Ruijia (Hannah) Guan

Email: rjguan@umich.edu Website: www.ruijia-hannah-guan.com

Education

University of Michigan **Ann Arbor, MI**
BS, Cognitive Science & Computer Science *2022 – 2025*
GPA: 3.94/4.00 University Honors
Colby College **Waterville, ME**
Psychology & Computer Science (Transferred to UMich) *2020 – 2022*
GPA: 4.08/4.00 2021 Dean's List

Fields of Interest

Human-Computer Interaction; Social Computing; Collaborative Systems; Collective Intelligence; Human-Centered AI; Mixed Reality;

Peer-Reviewed Publication

- **Guan, R.**, Lee-Robbins, E., Wang, X., & Adar, E. (Accepted) VisQuestions: A mixed-initiative system for evaluating communicative visualizations. *2025 ACM Conference on Human Factors in Computing Systems (CHI), Extended Abstracts*
- Esterwood, C., **Guan, R.**, Ye, X., & Robert, L. P. (Accepted). Virtually the same or realistically different: Do real-world robots differ from their virtual representations? *2025 ACM/IEEE International Conference on Human-Robot Interaction (HRI)*.
- Johnson, J., Peralta, M., Kaur, M., Huang, R. S., Sheng, Z., **Guan, R.**, Rajaram, S., & Nebeling, M. (Accepted with Minor Revision). Exploring MR-enhanced collaborative AI: Eliciting team perceptions and design considerations for the future of work. *2025 ACM SIGCHI Conference on Computer-Supported Cooperative Work & Social Computing (CSCW), October cycle*.
- Ashkinaze, J., **Guan, R.**, Adar, E., Budak, C., & Gilbert, E. (Accepted with Major Revision). Seeing like an AI: How LLMs apply (and misapply) Wikipedia neutrality norms. *2025 ACM SIGCHI Conference on Computer-Supported Cooperative Work & Social Computing (CSCW), July cycle*.
- Huffman, D., & **Guan, R.** (In Press). Computational models suggest that human memory judgments exhibit interference due to the use of overlapping representations. *Psychological Review*. https://doi.org/10.1037/rev0000517

Working Projects

- **Cognitive Science Honors Thesis**: Structuring Proactive AI in Collective Deliberation. Advisors: Janet Johnson, Eytan Adar
- Yu, Z., Liu, Y., **Guan, R.**, & Vermillion, C. Large Language Model-driven Mixed Strategy Framework for Social Navigation. *Planned for 2025 International Conference on Intelligent Robots and Systems (IROS)*

Research Experiences

[Social Computing]

Seeing Like an AI: How LLMs Apply (and Misapply) Wikipedia Neutrality Norms
Advisors: Prof. Eytan Adar and Prof. Eric Gilbert Sep. 2023 – July. 2024

- Coded to generate LLM revision on biased Wikipedia texts and explored the outcomes with different prompting techniques including zero-shot prompting and constitutional AI chain; analyzed the LLM revision results with metrics including edit distances and precision-recall scores to measure the quality and investigate the differences with the human edition
- Co-designed the user study to evaluate the human vs. LLM modified versions, collected 147 participant data on Prolific, and co-wrote the paper as the second author. Preprint: https://arxiv.org/abs/2407.04183

[Collective Intelligence]

DISCO: Designing Intelligent Spaces For Collaboration
Advisors: Dr. Janet Johnson and Prof. Michael Nebeling May. 2024 – Present

- Constructed the full-stack interface with React and Flask frameworks to manage Large Language Model (LLM)-supported agents, real-time conversation analysis, and text-speech conversion
- Collaborated on the presentation scene of the mixed-reality collaboration space on Unity, supporting the switch among agent avatars of various styles and exploration on different designs of collaboration space elements
- Conducted workshop studies on 6 professional teams, submitted the exploratory paper to CSCW 2025, and working on the revised Agent pipeline as the Cog Sci honors thesis

Virtually The Same or Realistically Different: Do Real-World Robots Differ From Their Virtual Representations
Advisor: Prof. Lionel Robert May. 2024 – Present

- Developed the systematic review research plan including literature review strategies and paper screening criterias
- Conducted the paper coding via *Ryaan* and *Notion*, undertook the part of the follow-up meta-analysis via *R* to analyze the effects of robot's physical embodiment on anthropomorphism, social presence, and user engagement

- First-stage paper accepted by HRI 2025; Preparing a journal version with more outcome metrics and alignment with the HRI analysis taxonomy, specifying field of application, task specification, and human-robot team composition

VisQuestions: A Mixed-Initiative System for Evaluating Communicative Visualizations

Advisor: Prof. Eytan Adar Feb. 2023 – Sep. 2024

- Developed a web application that generates multiple-choice questions based on selected text and the learning objective framework, facilitates the visualization project management, and streamlines the evaluation test deployment and analysis
- Co-conducted the user study on 9 participants and large-scale outcome analysis with Prolific (N=1096)

[Cognitive Psychology]

Computational Models on Human Memory Judgments

Advisor: Prof. Derek Huffman Jun. 2021 – May 2022

- Coded the online experiment that runs mnemonic similarity tasks to investigate the pattern separation of hippocampal function; analyzed the experiment data and co-analyzed the comparison among behavioral results and results from common computational hippocampus models
- Wrote sections of behavioral experiments and one hippocampus model; paper submitted to *Psychological Review*

Selected Project Experiences

Analyzing Emotional Expression and Engagement Dynamics in Reddit Communities Oct. 2024 – Dec. 2024

- Extracted posts, comments, and replies in 8 subreddits with 33719 unique users with Python's PRAW API
- Applied NLP techniques including word frequency analysis, sentiment analysis (TextBlob), emotion detection (Hugging Face DistilBERT), and SBERT-based comment classification; conducted temporal analysis to track engagement impact on user sentiment and activity
- Report link: https://www.ruijia-hannah-guan.com/_files/ugd/a739a9_3ebc9367ab9640cdaadf116d751ded49.pdf

RepetitionVR: A VR Simulator to Overcome Social Anxiety and Isolation April 2024

- Co-developed a VR narrative project as part of the U-M course Extended Reality and Society, exploring diverse social scenarios in Unreal Engine; contributed to design motivation analysis, background interviews, development logs, and trailer production
- Project showcased on the official website: https://sites.google.com/umich.edu/repetvr/home

Interactive Exhibition: Worldwide Tea Sep. 2023 – Feb. 2024

- Project under *ArtsEngine*, *Multidisciplinary Design Program, UMich;* Served as Engineering Sub-team Leader
- Contributed to an interactive tea culture exhibition in user scenario development, and LAN-based web server development
- Designed the prototype using Arduino triggers to interact with the front-end tea card presentation and video control; constructed and managed 28 instances in the 10-day exhibition

Effects of Organizational Structures on Information Dynamics and Decision-Making Efficiency March 2023 – April 2023

- Developed an agent-based model using Python (NetworkX) to simulate information dynamics across organizational structures (*democracy, aristocracy, and tyranny*)
- Analyzed network size and structure effects on diffusion speed and decision-making with the Watts-Strogatz model
- Report link: https://www.ruijia-hannah-guan.com/_files/ugd/a739a9_91b1fa7d74ec4df3a9b032ee1c280b40.pdf

Teaching and Working Experiences

University of Michigan **Ann Arbor, MI**

Peer Facilitator, Weinberg Institute for Cognitive Science *Sep. 2023 – May. 2024*

- Conducted 3 weekly office hours, providing students with insights into course registration and extra-curricular opportunities
- Co-plan community-building events and managed department resources including weekly email communications

Colby College **Waterville, ME**

Project Grader, Data Structure and Algorithms course *Feb. 2022 – May 2022*

- Graded projects such as social behavior simulation and word trend prediction; facilitated course design and coursework

Teaching Assistant, Honor Calculus I & II course *Sep. 2021 – May 2022*

- Held office hours and graded student homework; facilitated improvement of course design and coursework

Incus Company Limited **Shenzhen, Guangdong, China**

User Research Intern *Jun. 2021 – Aug. 2021*

- Analyzed backend user data for hearing aid products to identify improvement and monitor weekly user activities
- Conducted iterative field user research with 60+ potential participants in total, wrote a comprehensive improvement suggestion report for user interface and interaction design

Coursework Highlight

Cognitive Science *Computer Modeling of Complex Systems, Needs & Usability Evaluation, Computational Social Science*

Computer Science & Engineering *Web Systems, Artificial Intelligence, Extended Reality & Society, Computational HRI*