

Gekitai with Reinforcement Learning

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Specification

- ▶ In this assignment the main goal is to develop an AI capable of playing gekitai using reinforcement learning algorithms.
- ▶ Since the gekitai game is very simple, the goal for our agent is to win games against a more traditional algorithms (in particular MCTS).

Tools and algorithms

- ▶ For this project, we choose python as the main programming language, since it offers a lot of utilities and lots of libraries targeted to RL projects.
- ▶ For the environment we used OpenAI gym.
 - ▶ This was a challenge since gym API is best suited for single-agent environments. This means that `step()` would require some adaptation, i.e. `step()` would play for both the agent and its opponent.
- ▶ The implementation of the RL algorithms will be provided by Stable Baselines3.

Implementation Scheduling

- ▶ At the moment, we have already implemented the environment for the gekitai game.
- ▶ The next step is to make our agent learn using the appropriate RL algorithms, such as:
 - ▶ DQN
 - ▶ PPO
 - ▶ etc.

References

- ▶ Some of the references for the work already carried out:
 - ▶ Gekitai Rules
 - ▶ IA's course page @ moodle
 - ▶ Reinforcement Learning
 - ▶ OpenAI gym
 - ▶ Stable Baselines3