

# YIXIAO LI

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## EDUCATION

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**Tsinghua University, Beijing**

Bachelor of Science in Mechanical Engineering  
Minor in Statistics & Data Science

*August 2018 - Present*

GPA: 3.86/4.0

## WORK & RESEARCH EXPERIENCE

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**Intelligent Control Lab, Carnegie Mellon University**

Safety Control Optimization Intern

*July 2021 - Present*

Advisor: Prof. Changliu Liu <http://www.cs.cmu.edu/~cliu6/>

- Designed hyperparameter optimizer for a safety control algorithm.
- Developed a coarse-fine tuning optimization framework with 40% efficiency improvement.
- Currently work on active contextual optimizer to enable faster deployment through Sim2Real transfer.

**Precision Mechatronics and Control Lab, Tsinghua University**

Undergraduate Student Researcher

*January 2021 - July 2021*

Advisor: Prof. Chuxiong Hu <https://www.researchgate.net/profile/Chuxiong-Hu-2>

- Proposed Dynamic object-centric representation framework for robotic manipulation.
- Trained neural networks based on Detectron2 for object detection.
- Programmed to transfer models from simulation to real-world experiments.
- Wrote scripts for data washing and visualization.
- Conducting real-world experiments and collected about 5,500 episodes of real-world training & validation data.
- Conducted ablation experiments to prove efficacy of the proposed method.
- Submitted paper *Learning Dynamic Object-centric Representations for Robot Manipulation* as co-first-author.

**Institute of Solid Mechanics, Tsinghua University**

Undergraduate Student Researcher

*September 2019 - April 2020*

Advisor: Prof. Changqin Chen <https://www.hy.tsinghua.edu.cn/hyen/info/1162/1189.htm>

- 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.
- Designed different parameters of prototypes for testing.
- Tested different manufacturing methods(i.e. laser cutting and 3D printing, etc.) for prototyping.

**Shanghai Micro Electronics Equipment Co., Inc**

Electrical Engineering Intern

*June 2021 - August 2021*

- Python scripting for organizing cabling data stored in different engineering software.
- Developed a programming inference for transferring cabling information from different software.
- Wrote guidance and for the program.

## PUBLICATIONS

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- [ 1 ] Jiayu Wang, Yunan Wang\*, **Yixiao Li\***, Chuxiong HU\* & Yu ZHU, Learning Dynamic Object-centric Representations for Robot Manipulation, Science China Technological Sciences (under review) (\*These authors contributed to the work equally and should be regarded as co-first authors.)
- [ 2 ] Zhiqiang Meng, Weitong Chen, Tie Mei, Yuchen Lai, **Yixiao Li**, C.Q. Chen\*, Bistability-based foldable origami mechanical logic gates. Extreme Mechanics Letters, 2021

## OTHER PROJECTS

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### **Building a Leaping Quadruped Robot**

*September 2021 - Present*

*Advisor: Prof. Yu Tian*

Tribology Laboratory, Tsinghua University

- Currently work on the mechanics of the robot.
- Design a quadruped robot capable of jumping and leaping.
- Design machine learning augmented control algorithms for the robot based on proposed structure.

### **Stroke Prediction with Interpretable Machine Learning**

*May 2021 - June 2021*

*Advisor: Prof. Sheng Yu*

Center for Statistical Science, Tsinghua University

- Tested 9 types of machine learning algorithms for stroke prediction.
- Conducted exploration data analysis and make interpretation of the data using Logistic Regression model.
- Improved performance of Random Forest algorithm using Grid Search Optimization. Achieved 82% accuracy and 0.59 recall rate on testing data.
- Developed a framework for stroke prediction with high performance and good interpretability.

### **Programming a Robot Arm to Draw**

*October 2020 - January 2021*

*Advisor: Prof. Guolei Wang*

Institute of Mechatronics, Tsinghua University

- Proposed a novel algorithm for drawing based on Canny edge detection and path planning.
- Wrote MATLAB scripts to realize the proposed algorithm.
- Wrote C++ code to establish communications between the industrial robot arm and MATLAB.
- Successfully implemented the algorithm enabling robot to draw a give stick figure with a pencil.

## SKILLS

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<b>Programming</b>	R, Python, MATLAB(Simulink) under Linux and Windows
<b>Software &amp; Tools</b>	LaTex, Abaqus, SolidWorks, AutoCad
<b>Language</b>	English, Chinese, Pre-intermediate efficiency in Japanese

## AWARDS & SCHOLARSHIPS

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Excellent Academic Scholarship of Tsinghua University	- 2019
Excellent Academic Scholarship of Tsinghua University	- 2020
Third Prize Winner of “Hua Luogeng Cup” Mathematical Modeling Competition	- 2020