

Jialin Li

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EDUCATION

University of Illinois Urbana-Champaign

Champaign, United States

Ph.D. Mechanical Engineering

since Aug 2024

ETH Zurich

Zurich, Switzerland

MSc. Robotics, Systems, and Control (with distinction)

Sept 2021 - Sept 2024

University of Science and Technology of China

Hefei, China

BSc. Theoretical and Applied Mechanics (*summa cum laude*)

Sept 2017 - Jul 2021

RESEARCH INTERESTS

My research focuses on designing, analyzing, and evaluating **decision-making algorithms** that enable dynamical systems to leverage **generative models** for robust planning and **continuously learn** from **actively acquired experiences** in a **safe and scalable** manner, with the goal of advancing **autonomous driving** and **generalist robots**.

PUBLICATIONS

Safe Time-Varying Optimization based on Gaussian Processes with Spatio-Temporal Kernel

[Jialin Li](#), Marta Zagorowska, Giulia De Pasquale, Alisa Rupenyan, John Lygeros

NeurIPS, 2024. [\[Paper\]](#)

RESEARCH EXPERIENCES

PhD Student, University of Illinois Urbana-Champaign, advised by [Prof. Naira Hovakimyan](#)

Since Aug 2024

Topic: Generative Planning and Decision Making

- Developing **Diffusion-Based Online RL** method that learns multi-modal policies sample-efficiently
- Leveraging adaptive control to robustify **Decision Transformer**
- Developing sample-efficient **safe exploration** algorithm for dynamical systems

Research Intern, Bosch Center for Artificial Intelligence

Feb 2024 - Jul 2024

Injective Contractive Flows for Stable Trajectory Generation Advisor: [Hadi Beik-Mohammadi](#) and [Leonel Rozo](#)

Research Assistant, Automatic Control Lab, ETH Zurich

Jan 2024 - May 2024

- Enriched theoretical and empirical results of TVSafeOPT
- Accepted by *NeurIPS* 2024

Advisor: [Prof. Dr. John Lygeros](#)

Master Thesis, Automatic Control Lab, ETH Zurich

Apr 2023 - Nov 2023

Time-Varying Safe Bayesian Optimization

Advisor: [Prof. Dr. John Lygeros](#)

- Proposed Event-Triggered StageOPT (ET-StageOPT) algorithm to safely handle time-varying objective;
- Proposed Approximate Time-Varying SafeOPT (A-TVSafeOPT) algorithm to safely and continuously handle time-varying objective and constraints;
- Provided safety and near-optimality guarantees for A-TVSafeOPT;
- Validated effectiveness of both algorithms in simulation.

Research Assistant, USTC Robotics Lab, University of Science and Technology of China

Mar 2019 - Feb 2020

Mechanics Modeling of a Soft Robotic Gripper Augmented by Transfer Learning

Advisor: [Prof. Jianmin Ji](#)

- Derived the approximate moment balance equation for each flexure joint with large deformation;
- Tuned joint stiffness using experimental data with transfer learning to compensate for model mismatch;
- Successfully utilized the soft robotic gripper to grasp fragile objects like tofu with the augmented model.

PROJECTS

Semester Project: **Collision Avoidance for an Object Manipulation Scenario**

- Implemented additional cost terms in the MPC controller to avoid object-robot and object-environment collision;
- Wrote an active perception package for the ALMA robot to update the URDF of the manipulated object;
- Tested the perception and object collision avoidance module in simulation.

Laboratory for Intelligent Decision and Autonomous Robots, Georgia Tech

Jun 2020 – Aug 2020

Research Assistant: **Solution and Simulation of the Humanoid Inverse Kinematics**

- Derived and implemented a geometric IK solution for the bipedal robot Cassie;
- Implemented Jacobian pseudoinverse IK for arms of the upper body humanoid Athena;
- Simulated the whole-body IK for the Athena-Cassie humanoid in Drake.

University of Science and Technology of China

May 2019 - Oct 2019

Robot Summer School: **Design of a Robot for “Rescue over Challenging Terrain”**

- Designed the mechanical structure of a wheeled robot capable of traversing obstacles and climbing slopes;
- Guaranteed the mechanical design’s safety with knowledge of mechanics.

SELECTED HONORS AND AWARDS

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|---|------|
| ➤ ETH Scholarship | 2022 |
| ➤ Guo Moruo Scholarship (the highest honor for undergraduates at USTC) [Link] | 2020 |
| ➤ Scholarship for Outstanding Students, Gold Award | 2019 |
| ➤ National Scholarship | 2018 |

SERVICES

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| ➤ Reviewer: ICRA, RAL, L4DC | since 2021 |
| ➤ TA: UIUC ME 340 Dynamics of Mechanical Systems | 2024-2025 |
| ➤ TA: ETHz Probabilistic Artificial Intelligence [Link] | 2022 |

SKILLS

- Programming: Python, C++, Linux, MATLAB, LaTeX, HTML
- Frameworks: PyTorch, JAX, GPyTorch, GPy, Numpy, Git, Anaconda, ROS, Drake
- Robots: Panda Arm, ALMA (ANYmal with arm), Cassie