Multi-Agent Learning with (B)Pommerman

Getting up and running

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Disclaimer: You may or may not get this to work on other platforms than linux however, you will likely suffer from more headaches than spinning up a linux machine - Sorry ;-)

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Introduction

Installation

First things first: It's not Bomberman - But **POMMERMAN**. Live NIPS 2018 competition - Last submission November 21st if you want to take part.

1. Register your team/user @ www.pommerman.com
2. `git clone https://github.com/MultiAgentLearning/playground.git`
3. Understand the rules of the framework, read this paper
4. Read, iterate, read, iterate, read ...

Gauge your expectations - RL is a field of its own, Multi-Agent Learning is one of the darker undiscovered corners of RL, you are encouraged to reach for the stars, for fulfilling the course requirements however, you are only expected to demonstrate **learning**.

Sketch of project plan

Milestones

Recommended approach: Start small - Iterate in increments

1. Get a consistent FFA agent beating three RandomAgents on average more than 50%
2. Get a consistent FFA agent beating one RandomAgents two SimpleAgents on average more than 50%
3. Get a consistent FFA agent to beat three SimpleAgents on average with more than 50%
4. Design an algorithm to incorporate some learning between your controlled agents

Stretch goals

Once you really get going you can aim to

1. Beat the SimpleAgents with your two cooperating agents with more than 50% on average
2. Submit to NIPS Beat the competition

How to get started

Key reading material!

Do yourself a favour and spend some time (at least) to read up on RL in general, and Multi-Agent learning problems. Here are some great references:

- *I want a book, and it should be nice*
  Reinforcement Learning: An Introduction by Richard S. Sutton, aka. Big boss
- *Just show me the money*
  - Cooperative Multi-Agent Learning: The State of the Art
  - Multi-Agent Actor-Critic for Mixed Cooperative-Competitive Environments
  - Coordinated Multi-Agent Imitation Learning
  - Autonomous Agents Modelling Other Agents : A Comprehensive Survey and Open Problems

Key reading material!

But i don't know how to read!!:

- **INTENSE**: Deep Reinforcement Learning BOOTCAMP
- **LESS INTENSE**: CS294-112 Deep Reinforcement Learning

Time is of the essence, unlimited opportunity, limited time. In order to ensure learning requirements are met; Start **small**.

My god... So much work!

Formalities

Every Monday from 13-17 our time will be divided among the groups at Lecture room A033 as usual, however we'll offer one hour of pre-booked sessions monday 0900-12.00 for the projects. Bookings can be made here - Please book timeslots considerately, and post a message on slack once you do (in the Bomberman channel) such that all interested from the project may take part.

Useful tips & links

Don’t be afraid of getting inspired by other peoples code - Just ensure to cite and quote!

1. **Starting point in PyTorch** by Ross Wightman
2. **Baselines (TensorFlow/Keras** by Tambet Matiisen
3. **Getting Started Docs**
4. **Pommerman TensorForce training script**

We look forward to compete on the battlefield :-)