

Marin Bukov: Introduction to Deep Reinforcement Learning with applications in Quantum Control

Reinforcement learning (RL) is, alongside supervised and unsupervised learning, one of the three main pillars of modern machine learning. In RL, an artificial intelligence agent interacts with its environment in order to solve a task, by maximizing a reward signal. I will give an intuitive introduction to the basics of reinforcement learning and its mathematical framework (environment, states, actions, rewards, Markov decision processes, etc.). We will then discuss simple RL algorithms, such as policy gradient and Q-learning, recently used to teach AI agents to control quantum systems.