



The explosion of real-time data arising from devices that sense and control the physical world requires improving synergy in research 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 the 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 conference has been building 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 Ann Arbor for the 7th annual L4DC.

Conference: June 5-6, 2025. Tutorials: June 4, 2025.

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
- Machine learning for reduced-order modeling and physics-constrained systems
- Physical learning in dynamical and control systems applications in robotics, autonomy, biology, energy systems, transportation systems, cognitive systems, neuroscience, etc.

Important dates:

Paper submission: Nov 22, 2024

Notification: Late Feb 2025

Camera-ready: Apr 2025

Conference: June 4-6 2025

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 modeled 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://sites.google.com/umich.edu/l4dc2025/> or contact us at l4dc-2025@umich.edu

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