

QING “HELENA” HUANG

🌐 helenaqingh.github.io ✉ qhuang239@wisc.edu

RESEARCH INTERESTS

I critically study and design interactions with AI and AR to explore how computational tools can foster more reciprocal partnerships between people and machines, as well as how they relate to the real-world contexts they inhabit. Recently, I have been exploring these questions primarily in accessibility, creativity support, and sensemaking, with broader interests in the politics of design and human–robot interaction. Ultimately, my goal is to develop practical design principles and expand theories of interaction through system building and rigorous empirical studies, to envision a more empowering, liberatory, and embodied computing future.

EDUCATION

University of Wisconsin–Madison

Sept. 2024 – Dec. 2026 (Expected)

B.S. in Information Science

Madison, WI

- GPA: 3.85/4.00; Certificates in Data Science and Environmental Studies
- Selected Coursework: Human–Computer Interaction, Interaction Design Studio, Statistical Modeling, Text Mining, Spatial Data Modeling, Databases, Algorithms and Ethics, Interpretable & Explainable Machine Learning (Graduate-Level)

University of Nottingham Ningbo China (UNNC)

Sept. 2022 – Jun. 2024

B.S. Program in Environmental Science (Transferred to UW–Madison)

Ningbo, China

- Selected Coursework: Ecology, Environmental Policy, Remote Sensing, Geographic Information Systems, Geomorphology

PUBLICATIONS & MANUSCRIPTS

* denotes equal contribution; † denotes a modified title for anonymous review

[1] **Human–AI Collaboration for Reflective Exploration of Personal Data**[†]

Helena Qing Huang, Nandi Zhang, Yukang Yan

Submitted to CHI 2027

[2] **Social Cues Augmentation for Blind and Low Vision**[†]

Ben Kosa, Kexin Zhang, Daniel Killough, Yuheng Wu, Tianyi Zhang, **Helena Qing Huang**, Daniel Wang, Justin Feng, Sanbrita Mondal, Yuhang Zhao

Submitted to CHI 2027

[3] **Do Better Embeddings Lead to Better Judgments? A User Study of PCA and UMAP for Single-Cell Data**

Helena Qing Huang, Kris Sankaran

IEEE VIS 2026 Poster

[4] **FlowNote: Making Bodily Experiences Visible in Music Production**

Helena Qing Huang^{*}, Hengyu Mei^{*}

UIST 2026 Adjunct

RESEARCH EXPERIENCE

madAbility Lab, UW–Madison

Jun. 2025 – Present

Undergraduate Researcher (Supervisors: Prof. Yuhang Zhao, Ru Wang, Ben Kosa, Hazel Zhu)

Madison, WI

Neurodivergent Experiences of Masking and Authenticity with GenAI

[In progress]

- Leading a research project, through a crip technoscience lens, to understand how neurodivergent adults integrate GenAI into their everyday relationships and how this affects their masking, authenticity, and communication labor, and to speculate on alternative designs that support agency and interdependence.

Wearable AR to Augment Social Cues for Blind and Low Vision

[CHI 2027, under review]

- Worked on designing wearable augmented reality that augments social cues for blind and low-vision users.
- Conducted 6+ co-design sessions and user studies with blind and low-vision participants to characterize user needs and inform the design of wearable AR support for social scenarios; connected with local disability communities and networks to recruit participants.

Gaze-Adaptive Web Interfaces for Low-Vision Users

- Worked on designing a gaze-adaptive web interface that uses eye-gaze behavior as input to dynamically adapt webpage content and presentation for low-vision users.
- Curated and annotated 200+ image stimuli, operationalized object distribution and attention types as gaze-related signals; implemented three annotation-visualization modes on user study platforms.

BEAR Lab, University of Rochester

Jun. 2025 – Present

Undergraduate Researcher (Supervisor: Prof. Yukang Yan)

Rochester, NY

Human-AI Collaboration for Reflective Exploration of Personal Data

[CHI 2027, under review]

- Led a research project on human-AI collaboration for reflective sensemaking of longitudinal personal data. Conducted a formative study with a technology probe to identify design opportunities and derive design guidelines, designed and implemented an LLM-supported interactive system incorporating mixed-initiative strategies and adaptive scaffolding to support user-driven reflection, conducted an evaluation study, and performed mixed-method analysis.

Data Physicalization and Augmented Reality

- Investigated design opportunities at the intersection of data physicalization and augmented reality through a structured literature review and qualitative open coding.

Statistical Foundations of Microbiome Analysis Lab, UW-Madison

Jan. 2025 – Present

Undergraduate Researcher (Supervisor: Prof. Kris Sankaran)

Madison, WI

Human Perception of Dimensionality Reduction Visualizations

[IEEE VIS 2026]

- Investigated how dimensionality-reduction methods and embedding quality influence visual judgments in single-cell data analysis workflows.
- Designed and conducted a within-subjects study comparing PCA, default UMAP, and tuned UMAP across clustering and trajectory interpretation tasks.
- Developed study stimuli and analysis pipelines and applied mixed-effects models to evaluate accuracy, confidence, and completion time across visualization conditions.

String Theory, Particle Physics, and Cosmology Lab, UW-Madison

Sept. 2024 – May 2025

Undergraduate Research Scholar (Supervisors: Prof. Gary Shiu, Jacky Yip)

Madison, WI

Topology-Aware GNNs for Cosmological Simulation

[Hilddale Research Fellowship]

- Developed graph neural network models incorporating topological descriptors to emulate Λ CDM cosmological simulations; presented the work at the UW-Madison Undergraduate Symposium.

INTERNSHIP & PROFESSIONAL EXPERIENCE

Holos

Sept. 2026 – Present

User Research Intern

Madison, WI

Product lab3l: Human-in-the-Loop Review for Robotics Data

- Conducting 20+ user study sessions with researchers at 2 robotics labs to identify workflow needs and usability issues.
- Designing an Apple Vision Pro-based teleoperation interface for real-time control of simulated robotic hands in MuJoCo.
- Leading project planning for the lab3l review workflow with ML teammates, tracking milestones in Linear and specs in Figma.
- Facilitating 4 demo sessions with robotics lab partners to walk through Figma prototypes and turn feedback into iterations.

- Mapped the 1935 transportation system of Yin County and the archaeological sites of Zhejiang province in ArcGIS Pro to analyze human settlement and environmental change over time.
- Compiled, cataloged, and translated a two-volume set of Chinese and English historical documents on Ningbo Customs.

SELECTED PROJECTS

FlowNote: Making Bodily Experiences Visible in Music Production [UIST 2026 Adjunct]

Summer 2026

- Led and co-developed, in collaboration with a music producer, a wearable system with EmotiBit that embeds physiological signals as music composition input in FL Studio, with pattern suggestions that cluster these signals and flag anomalies using robust z-scores and multimodal fusion, user-defined annotations, and cross-session review to support embodied reflection.

Wheelchair Accessibility Mapping on UW–Madison Campus

Spring 2026

- Developed a network-based model of wheelchair accessibility by geocoding 174 campus buildings onto a stair-free OpenStreetMap pedestrian graph (OSMnx, NetworkX), measuring service proximity with multi-source Dijkstra, and clustering accessibility burden with K-Means; designed slope-aware routing that weights paths by ADA grade thresholds to compare wheelchair and standard routes.

Text Mining Player Experience in Stardew Valley Reviews

Fall 2025

- Collected nearly 10,000 Steam reviews and built a text-mining pipeline (TF-IDF, NMF topic modeling, PCA) on the 2,000 most upvoted, paired with theory-driven qualitative analysis through Self-Determination Theory, revealing how players express autonomy, competence, and relatedness through comfort, farming routines, and attachment to non-player characters (NPCs).

SCHOLARSHIPS & AWARDS

Hilldale Undergraduate/Faculty Research Fellowship, UW–Madison (\$4,000)

2025

Dean's List, UW–Madison

2024 – 2026

Academic Excellence Award, UNNC (Top 1%, \$3,500)

2022 – 2023

SERVICE & LEADERSHIP

Student Volunteer, IEEE VIS 2026, Boston, MA

Nov. 2026

Student Mentor, ACM Women in Computing (ACM-W), UW–Madison

2025 – Present

Event Support, Gender Studies Workshop, UNNC

Oct. 2023 – May 2024

Student Representative & Farming Group Leader, NottinGreen Sustainability Initiative, UNNC

Sept. 2023 – Sept. 2024

Natural History Theme Exhibition Organizer, UNNC Library

Sept. 2023 – Sept. 2024

Volunteer, Bird Collision Survey, Shanshui Conservation Center

Sept. 2022 – Dec. 2022

SKILLS

Programming: Python, R, SQL, C/C++, LaTeX; Full-stack Development (HTML, CSS, TypeScript, Vue.js, React.js, Node.js); Machine Learning (scikit-learn, PyTorch, TensorFlow)

HCI Methods & Design: User Studies, Qualitative & Quantitative Analysis, Experimental Design, Statistical Modeling, Figma Prototyping, Adobe Creative Cloud, Unity

GIS & Remote Sensing: ArcGIS Pro, ArcGIS Online, QGIS, Google Earth Engine, ENVI

Languages: Mandarin (native), Hakka (native), English (proficient)