

Mingxuan Li (李明暄)

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EDUCATION BACKGROUND

Master: Tsinghua University, Beijing, China 09/2023–Present

- Department: Institute of Manufacturing Engineering, Mechanical Engineering
- GPA: Major: **3.93**/4.00
- Advisors: [Yao Jiang](#), [AutoRobot Lab](#)

Bachelor: Tsinghua University, Beijing, China 09/2019–07/2023

- Major: Mechanical Engineering
- GPA: Major: 3.74/4.00 (Rank: 22/106); Overall: 3.70/4.00 (Rank: 28/106)
- Programming & Software: C/C++, Python, OpenCV, MATLAB, AutoCAD, SolidWorks, Abaqus, Unity, PS, PR

PUBLICATIONS & PATENTS

- Research Interests: *Tactile Perception & Manipulation*, *Vision-Based Tactile Sensors*, *Computer Vision Metrics*

Research Papers

- **Mingxuan. Li**, Lunwei. Zhang, Tiemin. Li, and Yao. Jiang, “Continuous marker patterns for representing contact information in vision-based tactile sensor: principle, algorithm, and verification”, *IEEE Transactions on Instrumentation and Measurement*, vol. 71, Aug. 2022, Art no. 5018212. [\[link\]](#)
- **Mingxuan. Li**, Tiemin. Li, and Yao. Jiang, “Marker displacement method used in vision-based tactile sensors—from 2D to 3D: A review”, *IEEE Sensors Journal*, vol. 23, no. 8, pp. 8042-8059, Apr. 2023. [\[link\]](#)
- **Mingxuan. Li**, Yen. Hang. Zhou, Tiemin. Li, and Yao. Jiang, “Improving the representation and extraction of contact information in vision-based tactile sensors using continuous marker pattern”, *IEEE Robotics and Automation Letters*, vol. 8, no. 2, pp. 1109-1116, Sep. 2023. [\[link\]](#)
- **Mingxuan. Li**, Yen. Hang. Zhou, Tiemin. Li, and Yao. Jiang, “Real-time and robust feature detection of continuous marker pattern for dense 3-d deformation measurement”, *Measurement*, vol. 221, Nov. 2023, Art no. 113479. [\[link\]](#)
- **Mingxuan. Li**, Yen. Hang. Zhou, Tiemin. Li, and Yao. Jiang, “Incipient slip-based rotation measurement via visuotactile sensing during in-hand object pivoting”, accepted by *2024 IEEE International Conference on Robotics and Automation (ICRA)*. [\[preprint\]](#)
- **Mingxuan. Li**, Lunwei. Zhang, Yen. Hang. Zhou, Tiemin. Li, and Yao. Jiang, “EasyCalib: Simple and low-cost in-situ calibration for force reconstruction with vision-based tactile sensors”, accepted by *IEEE Robotics and Automation Letters*. [\[arXiv\]](#)
- **Mingxuan. Li**, Yen. Hang. Zhou, Lunwei. Zhang, Tiemin. Li, and Yao. Jiang, “OneTip is enough: A non-rigid input device for single-fingertip human-computer interaction with 6-DOF”, submitted to *Sensors and Actuators: A. Physical*. [\[TechRxiv\]](#)

Patent Application

- **Mingxuan. Li**, Yanping. Xu, Xue. Qi, Dongqin. Li, and Fan. Wang, “Method and apparatus for touch screen detection”, Application No. 202111074563.1, Publish No. CN 113984337A, 2022-01-28.
- **Mingxuan. Li**, Aijun. Yang, Yanping. Xu, Xue. Qi, and Dongqin. Li, “Method, apparatus, and electronic device for detecting image sticking in display screen”, Application No. 202211286586.3, Publish No. CN 115509040A, 2022-12-23.
- Yao. Jiang, **Mingxuan. Li**, Lunwei. Zhang, and Tiemin. Li, “Tactile sensor, robot, method and apparatus for achieving tactile information acquisition”, Application No. 202210061023.8, Publish No. CN 114544052B, 2023-03-28.

SELECTED AWARDS AND HONORS

Research Performances

- **First Prize of Excellent Oral Presentation**, The 734th Doctoral Academic Forum of Tsinghua University 04/2024
- **Excellent academic paper**, The 16th National Conference on Undergraduate Innovation 12/2023
- **Outstanding Graduation Thesis** of Tsinghua University, 2023 06/2023
- **1st Place** in “New Engineering” Undergraduate Graduation Thesis Competition 06/2023
- **Project leader** of an iStar Program from the Fundamental Industry Training Center, Tsinghua University 05/2023
- **Best Poster Award** and **Excellent Oral Presentation Award** at Tsinghua Youth Science and Innovation Forum 03/2023
- **Grand Prize of Outstanding Project** of 2022 Tsinghua University Student Research Training (SRT) Program for Undergraduates (Top 5 of 1938, and was **the only single person study** among them) 12/2022
- **Project leader** of a National Training Program of Innovation and Entrepreneurship for Undergraduates 06/2022
- **Project leader** of an A-level Tsinghua University Initiative Scientific Research Program (**Excellent project rating**) 05/2022

- Served as the co-first author, led the team to win the **only Grand Prize in Tsinghua Craftsmanship Awards, 2022** (Received the award from **the President of Tsinghua University** as the only representative, and was **widely reported by mainstream medias in China**, including the report of **Xinhua News** with over **1.3 million views**) 04/2022
- Selected to **“Spark” Innovative Talent Cultivation Program** (Top 2% for outstanding research performance) 03/2022

Academic Awards

- Exceptionally awarded the **Comprehensive Excellent First-Class Scholarship** as a first-year graduate 11/2023
- **Excellent Graduates** of Tsinghua University, 2023 06/2023
- Named the **Person of the Year** in the Department of Mechanical Engineering, Tsinghua University 04/2023
- **Neng Ke Scholarship**, Tsinghua University (**Highest amount** in M.E. department, **Top 2%** of 300) 11/2022
- **Comprehensive Outstanding Award Scholarship**, Tsinghua University (**Top 5%** of 126) 11/2021
- **1st Prize** in National Zhou Peiyuan Mechanics Competition, 2021 (**Top 0.2%**) 08/2021
- **1st Prize** in National Undergraduate Physics Competition, 2020 (**Top 1%**) 12/2020

Innovation & Entrepreneurship

Student head of the ‘*ClearTactile*’ tech startup team

- **Grand Prize** in the 2023 “Challenge Cup” Capital Science and Technology College of Extra-curricular Academic Competition 06/2023
- **4th Place** in the “Kunshan Cup” 24th Tsinghua University Entrepreneurship Competition 03/2023
- **Bronze Award** in the 8th China College Students’ “Internet+” Innovation and Entrepreneurship Competition, National Finals 12/2022
- **3rd Place** in the special invitation track of the 4th “Beijing-Tianjin-Hebei and Guangdong-Hong Kong-Macao” Youth Innovation and Entrepreneurship Competition 09/2022
- **1st Prize** in the 8th China College Students’ “Internet+” Innovation and Entrepreneurship Competition, Beijing Area 07/2022
- **The top ten teams** in the China College Students’ “Internet+” Innovation and Entrepreneurship Competition, Tsinghua University, 2022 (**The only undergraduate student team**) 06/2022

PREVIOUS WORK & RESEARCH EXPERIENCE

Research on Representation and Extraction of Robotic Tactile information 04/2021–07/2023

Student Research Training Program, supervised by Prof. Yao Jiang, Tsinghua University

- Served as the **sole participant (student)**, proposed the continuous marker patterns (CMP) to improve the tactile representation.

Self-Initiated Research Interest Group for Undergraduates, supervised by Prof. Yao Jiang, Tsinghua University

- Served as **the leader** of “Tactile Information Representation and Extraction” group, responsible for the project management.

Design, Preparation and Application of Multimodal Tactile Sensor 03/2022–07/2023

The ClearTactile tech startup team, supervised by Prof. Yao Jiang, Tsinghua University

- Served as the **student leader** and the **co-first author** in integrating high-performance visuotactile sensors.

Research on Innovation and Application of Intelligent Software Testing 01/2021–02/2021, 07/2022–08/2022

Interned in LCFC Luzhou Laboratory, LCFC (Hefei) Electronics Technology Co., Ltd.

- Studied the detection device of LCD touch screen based and the detection method of image sticking in LCD screen.

Studying on Under-Actuated Robotic Hands and Soft Robots 09/2020–04/2021

Independent Research, supervised by Prof. Wenzhen Zhang, Tsinghua University

- Proposed a soft robot hand based on self-curling underactuated structure and developed the prototypes.

COMMUNITY SERVICE AND LEADERSHIP

- **Invited as Reviewer**: *IEEE Sensors J.*, Jul. 2023; *ICRA 2024*, Oct. 2023; *IEEE TIM*, May 2024; *Scientific Reports*, Jun. 2024.
- Serves as the **Vice President and Academic Affairs Representative of the Graduate Association**, Department of Mechanical Engineering, Tsinghua University
- Served as the **Chairman of the Sub-forum** “Key Components and Equipment” and the **Organizational Committee Member**, The 734th Doctoral Academic Forum of Tsinghua University.
- **Former Vice President** of Hunan Cultural Student Association of Tsinghua, in charge of science & innovation and lecture activities.
- **Invited to give a Keynote Speech** at the 2022 Tsinghua Maker’s Day New Age Creativity Education Forum.