6th Advanced Course on Data science & machine Learning – ACDL 2023

from Deep Learning to Foundation Models

Riva del Sole Resort & SPA – Castiglione della Pescaia (Grosseto) Tuscany, Italy
10 – 14 June 2023
https://acdl2023.icas.cc/
lod@icas.cc

Schedule Ver. 1.0 (3 pages) – May 31

	Sat, 10 June	Sun, 11 June	Mon, 12 June	Tue, 13 June	Wed, 14 June
09:00 – 09:50	Yi Ma	Zoltan Szabo	Panos Pardalos	Matej Balog	Michal Valko
09:50 – 10:40	Yi Ma	Thomas Kipf	Tor Lattimore	Michal Valko	Lucas Beyer
10:40 – 11:20	Coffee break	Coffee break	Coffee break	Coffee break	Coffee break
11:20 – 12:10	Yi Ma	Thomas Kipf	Lucas Beyer	Gerhard Paass	Gerhard Paass
12:10 – 13:00	Yi Ma	Zoltan Szabo	Thomas Kipf	Matej Balog	Lucas Beyer
13:00 – 15:00	Lunch	Lunch	Lunch	Lunch	Lunch
15:00 – 15:50	Qing Qu	Bruno Loureiro	Michal Valko	Michal Valko	Aakanksha Chowdhery
15:50 – 16:40	Qing Qu	Bruno Loureiro	Lucas Beyer	Gerhard Paass	Aakanksha Chowdhery
16:40 – 17:20	Coffee break	**Free time**	Coffee break	**Free time**	Varun Ojha
17:20 – 18:10	Qing Qu		Tor Lattimore		Varun Ojha
18:10 – 19:00	Qing Qu		Thomas Kipf		**Free time**
19:00 – 19:50	Bruno Loureiro		Gerhard Paass		
20:00	Dinner	Dinner	Dinner	Dinner	Social Dinner
				21:45 Participant talks	

Conference Room: *The Crown* (in the conference centre of the Riva del Sole Resort & SPA)
Registration: *June 9 @ 18:00 – 19:50* (in the foyer of the conference centre near The Crown conference room)
Inside the Riva del Sole it is mandatory to wear the badge.
Group Photo: *June 10 @ 14:40 Meeting point: on the beach!*

DIRECTORS:
Giuseppe Nicosia, University of Catania, Italy
Panos Pardalos, University of Florida, USA

LECTURERS:
Matej Balog, DeepMind, London, UK
Lucas Beyer, Google Brain, Zürich, Switzerland
Aakanksha Chowdhery, Google Brain, USA
Thomas Kipf, Google Brain, USA
Tor Lattimore, DeepMind, London, UK
Bruno Loureiro, École Normale Supérieure, France
Yi Ma, University of California, Berkeley, USA
Gerhard Paass, Fraunhofer Institute – IAIS, Germany
Panos Pardalos, University of Florida, USA
Qing Qu, University of Michigan, USA
Zoltan Szabo, LSE, London, UK
Michal Valko, DeepMind Paris & Inria France & ENS MVA

TUTORIAL SPEAKER:
Varun Ojha, Newcastle University, UK

ACDL 2023 Lecturers

Matej Balog, DeepMind, London, UK
Lecture 1: "*Algorithm Discovery using Reinforcement Learning 1/2*"
Lecture 2: "*Algorithm Discovery using Reinforcement Learning 2/2*"

Lucas Beyer, Google Brain, Zürich, Switzerland
Lecture 1: "*Large-Scale Pre-Training & Transfer in Computer Vision and Vision-Text Models 1/2*"
Lecture 2: "*Large-Scale Pre-Training & Transfer in Computer Vision and Vision-Text Models 2/2*"
Lecture 3: "*Transformers 1/2*"
Lecture 4: "*Transformers 2/2*"

Aakanksha Chowdhery, Google Brain, USA
Lecture 1: "*PaLM-E: An Embodied Language Model*"
Lecture 2: "*Efficiently Scaling Large Model Inference*"

Thomas Kipf, Google Brain, USA
Lecture 1: "*Graph Neural Networks 1/2*"
Lecture 2: "*Graph Neural Networks 2/2*"
Lecture 3: "*Structured Representation Learning for Perception 1/2*"
Lecture 4: "*Structured Representation Learning for Perception 2/2*"

Tor Lattimore, DeepMind, London, UK
Lecture 1: "*Zeroth-order Optimisation: Applications, Algorithms and Analysis, 1/2*"
Lecture 2: "*Zeroth-order Optimisation: Applications, Algorithms and Analysis, 2/2*"

Bruno Loureiro, École Normale Supérieure, France
Lecture 1: "*Wonders of high-dimensions: the maths and physics of Machine Learning 1/4*"
Lecture 2: "*Wonders of high-dimensions: the maths and physics of Machine Learning 2/4*"
Lecture 3: "*Wonders of high-dimensions: the maths and physics of Machine Learning 3/4*"
Lecture 4: "*Wonders of high-dimensions: the maths and physics of Machine Learning 4/4*"

Yi Ma, University of California, Berkeley, USA
Lecture 1: "*An Overview of the Principles of Parsimony and Self-Consistency: The Past, Present, and Future of Intelligence*"
Lecture 2: "*An Introduction to Low-Dimensional Models and Deep Networks*"
Lecture 3: "*Parsimony: White-box Deep Networks from Optimizing Rate Reduction*"
Lecture 4: "*Self-Consistency: Closed-Loop Transcription of Low-Dimensional Structures via Maximin Rate Reduction*"

Gerhard Paass, Fraunhofer Institute - IAIS, Germany
Lecture 1: "*Introduction to Foundation Models*"
Lecture 2: "*Foundation Models for Retrieval Applications*"
Lecture 3: "*Combining Foundation Models with External Text Resources*"
Lecture 4: "*Approaches to Increase Trustworthiness of Foundation Models*"

Panos Pardalos, University of Florida, USA
Lecture : "*Diffusion capacity of single and interconnected networks*"

Qing Qu, University of Michigan, USA
Lecture 1: "*Low-Dimensional and Nonconvex Models for Shallow Representation Learning*"
Lecture 2: "*Low-Dimensional Structures in Deep Representation Learning I*"
Lecture 3: "*Low-Dimensional Structures in Deep Representation Learning II*"
Lecture 4: "*Robust Learning of Overparameterized Networks via Low-Dimensional Models*"

Zoltan Szabo, LSE, London, UK
Lecture 1: "*Shape-Constrained Kernel Machines and Their Applications*"
Lecture 2: "*Beyond Mean Embedding: The Power of Cumulants in RKHSs*"

Michal Valko, DeepMind Paris & Inria France & ENS MVA
Lecture 1: "*Reinforcement learning*"
Lecture 2: "*Deep Reinforcement Learning*"
Lecture 3: "*Learning by Bootstrapping: Representation Learning*"
Lecture 4: "*Learning by Bootstrapping: World Models*"

ACDL 2023 Tutorial Speaker

Varun Ojha, Newcastle University, UK
Tutorial 1: "*Backpropagation Neural Tree*"
Tutorial 2: "*Sensitivity Analysis of Deep Learning and Optimization Algorithms*"

The Accepted Talks
Tue, 13 June @ 21:45

Each talk must compulsorily last no longer than 8 minutes.

Edina Rosta, "*Enhanced Sampling Simulations of Biomolecular Systems*"
Federico Nocentini, "*Speech-Driven 3D Talking Head animation using facial landmarks*"
Roberta De Fazio, "*Merging Model-Based and Data-Driven Approaches for Resilient Systems Digital Twins Design*"
Alberto Baldrati, "*Zero-Shot Composed Image Retrieval with Textual Inversion*"
Alena van Bommel, "*Accurate epigenetic aging clocks using hydroxymethylation data*"
Emanuele Vivoli, "*MUST-VQA: MUltilingual Scene-text VQA*"
Niccolò Biondi, "*CoReS: Compatible Representations via Stationarity*"
Olivier Caelen, "*Are your models well calibrated?*"
Andrea Mastropietro, "*Leveraging positive-unlabeled learning and graph neural network explainability for disease gene prioritization*"
Igor KoÇakowski, "*GLM: General Language Model Pretraining with Autoregressive Blank Infilling*"
Oren Neumann, "*A universal performance metric for RL*"
Federico Motta, "*Incremental Data-Preparation Pipeline*"
Hamza Amrani, "*Deep Embedded Open Vocabulary Electroencephalography-to-Text Decoding using Pre-Trained Large Language Models*"
Nik Schwichtenberg, "*Data Driven Welding Optimization*"

"Those who have an eye find what they are looking for even with their eyes closed"

"Chi ha occhio trova quel che cerca anche a occhi chiusi"

Italo Calvino.