

Peter He

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Education

Cornell University, College of Engineering, Ithaca, NY
Bachelor of Science, Electrical & Computer Engineering

Expected May 2027
Expected Minor in Computer Science

Skills

Programming: Python, C, C++, Ubuntu Linux, Pytorch, OpenCV, Three.js, PlatformIO, Verilog, Swift

Hardware: Micro-controllers, Embedded Systems, Encoder Firmware, PCB Design, KiCad, 3D Printing, RTL, Fusion360

Awards

Computing Research Association (CRA) Outstanding Undergraduate Researcher Award

2025

Honorable Mention

ACM CHI 25' Best Paper

2025

Honorable Mention

Research Papers

SeamPose: Repurposing Seams as Capacitive Sensors in a Shirt for Upper-Body Pose Tracking

Tianhong Catherine Yu, Manru Mary Zhang, **Peter He**, Chi-Jung Lee, Cassidy Cheesman, Saif Mahmud, Ruidong Zhang, Francois Guimbretiere, Cheng Zhang

dl.acm.org/doi/abs/10.1145/3654777.3676341

ACM UIST 24'

SplatOverflow: Asynchronous Hardware Troubleshooting

Amritansh Kwatra, Tobias Wienberg, Ilan Mandel, Ritik Batra, **Peter He**, Francois Guimbretiere, Thijs Roumen

<https://dl.acm.org/doi/10.1145/3706598.3714129>

Honorable Mention ACM CHI 25'

Relevant Experience

Halo

June 2025 - Present

Engineering Intern

San Francisco, CA

- Joined a startup with \$1M+ in pre-seed funding to create the future of smart glasses.
 - Was offered a full-time position, which I declined to pursue research instead.
- Wrote mobile applications in Swift to interface with AI smart glasses with a display.
 - Reverse-engineered Bluetooth protocols and commands for smartglasses to allow the Halo app to communicate with glasses by various manufacturers, creating a general-purpose application.
 - Researched and designed an always-listening Human-AI interface to enable seamless integration of real-time proactive AI assistance to the smart glasses.
- Sourcing and selecting ideal components for light-weight AI smart glasses with a display.
- Designed basic electrical prototypes of various smartglasses with cameras and custom PCBs.

Smart Computer Interfaces for Future Interactions (SciFi) Lab

Dec 2023 - Present

Undergraduate Research Assistant

Ithaca, NY

- Currently working on a project to fabricate textile-based dry electrodes for electro-tactile feedback.
- Co-second author on [research paper](#) using capacitive sensing and deep learning to track upper body poses.
 - Presented at the **ACM User Interface Software and Technology (UIST) '24** conference.
 - Responsible for firmware and electronics design for the wearable textiles project with an integrated capacitive sensing system for upper body body-pose estimation and tracking.
 - Designed a custom PCB for microcontroller integration with FDC2214 capacitive sensing chips.
- Conducted data acquisition and wrote a data processing script in Python to clean and convert capacitance signals into data that can be trained for pose estimation using a computer vision model as the ground truth.

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Matter of Tech Lab at Cornell Tech Research Intern

May 2024 - Sep 2024
NYC, NY

- Designed and wrote a Python library to facilitate real-time localization of phone camera-feeds into 3D-gaussian splat scenes of hardware devices for the purpose of remote hardware maintenance.
 - Written based on recent research advancements in feature matching algorithms for 3D spaces.
 - Optimized a Pytorch pipeline reducing localization time through pre-loading models and optimizing structure for smaller-scale scenes.
 - Camera localization library created was implemented and used in an **accepted ACM Conference on Human Factors in Computing Systems (CHI) '25** [research paper](#).

Cornell XR (Virtual, Augmented & Mixed Reality) Project Team Founder & Full Team Lead

Dec 2023 - Present
Ithaca, NY

- Founded the Cornell XR Project Team to create a space for students to work on XR and HCI projects.
- Fastest club to ever become an official Cornell Engineering Project Team.
- Leading a project to create a full haptic ecosystem featuring various stimuli and kinesthetic feedback.
 - Researching and developing a pair of custom VR haptics gloves with custom firmware, drivers, and circuit based on prior open-source designs.
 - Teaching members serial communication protocols to connect DIY hardware devices to Virtual Reality headsets through Unity.
 - Designing a system integrating custom-made olfactory displays, force-feedback exoskeletal arms, and BCI controllers.

Featured Projects

NeuroScent | MIT Reality Hack (XR Hackathon) 2025

Winner of Hardware Track - Smart Sensing

- Collaborated with a team of 5 to create [NeuroScent](#), a system connecting VR brain-computer interfaces with olfactory displays to promote users' mental well-being based on biofeedback using OpenBCI's Galea Headset.
 - Created an environment in Unity that reacted and dispensed scent based on detected alpha brain waves.
- Assembled a cheap ~\$60 olfactory display to enable smelling two scents (lavender & orange) from scratch using common rapid-prototyping components and two cheap diffusers referenced from a research paper.
 - Wrote custom ESP32 micro-controller firmware and Unity scripts to enable USB serial connection of the olfactory display to a Unity VR scene.

FlexVR Wellness | MIT Reality Hack (XR Hackathon) 2024

Winner of Hardware Track - Creative Inputs/Outputs

- Developed the [FlexVR Wellness](#) ecosystem to enable remote electro-stimulation therapy.
 - Designed a system where the therapist uses an AR headset to enhance their workflow, communicate with patients, get live data, and control the patient's electro-stimulation therapy while the patient is in a calm, stress-reducing VR environment.
- Wrote ESP32 firmware and did fabrication + hardware design of the project during the hackathon.
- First developers ever to create a system enabling cross-play between the Qualcomm Snapdragon Spaces AR

Rewind | HackMIT

3rd Place Winner of InterSystems Challenge

- Created Rewind, an memory preservation web app that allows users to store, revisit, and share their memories in various formats such as video, photos, text, and audio.
 - Designed a system for users to query memories using natural language search.
- Developed a pipeline that integrated gaussian splatting to generate 3D scenes from user-uploaded videos for immersive memory viewing.
- Used Three.js and WebXR to let Apple Vision Pro users view their memories in 3D format.