Run Peng

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Education

University of Michigan Aug. 2024 - Apr. 2028 (exp.)
Ph.D., Computer Science and Engineering
Advisor: Prof. Joyce Chai

University of Michigan Aug. 2022 - Apr. 2024
M.S., Computer Science and Engineering

University of Michigan Aug. 2020 - Apr. 2022
(Dual) B.S.E, Computer Science
Minor, Mathematics

Shanghai Jiao Tong University Sep. 2018 - Aug. 2022
(Dual) B.S., Electrical and Computer Engineering

Academia Research

SLED Lab, University of Michigan Nov. 2022 - Now
Research Assistant (Undergrad/Grad), *Advisor: Prof. Joyce Chai*

- Building a **multi-modal dataset to simulate long-horizon personalized assistance**, where agents co-habit with humans to perceive, communicate, and reason over **months-long dynamic contexts**, enabling sustained and adaptive human–AI partnerships.
- Led/Co-led research on theory of mind(ToM) emergence [PP1, P1] and collaboration among LLM agents [P2], revealing how ToM-aware reasoning and information exchange enable **multi-agent collaboration** under asymmetry.
- Developed visual assistant [P3] and embodied robot [P4, LB1] to perform human-centered assistance by modeling user preferences and adaptive behaviors in situated interaction, paving the way for co-situated and personalized agent development.
- Co-led research on emergent cooperation and social dynamics in **multi-agent LLM systems** [P5, PP2], and examined the boundary and methodological validity of AI-based social simulations [PP3].

Lee Lab, University of Michigan Nov. 2021 - Feb. 2023
Research Intern (Undergrad/Grad), *Advisor: Prof. Honglak Lee, Ph.D. student Yijie Guo & Violet Fu*

- Developed learning-based, cogsci-inspired **intrinsic motivation** for better **sample efficiency** in **reinforcement learning** [P6, P7]; Obtained state-of-the-art performance of task solving in 2D grid world (Minigrid), and continuous space (Deepmind Control).

Industry Experience

LG AI Research (MI, United States) Sep. 2023 - Dec. 2023
ML Research Engineer, *Mentor: Lajanugen Logeswaran, Sungryull Sohn*

- Implemented whole evaluation pipeline for modularized task-oriented dialog system (including NLG, DM, and NLU modules); Implemented GPT-based end-to-end baseline for comparison study.
- Implemented LLM-As-a-Judge with GPT4 as backbone to provide judgments on the overall performance of dialog systems; Designed simulated users with GPT4 to support scalable human-like interaction with dialog systems.

INTSIG (Shanghai, China) Aug. 2020 - Jan. 2021
Algorithm Engineer, *Mentor: Zhichao Lvu*

- Extended Kubernetes & K3S to Cloud deployment construction; Designed automatic, minimized installation method for small companies without scaled web clusters or related engineers.
- Constructed Lua SDK of mockserver for web testing to raise efficiency of coordination between front and back-end; Constructed Lua SDK of SQL (mysql, postgres) code format correction for preventing SQL injection.

Publications [G]

$*$ → equal contribution

Conference & Workshop Papers

[P1] Ziqiao Ma, Jacob Sansom, **Run Peng**, and Joyce Chai. "Towards A Holistic Landscape of Situated Theory of Mind in Large Language Models". In: *Findings of the Association for Computational Linguistics: EMNLP 2023 (Findings of EMNLP)*. 2023, pp. 1011–1031.

[P2] **Run Peng***, Ziqiao Ma*, Amy Pang, Sikai Li, Zhang Xi-Jia, Yingzhuo Yu, Cristian-Paul Bara, and Joyce Chai. "Communication and Verification in LLM Agents towards Collaboration under Information Asymmetry". In: *The 1st Workshop on Multi-Agent Systems in the Era of Foundation Models: Opportunities, Challenges and Futures (MAS) @ ICML 2025*. 2025.

[P3] Yichi Zhang, **Run Peng**, Lingyun Wu, Yinpei Dai, Xuweiyi Chen, Qiaozi Gao, and Joyce Chai. "Bootstrapping Visual Assistant Modeling with Situated Interaction Simulation". In: *Proceedings of the Second Conference on Language Modeling (CoLM)*. 2025.

[P4] Yinpei Dai, **Run Peng**, Sikai Li, and Joyce Chai. "Think, Act, and Ask: Open-World Interactive Personalized Robot Navigation". In: *Proceedings of the IEEE International Conference on Robotics and Automation (ICRA)*. 2024.

[P5] Zengqing Wu*, **Run Peng***, Shuyuan Zheng, Qianying Liu, Xu Han, Brian I. Kwon, Makoto Onizuka, Shaojie Tang, and Chuan Xiao. "Shall We Team Up: Exploring Spontaneous Cooperation of Competing LLM Agents". In: *Findings of the Association for Computational Linguistics: EMNLP 2024*. 2024.

[P6] Yao Fu, **Run Peng**, and Honglak Lee. "Go Beyond Imagination: Maximizing Episodic Reachability with World Models". In: *Proceedings of the 40th International Conference on Machine Learning (ICML)*. 2023, pp. 10405–10420.

[P7] Yijie Guo, Yao Fu, **Run Peng**, and Honglak Lee. "Learning Exploration Policies with View-based Intrinsic Rewards". In: *Deep Reinforcement Learning Workshop NeurIPS 2022*. 2022.

[P8] Ziqiao Ma, Jing Ding, Xuejun Zhang, Dezhi Luo, Jiahe Ding, Sihan Xu, Yuchen Huang, **Run Peng**, and Joyce Chai. "Vision-Language Models Are Not Pragmatically Competent in Referring Expression Generation". In: *Proceedings of the Second Conference on Language Modeling (CoLM)*. 2025.

Preprints

[PP1] **Run Peng**, Ziqiao Ma, Yinpei Dai, Yichi Zhang, Sungryull Sohn, Moontae Lee, Honglak Lee, and Joyce Chai. "CommonGrid: Training Large Language Model Agents with a Situated Theory of Mind for Multi-Agent Collaboration". In: *preprint* (2025).

[PP2] Zengqing Wu, **Run Peng**, Xu Han, Shuyuan Zheng, Yixin Zhang, and Chuan Xiao. "Smart Agent-Based Modeling: On the Use of Large Language Models in Computer Simulations". In: *arXiv preprint* (2023).

[PP3] Zengqing Wu, **Run Peng**, Takayuki Ito, and Chuan Xiao. "LLM-Based Social Simulations Require a Boundary". In: *arXiv preprint* (2025).

Late Breaking Results

[LB1] Sikai Li, **Run Peng**, Yinpei Dai, Jenny Lee, and Joyce Chai. *Exploring LLM in Intention Modeling for Human-Robot Collaboration*. Late-breaking results report presented at the IEEE/RSJ International Conference on Intelligent Robots and Systems (IROS). 2023.

Recent Teaching

University of Michigan

FA 2025	Graduate Student Instructor, Natural Language Processing (CSE 595 / SI 561 / LING 541)
SP 2022	Instructional Aide, Database Management Systems (EECS 484)

Shanghai Jiao Tong University

SU 2021	Teaching Assistant, Data Structures and Algorithms (VE 281)

Academic Service

Conference Reviewing

Natural Language Processing	ARR, EMNLP, NAACL, EACL, COLM
Machine Learning	ICLR, ICML, NeurIPS, AISTATS
Human Computer Intearction	HRI, CHI

Journal Reviewing

Simulation	Journal of Simulation

Selected Community Service

Volunteering & Leadership

2025	Poster Co-chair, Michigan AI Symposium
2024	Mentor, Explore Grad Studies at Umich
2024	Student Admission Committee, AI Application review at Umich

Skills

Programming Languages

Proficient	Torch, Python, C/C++, SQL, HTML/CSS
Familiar	TeX, MATLAB, JavaScript, Pascal
Capable	Lua, Kubernetes

Natural Languages

Native	Mandarin Chinese, Japanese
Fluent	English