Imitation-learning-project

General Outline

The project aims to solve/build a single research idea by balancing its theory with empirical evaluation. We hope to begin by gaining intuition about the problem and addressing it on a simple toy task. The method can then be extended to non-trivial robot control tasks in order to compare its efficacy with baseline algorithms.

Multi-Agent Path Finding

- Lifelong Multi-Agent Path Finding in A Dynamic Environment
- Other papers by Reza

Deep Reinforcement Learning for Robot Control

- C-Learning: Learning To Achieve Goals Via Recursive Classification
- COG: Connecting New Skills to Past Experience with Offline Reinforcement Learning
- Diversity Is All You Need: Learning Skills Without a Reward Function
- Hierarchical Deep Reinforcement Learning: Integrating Temporal Abstraction and Intrinsic Motivation

Fundamental Reinforcement Learning

- A Theoretical and Empirical Analysis of Expected Sarsa
- Expected Eligibility Traces
- Dyna: Model-based Planning Combined with Model-Free Learning
- Maxmin Q-Learning: Controlling The Estimation Bias Of Q-Learning

Tentative Schedule

Week	Task	Description	Completed
1	Literature Review	Brainstorm Ideas and jot down good ones	✔️
2	Literature Review	Brainstorm Ideas, Meet with prof	-
3	Formulate Problem	Setup the problem with potential solutions	-
4	Implement Toy Problem	Solve base case and gain intuition	-
5	Implement Toy Problem	Complete base case solution and interpret results	-
6	Implement Algorithm	Solve main problem	-
7	Implement Algorithm	Solve main problem	-
9	Accumulate Results	Interpret and finalize results	-
10	Write Report	Draft and finalize report	-
11	Wrap Project	Package code base and wrap ppt	-