

Title Bandits, Learning, and Search (in the advertising industry)
Presenter Tom Vodopivec, Celtra Inc.
Date 2019-08-05
Level Introductory

Brief description

We will provide a basic overview of multi-armed bandit problems and algorithms for solving them. We will illustrate the application of such algorithms on a real problem in the scope of the advertising industry. Then we will continue with the relation of multi-armed bandits to reinforcement learning, and further on with the relation of reinforcement learning to Monte Carlo tree search. We will describe the application of such algorithms for game playing in the scope of the General Video Game AI competition.

Timeshare by content type

1/3 theory
1/3 applied and business
1/3 practical programming and experimentation

Preparation

Since we are in a lab room you might not need laptops, but if you wish to work on your own laptop please install Python 3 (and possibly some IDE of your own preference).

Prerequisites/knowledge

Basic understanding of algorithms, basic statistics, basic AI, basic Python programming.

Expected timeline

Monday 5th August**	Topic	Content	Content type
9:00	Introduction and business context	The advertising industry	Business
9:30		Data science within the advertising industry	Business
10:00	Learning and bandits	Reinforcement learning	Theory
10:30		Coffee break	
11:00	Learning and bandits	Multi-armed bandits	Theory
11:30		Case-study: Real-time optimization of advertising content	Applied
12:00			
12:30		Lunch break	
13:00			
13:30	Learning and bandits	Implementing and evaluating bandit algorithms	Practical
14:00			

14:30			
15:00		Coffee break	
15:30	Learning and search	Reinforcement learning and Monte Carlo tree search	Theory
16:00		The GVG-AI competition	Applied
16:30	Wrap up	Ideas, collaboration, Q&A	Networking

**note that the time dedicated to individual topics might change as we go

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