a glance at reinforcement learning

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Zero - Introduction

agenda

about me

goals for this course

where to go next

One - Background

Expectations

Conditionals

Variance & bias

Bootstrapping

IID

Function approximation

One - Few things about neural networks

Learning rate

Batch size

Scaling / preprocessing

Two - Introduction to reinforcement learning

Context within machine learning

Markov Decision Processes

Four central challenges

Three - Value functions

$V(s)$ vs $Q(s, a)$

Using a value function

Bellman Equation

Dynamic programming

Monte Carlo

Temporal difference

Three - Value functions

SARSA

Q-Learning

DQN

Four - DQN extensions

Eligibiliy traces

Prioritized experience replay

DDQN

Distributional Q-Learning

Rainbow

Five - Policy gradients

Motivations

Discrete & continuous action spaces

The score function

Actor-critic

DPG

A3C

Six - AlphaGo

Comparison with DeepBlue

MCTS

AlphaGo Zero

Seven - Practical concerns

Should I use RL for my problem?

Mistakes and lessons

Best practices

Eight - State of the art

Open AI DOTA

World Models

Deep RL doesn't work yet

Inverse reinforcement learning