Qihao Lin

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EDUCATION BACKGROUND

Carnegie Mellon University (CMU), Pittsburgh, PA ***Jan. 2026 – Present***

MS student in Biomedical Engineering, advised by Zackory Erickson

Sun Yat-sen University (SYSU), China **Sept. 2021 – Jun. 2025**

Bachelor of Engineering in Aeronautical and Astronautical Engineering

RESEARCH EXPERIENCE

Robotic Caregiving and Human Interaction Lab, CMU

Advisor: Zackory Erickonson

Graduate Researcher **Sept. 2025 – Present**

Project 1: Reversibility Aware Bedding Manipulation

- Working on implicit bedding manipulation of uncover and recover via reversibility aware.

Agile Robotics Perception and Manipulation Group, Intelligent Robotics Lab, School of Advanced Manufacturing, SYSU

Advisor: Chongkun Xia, Associate Professor

Undergraduate Researcher **Dec. 2023 – Sept. 2025**

Project 1: Transparent Fragments Contour Estimation via Visual-Tactile Fusion for Autonomous Reassembly

Leader, *Thesis* **Sept. 2024 – Sept. 2025**

- Developed a visual–tactile fusion framework for fine-grained contour estimation of transparent fragments, integrating vision-based localization with GelSight-based tactile sensing to reconstruct local height profiles, gradients, and fracture boundaries for precise fragment matching and reassembly.
- Designed and benchmarked an end-to-end autonomous transparent fragment reassembly pipeline, including a grasp-point network, tactile reconstruction modules, multi-modal fragment classification, and contour matching and reassembly, together with the construction of TransFrag27K the first dataset for transparent fragment grasping and reassembly.

Project 2: Trajectory Prediction and Agile Grasping of Dynamic Fragile Objects

Leader*, Undergraduate Training Program for Innovation and Entrepreneurship* **Dec. 2023 – June. 2024**

- Developed and implemented deep learning models for object detection and trajectory prediction using You Only Look Once (YOLO) and Long Short-Term Memory (LSTM) algorithms; integrated vision systems, visual-tactile sensors, and robotic arms within the Robot Operating System (ROS) framework to achieve multi-modal perception and grasping.
- Utilized an air-floating platform with a simulated zero-gravity environment to perform Three-Degrees of Freedom (3-DOF) perception and grasping of objects in random motion.

Project 3: Benchmarking Grasp Selection for Robotic Cloth Unfolding: The ICRA 2024 Cloth Competition

Key member*, Cloth Track of the 9th Robotic Grasping and Manipulation Competition* **Feb. 2024 – Aug. 2024**

- Primarily responsible for model training and optimization, including loss function adjustments and dataset preparation; processed depth and confidence map data using an ROI strategy and applied the SAM for segmentation, securing the **8th place** in the competition.
- Trained a U-Net deep learning model on curated datasets to determine optimal grasping points for unfolding various fabrics; contributed to a research paper published in The International Journal of Robotics Research (IJRR).

New Concept Propulsion Lab, School of Aeronautical and Astronautical, SYSU **May 2023 – Jun. 2024**

Undergraduate Researcher Advisor: Lin Lai, Associate Professor

Project: Design and Mechanism Study of a Novel Rotary Ionic Engine (RIE) based on the Biefeld-Brown Effect

Leader*, Research and Innovation Training Course* **May 2023 – Jun. 2024**

- Designed and manufactured RIEs, conducting experimental designs and parameter measurement to study the effects of asymmetric electrode configurations and airfoil designs on lift performance under high voltage.

- Designed a new disc-shaped aircraft and participated in the **4th Air and Space Cup Innovation Competition**, winning the **Third Prize**.

INTERNSHIP EXPERIENCE

Shenzhen Haoya IoT Co., Ltd., Shenzhen, China https://www.haoyarl.com
Machine Learning Engineer **Sept. 2025 – Dec. 2025**

- Worked on computer vision algorithm development for sign language translation system as a lead engineer.
- Conducted research on cutting-edge technologies in sign language interpretation.
- Processed sign language data based on the hearing-impaired people the company serves.

PUBLICATIONS

"Transparent Fragments Contour Estimation via Visual-Tactile Fusion for Autonomous Reassembly"

Under Peer Review

Qihao Lin , Borui Chen , Yuping Zhou , Jianing Wu , Yulan Guo , Weishi Zheng , and Chongkun Xia

"A Dataset and Benchmark for RoboticCloth Unfolding Grasp Selection: TheICRA 2024 Cloth Competition"

The International Journal of Robotics Research (IJRR**)**

Victor-Louis De Gusseme , Thomas Lips, **Qihao Lin**, Francis wyffels, et al.

HONORS AND AWARDS

- Outstanding Undergraduate Thesis Award (University-Level), Sun Yat-sen University, 2025
- Outstanding Undergraduate Thesis Award (School of Advanced Manufacturing), Sun Yat-sen University, 2025
- Third-Class Academic Scholarship, Sun Yat-sen University (2023–2024)
- Third-Class Academic Scholarship, Sun Yat-sen University (2022–2023)