SIQI ZHANG

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EDUCATION

Carnegie Mellon University *2025 - Present*
Ph.D. in Electrical and Computer Engineering
Advisor: Justin Chan, Mayank Goel

Tsinghua University *2021 - 2025*
B.E. in Intelligent Engineering and Creative Design (CDIE)
Coursework primarily Electrical Engineering and Computer Science, Mechanical Engineering and Industrial Design
Cumulative GPA: 3.99 (Rank: 1)

PUBLICATIONS

LubDubDecoder: Bringing Micro-Mechanical Cardiac Monitoring to Hearables
Siqi Zhang, Xiyuxing Zhang, Duc Vu, Tao Qiang, Clara Palacios, Jiangyifei Zhu, Yuntao Wang, Mayank Goel, Justin Chan
CHI 2026

DropleX: Liquid sensing on tablet touchscreens
Siqi Zhang, Mayank Goel, Justin Chan
Under Review

RESEARCH EXPERIENCE

DropleX: Liquid sensing on tablet touchscreens
2025 - Present / Ph.D. Student **Advisor: Justin Chan, Mayank Goel**

- Contribution: Led the design of *DropleX*, a system that enables liquid sensing on commodity tablet touchscreens for microliter-scale detection and through-container analysis.
- Approach: Repurposed capacitive touchscreens to detect and characterize liquids; developed signal processing and machine learning pipeline for liquid identification.
- Achievement: Achieves 89-99% accuracy in detecting microliter-scale adulteration in drinks, 94-96% accuracy in threshold detection of trace chemical concentrations, and 86-96% accuracy in through-container detection.

LubDubDecoder: Bringing Micro-Mechanical Cardiac Monitoring to Hearables
July. 2024 - Sept. 2025 / Research Assistant **Advisor: Justin Chan, Mayank Goel**

- Contribution: Led the design of *LubDubDecoder*, a system that enables fine-grained monitoring of micro-cardiac vibrations associated with the opening and closing of heart valves across a range of hearables.
- Approach: Developed machine learning algorithm to perform fine-grained SCG and GCG waveforms from ear-based heart sounds which generalizes across different hearable designs. Repurposed built-in speakers in hearables into a microphone to capture heart sounds from the ear.
- Achievement: Achieves correlations of 0.88–0.95 compared to chest-mounted reference measurements, and generalizes to unseen hearables using a zero-effort adaptation scheme.

EchoVoice: Synthesizing Speech Voice from Skin Deformations using Flow-based Variational Auto-Encoder
Oct. 2023 - Feb. 2024 / Research Assistant **Advisor: Cheng Zhang**

- Contribution: Developed a speech synthesis system for patients unable to speak which synthesizes highly personalized voice directly from skin deformations captured through active acoustic sensing .

- Approach: Designed a deep learning pipeline that could directly synthesize natural-sounding speech from acoustic reflections from the user's mouth, using variational auto-encoders and neural vocoders.
- Achievement: Achieved high-quality speech synthesis that's accurate in conveying information with evaluation scores (PESQ, WER, etc.) comparable or superior to prior work, while preserving nuances in the speech including speed, tone and stutter.

FELLOSHIPS AND AWARDS

Axel Berny Presidential Graduate Fellowship *2026*
Carnegie Institue of Technology Dean's Fellow *2025*
Luo Yue Hua Fellowship – Tsinghua University *2024*
Optics Valley Fellowship of China *2023*
National Scholarship (top **0.2%** among undergrads in China) *2022*
Tsinghua Outstanding Student Leader (awarded to **only 1** student every college) *2022*
Tsinghua University Scholarship *2022*

TECHNICAL SKILLS

Programming languages	C, C++, Python, MATLAB, HTML, CSS, JavaScript
Hardware languages	Verilog, Arduino, STM32, QuartusII
Design Tools	SolidWorks, OnShape, AutoCAD, PhotoShop, Figma
Technical Skills	Signal Processing, Machine Learning, 3D Modeling, User Interface (UI) Design Web Design

LANGUAGE LEVELS

Toefl iBT 116/120