# Xiaoyue (Helen) Yu

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## Research Statement

Undergraduate Researcher in Information Science and Industrial Engineering specializing in **Human-Computer Interaction (HCI)**, **Human-AI Interaction**, and **Learning Sciences**. Investigating LLM-powered systems and multimodal human factors to design user-centered intelligent systems.

## Education

**University of Pittsburgh**, Pittsburgh, PA, USA — Fall 2025 – Spring 2027
*B.S. in Information Science* | GPA: 4.0 / 4.0

- **Relevant Coursework:** Machine Learning, Data Analysis, User-Centered Design, Database Management, Game Design.

**Sichuan University**, Chengdu, Sichuan, China — Fall 2023 – Spring 2025
*B.E. in Industrial Engineering* | GPA: 3.83 / 4.0

- **Relevant Coursework:** Human Factors Engineering, Operations Research, Productivity Analysis, Information Systems.

## Publications

**Assertive versus Defensive Automated Driving: Impacts on Prefrontal Activity and Intervention Tendency** — Under Review
Danduo Huang, Wenjing Qin, ***Xiaoyue Yu***, Yuzhou Wu, Yanchun Wang, Yaoyu Fu, Rong Yin, Hui Jiang, Dan Pu, Kang Li, Xiandi Wang, Xiaomei Tan.
*Under Review at Transportation Research Part F: Traffic Psychology and Behaviour* (Preprint: SSRN).
doi:10.2139/ssrn.7157788

**Blood Biomarker-Based Machine Learning Triaging Model for Predicting the Risk of Cognitive Decline Progression** — June 2025
Jiuyue Yin, ***Xiaoyue Yu***, Jiayi Pan, Guangwu Qian.
*2025 IEEE 2nd International Conference on Deep Learning and Computer Vision (DLCV)*.
doi:10.1109/DLCV65218.2025.11088776

**Drivers' Intervention Tendency and Trust Dynamics During Interactions with Automated Vehicles** — May 2025
Yuzhou Wu, Danduo Huang, ***Xiaoyue Yu***, Yanchun Wang, Wenjing Qin, Xiaomei Tan.
*HCI International 2025 Posters*.
doi:10.1007/978-3-031-94159-7_44

## Research Experience

**Research Intern** — Apr 2026 – Present
McLearn Lab, Human-Computer Interaction Institute (HCII), Carnegie Mellon University
*PI: Prof. Bruce M. McLaren | Mentors: Daniel Pollock, Hayden Stec*

- **LLM-powered Qualitative Annotation Infrastructure:** Extending an AI-assisted tool (built on a mentor's codebase) that leverages LLMs to automate qualitative annotation of natural-language research data for HCI and learning-science workflows.
- Refactored the Python codebase into modular components, redesigned the researcher-facing UI, added new annotation features, and integrated the OpenAI API with checkpoint-based recovery for long-running tasks.
- **Decimal Point KC Model Improvement:** Conducted an independent data-mining study on *Decimal Point*, an educational digital game, analyzing student interaction logs with DataShop metrics (AIC, BIC, RMSE) and supporting the work with data annotation and testing.

**Undergraduate Research Fellow & Assistant** — Aug 2025 – Present
Learning Technologies Lab, School of Computing and Information, University of Pittsburgh

*PI: Dr. Dmitriy Babichenko*

- Awarded the **2026 NOUR (Network of Undergraduate Researchers) Fellowship** to conduct independent HCI research under faculty mentorship.
- **Kichwa Language Preservation System:** Leading development of a WhatsApp language-learning chatbot (Python Flask + Twilio API); designed the MySQL database schema, E-R diagram, and game flow, grounding the experience in Indigenous cultural values.
- **VR User Studies:** Led user interviews, IRB compliance, and thematic analysis for two VR projects—*The Playable Archive* (social virtual-museum platform, 60,000+ historical photos; Secondary Study Coordinator) and a VR locomotion study (co-authored manuscript).

**Research Intern (Remote)** Dec 2025
Pervasive HCI Lab, Tsinghua University, Beijing, China
*Mentor: Chang Liu*

- Researched **eye-tracking integration with LLMs** to infer user cognitive intent during reading of AI-generated text.
- Investigated RLHF-inspired alignment by modeling simulated versus empirical gaze patterns to capture implicit user reading preferences.
- Built a Python backend prototype connecting gaze-stream data with LLM API pipelines to generate implicit, real-time context annotations without explicit user prompts.

**Research Assistant** Oct 2023 – Jun 2025
Human-Centered AI Lab (HAIL), Sichuan University-Pittsburgh Institute, Chengdu, China
*PI: Dr. Xiaomei Tan*

- Investigated human factors and user trust dynamics in Level 2 autonomous driving systems in hazard scenarios.
- Managed end-to-end experimental protocols, participant recruitment, and fNIRS cerebral hemodynamic data collection pipelines, contributing to a published poster at **HCII 2025** and an SSRN journal submission under review.

## Internships

**Conversational AI Developer Intern** May 2026 – Present
SVC Research & Office of the Provost, University of Pittsburgh
*Advisors: Dr. Adam J. Lee (Vice Provost), Dr. Robert Cunningham*

- Prototyping an AI advising system for Pitt undergraduates, designing data architecture and Claude prompt-engineering pipelines for academic planning; targeting **ACM Learning @ Scale 2027**.

**R&D Software Engineering Intern (Remote)** Mar 2026 – May 2026
Hunan Creator Information Technologies, Hunan, China

- Developed enterprise MIS user-management modules using Java (Spring) and Vue/TypeScript; adopted Cursor/OpenAI Codex for accelerated AI-native software prototyping and GitHub Actions CI/CD pipelines.

## Selected Projects

**Black Friday** | *Game Designer & Unity Developer* Mar 2026

- **Global Game Jam at GDC 2026:** Designed and developed an interactive game prototype under 36-hour constraints during The Jam @ GDC 2026, published on Itch.io for public rating and feedback.
- Engineered core game mechanics and interaction logic in Unity (C#), focusing on intuitive player feedback, level design, and narrative integration.

**The Anxiety Time Machine** | *Full-Stack Developer* Feb 2026

- **Award: Won 2nd Place** (70+ participants) at Pitt's She Innovates 2026.
- Built a React and Python Flask web app integrated with the Gemini API to enable cross-generational emotional narrative sharing using a time-dial interface.

**Paperworkx** | *Narrative Design Lead & Developer* Nov 2025

- **Award: Won 1st Place in Narrative Design** at Games 4 Social Impact 2025; implemented Unity C# game logic.

## Teaching Experience

**Teaching Assistant**, IE 1081 Operations Research, University of Pittsburgh Jan 2026 – Apr 2026

- Appointed via the Allias/Holzman program; facilitated student learning and provided rubric-aligned evaluation for linear programming, stochastic models, and network optimization.

## Honors & Fellowships

- **Jennifer & Eric Spiegel Technology and Communications Award**, University of Pittsburgh 2026
- **NOUR Undergraduate Research Fellowship**, SCI, University of Pittsburgh 2026
- **Selected Member, NCWIT Aspirations in Computing (AiC) Community** 2026 – Present
- **Selected Member, Friends of McNair Program (TRIO)**, University of Pittsburgh 2025 – Present
- **Dean's List**, University of Pittsburgh (SCI) Fall 2025
- **Dean's List (Top 10%)**, Sichuan University Pittsburgh Institute 2025
- **National Scholarship Comprehensive Award**, Sichuan University 2024, 2025
- **Outstanding Student Award**, Sichuan University 2024, 2025

## Technical Skills & Research Methods

**Programming Languages:** Python, Java, SQL, C#, JavaScript/TypeScript, HTML/CSS, LaTeX
**Frameworks & Tools:** React, Vue.js, Flask, Unity, Git, OpenAI API, Claude API, DataShop, SPSS
**Research Methods:** Qualitative Coding (Thematic Analysis), User Study Design, IRB Protocols, Prompt Engineering