

Zipeng Li

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Education

Tsinghua University

Sep 2021–Jul 2025

Undergraduate, major in Automation

GPA: 3.66 / 4.0

Major courses: Pattern Recognition and Machine Learning, Theory of Automatic Control, Signals and System Analysis, Digital Electronics, Operations Research

Research Experience

Bimanual Hand-Object-Interaction Dataset

Aug 2023–Feb 2024

Supervisor: Li Yi, Institute for Interdisciplinary Information Sciences at Tsinghua University

- Built a helmet device equipped with a Realsense camera, and an automatic data acquisition pipeline to capture egocentric RGBD videos and recording timestamps for synchronization.
- Constructed a camera extrinsic calibration pipeline that utilizes marker positions in both world and pixel coordinate system to compute the optimal camera extrinsic minimizing re-projection error of markers.
- Benchmarked interaction field estimation by modifying InterField architecture for our dataset, highlighting the difficulties encountered by current methods in generalizing to novel geometries and actions.

Depth Estimation on Rolling Fingers

May 2023–Aug 2023

Supervisor: Jianjiang Feng, Department of Automation at Tsinghua University

- Designed a device to capture RGB images of rolling fingers, and a pipeline to annotate each image with depth information of the finger surface, which is obtained using COLMAP, a Structure-from-Motion technique.
- Designed and trained a convolutional neural network to estimate depth value at each pixel of the input image.

Satellite Fault Detection and Diagnosis using Machine Learning

Sep 2023–Dec 2023

Supervisor: Fan Yang, Department of Automation at Tsinghua University

- Analyzed and processed time series of large-scale multi-dimensional satellite data, including clustering and dimensionality reduction.
- Developed and fine-tuned machine learning techniques for fault detection and diagnosis using satellite data, including the design of task-specific neural networks and implementation of ensemble learning strategies.

Publication

[1] Yun Liu, Haolin Yang, Xu Si, Ling Liu, **Zipeng Li**, Yuxiang Zhang, Yebin Liu, and Li Yi. Taco: Benchmarking generalizable bimanual tool-action-object understanding, arXiv:2401.08399 [cs.CV]. (Submitted to CVPR 2024)

Technical Skills

English Proficiency: TOEFL 111

Languages: Python, C/C++, MATLAB, Verilog, LATEX

Machine Learning Libraries: PyTorch, scikit-learn

Professional Software: SolidWorks, Multisim, Quartus