

Peter He

Scarsdale, New York | Ithaca, New York | 914-619-0498 | ph475@cornell.edu
[linkedin.com/in/ph475/](https://www.linkedin.com/in/ph475/) | peterhe.dev

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++, Javascript, Linux, Pytorch, OpenCV, Three.js, HTML, VR, AR, Unity, PlatformIO

Hardware: Micro-controllers, Fusion 360 (CAD), PCB Design, KiCad, 3D Printing, Rapid Prototyping, Embedded Systems

Awards

Computing Research Association (CRA) Outstanding Undergraduate Researcher Award
Honorable Mention

Jan 2025

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

UIST 24'

SplatOverflow: Asynchronous Hardware Troubleshooting

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

<https://arxiv.org/abs/2411.02332>

Accepted CHI 25'

Research Experience

Smart Computer Interfaces for Future Interactions (SciFi) Lab

Dec 2023 - Present

Undergraduate Research Assistant

Ithaca, NY

- Currently working on my first-author project using wireless RF sensing to create a pose-tracking wearable wristwatch for XR interactions aiming for submission to **IMWC 25'**
- Co-second author on [research paper](#) using capacitive sensing and deep learning to track upper body poses in real-time.
 - 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 pipeline 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.

Matter of Tech Lab at Cornell Tech

May 2024 - Sep 2024

Research Intern

NYC, NY

- Led the design and creation of a Python library to facilitate real-time localization of phones into 3D-gaussian splat scenes of Hardware devices based on the phone camera feed.
 - 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](#) submission.
 - Wrote a Three.js WebXR interface for phone and VR headset localization with Flask backend.

Peter He

Scarsdale, New York | Ithaca, New York | 914-619-0498 | ph475@cornell.edu
[linkedin.com/in/ph475/](https://www.linkedin.com/in/ph475/) | peterhe.dev

Other Relevant Experience

Cornell XR (Virtual, Augmented & Mixed Reality) Club

Dec 2023 - Present

Founder & President

Ithaca, NY

- Founded the Cornell XR Club to create a community of student XR enthusiasts that will draw attention to the innovative field by developing apps, hardware, and games and hosting events related to XR on campus.
- Leading a project integrating haptics hardware interactions with a photorealistic VR environment.
 - Researching and developing a pair of custom VR haptics gloves with custom firmware and drivers based on prior open-source designs.
 - Created a Unity program for experiments with realistic physics-based haptic glove interactions

IEEE @ Cornell

Feb 2024 - Present

Corporate Lead

Ithaca, NY

- Managing 10+ corporate board members in completing corporate outreach tasks and organizing career and industry-focused events for Electrical & Computer Engineering majors on campus.

Cornell Maker Lab

Feb 2024 - Present

Lab Manager

Ithaca, NY

- Maintains Cornell's electrical and mechanical maker spaces, consults students on personal projects, and repairs maker space equipment such as 3D printers, laser cutters, and electronics.
- Responsible for updating and writing guides on proper maintenance and usage of maker space machines.

Outside 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

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 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.