YIXIAO LI

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EDUCATION

Tsinghua University, Beijing *August 2018 - Present*
Bachelor of Science in Mechanical Engineering
Minor in Statistics & Data Science

- **Academic:** GPA:3.86, Ranking:7/96
- **Awards:** Academic Excellence Scholarship of Tsinghua University -2019,2020,2021 (Top 10%)
- **Relevant Courses:** Calculus-2(4.0)| Linear Algebra-2(4.0)| Physics for Scientists and Engineers-A(4.0)| Ordinary Equations(4.0)| Probability and Statistics(4.0)| Basic of Control Theory(4.0)

RESEARCH EXPERIENCE

Intelligent Control Lab, Carnegie Mellon University
Safety Control Optimization Intern *July 2021 - Present*
Advisor: Prof.Changliu Liu http://www.cs.cmu.edu/ cliu6/

- Developed a coarse-fine tuning optimization framework with a significant efficiency improvement (up to 40% compared with the worst case scenario).
- Designed an Active Contextual Optimizer (ActiveCO) based on Artificial Curiosity and Black-box Optimization.
- Proposed optimizer capable of incorporating contextual information such as encoded environments and tasks.
- Proposed sampling strategy which actively choose contexts based on Expected Improvement,speeding up the optimization process

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.
- Applied Domain Randomization to transfer models from simulation to real-world experiments.
- Programmed for data washing and visualization.
- Conducted 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.

PUBLICATIONS

[1] Jiayu Wang, Yunan Wang*, **Yixiao Li***, Chuxiong HU* & Yu ZHU, Learning Dynamic Object-centric Representations for Robot Manipulation, IEEE Transactions on Industrial Informatics (under review)

[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

Quadruped Robot Capable of Jumping *September 2021 - Present*
Advisor: Prof.Yu Tian Tribology Laboratory, Tsinghua University

- Designing jumping mechanism for a quadruped robot based on Stanford quadruped robot program "Pupper".
- Rewriting the control with Robotic Operation System(ROS), enabling future incorporation of visual detection and path planning.
- Building simulation environment based on Pybullet and OpenGym for designing novel control methods for jumping actions.

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 used Logistic Regression model for data interpretation.
- Improved performance of Random Forest algorithm using Grid Search Optimization. Achieved 82% accuracy and 59% recall rate on testing data.
- Developed a framework for stroke prediction with high performance and good interoperability.

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 the robot arm to draw a given stick figure with a pencil.

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

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

SKILLS

Languages	English (TOFEL 109), Chinese (Native), Japanese (Pre-intermediate efficiency)
Programming	R, Python, C++, MATLAB(Simulink) under Linux and Windows
Software & Tools	LaTex, Robot Operating System (ROS), Abaquas, SolidWorks, AutoCad