



Over the next decade, the biggest generator of data is expected to be devices that sense and control the physical world. The explosion of real-time data that is emerging from the physical world requires a rapprochement of areas such as machine learning, control theory, and optimization. While control theory has been firmly rooted in the tradition of model-based design, the availability and scale of data (both temporal and spatial) will require rethinking the foundations of our discipline. From a machine learning perspective, one of the main challenges going forward is to go beyond pattern recognition and address problems in data-driven control and optimization of dynamical processes. Our overall goal is to create a new community of people who think rigorously across the disciplines, ask new questions, and develop the foundations of this new scientific area.

**We are happy to welcome you to Oxford for the 6<sup>th</sup> annual L4DC Conference: July 16-17, 2024. Tutorials: July 15, 2024.**

We invite submissions of short papers addressing topics including:

- Foundations of learning of dynamics models
- System identification
- Optimization for machine learning
- Data-driven optimization for dynamical systems
- Distributed learning over distributed systems
- Reinforcement learning for physical systems
- Safe reinforcement learning and safe adaptive control
- Statistical learning for dynamical and control systems
- Bridging model-based and learning-based dynamical and control systems
- Physics-constrained learning
- Physical learning in dynamical and control systems applications in robotics, autonomy, biology, energy systems, transportation systems, cognitive systems, neuroscience, etc.

The conference is open to any topic on the interface between machine learning, control, and optimization; its primary goal is to address scientific and application challenges in real-time processes modelled by dynamical or control systems.

#### **Paper submissions:**

- All accepted papers will be presented as posters at the conference. A selected set of papers deemed particularly exceptional by the program committee will be presented as oral talks.
- Accepted papers will be published electronically in the Proceedings of Machine Learning Research (PMLR).
- Submissions are limited to 10 pages in PMLR format with unlimited allowance for references.

Further information at <https://l4dc.web.ox.ac.uk/> or contact us at [l4dc@eng.ox.ac.uk](mailto:l4dc@eng.ox.ac.uk)

#### **General Co-Chairs:**

Kostas Margellos, Antonis Papachristodoulou, Alessandro Abate,  
University of Oxford

**Program Chair:** Mark Cannon, University of Oxford

**Tutorials Chair:** Simone Garatti, Politecnico di Milano

**Publicity Chair:** Ian Manchester, University of Sydney

**Awards Chair:** Maryam Kamgarpour, EPFL

**Website Chair:** Jack Umenberger, University of Oxford

#### **Important dates:**

Paper submission: Dec 2023

Notification: Apr 2024

Camera-ready: May 2024

Conference: July 15-17, 2024

#### **Steering Committee:**

Ali Jadbabaei, MIT

John Lygeros, ETH Zurich

George Pappas, UPenn

Pablo Parrilo, MIT

Ben Recht, UC Berkeley

Claire Tomlin, UC Berkeley

Melanie Zeilinger, ETH Zurich