

# Keyang Xuan

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## Education

University of Illinois, Urbana-Champaign, Master in Computer Science	Aug 2023 – May 2025
• GPA: 3.95/4.0	
• <b>Selected Coursework:</b> Advanced NLP, Text Information System, ML System, Data Mining Principle, Language Interface	
University of Minnesota, Twin Cities, BS in Computer Science; BS in Data Science	Sept 2019 – May 2023
• GPA: 3.92/4.0	
• <b>Selected Coursework:</b> Computer Vision, Deep Learning in NLP, Advanced Machine Learning, Theory of Probability, Applied Statistics, Optimization in Machine Learning	

## Research Interest

- [R1] **Automated Scientific Discovery:** Develop and train large-scale models to accelerate scientific discovery, building the automated research system. (e.g. *ResearchTown*, *TinyScientist*)
- [R2] **Social Learning & Modeling:** Design and train agents that exhibit social intelligence and adapt to human interactions. (e.g. *SOTOPIA-RL*, *ResearchTown*, *SocialVeil*)
- [R3] **Efficient & Safe AI:** Promote AI democratization through efficient and secure strategies. (e.g. *LEMMA*, *TAMP*, *APILOT*)

## Publications

Probing Social Intelligence of Language Agent under Communication Barriers	Preprint
Keyang Xuan, Pengda Wang, Chongrui Ye, Haofei Yu, Tal August, Jiaxuan You	
SOTOPIA-RL: Reward Design for Social Intelligence	Preprint
Haofei Yu, Zengyang Qi, Yining Zhao, Kolby Nottingham, Keyang Xuan, Bodhisattwa Prasad Majumder, Hao Zhu, Paul Pu Liang, Jiaxuan You	
TINYSCIENTIST: An Interactive, Extensible, and Controllable Framework for Building Research Agents	EMNLP 2025 Demo
Haofei Yu*, Keyang Xuan*, Fenghai Li*, Kunlun Zhu, Zijie Lei, Ziheng Qi, Jiaxun Zhang, Kyle Richardson, Jiaxuan You	
ResearchTown: Simulator of Human Research Community	ICML 2025
Haofei Yu, Zhaocheng Hong, Zirui Cheng, Kunlun Zhu, Keyang Xuan, Jinwei Yao, Tao Feng, Jiaxuan You	
APILOT: Navigating Large Language Models to Generate Secure Code by Sidestepping Outdated API Pitfalls	ACSAC 2025
Weiheng Bai, Keyang Xuan, Pengxiang Huang, Wu Qiushi, Jianing Wen, Jingjing Wu, Kangjie Lu	
TAMP: Token-Adaptive Layerwise Pruning in Multimodal Large Language Models	ACL Findings 2025
Jaewoo Lee, Keyang Xuan, Chanakya Ekbote, Sandeep Polisetty, May Fung, Paul Pu Liang	
LEMMA: Towards LVLM Enhanced Multimodal Misinformation Detection with External Knowledge Augmentation	KnowledgeLM @ ACL 2024
Keyang Xuan, Yi Li, Fan Yang, Ruochen Wu, Yi R. Fung, Heng Ji	
Spatiotemporal Classification with limited labels using Constrained Clustering for large datasets	SDM 2023
Praveen Ravirathinam, Rahul Ghosh, Ke Wang, Keyang Xuan, Ankush Khandelwal, Dugan Hilary, Paul Hanson, Vipin Kumar	

## Open Source Projects

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<b>Tiny-Scientist: A Lightweight Framework for Building Research Agents</b>	Lead Developer
GitHub tiny-scientist ★ 104	
<b>ResearchTown: Simulator for Human Research Community</b>	Core Maintainer
GitHub research-town ★ 173	

## Selected Research Experience

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<b>University of Illinois, U Lab</b>	Sep 2024 – Present
• Developed an automatic research platform that simulates the full lifecycle of a research process.	
• Defined ResearchBench, a benchmark that collects 1000 AI conference paper writing tasks and 200 reviewing tasks to measure the quality of simulations of the research community.	
<b>MIT Multisensory Intelligence Lab</b>	Nov 2024 – Feb 2025
• Co-developed TAMP, a token-adaptive pruning framework for Multimodal Large Language Models (MLLMs), enabling layerwise pruning decisions based on token importance.	
• Achieved an average 1.9% relative performance improvement over the strongest baseline, demonstrating superior performance-sparsity trade-offs compared to standard pruning methods.	
<b>University of Illinois, Blender Lab</b>	Dec 2023 – Jun 2024
• Proposed retrieval-augmented based method to improve GPT4V performance on multimodal misinformation detection, achieving a 9% increase on Twitter and a 13% increase on Fakeddit.	
<b>University of Minnesota, Security Lab</b>	Jun 2023 - Jun 2024
• Proposed a security-focused framework for LLM code generation, addressing outdated and insecure API usage in systems like GitHub Copilot.	
• Designed AST-based method to improve the accuracy of code sanitizer in LLMs and proposed a retrieval-augmented moderation which can achieve a reduction of 89% in vulnerable code recommendations and an average increase of 27.54% in usability.	
<b>University of Minnesota, Data Mining Lab</b>	Jun 2022 - Jun 2023
• Applied constrained clustering and a hybrid LSTM-CNN architecture to enhance the classification performance on a newly collected remote sensing global waterbody dataset.	

## Industrial Experience

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<b>Research Intern, National Renewable Energy Laboratory</b>	Jan 2024 – Present
• Investigate grid edge resource flexibility prediction with social impact integrated.	
• Develop Advanced Non-intrusive Load Disaggregation Method for household energy consumption.	
<b>Quantitative Analyst Intern, CITIC Future</b>	Jun 2021 - Aug 2021
• Implemented Double Moving Average Model and rigorously assessing its suitability across diverse commodity futures markets consumption.	
<b>Data Analyst Intern, Shanghai Metro Data Tech</b>	May 2021 - Jun 2021
• Crafted SQL queries to precisely extract essential data in alignment with BI product design requirements.	

## Academia Services

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**Program Reviewer:** ACL Rolling Review 2024

## Technologies

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**Languages:** C/C++, Java, Python, JavaScript, HTML/CSS, MATLAB, R, Node.js

**Technologies:** Git/GitHub, Unix Shell, VS Code, IntelliJ IDEA, Atom, R Studio, Postman