Deep Reinforcement Learning Nanodegree Syllabus

Contact Info

While going through the program, if you have questions about anything, you can reach us at support@udacity.com. For help from Udacity Mentors and your peers visit the Udacity Classroom.

Nanodegree Program Info

Version: 2.0.0

Length of Program: 100 Days*

** This is a self-paced program and the length is an estimation of total hours the average student may take to complete all required coursework, including lecture and project time. Actual hours may vary.*

Part 1: Introduction to Deep Reinforcement Learning

Part 2: Value-Based Methods

Project: Navigation

Train an agent to navigate a large world and collect yellow bananas, while avoiding blue bananas.

Supporting Lessons

Lesson	Summary
Study Plan	Obtain helpful resources to accelerate your learning in the second part of the Nanodegree program.
Deep Q-Networks	Extend value-based reinforcement learning methods to complex problems using deep neural networks.
Deep RL for Robotics	Train a DQN agent in C++, as a first step towards building an autonomous robot in the real world.

Project: Optimize Your GitHub Profile

Other professionals are collaborating on GitHub and growing their network. Submit your profile to ensure your profile is on par with leaders in your field.

Supporting Lessons

Lesson	Summary
Opportunities in Deep Reinforcement Learning	Learn about common career opportunities in deep reinforcement learning, and get tips on how to stay active in the community.

Part 3: Policy-Based Methods

Project: Continuous Control

Train a double-jointed arm to reach target locations.

Supporting Lessons

Lesson	Summary
Study Plan	Obtain helpful resources to accelerate your learning in the third part of the Nanodegree program.
Introduction to Policy-Based Methods	Policy-based methods try to directly optimize for the optimal policy.
Policy Gradient Methods	Policy gradient methods search for the optimal policy through gradient ascent.
Proximal Policy Optimization	Learn what Proximal Policy Optimization (PPO) is and how it can improve policy gradients. Also learn how to implement the algorithm by training a computer to play the Atari Pong game.
Actor-Critic Methods	Miguel Morales explains how to combine value-based and policy-based methods, bringing together the best of both worlds, to solve challenging reinforcement learning problems.
Deep RL for Finance (Optional)	Learn how to apply deep reinforcement learning techniques for optimal execution of portfolio transactions.

Project: Improve Your LinkedIn Profile

Find your next job or connect with industry peers on LinkedIn. Ensure your profile attracts relevant leads that will grow your professional network.

Part 4: Multi-Agent Reinforcement Learning

Project: Collaboration and Competition

Train a pair of agents to play tennis.

Supporting Lessons

Lesson	Summary
Study Plan	Obtain helpful resources to accelerate your learning in the fourth part of the Nanodegree program.
Introduction to Multi-Agent RL	
Case Study: AlphaZero	

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