

RESEARCH INTERESTS

My research interests are centered around embodied AI, multimodality, and language, with the goal to create Scalable Cognitive Agents that perceive, act, and learn like humans in physical and virtual worlds. My current focuses are memory, world models, and multi-agent simulations.

EDUCATION

Johns Hopkins University, Baltimore, MD, US
Ph.D. in Computer Science

08/2025 - 05/2030 (expected)
Advisor: Tianmin Shu, Daniel Khashabi

University of Michigan, Ann Arbor, MI, US
M.S. in Robotics and Graduate Certificate in Cognitive Science
GPA: 4.000/4.000

08/2022 - 04/2024
Advisor: Joyce Chai

Relevant Courses: Mathematics for Robotics, Robotic Systems Laboratory, Natural Language Processing, Computational Modeling of Cognition, Cross-Disciplinary Perspectives in Cognitive Science, Advanced Topics in Computer Vision, Mobile Manipulation Systems, Advanced Artificial Intelligence

University of Massachusetts Amherst, Amherst, MA, US
B.S. in Computer Science
GPA: 3.848/4.000

09/2018 - 05/2022

Computer Science Courses: Introduction to Problem Solving with Computers, Programming with Data Structures, Programming Methodology, Computer Systems Principles, Reasoning Under Uncertainty, Introduction to Computation, Introduction to Algorithms, Web Programming, Social Issues in Computing, Introduction to Computer Vision, Artificial Intelligence, Introduction to Robotics: Perception, Mechanics, Dynamics, and Control, Game Programming, Machine Learning, Practice and Applications of Data Management, Introduction to Computer Graphics, Probabilistic Graphical Models

PUBLICATIONS

* → equal contribution

- [P.1] Hongxin Zhang*, **Zheyuan Zhang***, Zeyuan Wang*, Zunzhe Zhang, Lixing Fang, Qinhong Zhou, Chuang Gan. “Ella: Embodied Social Agents with Lifelong Memory”. In *Submission*. 2025.
- [P.2] Qinhong Zhou*, Hongxin Zhang*, Xiangye Lin*, **Zheyuan Zhang***, Yutian Chen, Wenjun Liu, Zunzhe Zhang, Sunli Chen, Lixing Fang, Qiushi Lyu, Xinyu Sun, Jincheng Yang, Zeyuan Wang, Bao Chi Dang, Zhehuan Chen, Daksha Ladia, Jiageng Liu, Chuang Gan. “Virtual Community: An Open World for Humans, Robots, and Society”. In *Submission*. 2025.
- [C.1] Yuncong Yang*, Jiageng Liu*, **Zheyuan Zhang**, Siyuan Zhou, Reuben Tan, Jianwei Yang, Yilun Du, Chuang Gan. “MindJourney: Test-Time Scaling with World Models for Spatial Reasoning”. In *Advances in Neural Information Processing Systems 39 (NeurIPS)*. 2025.
- [C.2] Shane Storks, Itamar Bar-Yossef, Yayuan Li, **Zheyuan Zhang**, Jason J. Corso, Joyce Chai. “Transparent and Coherent Procedural Mistake Detection”. In *Proceedings of the 2025 Conference on Empirical Methods in Natural Language Processing (EMNLP), Long Papers*. 2025.

- [C.3] **Zheyuan Zhang***, Fengyuan Hu*, Jayjun Lee*, Freda Shi, Parisa Kordjamshidi, Joyce Chai, Ziqiao Ma. “Do Vision-Language Models Represent Space and How? Evaluating Spatial Frame of Reference Under Ambiguities”. In *The Thirteenth International Conference on Learning Representations (ICLR)*, **Oral Presentation (1.8%)**. 2025.
- [C.4] Hongxin Zhang*, Zeyuan Wang*, Qiushi Lyu*, **Zheyuan Zhang**, Sunli Chen, Tianmin Shu, Yilun Du, Behzad Dariush, Kwonjoon Lee, Chuang Gan. “Compositional World Models for Embodied Multi-Agent Cooperation”. In *The Thirteenth International Conference on Learning Representations (ICLR)*. 2025.
- [C.5] **Zheyuan Zhang**. “A Combinatorial Approach to Neural Emergent Communication”. In *Proceedings of the 31th International Conference on Computational Linguistics (COLING)*. 2025.
- [C.6] Keunwoo Peter Yu, **Zheyuan Zhang**, Fengyuan Hu, Shane Storks, Joyce Chai. “Eliciting In-Context Learning in Vision-Language Models for Videos Through Curated Data Distributional Properties”. In *Proceedings of the 2024 Conference on Empirical Methods in Natural Language Processing (EMNLP), Long Papers*. 2024.
- [C.7] **Zheyuan Zhang***, Shane Storks*, Fengyuan Hu, Sungryull Sohn, Moontae Lee, Honglak Lee, Joyce Chai. “From Heuristic to Analytic: Cognitively Motivated Strategies for Coherent Physical Commonsense Reasoning”. In *Proceedings of the 2023 Conference on Empirical Methods in Natural Language Processing (EMNLP), Long Papers*. 2023.
- [C.8] **Zheyuan Zhang**, Huiliang Shang. “Low-cost Solution for Vision-based Robotic Grasping”. In *Proceedings of the 2021 International Conference on Networking Systems of AI (INSAI)*, **Second Prize Excellent Paper Award**. 2021.

RESEARCH EXPERIENCE

MIT-IBM Watson AI Lab , Visiting Researcher	Cambridge, MA, US
UMass Amherst CICS , Research Internship	06/2024 - 05/2025
Adviser: Chuang Gan	
University of Michigan SLED Research Lab , Research Assistant	Ann Arbor, MI, US
Adviser: Joyce Chai	11/2022 - 05/2024
Fudan University RAS Lab , Research Internship	Shanghai, CN
Adviser: Huiliang Shang, Ruijiao Li	06/2021 - 08/2021

HONORS AND AWARDS

Oral Presentation (1.8%). ICLR 2025 Conference.	2025
Chancellor’s Award. UMass Amherst. \$10,000 USD.	2018, 2019, 2020, 2021
Dean’s List Honors. UMass Amherst.	2018-2022 (8 semesters)
Second Prize Excellent Paper Award. INSAI 2021 Conference.	2021

TEACHING

EECS 492: Introduction to Artificial Intelligence

Topics: Search, Constraint Satisfaction Problem, Logic and Inference, Uncertainty, Bayesian Networks, Decision Trees, Linear Regression, Neural Networks and Generative AI, Nonparametric Methods, Decision Theory, Reinforcement Learning, Game Theory

PRESENTATIONS

1. **Zheyuan Zhang**. “Guest Lecture: Embodied AI”. In EECS 492, University of Michigan.
2. **Zheyuan Zhang**. “Guest Lecture: Foundation Models”. In EECS 492, University of Michigan.

ACADEMIC SERVICE

Conference Reviewer

- ICLR 2025, 2026
- ACL ARR 2025

Workshop Reviewer

- ACL-SRW 2025
- NeurIPS 2024 Workshop: Pluralistic Alignment
- RSS 2025 Workshop: Continual Robot Learning from Humans

OTHER PROJECTS

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| 1. Bot Lab: Autonomous Ground Vehicle from Low-level Control, SLAM to Planning and Exploration | 2022 |
| 2. Clara in Wonderland: 3D Open-world Adventure Game (Unity, C#) | 2021 |
| 3. Quanin: Automatic Stock Screener (Python, C#) | 2021 |
| 4. Blockchain From Scratch (C++) | 2020 |
| 5. Findurcourse.com: Node.js Web Application (HTML/CSS, JavaScript, PostgreSQL) | 2020 |
| 6. ZiZoyaOS: 32-Bit Operating System From Scratch (Assembly, C) | 2020 |

SKILLS

- Programming Languages: Python, C/C++, C#, JavaScript, MATLAB, Visual Basic, Pascal
- Other Computer Languages and Software: HTML/CSS, SQL, L^AT_EX, Blender, Unity, Unreal Engine