

# ZIYI WANG

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## 🎓 EDUCATION

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**Northeastern University** Sep. 2024 – Present

Ph.D. student in Computer Science. Advisor: [Dakuo Wang](#)

**Tsinghua University** Aug. 2021 – Jun. 2024

Master's in Electronic and Information Engineering. Advisor: [Ji Wu](#)

**Tsinghua University** Aug. 2017 – Jun. 2021

Bachelor of Engineering in Electronic Information Science and Technology

## 📖 PUBLICATIONS

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- **Trajectory2Task: Training Robust Tool-Calling Agents with Synthesized Yet Verifiable Data for Complex User Intents.**  
[Ziyi Wang](#), Yuxuan Lu, Yimeng Zhang, Ziwei Dong, Jing Huang, Jiri Gesi, Xianfeng Tang, Chen Luo, Yisi Sang, Hanqing Lu, Manling Li, Dakuo Wang  
(Submitted to ACL 2026)
- **OPeRA: A Dataset of Observation, Persona, Rationale, and Action for Evaluating LLMs on Human Online Shopping Behavior Simulation.**  
[Ziyi Wang](#), Yuxuan Lu, Wenbo Li, Amirali Amini, Bo Sun, Yakov Bart, Weimin Lyu, Jiri Gesi, Tian Wang, Jing Huang, Yu Su, Upol Ehsan, Malihe Alikhani, Toby Jia-Jun Li, Lydia Chilton, Dakuo Wang.  
(Accepted by NeurIPS Workshop 2025 on MTI-LLM and SEA; ARR 3.5/5, to be committed to ACL 2026)
- **Customer-R1: Personalized Simulation of Human Behaviors via RL-based LLM Agent in Online Shopping.**  
[Ziyi Wang](#), Baber Khalid, Houyu Zhang, Jiri Gesi, Yuxuan Lu, Yimeng Zhang, Tian Wang, Ruochen Jiao, Alejandro Mottini, Jing Xu, Yufan Guo, Qingjun Cui, Dakuo Wang.  
(Accepted by NeurIPS Workshop 2025 on MTI-LLM)
- **Shop-R1: Rewarding LLMs to Simulate Human Behavior in Online Shopping via Reinforcement Learning.**  
Yimeng Zhang, Tian Wang, Jiri Gesi, [Ziyi Wang](#), Yuxuan Lu, Jiacheng Lin, Sinong Zhan, Vianne Gao, Ruochen Jiao, Junze Liu, Kun Qian, Yuxin Tang, Ran Xue, Houyu Zhang, Qingjun Cui, Yufan Guo, Dakuo Wang.  
(Accepted by ICLR 2026)
- **See, Think, Act: Online Shopper Behavior Simulation with VLM Agents.**  
Yimeng Zhang, Jiri Gesi, Ran Xue, Tian Wang, [Ziyi Wang](#), Yuxuan Lu, Sinong Zhan, Huimin Zeng, Qingjun Cui, Yufan Guo, Jing Huang, Mubarak Shah, Dakuo Wang.  
(Accepted by NeurIPS Workshop 2025 on SEA)

## 👤 INTERNSHIP

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**Applied Scientist Intern @ Amazon.Com, Inc**, Palo Alto, USA Sep. 2025 – Present  
Working on training tool-calling agents.

**Applied Scientist Intern @ Amazon.Com, Inc**, Seattle, USA May. 2025 – Aug. 2025  
Worked on personalized simulation of human behaviors via RL-based LLM agent.

**Research Intern @ Xiaomi Corp., Beijing, China** Aug. 2023 – Nov. 2023  
Worked on autonomous driving planning algorithms using multimodal large model.

**Research Intern @ Megvii, Beijing, China** Aug. 2021 – Jan. 2022  
Worked on robustness of face recognition models.

## 🔬 RESEARCH EXPERIENCES

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### **Controllable Self-Evolution for Tool-Calling Customer-Service Agents** Nov. 2025 – Present

*Amazon* | *Applied Scientist Intern*

- Proposed a controllable self-evolution framework for training tool-calling agents in tool-calling environments with minimal human supervision.
- Demonstrating improved end-to-end tool-calling success and stronger robustness to evolving environments (e.g., policy updates, tool schema changes, and shifting task distributions) without large-scale human annotation.

### **Scaling Verifiable Tool-Calling Data Synthesis via Model Exploration** Nov. 2025 – Present

*Northeastern University* | *PhD Student*

- Introduced a large-scale synthetic *verifiable* dataset containing tasks and valid trajectories for agentic training and evaluation on tool-calling.
- Proposed a self-exploration and back-chaining synthesis framework to automatically generate high-quality, verifiable tool-use tasks across domains.
- Demonstrated state-of-the-art performance and stronger generalization across multiple real-world benchmarks after training on the dataset.

### **Trajectory2Task: Learning Tool Use in Real-World Settings** Sep. 2025 – Dec. 2025

*Amazon* | *Applied Scientist Intern*

- Proposed a systematic study of tool-calling agents under ambiguous, changing, and infeasible user goals, analyzing multi-turn decision-making in realistic tool-use settings.
- Developed a general, verifiable data synthesis pipeline that generates complex multi-turn tool-use tasks and trajectories, and built a comprehensive benchmark revealing key LLM failure modes.
- Proposed a trajectory-based SFT training method that teaches agents when to ask, how to adapt, and how to act, improving tool-calling performance and transferring to unseen domains.

### **Customer-R1: Personalized Simulation of Human Behavior with RL** May. 2025 – Aug. 2025

*Amazon* | *Applied Scientist Intern*

- Developed an RL-based algorithm for step-by-step user behavior simulation in online shopping, optimizing both action generation and reasoning alignment.
- Leveraged real human behavior data from the OPeRA dataset with custom reward signals to improve fidelity of simulated behaviors.
- Compared against supervised fine-tuning and prompting baselines; achieved better alignment with authentic human decision-making processes.

### **OPeRA: User Online Shopping Behavior Simulation Benchmark** Oct. 2024 – May. 2025

*Northeastern University* | *PhD Student*

- Designed and implemented a Chrome extension to collect detailed user behavior data on Amazon.com, including click, scroll, and navigation patterns.
- Built a comprehensive dataset capturing user shopping behavior, environmental context, final purchasing decisions, rationales, and persona attributes.
- Developed evaluation tasks to benchmark LLM agents and support research on human behavior simulation.

### **Prompt Based Automatic ICD Coding with Knowledge Injection** Jun. 2023 – Apr. 2024

*Tsinghua University* | *Research Assistant*

- Developed a unified knowledge-injection approach to enhance pre-trained models in specialized domains, enabling extensible incorporation of new knowledge.
- Introduced a GNN pre-training method tailored for hierarchical knowledge data.
- Designed an ICD coding algorithm using GNN pre-training and multimodal training strategies with prompt-tuning; achieved SOTA on MIMIC-III-50, especially in few-shot settings.

## Autonomous Driving Planning Algorithms

Jul. 2023 – Nov. 2023

*Xiaomi | Research Intern*

- Contributed to an end-to-end autonomous driving decision and planning model integrating multi-sensor and high-level inputs.
- Designed methods using navigation information to improve holistic route understanding.
- Built data interfaces and optimized preprocessing; established evaluation on NuPlan and CARLA Leaderboard, conducting closed-loop tests at 2Hz on CARLA.

## ♡ HONORS AND AWARDS

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| • Northeastern University Khoury Distinguished Fellowship                  | Fall 2024 |
| • Best Performance Prize, Intelligent Robot Obstacle Avoidance Competition | Dec. 2019 |
| • Excellence Award, Tsinghua Electronic Design Competition                 | Dec. 2018 |
| • Second Prize, Tsinghua Freshman Scholarship                              | Oct. 2017 |