

SIQI ZHANG

Carnegie Mellon University
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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

IMWUT 2026

WeeCare: Towards Handheld Bladder Fullness Sensing with a Conformable Pad

Zhikai Qin, Siqi Zhang, Junyi Zhu, Justin Chan

ISWC 2026 (conditionally accepted)

RESEARCH EXPERIENCE

DropleX: Liquid sensing on tablet touchscreens

2025.9 - 2025.11

Advisor: Justin Chan, Mayank Goel

Ph.D. Student

- Developed a mechanism that disables the touchscreen's built-in adaptive filter originally designed to reject liquid, enabling commodity touchscreens to sense liquid with a mere software update.
- Engineered signal processing and machine learning pipeline for liquid detection based on physics-informed modeling of the screen's response to liquids of different conductivity, permittivity and surface tension.
- Achieved 89-99% accuracy in detecting microliter-scale adulteration in drinks, 94-96% accuracy in detection of trace chemical concentrations, and 86-96% accuracy in through-container detection.

LubDubDecoder: Bringing Micro-Mechanical Cardiac Monitoring to Hearables

2024.7 - 2025.9

Advisor: Justin Chan, Mayank Goel

Research Assistant

- Repurposed the built-in speaker, the only transducer common to all hearables, into a microphone, thus enabling cardiac monitoring in all hearables, including ultra-low-cost ones.
- Designed a temporal autoencoder with multi-branch convolutional architecture to learn a cross-modal mapping between ear-based cardiac signal and mechanical vibrations of the heart.
- In a 25-user study, achieved 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

2023.10 - 2024.2

Advisor: Cheng Zhang

Research Assistant

- Prototyped a smartglasses-based silent-speech system that emits inaudible active sonar chirps across the face and converts the returned acoustic reflections into a representation of lip and mouth motion, enabling patients unable to speak to communicate through synthesized, personalized voice.
- Designed and trained the core deep learning system of a flow-based Variational Auto-Encoder and a neural vocoder, trained adversarially with a multi-period discriminator, to directly synthesize speech waveforms from acoustic reflections, achieving a 9.5% Word Error Rate (PESQ 2.20, STOI 0.72) while preserving fine-grained nuances like speed, tone, and stutter.

FELLOSHIPS AND AWARDS

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

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
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