

SEMINAR SERIES: ANNOUNCEMENT

Reinforcement Learning: from Foundations to Meta Learning

Lecture 1: Tuesday, November 14th, 2023

Lecture 2: Tuesday, November 21st, 2023

Lecture 3: Tuesday, December 5th, 2023

15:30 – 17.45 (1 hour seminar + QA)

Room "Sala Seminari" - Abacus Building (U14)

Speaker

Dr. Matteo Hessel

Google DeepMind

Lecture 1: Introduction to Reinforcement Learning

Abstract

In this first lecture we first discuss the role of reinforcement learning (RL) as a formalization of the problem of intelligence. We introduce the key concepts in RL and the main algorithmic challenges (exploration, credit assignment, planning, state construction, function approximation). In the process, we describe a number of field-defining algorithms, from Q-learning and policy gradients to monte-carlo tree search.

Lecture 2: Deep Reinforcement Learning

Abstract

In this lecture we discuss the opportunities and challenges that arise when integrating deep learning and reinforcement learning in order to build powerful agents, capable of mastering complex skills in a wide range of domains. We also discuss several of the most exciting real world applications of deep RL.

Lecture 3: Meta Reinforcement Learning

Abstract

In the final lecture of the seminar series we discuss the different paradigms for "learning to learn" with reinforcement learning. We analyse the challenges of doing so at scale, and describe the fundamental algorithmic and engineering tools to overcome these challenges. We conclude with an overview of the open research questions for this active area of RL research.

Short Bio:

Matteo Hessel is a Staff Research Engineering Manager at Google DeepMind, Honorary Lecturer at University College London, and a co-organizer of the Mediterranean Machine Learning summer school. His research focuses on the integration of deep learning and reinforcement learning methods for building increasingly intelligent agents, capable of mastering a wide range of skills across diverse domains.

contact person for this Seminar: prof. Matteo Palmonari