Jie Gao

jgao77@jh.edu · gaojie058.github.io · +1 (410)710-0555
Malone Postdoctoral Fellow, Johns Hopkins University
Department of Computer Science
Malone Center for Engineering in Healthcare & Center for Language and Speech Processing
Malone Hall, 3400 N Charles St, Baltimore, MD 21218, USA

Research Interests

- **Primary**: Human-AI Collaboration; Human-Centered AI
- **Secondary**: Responsible and Trustworthy AI; AI-Assisted Qualitative Data Analysis
- **Tertiary**: Human Aspects of Software Engineering; Computational Social Science

A key challenge today is the ever-growing volume of large, complex, and unstructured data, such as text, code, and images, produced by individuals, organizations, and society. Empowering humans to understand and make meaningful use of such data remains a significant problem. To address this, I leverage AI techniques, particularly large language models (LLMs), with methodologies from social science to design human–AI collaborative systems. To ensure these systems are usable and adaptable in real-world settings, I apply empirical, human-centered methods including interviews and user studies. These approaches help me understand the practices of professionals such as software engineers, designers, and researchers, and identify key human-centered design principles. My long-term goal is to enable individuals and teams to perform tasks beyond their original capabilities by creating the next generation of human–AI systems.

Work & Research Experience

Present–2025	**Johns Hopkins University**, Baltimore, MD, USA Malone Postdoctoral Fellow, Department of Computer Science & Malone Center for Engineering in Healthcare & Center for Language and Speech Processing *Advisors: Mark Dredze, Ziang Xiao, Chien-Ming Huang*
2025–2024	**Singapore-MIT Alliance for Research and Technology (SMART)**, Singapore Postdoctoral Associate, Mens Manus Machina (M3S) team *Advisor: Thomas W. Malone*
2023	**University of Notre Dame**, Indiana, USA Visiting Ph.D. Student *Host Advisor: Toby Jia-jun Li*
2022	**National University of Singapore**, Singapore Visiting Ph.D. Student *Host Advisor: Shengdong Zhao*

Education

2024– 2019	**Singapore University of Technology and Design**, Singapore Ph.D. in Information Systems Technology and Design PhD Thesis: Tool Support for Human-AI Collaboration in Qualitative Data Analysis PDF *Advisor: Simon Perrault* SUTD PhD fellowship
2019– 2017	**Zhejiang University**, Hangzhou, China M.Eng. in Software Engineering (Information Product Design) Direct admission based on outstanding undergraduate performance
2017– 2013	**Shanghai University**, Shanghai, China B.Eng. in Digital Media Technology Top 1% of class

Manuscript and Ongoing Work

1. **Jie Gao**, Mian Zhong, Jonathan Ivey, Chien-Ming Huang, Ziang Xiao, Mark Dredze. **Evaluation Framework for LLM-assisted Qualitative Data Analysis**. *In preparation*

2. **Jie Gao**, Thomas Malone, et al. **Not just Prompt Engineering! A Taxonomy for Human-LLM Interaction Modes**. *In preparation*   manuscript ⊕ Website

3. **Jie Gao**, Zhiyao Shu, Shun Yi Yeo, Alok Prakash, Chien-Ming Huang, Mark Dredze, Ziang Xiao. **Efficiency with Rigor! A Trustworthy LLM-powered Workflow for Qualitative Data Analysis**. *In submission*, *https://arxiv.org/abs/2501.00775*   arXiv ⊕ Tool Website

Key Publications

1. **Jie Gao**, Yue Xue, Xiaofei Xie, SoeMin Thant, Erika Lee, Bowen Xu. **Understanding Codebase like a Professional! Human–AI Collaboration for Code Comprehension**. *The 34th IEEE/ACM International Conference on Program Comprehension (ICPC 2026)* Cross-disciplinary collaboration with Software Engineering   PDF Website

2. **Jie Gao**, Yuchen Guo, Gionnieve Lim, Tianqin Zhang, Zheng Zhang, Toby Jia-Jun Li, Simon Perrault. **CollabCoder: A Lower-barrier, Rigorous Workflow for Inductive Collaborative Qualitative Analysis with Large Language Models**. *Proceedings of the ACM Conference on Human Factors in Computing Systems (CHI 2024)* Highly cited in its domain; Citations: 180+, Jan, 2026 PDF Website

3. **Jie Gao**, Kenny Tsu Wei Choo, Junming Cao, Roy Ka Wei Lee, Simon Perrault. **CoAIcoder: Examining the Effectiveness of AI-assisted Human-to-Human Collaboration in Qualitative Analysis**. *ACM Transactions on Computer-Human Interaction (TOCHI 2023)* Highly cited in its domain; Citations: 100, Jan, 2026 PDF

4. Zheng Zhang, **Jie Gao**, Ranjodh Singh Dhaliwal, Toby Jia-Jun Li. **VISAR: A Human-AI Argumentative Writing Assistant with Visual Programming and Rapid Draft Prototyping**. *Proceedings of the ACM Symposium on User Interface Software and Technology (UIST 2023)* Highly cited in its domain; Citations: 170+, Jan, 2026 PDF

5   Nuwan Janaka, **Jie Gao**, Lin Zhu, Shengdong Zhao, Lan Lyu, Peisen Xu, Maximilian Nabokow, Silang Wang, Yanch Ong. **GlassMessaging: Towards Ubiquitous Messaging Using OHMDs**. *Proceedings of the ACM on Interactive, Mobile, Wearable and Ubiquitous Technologies (IMWUT 2023)*   PDF

6   ShunYi Yeo, Gionnieve Lim, **Jie Gao**, Weiyu Zhang, Simon Tangi Perrault. **Help Me Reflect: Leveraging Self-Reflection Interface Nudges to Enhance Deliberativeness on Online Deliberation Platforms**. *Proceedings of the ACM Conference on Human Factors in Computing Systems (CHI 2024)*   PDF

7   Junming Cao, Bihuan Chen, Longjie Hu, **Jie Gao**, Kaifeng Huang, Xuezhi Song, Xin Peng. **Understanding Complexity and Its Impact on Testing in ML-Enabled Systems**. *IEEE International Conference on Software Maintenance and Evolution (ICSME 2023)*   PDF

Peer-Reviewed Short Papers

1   **Jie Gao***, Simret Araya Gebreegziabher*, Kenny Tsu Wei Choo, Toby Jia-Jun Li, Simon Tangi Perrault, Thomas W Malone. **A Taxonomy for Human-LLM Interaction Modes: An Initial Exploration**. *Extended Abstracts of the ACM Conference on Human Factors in Computing Systems (CHI EA 2024)* Highly cited in its domain; Citations: 80+, Jan, 2026   PDF

2   **Jie Gao**, Xiayin Ying, Junming Cao, Yifan Yang, Pin Sym Foong, Simon Perrault. **Differences of Challenges of Working from Home (WFH) between China and the US during COVID-19**. *Extended Abstracts of the ACM Conference on Human Factors in Computing Systems (CHI EA 2022)*   PDF

3   Marianne Aubin Le Quéré, Hope Schroeder, Casey Randazzo, **Jie Gao**, Ziv Epstein, Simon Perrault, David Mimno, Louise Barkhuus, Hanlin Li. **LLMs as Research Tools: Applications and Evaluations in HCI Data Work**. *Extended Abstract of the ACM Conference on Human Factors in Computing Systems (CHI2024 Workshop Proposal)*   PDF

4   Ruyuan Wan, Haonan Wang, Ting-Hao 'Kenneth' Huang, **Jie Gao**. **From Noise to Nuance: Enriching Subjective Data Annotation through Qualitative Analysis**. *The 4th HCI+NLP Workshop at the Conference on Empirical Methods in Natural Language Processing (EMNLP 2025)* Advising Author

5   **Jie Gao**, Yuchen Guo, Toby Jia-jun Li, Simon Perrault. **CollabCoder: A GPT-Powered Workflow for Collaborative Qualitative Analysis**. *ACM Conference on Computer-Supported Cooperative Work and Social Computing (CSCW Demo 2023)*

5   **Jie Gao**, Leijing Zhou, Miaomiao Dong, Fan Zhang. **Expressive Plant: A Multisensory Interactive System for Sensory Training of Children with Autism**. *ACM International Joint Conference on Pervasive and Ubiquitous Computing (Ubicomp Poster 2018)*

Honors and Awards

2024   **Malone Postdoctoral Fellowship**
Johns Hopkins University

2019   **SUTD PhD Fellowship**
Singapore University of Technology and Design

2017   **Excellent Graduate Student**
Zhejiang University

2015   **Excellent Undergraduate Student**
Shanghai University

Invited Talks & Presentations

2025.11   **Human–AI Collaboration for Complex Unstructured Data Analysis**
Western Michigan University

2025.10   **From Automation to Human-AI Collaboration: Methods and Applications for Insights Extraction in Unstructured Data**
Malone Center Research Lunch at Johns Hopkins University

2025.07   **AI for Text Production and Analysis**
HCIX Research Club

2025.04   **Designing Human-AI Teams to Extract Insights from Unstructured Data—Methods and Applications**
HCI Seminar at Johns Hopkins University

2025.03   **Human-Centric Software Engineering in the Era of Large Language Models**
Singapore Management University

2025.02   **Extracting Insights from (Un)structured Data: Methods and Applications**
M3S Seminar in Mens Manus Machina (M3S) team at Singapore-MIT Alliance for Research and Technology

Academic Service

Associate Chair, ACM Conference on Human Factors in Computing Systems (CHI 2025 & 2026), Main Track

Reviewer, Annual ACM Symposium on User Interface Software and Technology (UIST 2025)

Reviewer, Computers in Human Behavior Reports 2025

Reviewer, International Journal of Human–Computer Interaction (IJHCI 2025, 2026)

Reviewer, ACM Transactions on Interactive Intelligent Systems (TiiS 2024, 2025)

Associate Chair, ACM Conference on Human Factors in Computing Systems (CHI 2022, 2023), Late-Breaking Work Track

Reviewer, ACM Conference on Computer-Supported Cooperative Work and Social Computing (CSCW 2022, 2023)

Reviewer, ACM Conference on Human Factors in Computing Systems (CHI 2023, 2024)

Reviewer, International Conference on Artificial Intelligence in Education (AIED 2023)

Mentoring Experience

Spring   **Yifan Zhang (PhD Student)**
2026   National University of Singapore

Fall 2025	**Mian Zhong (PhD Student)** Johns Hopkins University
Fall 2025	**Jonathan Ivey (PhD Student)** Johns Hopkins University
Summer-Fall 2025	**Haonan Wang (Master)** Johns Hopkins University
Summer 2024	**Ruyuan Wan (PhD Student)** Pennsylvania State University
Summer-Spring 2024–2025	**Zhiyao Shu (Master, Remote Research Intern)** University of California, Berkeley (Graduated). Now PhD student at George Mason University
Summer 2024	**Xiaoxian Zhang (Master, Research Intern)** National University of Singapore
Summer 2024	**Erika Lee (Undergraduate, Research Intern)** University of California, San Diego
Fall 2022	**Yuchen Guo (Undergraduate, Research Intern)** Singapore University of Technology and Design
Fall 2022	**Tianqin Zhang (Undergraduate, Research Intern)** Singapore University of Technology and Design

Teaching Experience

Fall 2020	**Teaching Assistant, 50.002: Introduction to Algorithms (Singapore University of Technology and Design)**
Summer 2020	**Teaching Assistant, 50.017: Graphics and Visualization (Singapore University of Technology and Design)**

References (Ranked by Priority)

Mark Dredze (mdredze@cs.jhu.edu, +1 (410) 516-6786)
Professor, Johns Hopkins University

Thomas W. Malone (malone@mit.edu, +1 (617) 253-6843)
Professor, Massachusetts Institute of Technology

Simon Perrault (simon.perrault@telecom-paris.fr, +33 664871217)
Professor, Télécom Paris, Institut Polytechnique de Paris

Ziang Xiao (ziang.xiao@jhu.edu, +1 (217)281-2005)
Assistant Professor, Johns Hopkins University

Toby Jia-Jun Li (toby.j.li@nd.edu, +1 (574) 631-5375)
Assistant Professor, University of Notre Dame

Chien-Ming Huang (chienming.huang @jhu.edu)

Associate Professor, Johns Hopkins University

Updated as of Jan, 2026

Chien-Ming Huang (chienming.huang @jhu.edu)

Associate Professor, Johns Hopkins University