

Qitong Li

qitongli2025@u.northwestern.edu | 773-299-3155 | linkedin.com/in/qitongliqt | github.com/qitong-li

Education

Northwestern University, M.S. in Computer Engineering (Thesis Track) Sept 2023 - June 2025

- **Advisor:** Nivedita Arora
- **Focus:** Physical computing, plant-environment sensing interfaces, embedded systems, Human-Computer Interaction, and STEM education

Beijing University of Technology, B.S. in Computer Science Aug 2019 - June 2023

Relevant Coursework: Data Structures, Algorithms, ML, Software Engineering, OS, Architecture, VR, VLSI IC Design

Research Experience

Research Assistant, VAK Embodied System Lab, Northwestern University March 2024 - Present

Project 1: When Plants Breathe: A Frugal Toolkit for Exploring Stomatal Rhythms and Photosynthesis Types (Manuscript submitted to ACM IMWUT 2026)

- Designed a low-cost embedded sensing system using **CO₂, humidity, and temperature sensors** to help students observe stomatal rhythms and distinguish photosynthesis types, with a focus on CAM behavior.
- Built microcontroller-based data acquisition pipelines to visualize continuous environmental fluctuations and plant physiological responses.
- Collected **ground-truth physiological data** (completed: LI-COR gas-exchange measurements and QBIC Quantitative Bulk-Elemental metal-content assays; in progress: transcriptomics workflows and leaf acid-titration assays).
- Developed hands-on **STEM curriculum modules** integrating plant physiology, embedded systems, and computational thinking concepts.
- Conducted initial **classroom pilots user study** to support inquiry-based learning and improve data literacy around plant-environment interactions.

Project 2: OECT Sensors for In-Vivo Plant Monitoring

- Developed **hydrogel-based organic electrochemical transistor (OECT)** sensors using PEDOT:PSS and biodegradable freeze-thaw cryogels for in-vivo plant interfacing.
- Setting up characterization workflows using a **PalmSens electrochemical analyzer**, including linear voltammetry and impedance measurement pipelines.
- Investigating material-device interactions, hydration dynamics, and sensor stability to enable robust long-term ecological and educational sensing deployments.

Intern Experience

Software Engineer Intern, HiRain Technologies - Beijing, China Mar 2023 - May 2023

- Optimized **Linux real-time process performance** for automotive control software by monitoring CPU occupancy and execution cycles.
- Built Python visualizations to analyze performance bottlenecks and system reliability in in-vehicle embedded systems.
- Authored technical documentation for system functionality and code architecture.

SDE Intern, Shanghai Zhizhen Junzhi Technology - Beijing, China Jul 2022 - Aug 2022

- Developed large-scale online data collection and sentiment analysis pipelines.
- Built web-scraping automation using Selenium and WebDriver.
- Integrated **BERT + LSTM** models for dynamic multi-modal emotion classification.

Honors & Awards

- **Best MS Thesis Award**, Northwestern ECE (2025)
- Joint-Training Scholarship, Tsinghua University
- Academic Excellence Award, Beijing University of Technology

Service & Extracurriculars

- Science Mentor, Pederson-McCormick Boys & Girls Club (2024-Present)
- Reviewer, ACM TEI (2025)
- Reviewer, ACM CHI (2026)
- Assistant Hair & Makeup Designer, NU Dolphin Show (2023-2025)
- Musical Performer, “Rebecca” - Tsinghua University Musical Club (2020-2022)

Projects

News2Video – AI-Driven Journalism Video Generation Platform [Demo Video] Jan 2024 - Mar 2024

- Built an end-to-end system combining **frontend UI (Streamlit)**, **backend automation**, and **AI agents** to convert online news articles into short-form journalism videos
- Integrated AI APIs for script writing, audio narration, and image generation, and automated video editing with MoviePy and OpenCV

Smart Desk – Cross-Device Interaction Workspace [Demo Video] Feb 2022 - Jun 2022

- Implemented “one-seat activation” with face recognition unlock and meeting handoff for cross-device continuity
- Developed an **Android app transforming the phone into a multi-functional touchpad**, enabling gesture-based control (mute, volume/brightness, media playback) and reducing interaction time by half
- Demonstrated the broader vision of an **intelligent, adaptive workspace** by integrating computer vision (YOLOv5), mobile computing, and sensor-based context awareness

Technologies

Languages: Python, C++, C, Java, JS, SQL, Rust, Verilog

Frameworks: PyTorch, TensorFlow, Keras, Spring Boot

Tools: Git, Docker, AWS, Linux, Android Studio

Embedded/EDA: Arduino, ESP32, Micro:bit, Raspberry Pi, Cadence Virtuoso