In-class Game Tournament

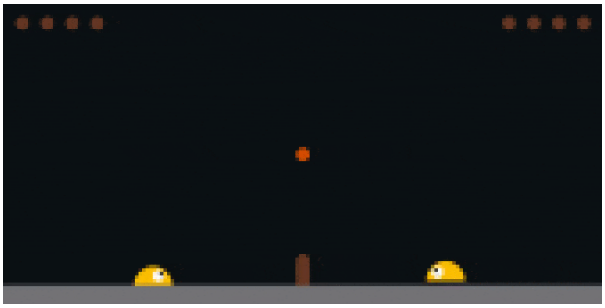
*** Issue date: 2022.03.30.**

I. Goal

- **The goal of this class content (a.k.a., in-class game tournament) is to apply Reinforcement Learning to train an agent that plays game 'Slime Volley Ball' well against the agents trained by your peers.**

II. Problem Description

- **SlimeVolleyGym is a simple gym environment for testing single and multi-agent reinforcement learning algorithms. The game is very simple: the agent's goal is to get the ball to land on the ground of its opponent's side, causing its opponent to lose a life. Each agent starts off with five lives. The episode ends when either agent loses all five lives, or after 3000 time steps has passed. An agent receives a reward of +1 when its opponent loses or -1 when it loses a life.**



  - **https://github.com/hardmaru/slimevolleygym**
- **Students should train their agents using Stable Baselines3 (SB3), which contains a set of reliable implementations of reinforcement learning algorithms in PyTorch.**
  - **https://github.com/DLR-RM/stable-baselines3**

III. Schedule

- **Weekly tournaments will be held in class during Week 10 – 12 (three times).**
- **For each week, each team should submit the most recent (or the best) agent before class in the form specified by the TA.**
  - **Submission format will be announced later.**

IV. Provided material

- **Skeleton training code:** a sample training code (provided as an iPython notebook file)
  - **EE488_04A_Volleyball_statemode_SB3_train.ipynb**
  - **Additional files will be provided later.**

V. Computing

- **One Colab Pro Plus account will be given to each team. The best feature of Colab Pro Plus is that it allows the notebooks to keep executing even after you close your browser.**
- **We advise you to NOT rely only the Colab Pro Plus account especially because there will be 2~3 students in each team (and you have only one Colab Pro Plus account for each team). Try multiple things using your own Colab account and use the Colab Pro Plus account for a longer training.**

VI. Grading

- **Followings will be taken into account for grading.**
  - **Your agent's performance against the agents trained by your peers (i.e., tournament winners will get higher scores).**
  - **Your agent's performance against the default AI embedded in SlimeVolleyGym.**
  - **Your level of participation.**

VII. Acknowledgement

- **The skeleton code was prepared by our TAs Seungjae Han and Changyeop Shin, grad students in NICA Lab.**