Weiyi Wang

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https://scholar.google.com/citations?user=f97uNVwAAAAJ

Education

M.Eng. Shanghai Jiao Tong University, Electronic Information, School of Computer Science — Shanghai, China, Sept 2025 – present

- Admitted through the recommendation-based graduate admission program.
- GPA: 3.82 / 4.00
- Research interests: multimodal sensing, edge AI, ubiquitous computing and HCI, IoT
- Selected courses: Principles and Design of Sensing Systems (A+), Frontiers of Autonomous Driving Technology (A+), Mobile Intelligent Sensing (A), Neural Network Theory and Applications (A)

B.Eng. Dalian University of Technology, Computer Science and Technology — Dalian, China, Sept 2021 – June 2025

- Weighted average score: 90.89 / 100, ranked 5 / 143 (top 3.5%)
- Selected courses: Computer Network Experiments (99), Discrete Mathematics (98), Mathematical Analysis for Engineering (96), Advanced Programming in C++ (96), Compiler Principles (94), Data Structures (93), Artificial Intelligence (93), Operating Systems (92)
- English: CET-6 (518)

Experience

Shanghai Baosight Software Co., Ltd. (China Baowu), Intern — Sept 2026 – present, 3 months

Publications

Eyes-Free, Touch-Free, and Worry-Free: Repurposing Wireless Chargers for Safer In-Car Gesture Interaction — Sept 2026
Weiyi Wang, Lanqing Yang, Guo Yu, Qinfei Fan, Jeffery Wu, Longyuan Ge, Leo Linqian Gan, Guangtao Xue
10.1145/3831984 (Proc. ACM IMWUT, Vol. 10, No. 3, Article 164 (UbiComp 2026, CCF A, first author))

SingSprite: Non-Tactile Appliance Interaction for the Blind through Power-Supply Acoustic Signatures — May 2026
Lanqing Yang, **Weiyi Wang**, Yongzhao Zhang, Yixin Liu, Yi-Chao Chen, Guangtao Xue, Ahmad Ali
10.1145/3774906.3800505 (ACM/IEEE SenSys 2026 (CCF B, first student author), pp. 933-946, Saint-Malo, France)

Conference Presentations

- Oral presentation of MagHarp, UbiComp / ISWC, Shanghai, China (October 2026)
- Oral presentation of SingSprite, ACM/IEEE SenSys, Saint-Malo, France (May 2026)

Projects

MagHarp: In-Car Mid-Air Gesture Interaction by Repurposing Wireless Chargers — Dec 2024 – June 2026
First author, ACM IMWUT / UbiComp 2026 (CCF A)

- Designed a low-cost seat retrofit (conductive fabric on the seat surface) that turns the driver's body into a near-field antenna, capturing hand-induced perturbations of Qi charging signals without modifying the charger or the phone.
- Built a pipeline of background subtraction, harmonic band selection and multi-band stitching, followed by a lightweight CNN-BiLSTM that recognizes 7 gestures (swipe, press, etc.).
- Reached 97.6% average accuracy on 3,500 samples across 5 chargers and 4 phones.

SingSprite: Non-Tactile Appliance Interaction for Blind Users Dec 2024 – Sept 2025
First student author, ACM/IEEE SenSys 2026 (CCF B)

- Phones and smartwatches identify nearby appliances and their working states from the high-frequency hum of their power supplies, with voice and vibration feedback; no tags or retrofitting needed.
- VMD-based noise removal, an FCN-BLSTM autoencoder for low-sampling-rate microphones, and a multi-stage LSTM (HumNet) for joint appliance and state recognition.
- End-to-end F1 of 0.95 over 100 appliances and F1 of 0.92 across eight kinds of mobile devices; user study with 16 blind participants.

Non-Intrusive Monitoring of Shared Laboratory Instruments Feb 2026 – Aug 2026
Back-end recognition algorithms and Home Assistant front-end

- Infers the working state and real-time rotor speed of closed commercial instruments (e.g., high-speed refrigerated centrifuges) from leaked acoustic hum and low-frequency magnetic fluctuations captured by external microphones and magnetometers.
- Classifies 4 working states (F1 0.885) and regresses continuous speed (mean error about 5% of full speed) in parallel.
- Runs in real time on NVIDIA Jetson with TensorRT, integrated with Home Assistant and a web dashboard for status alerts and reservations; deployed at the SJTU School of Life Sciences.

Honors and Awards

National Scholarship (Graduate) 2026
Academic year 2025-2026

Ningbo Future Star Excellent Engineer Scholarship 2026

Outstanding Graduate of Liaoning Province 2025

Outstanding Graduate of Dalian University of Technology 2025

BYD Scholarship 2024

Honorable Mention, Mathematical Contest in Modeling (MCM/ICM) 2024

Merit Student of Dalian University of Technology 2024
Awarded in 2022, 2023 and 2024

National Scholarship (Undergraduate) 2023
Academic year 2022-2023

First Prize, the 14th Chinese Mathematics Competitions 2023
National College Students' Mathematics Competition

Technical Skills

Physics-informed sensing design: Identify physical signatures and design task-specific sensing pipelines, using harmonics spaced about 360 kHz apart in Qi2 wireless charging for gesture sensing and switching-power-supply acoustics for appliance-state recognition.

Sensing: RF / near-field electromagnetic sensing (HackRF One SDR), acoustic and magnetic sensing, STFT, variational mode decomposition, filtering

Machine learning: CNN, BiLSTM / LSTM and autoencoders for time-series and spectrogram data

Edge and systems: NVIDIA Jetson, TensorRT, Home Assistant, web dashboards

Programming: Python, C++

Leadership and Service

- Class Monitor, Baowu Class of 2026 (Engineering Master's and PhD Program) and CS Master's Class 25M036, SJTU (2025-present)
- Vice Minister, Student Self-Management Committee, Dalian University of Technology (2023-2025)
- Peer Mentor of a freshman class, Dalian University of Technology (2023-2025)
- Class Monitor of two undergraduate classes, Dalian University of Technology (2022-2025)