Project WS 20/21

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1 Scope and main objective

We plan to implement a RL agent for the OpenAI-Gym CarRacing-v0 environment. We would like to use DQN as our algorithm, tune its hyperparameters and produce results according to the ML reproducibility checklist. We probably also have to introduce some preprocessing.

Additionally, if time allows, we'd like to implement 'extras' such as experience replay and different exploration techniques.

The amount of extras is obviously limited by training and time used for (simple) agent implementation. Finally, we want to compare the results with popular baselines.

2 Frameworks and Resources

We plan to use Google Colab for compute resources and pytorch for the agent. Existing implementations for baseline agents can be taken from your hints slide.

3 Timeframe and Milestones

1. Implementation of the agent (roughly 2 days)
2. Train and evaluate the agents
3. Compare the different agents against each other
4. Implement extras
5. Summarize our findings
6. Prepare presentation
7. Very optional: Try PPO