JIACHENG LIU

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EDUCATION

Cornell University, Ithaca, New York, USA *Aug 2025 – Present*

Ph.D. Student in Information Science

Advisor: Cheng Zhang

My research centers on AI-assisted sensing technologies, with a particular emphasis on wearable form factors. I am passionate about building activity-detection systems and assistive devices that provide unobtrusive and powerful monitoring and support. I envision a future in which AI genuinely understands human behavior and helps people better understand themselves.

Tsinghua University, Beijing, China *Sep 2021 – Jun 2025*

Bachelor of Creative Design and Intelligent Engineering (CDIE), Xinya College

An interdisciplinary undergraduate program that combines Electrical Engineering and Computer Science (EECS, main part), Mechanical Engineering (ME), and Industrial Design (ID).

GPA: 3.96/4.00, Rank 2.

PUBLICATION

* These authors contributed equally to this work.

1. **Jiacheng Liu***, Jiankai Tang*, Guangye Zhao, Ruichen Gui, Songqin Cheng, Taiting Lu, Mahanth Gowda, Yuanchun Shi, and Yuntao Wang. 2025. **PPG as a Bridge: Cross-Device Identity Transfer with Photoplethysmography**. *Submitted to the 2026 CHI Conference on Human Factors in Computing Systems (CHI '26)*.

2. Ruidong Zhang, **Jiacheng Liu**, Justin Xiang, Ke Li, Babak Sadoughi, Sam Tilsen, François Guimbretière, and Cheng Zhang. 2025. **AI-Powered Wearable Acoustic Sensing Restores Natural Voice for Laryngectomees**. *Submitted to Nature Electronics*.

3. Jiankai Tang*, **Jiacheng Liu***, RENLING TONG, Kai Zhu, Zhe Li, Junliang Xing, Yuanchun Shi, Yuntao Wang. 2025. **Exploring Efficient and Reliable PPG Authentication in Daily Scenarios**. 2025. *ready for IEEE Transactions on Biometrics, Behavior, and Identity Science (IEEE T-BIOM)*. https://arxiv.org/abs/2503.23930

4. Jiankai Tang, Xinyi Li, **Jiacheng Liu**, Xiyuxing Zhang, Zeyu Wang, and Yuntao Wang. 2024. **Camera-Based Remote Physiology Sensing for Hundreds of Subjects Across Skin Tones**. 2025. *In PhysioCHI: Towards Best Practices for Integrating Physiological Signals in HCI, Workshop at ACM CHI 2024, Honolulu, HI, USA (CHI Workshop PhysioCHI 2024)*. https://arxiv.org/abs/2404.05003

5. Yu Zhang, Peizhong Gao, Fangzhou Kang, Jiaxiang Li, **Jiacheng Liu**, Qi Lu, and YINGQING XU. 2024. **OdorAgent: Generate Odor Sequences for Movies Based on Large Language Model**. 2024. *In 2024 IEEE Conference Virtual Reality and 3D User Interfaces (VR) (pp. 105-114). IEEE.* https://ieeexplore.ieee.org/abstract/document/10494179

RESEARCH EXPERIENCE

SciFi Lab, Cornell University *Aug 2025 - Present*

Ph.D. Student / Advisor: Prof. Cheng Zhang *Ithaca, New York, USA*

- Developing smart wearable devices for human activity tracking.

Pervasive HCI Group, Tsinghua University *Oct 2023 - Aug 2025*
Undergraduate Research Assistant / Advisor: Prof. Yuntao Wang *Beijing, China*

- Led the project *PPG as a Bridge*, a ubiquitous and unobtrusive cross-device authentication method for smart wearable devices.
- Led the project *PPG Authentication* and the design of RAPID-MTL, a reliable and efficient authentication model using PPG signals that can fit different daily scenarios with diverse security requirements.
- Examined the impact of skin tone diversity in dataset composition on the performance of remote photoplethysmography (rPPG) models.

SciFi Lab, Cornell University *Jul 2025 - Oct 2025*
Visiting Student / Advisor: Prof. Cheng Zhang *Ithaca, New York, USA*

- Designed a smart neckband capable of generating high-quality human voice for patients who have undergone throat-removal therapy.
- Proposed a cross-modal model leveraging acoustic signals from smart glasses to reduce dependence on silent data in silent speech recognition.

The Future Lab, Tsinghua University *Mar 2023 - Sep 2023*
Undergraduate Research Assistant / Advisor: Prof. Yingqing Xu *Beijing, China*

- Designed an automated odor generator that creates synchronized scent sequences with movie content through prompt engineering with a Large Language Model (LLM).

TEACHING EXPERIENCE

INFO 1300 - Introductory Design and Programming for the Web *Fall '25*
Teaching Assistant / Instructor: Prof. Kyle Harms *Ithaca, New York, USA*

HONOR AND GRANTS

Tsinghua University Scholarship
- 🏆 Outstanding Undergraduate Thesis (Awarded to **a single** student in the cohort) *Jul.2025*
- Xinya College Academic Excellence Award *Jul.2025*
- Passion for Reading Scholarship (awarded to **only 2** students at the college level) *Oct.2022*
- Tsinghua Friendship - Toyota Scholarship (awarded to **only 1** student at the college level) *Oct.2023*
- Tsinghua Friendship - Luo Yuehua Scholarship (awarded to **only 3** students at the college level) *Nov.2024*

Research assistance fund
- Tsinghua University Academic Advancement Plan project *Oct.2024*
- Beijing Natural Science Foundation *Oct.2023*

SOCIETY MEMBERSHIPS

- Minister of the Publicity Department, Student Union, Xinya College, Tsinghua University *Jul.2022 - Jul.2023*
- Member of the Publicity Department, Student Union, Xinya College, Tsinghua University *Jul.2021 - Jul.2022*
- Class Representative, Creative Design and Intelligent Engineering Program *Jul.2023 - Jul.2025*

SKILLS

Programming Languages:	Python, C, C++, Swift, MATLAB, shell
Hardware Programming:	Verilog, Micropython, Arduino, Quartus II, Multisim
Modeling & UI Design:	Xcode, Photoshop, AutoCAD, Solidworks, Indesign, Figma, Fusion 360
Skill Set:	Machine Learning, User Interface Design, 3D printing, Laser Cutting