

# Junan Lin

PhD Student in Oxford Control Group | ✉ [junan.lin@eng.ox.ac.uk](mailto:junan.lin@eng.ox.ac.uk) 🌐 [jalin2000.github.io](https://jalin2000.github.io)  
Seeking research / software engineering internship in optimization solvers, learn-to-optimize, ML and control.  
Full-time available in Summer 2026/2027; part-time available during academic terms.

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## Education

- University of Oxford**, DPhil in Engineering Science (fully funded) Oct 2025 – Apr 2029 (expected)  
• Supervisors: Prof. Luca Furieri and Prof. Paul Goulart
- ETH Zürich**, M.Sc in Robotics, Systems and Control, GPA 5.77/6.00 (distinction) Sep 2022 – May 2025  
• Relevant coursework: Model Predictive Control, Linear System Theory, Machine Perception, 3D Vision, Planning and Decision Making, Robot Dynamics
- Beihang University**, B.Eng in Automation, GPA 3.82/4.00 (top 10%) Sep 2018 – Jun 2022
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## Selected Papers

- Junan Lin**, Paul J. Goulart, and Luca Furieri, “Learning Over-Relaxation Policies for ADMM with Convergence Guarantees”, *arXiv:2604.26932*, 2026.
- Junan Lin**, *et al.*, “Enhancing Port Automation: A Novel Object Detection Pipeline for Container Ship Bays”, *IEEE SENSORS*, Kobe, Japan, 2024.
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## Research Experiences

- Learning Over-Relaxation Policies for ADMM** Oct 2025 – Mar 2026, 📄 Paper  
• Proved **convergence of relaxed ADMM** with time-varying diagonal penalty and relaxation parameters for convex problems under summable-change conditions.  
• Built an **OSQP-style learning-to-optimize pipeline** that adapts over-relaxation policies without triggering linear-system refactorization.  
• Improved convergence speed of OSQP by **10–20%** on benchmark QPs (e.g. Portfolio, SVM, MPC).
- Learning Constrained Value Functions for MPC** Oct 2024 – May 2025, 📄 Slides  
• Developed a data-driven optimization framework for value function approximation in constrained optimal control, targeting fast online decision-making for dynamical systems.  
• Computed value, gradient, and Hessian of the value function efficiently via the **envelope theorem**, avoiding costly neural network training.  
• Achieved **5×** speedup compared to long-horizon MPC while maintaining high feasibility (**up to 96% vs 38% baseline**).
- Policy Optimization for Melt Pool Control in Selective Laser Melting** Apr 2024 – Jul 2025, 📄 Slides  
• Developed a control scheme that combines **temperature trajectory optimization, iterative learning control, and output feedback control (designed by policy gradient)** to drive the surface temperature of selective laser melting system to a reference temperature.  
• Achieved performance comparable to Bayesian optimization **on real hardware** with **simulation-trained** parameters.
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## Internship Experiences

- ABB Switzerland** Oct 2023 – Mar 2024 | May 2025 – Aug 2025  
**Computer Vision & Machine Learning R&D Intern, Baden, Switzerland** 📄 Paper  
• Designed and implemented an end-to-end **learning pipeline** for port automation, transforming 3D sensing data into structured 2D representations for object detection with **Deformable DETR**.  
• Achieved **97% precision & recall** in container detection and **under 5 cm** error in 3D position estimation.  
• Built simulation-based learning workflows and developed **reinforcement learning** policies with curriculum learning for large-scale container loading scenarios.
- DVSense (Beijing) technology** June 2023 – September 2023  
**Computer Vision R&D Intern, Zürich, Switzerland**  
• Built OCR pipelines and improved deployment efficiency by **2–4×** using ONNX/TensorRT.
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## Skills

- Optimization / scientific computing:** OSQP, CVXPY, CasADi, NumPy, SciPy, Pytorch.  
**Programming:** Python, C/C++, MATLAB, Git.  
**Deployment / robotics:** ONNX, TensorRT, Isaac Sim, Isaac Lab.