# YIXIAO LI

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## EDUCATION

**ETH, Zurich** *September 2023 - Present*
Master of Science in Robotics, Systems and Control
**Awards:** Excellence Scholarships(ESOP) 2023

**Tsinghua University, Beijing** *August 2018 - June 2022*
Bachelor of Science in Mechanical Engineering
Bachelor of Science in Statistics (minor)

- **Academic:** Major GPA:3.84/4.00, Ranking:7/96; Minor GPA: 4.00/4.00
- **Awards:**
  - Outstanding Graduates of Beijing
  - Excellent Graduates of Tsinghua University
  - 7th IEEE ARM Best Conference Paper Finalist
  - Academic Excellence Scholarship of Tsinghua University -2019,2020,2021 (Top 10%)

## RESEARCH EXPERIENCE

**Hong Kong Centre For Logistics Robotics, The Chinese University of Hong Kong**
Robust Dynamic Bin-Picking *June 2023 - November 2023*
*Advisor: Prof.Yun-Hui Liu*

- Proposed a framework for logistic bin-picking capable of picking objects from a moving bin.
- Developed motion planning and control algorithms based MPPI and reactive control.
- Co-authored the paper *DBPF: A Framework for Efficient and Robust Dynamic Bin-Picking* (under review RAL).

**Precision Mechatronics and Control Lab, Tsinghua University**
Planning and Control for Safe Robot-human Interaction *January 2021 - July 2021*
*Advisor: Prof.Chuxiong Hu*

- Developed a hierarchical safe planning and control framework for robot obstacle avoidance.
- Proposed a novel obstacle representation for static and dynamic obstacles in the environment.
- Proposed an automatic hyperparameter regulator to improve efficiency and safety.
- Deployed the dynamic robot collision avoidance system in real-world experiments and tested it with Kinova Jaco robot.

**Intelligent Control Lab, Carnegie Mellon University**
Hyperparameter Optimization for Safe Control Algorithm *July 2021 - September 2021*
*Advisor: Prof.Changliu Liu*

- Developed a coarse-fine tuning optimization framework with significant efficiency improvement (up to 40% compared to a benchmark).
- Designed an Active Contextual Optimizer (ActiveCO) based on Artificial Curiosity and Bayesian Optimization.
- Tested the proposed method on safe control algorithms such as Safe Set Algorithm and Barrier Function Method.

**Precision Mechatronics and Control Lab, Tsinghua University**
Robot Learning for Manipulations *January 2021 - July 2021*
*Advisor: Prof.Chuxiong Hu*

- Proposed Latent Object-Centric Representations for robotic manipulation.
- Conducted real-world experiments and collected about 5,500 episodes of real-world training & validation data. Programmed for data washing and visualization.
- Conducted ablation experiments to prove the efficacy of the proposed method.
- Co-authored the paper *Learning Latent Object-Centric Representations for Visual-Based Robot Manipulation.*

**Institute of Solid Mechanics, Tsinghua University**
Mechanical Logic Gates *September 2019 - April 2020*
*Advisor: Prof.Changqin Chen*

- Designed mechanical logic gates utilizing origami structures.
- Built mechanical models for bistability-based foldable origami structures.
- Designed possible structures for mechanical logic gates AND, OR, and NOT based on the proposed origami structure.

## PUBLICATIONS

[ 1 ] Yichuan Li,Junkai Zhao, **Yixiao** Li,Zheng Wu, Rui Cao,Masayoshi Tomizuka, Yun-Hui Liu,DBPF: A Framework for Efficient and Robust Dynamic Bin-Picking,IEEE Robotics and Automation Letters (under review)

[ 2 ] Jiayu Wang, Yunan Wang, **Yixiao Li**, Chuxiong HU, Yu ZHU, Learning Dynamic Object-centric Representations for Robot Manipulation, IEEE International Conference on Advanced Robotics and Mechatronics, 2022

[ 3 ] Zhiqiang Meng, Weitong Chen, Tie Mei, Yuchen Lai, **Yixiao Li**, C.Q. Chen, Bistability-based foldable origami mechanical logic gates. Extreme Mechanics Letters, 2021

## INDUSTRY EXPERIENCE

**Hong Kong Centre For Logistics Robotics**
Assistant Engineer *September 2022 - August 2023*

- Developed algorithms for robot manipulation skills such as pushing and bin-picking.
- Designed prototypes of hardware and algorithms for a pill identification system.

**Shanghai Micro Electronics Equipment Co., Inc**
Electrical Engineering Intern *June 2021 - August 2021*

- Developed a software for organizing cabling data stored in different engineering softwares.
- Developed a programming interface for transferring cabling information from different software.

## SKILLS

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| **Programming** | R, Python, C++, MATLAB(Simulink) under Linux |
| **Robotics:** | Robot Operating System (ROS), PyBullets, MuJoCo |
| **Mechanical Design:** | SolidWorks, AutoCad, Abaquas |
| **Visualization & Editing:** | R(ggplot2), LaTex |