Xinzhe Juan

1863 Willowtree Lane, Ann Arbor, MI juanxz@umich.edu 734 465 7067 scholar Homepage

Education

University of Michigan, Ann Arbor, MI *Aug 2024 – May 2025*
Computer Science Undergrad, GPA: 3.96/4.00 *(expected)*

- Selected Coursework (4.0/4.0): Natural Language Processing, Information Retrieval and Web Search, Principles of Machine Learning, Probability and Statistics, Computer Organization, Theory of Complex Systems
- On going Courework: Computer Vision, Machine Learning Researches
- Honors and Awards: Jackson and Muriel Lum Scholarship **(top 2%)**, Deans' List, University Honors

Shanghai Jiao Tong University, Shanghai, China *Sept 2022 – July 2025*
Mechanical Engineering Undergrad, GPA: 3.83/4.00 *(expected)*

- Selected Coursework(4.0/4.0): Data Structures and Algorithms, Design and Manufacturing, National Undergraduate Innovation Program, Undergraduate Research
- Honors and Awards: John Wu & Jane Sun Sunshine Scholarship **(top 6%)**, University Physics Competition Gold Medal **(top 2% Globally)**

Selected Research Experiences

Wang Lab@Princeton AI for Accelerating Invention *Remote*
Princeton University, Advised by Prof. Mengdi Wang Oct 2024 – Present

- Research on self-evovling agents and AI for Humanities.
- Co-lead EmoAgent, a multi-agent AI framework designed to evaluate and mitigate mental health risks in human-AI interaction. In 34.4% of simulations, users' mental health deteriorated, proposing that AI safety should also consider mental health safety.
- Co-lead the first comprehensive survey of self-evolving agents, highlighting what, when, and how agents evolve, key benchmarks and applications, and future directions towards ASI.
- Contribute to Alita, a general agent with minimal pre-definition and maximal evolution which achieves top-1 performance on GAIA in May 2025, and Alita-G, a self-evolving agent that achieves new SOTA on GAIA and transforms a general agent into a domain expert by systematically generating, abstracting, and curating MCP tools.
- Actively contributed to the full research cycle – from proposing ideas, implementing and maintaining codebases, running complete experiments, and managing the Git repository, to drafting papers, leading rebuttals from boardline re, and presenting our work in person at top conferences.

Wu Laboratory *Remote*
Princeton University, Advised by Prof. Sanfeng Wu Jun 2025 – Present

- Research on building domain specific agents in 2D quantum material fabrication.
- Co-lead Qumus, an interactive and device-controlling agent to assist automated 2D quantum material construction, including automated exfoliation, flake searching, design and stacking, which is the multi-agent framework in automated material construction. Plan to submit to top journal.
- Construct the overall agents' pipeline, implement the agent's toolchain, including differential-evolution-based design search and computer-vision modules for flake detection and matching.

HUMAIN Lab *Remote*
University of Texas at Austin, Advised by Prof. Leqi Liu Mar 2025 – Jun 2025

- Research on training free distillation of agents' intelligence.
- Co-lead AgentDistill, which proposes a training-free distillation framework enabling efficient intelligence transfer through reusable MCPs. Experiments on biomedical and mathematical benchmarks demonstrate that our distilled student agents built on small language models (Llama3.1-8B, GPT-3.5-turbo, Qwen3-8B), can achieve performance comparable to advanced systems using large LLMs such as OctoTools (GPT-4o)
- Design, implement, and conduct experiments on distilling MCP-boxes from teacher agents with strong but

expensive LLMs to student agents equipped with lightweight LLMs, achieving competitive performance without gradient updates.

Publications

EmoAgent: Assessing and Safeguarding Human-AI Interaction for Mental Health Safety 2025
Jiahao Qiu*, Yinghui He*, **Xinzhe Juan***, Yimin Wang, Yuhan Liu, Zixin Yao, Yue Wu, Xun Jiang, Ling Yang, Mengdi Wang†
EMNLP 2025 MainConference, Oral Presentation. aclanthology.org/2025.emnlp-main.594

A Survey of Self-Evolving Agents: On Path to Artificial Super Intelligence 2025
Huan-ang Gao*, Jiayi Geng*, Wenyue Hua*, Mengkang Hu*, **Xinzhe Juan***, et al.
(Ordered alphabetically)
Under review as submission to top journal. arxiv.org/abs/2506.14728

AgentDistill: Training-Free Agent Distillation with Generalizable MCP Boxes 2025
Jiahao Qiu*, **Xinzhe Juan***, Yimin Wang*, Ling Yang*, Xuan Qi, Tongcheng Zhang, Jiacheng Guo, Yifu Lu, Zixin Yao, Hongru Wang, Shilong Liu, Leqi Liu†, Mengdi Wang†
Under review as submission to top conference. arxiv.org/abs/2506.14728

TreeBoN: Enhancing Inference-Time Alignment with Speculative Tree-Search and Best-of-N Sampling 2025
Jiahao Qiu, Yifu Lu, Yifan Zeng, Jiacheng Guo, Jiayi Geng, Chenhao Zhu, **Xinzhe Juan**, Ling Yang, Huazheng Wang, Kaixuan Huang, Yue Wu, Mengdi Wang†
EMNLP 2025 Findings. aclanthology.org/2025.findings-emnlp.1140/

Temporal Consistency for LLM Reasoning Process Error Identification 2025
Jiacheng Guo, Yue Wu, Jiahao Qiu, Kaixuan Huang, **Xinzhe Juan**, Ling Yang, Mengdi Wang †
EMNLP 2025 Findings. aclanthology.org/2025.findings-emnlp.1205/

Physics Supernova: AI Agent Matches Elite Gold Medalists at IPhO 2025 2025
Jiahao Qiu*, Jingzhe Shi*, **Xinzhe Juan**, Zelin Zhao, Jiayi Geng, Shilong Liu, Hongru Wang, Sanfeng Wu, Mengdi Wang
NeurIPS 2025 LLM LAW workshop (spotlight). arxiv.org/abs/2505.20246

Shallow Preference Signals: Large Language Model Aligns Even Better with Truncated Data? 2025
Xuan Qi*, Jiahao Qiu*, **Xinzhe Juan**, Yue Wu, Mengdi Wang†
ACL 2025 GEM workshop. aclanthology.org/2025.gem-1.48/

Alita-G: Self-Evolving Generative Agent for Agent Generation 2025
Jiahao Qiu*, Xuan Qi*, Hongru Wang*, **Xinzhe Juan**, Yimin Wang, Zelin Zhao, Jiayi Geng, Jiacheng Guo, Peihang Li, Jingzhe Shi, Shilong Liu, Mengdi Wang†
Under review as submission to top conference. arxiv.org/abs/2506.14728

Alita: Generalist Agent Enabling Scalable Agentic Reasoning with Minimal Predefinition and Maximal Self-Evolution 2025
Jiahao Qiu*, Xuan Qi*, Tongcheng Zhang*, **Xinzhe Juan**, et al.
Under review as submission to top conference. arxiv.org/abs/2505.20286

On Path to Multimodal Historical Reasoning: HistBench and HistAgent 2025
Jiahao Qiu*, Fulian Xiao*, Yimin Wang*, Yuchen Mao*, Yijia Chen*, **Xinzhe Juan**, et al.
Under review as submission to top conference. arxiv.org/abs/2505.20246

A Robotic Manipulation Framework for Industrial Human–Robot Collaboration Based on Continual Knowledge Graph Embeddings 2024
Bohan Feng, **Xinzhe Juan**, Xinyi Gao, Qi Zhou, Youyi Bi
Published in *The International Journal of Advanced Manufacturing Technology.*
https://link.springer.com/article/10.1007/s00170-024-14468-w

Work Experience

Counselor, Student Science and Technology Innovation Association, UM-SJTU JI Oct 2022 – Aug 2024

- Principal for the 14th Liming Cup set design and terrain layout
- Lecturer for the 2023 SolidWorks Workshop
- TA for 2022–2023 Python, Markdown & LaTeX, and Liming Cup Prep Workshops

Skills

Programming: Python, C++, C, MATLAB **Tools:** LaTeX, Markdown, Git
Machine Learning: PyTorch, NumPy, smolagents, Autogen, verl **Languages:** Chinese, English