

**3rd Advanced Course on Data Science & Machine Learning – ACDL 2020**  
*Certosa di Pontignano - Siena, Tuscany, Italy*  
**13 – 17 July 2020**

*Schedule Ver. 11.0 – July 9th*

**Time Zone: Central European Summer Time (CEST), Offset: UTC+2, Rome – (GMT+2:00) Rome**

	Mon, 13 July	Tue, 14 July	Wed, 15 July	Thu, 16 July	Fri, 17 July
07:30 – 09:00	Breakfast	Breakfast	Breakfast	Breakfast	Breakfast
09:00 – 09:50	T. Viehmann Tutorial	Michael Bronstein	8:30 Social Tour  Guided Visit of Siena	D. Bacciu Tutorial	D. Bacciu Tutorial
09:50 – 10:40		Michael Bronstein Tutorial			Igor Babuschkin
10:40 – 11:20	Coffee break	Coffee break		Coffee break	Coffee break
11:20 – 12:10	T. Viehmann Tutorial	Michael Bronstein Tutorial	Lunch	Igor Babuschkin	Igor Babuschkin
12:10 – 13:00		Michael Bronstein Tutorial		G. Fiameni Industrial Talk	Diederik P. Kingma
13:00 – 15:00	Lunch (13:00-14:00)	Lunch		Lunch	Lunch
15:00 – 15:50	Mihaela van der Schaar (14:00-16:40)	José C. Principe	Lorenzo De Mattei Industrial Talk	Guido Sanguinetti	Sergiy Butenko
15:50 – 16:40		José C. Principe	Guido Sanguinetti	Guido Sanguinetti	Sergiy Butenko
16:40 – 17:20	Coffee break	Coffee break	Coffee break	Coffee break	Coffee break
17:20 – 18:10	17:20 Guided Visit of the Certosa di Pontignano & 18:20 Wine Tasting	José C. Principe	Pierre Baldi	Risto Miikkulainen	Marco Gori
18:10 – 19:00		Roman Belavkin	Pierre Baldi	Risto Miikkulainen	Marco Gori
19:00 – 19:50		Roman Belavkin	Pierre Baldi	Risto Miikkulainen	Varun Ojha Tutorial
19:50 – 21:50	Dinner	Dinner	Dinner	Dinner	Social Dinner
21:50 –	Oral Presentation Session with Cantucci biscuits and Vin Santo (sweet wine)	Roman Belavkin with Cantucci biscuits and Vin Santo	Oral Presentation Session with Cantucci biscuits and Vin Santo		

Arrival: July 12 (Dinner at 20:30)

Departure: July 18 (Breakfast 07:30-09:00)

#### REGISTRATION

The registration desk will be located close to the Main Conference Room.

Upon registration at the desk, you will receive your badge, vouchers, and course materials. To facilitate the process please bring with you the *registration confirmation*. You are kindly requested to wear your name badge during all events of the conference.

#### ZOOM: for ACDL 2020 participants using remote connection

As you know, ACDL 2020 is a hybrid event: in person for those who can come to Tuscany, and online for those who want to attend virtually. ACDL 2020 (for participants using remote connection) will use Zoom (<https://zoom.us>). The online lectures and tutorials (e.g., live presentations or recorded ones) will be made possible. ACDL 2020 virtual participants will receive the link and the password.

#### PRESENTATIONS GUIDE

Oral Presentations and Poster Presentations are **5 mins long**. We will share an allocation schedule asap.

WiFi Name: Silver (it is an open Wi-Fi); if you have login and password you can use Eduroam.

## LECTURERS:

- *Igor Babuschkin, DeepMind - Google, London, UK*
  - Lecture 1: An Introduction to Deep Reinforcement Learning
  - Lecture 2: Milestones in Large-scale Reinforcement Learning: AlphaZero, OpenAI Five and AlphaStar
  - Lecture 3 – Tutorial: JAX, A new library for building neural networks
- *Pierre Baldi, University of California Irvine, USA*
  - Lecture 1: Autoencoders and Deep Learning
  - Lecture 2: Deep Learning in the Physical Sciences
  - Lecture 3: Deep Learning in the Life Sciences
- *Roman Belavkin, Middlesex University London, UK (By Presence)*
  - Lecture 1: Introduction to the Value of Information Theory
  - Lecture 2: Applications of the Value of Information: Graphs, Evolutionary and Learning Algorithms
  - Lecture 3: Tutorial on Quantum Probability
- *Michael Bronstein, Twitter & Imperial College London, UK*
  - Lecture 1: Geometric deep learning: history, successes, promises, and challenges
  - Lecture 2: From grids to graphs
  - Lecture 3: Theory and practice
  - Lecture 4: Manifolds, meshes, and point clouds
- *Sergiy Butenko, Texas A&M University, USA*
  - Lecture 1: TBA
  - Lecture 2: TBA
- *Marco Gori, University of Siena, Italy (By Presence)*
  - Lecture 1: *A Constraint-based approach to learning and reasoning*
  - Lecture 2: TBA
- *Diederik P. Kingma, Google Brain, San Francisco, CA, USA*
  - Lecture: Finding Deeply Hidden Truths: Breakthroughs in Nonlinear Identifiability Theory
- *Risto Miikkulainen, University of Texas at Austin, USA*
  - Lecture 1: Evolving Neural Networks for POMDP Tasks
  - Lecture 2: Evolutionary Neural Architecture Search
  - Lecture 3: Evolutionary Surrogate-Assisted Optimization
- *José C. Principe, University of Florida, USA*
  - Lecture 1: Beyond Backpropagation: Cognitive Architectures for Object Recognition in Video – Requisites for a Cognitive Architecture
  - Lecture 2: Beyond Backpropagation: Cognitive Architectures for Object Recognition in Video – Putting it all together
  - Lecture 3: Beyond Backpropagation: Cognitive Architectures for Object Recognition in Video – Modular Learning for Deep Networks
- *Guido Sanguinetti, School of Informatics - University of Edinburgh, UK*
  - Lecture 1: Bayesian hierarchical models for single-cell ‘omics – Foundations and problem description
  - Lecture 2: Hierarchical models for gene expression in single cells
  - Lecture 3: Single-cell epigenetics and multi-omics
- *Mihaela van der Schaar, University of Cambridge, UK (By Presence)*
  - Lecture 1: Machine Learning for Medicine – a new research frontier
  - Lecture 2: Causal Inference and Estimating Individualized Treatment Effects
  - Lecture 3: From Black Boxes to White Boxes: Machine Learning Interpretability, Explainability and Trustworthiness

## TUTORIAL SPEAKERS:

- *Davide Bacciu, University of Pisa, Italy (By Presence)*
  - Learning for Structured Data
- *Varun Ojha, University of Reading, UKs*
  - Do the dynamics of the city environment influence us and how?
- *Thomas Viehmann, MathInf GmbH, Germany*
  - PyTorch: A Modern Library for Machine Learning

## INDUSTRIAL SPEAKERS:

- *Giuseppe Fiameni, NVIDIA*
- *Lorenzo De Mattei, Aptus AI (By Presence)*

## ORAL PRESENTATIONS (Mon 13, July @ 21:50):

21:50 – 21:55 *Analysis of occupational accident reports in a contracting company in the Swedish construction industry*, May Shayboun, Chalmers University of Technology, Sweden

21:55 – 22:00 *Bayesian Neural Networks for RUL prognosis of Solenoid Valves*, Tamir Mazaev, Ghent University – imec, Belgium

22:00 – 22:05 *Neural Ensemble Search for Performant and Calibrated Predictions*, Arber Zela, University of Freiburg, Germany

22:05 – 22:10 *Representation Learning of Forklift Truck Activity with CAN-Bus Data*, Kunru Chen, Halmstad University, Sweden

22:10 – 22:15 *Sample-Efficient Automated Deep Reinforcement Learning*, Jörg Franke, University of Freiburg, Germany

22:15 – 22:20 *Network Analysis for the Integration of Histone Modification Data to Explain Haematopoiesis*, Federica Baccini, University of Pisa, Department of Computer Science - Institute of informatics and Telematics of CNR, Pisa

22:20 – 22:25 *Towards Continual Learning on Device with Latent Replay*, Gabriele Graffieti, University of Bologna, Italy

22:25 – 22:30 *A Flexible Framework for Evaluating User and Item Fairness in Recommender Systems*, Yashar Deldjoo, Polytechnic University of Bari, Italy

## ORAL PRESENTATIONS (Wed 15, July @ 21:50):

21:50 – 21:55 *Automatic Narrative Detection for Lithuanian Language*, Monika Briediene, Vytautas Magnus University, Baltic Institute of Advanced Technology, Lithuania

21:55 – 22:00 *Big data and Machine Learning in Neuroimaging: Could we predict a disorder?* Ivan Maximov, University of Oslo, Norway

22:00 – 22:05 *Discriminative and Generative Bayesian models for informative predictions based on brain MRI scans*, Chiara Mauri, Technical University of Denmark, Denmark

22:05 – 22:10 *Event reconstruction with the aid of object detection algorithms for the electromagnetic calorimeter at the LHCb Experiment at CERN*, Michał Mazurek, National Center For Nuclear Research, Warsaw, Poland and CERN, Poland

22:10 – 22:15 *Financial sustainability of a Home Care Hospital through machine-learning generated protocols*, Alice Martin, IAC Partners, France

22:15 – 22:20 *Knowledge Graph modeling for IoT data in Cultural Heritage framework*, Vincenzo Schiano Di Cola, DIETI - University of Naples Federico II and DATABOOZ, Italy

22:20 – 22:25 *Machine learning for the remote protein homology detection*, Jan Ludwiczak, Laboratory of Structural Bioinformatics, Centre of New Technologies, University of Warsaw, Poland

**SOCIAL ACTIVITIES: Visit of the Certosa di Pontignano, Tour in the Tuscan Countryside and Wine Tasting**

- Guided tour of the Certosa di Pontignano, guided visit to the famous Certosa Chapel (called the Sistine Chapel of Siena).
- Social Tour: Guided tour of Siena.
- Wine Tasting of Tuscan Wines (e.g., Chianti Classico, Chianti Classico Riserva, Chianti Classico Gran Selezione, Brunello di Montalcino) produced in Siena, in general, and in the surroundings of the Certosa di Pontignano, in particular.