YIXIAO LI

Department of Mechanical Engineering, Tsinghua University

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EDUCATION

Tsinghua University, Beijing

Bachelor in Mechanical Engineering *August 2018 - Present*

Minor in Statistics *September 2019 - Present*

GPA: 3.86/4.0 Rank: 6/97

RESEARCH EXPERIENCE

Hyperparameter Optimization for Hierarchical Long Short Term Safety Control *July 2021 - Present*

Intelligent Control Lab, Carnegie Mellon University

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

Hierarchical Long Short Term Safety Framework(HLSTS) is a general safety control algorithm which proves to be effective in motion planning under stochastic environments. However, extensive experiments show that the performance of HLSTS is heavily influenced by hyperparameters. In order to improve the reproducibility and fairness of the proposed HLSTS, we are developing a contextual optimization algorithm with potential values of reducing efforts and improving performance.

- Developed a coarse-fine tuning optimization framework with 40% efficiency improvement.
- Currently work on active contextual optimization to enable faster deployment through Sim2Real transfer.

Dynamic Object Representation for Robotic Manipulation Task *January 2021 - July 2021*

Institute of Mechatronics, Tsinghua University

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

We proposed Dynamic Object-centric Representations, which are used to train a neural network for capturing the dynamic of robot-objects interactions. Combined with Model Predictive Controller(MPC), our model could be utilized to generate possible sequence of actions for robots to perform manipulation tasks, such as pushing objects.

- Programmed real-world experiments.
- 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.

PUBLICATIONS

[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 equllly 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