Title	[Bandits, Learning, and Search](#)
Presenter	[Tom Vodopivec](#), [Silicon Gardens](#)
Date	2022-08-01
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 coding and experimentation

Expected timeline

Monday 1st August*	Topic	Content	Content type
9:30	Introduction and business context	The advertising industry	Business
		Data science within the advertising industry	Business
	Learning and bandits	Reinforcement learning	Theory
10:30		Coffee break	
11:00	Learning and bandits	Multi-armed bandits	Theory
		Case-study: Real-time optimization of advertising content	Applied
12:30		Lunch break	
13:30	Learning and bandits	Implementing and evaluating bandit algorithms	Practical
15:00		Coffee break	
15:30	Learning and search	Reinforcement learning and Monte Carlo tree search	Theory
		The GVG-AI competition	Applied
	Wrap up	Ideas, collaboration, Q&A	Networking
17:00		Course end	

*the time slots and duration of individual topics might change

Preparation

Make sure the python code for the practical part runs without errors - that is the "Main.py" file in the folder "Bandits, Learning, and Search - 24 - Code for bandits" - either locally on your system or on Google Colab.

Prerequisites/knowledge

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

Contact

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