Chenyi Tong

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Education

University of Wisconsin–Madison
M.S. in Data Science *Sep. 2025 – May 2027 (Expected)*

- **Relevant Coursework:** CS 639 (DL for NLP), STAT 453 (DL & Gen Models), STAT 479 (Interpretable ML)

Wuhan University
B.S. in Mathematics (National Plan for Strengthening Basic Disciplines) *Sep. 2022 – Jun. 2026 (Expected)*

- **GPA:** 88.6/100 (Top 10%)

Research Interests

- **LLM Agent Applications:** tool-augmented agents for multi-step workflows, retrieval, and automation; evaluation and reliability for long-horizon tasks.
- **Post-training for Agentic LLMs:** fine-tuning LLMs to follow instructions more reliably and use tools more consistently in multi-step agent workflows.

Publications

- **CrystalSTAR: Structured Action Orchestration with Trio-Reflection for Constrained Novel Crystal Discovery**
  Chenyi Tong Jingru Gan, Yanqiao Zhu, Kaiqiao Han, Haixin Wang, Xiao Luo, Yizhou Sun, Wei Wang
  Submitted to the Conference on Language Modeling (COLM), Mar 2026 (under review)
- **ARLArena: Demystifying Policy Gradient Stability in Agentic Reinforcement Learning**
  Xiaoxuan Wang, Han Zhang, Haixin Wang, Yidan Shi, Ruoyan Li, Kaiqiao Han, **Chenyi Tong**, Haoran Deng, Alexander K. Taylor, Renliang Sun, Yanqiao Zhu, Jason Cong, Yizhou Sun, Wei Wang
  Submitted to the International Conference on Machine Learning (ICML), Jan 2026 (under review)
- **TOAST: Multi-Agent Collaborative System for Symbolic Regression**
  Xinyu Pan, Yanqiao Zhu, **Chenyi Tong**, Kaiqiao Han, Jingru Gan, Xiao Luo, Yizhou Sun, Wei Wang
  Submitted to the Annual Meeting of the Association for Computational Linguistics (ACL), Jan 2026 (under review)

Research Experience

Research Collaborator (Remote) Oct. 2025 – Present
ScAI Lab, University of California, Los Angeles

- Developed protocol-aligned baselines and standardized evaluation pipelines for agentic RL benchmarks, enabling consistent comparisons across runs.
- Built trajectory-level diagnostics to study failure patterns in long-horizon rollouts and guide agent-system refinement.

Research Assistant Oct. 2025 – Present
University of Wisconsin–Madison

- Advisor: Prof. Xiao Luo
- Designed a ReAct-style, tool-augmented agent for multi-objective materials discovery, integrating retrieval and iterative propose–evaluate–refine loops.
- Implemented a reproducible evaluation and ablation pipeline and ran large-scale experiments to benchmark agent behavior across tasks and settings.

Research Assistant Mar. 2025 – Oct. 2025
The Hong Kong University of Science and Technology

- Advisor: Prof. Nan Jiang
- Modeled physician scheduling as a chance-constrained bilevel program, capturing hierarchical decisions and probabilistic requirements; derived tractable reformulations to enable computation.
- Implemented and evaluated scenario-based methods in Gurobi; presented results in a research talk (slides).

Projects

VHaLM: Multi-Image Haiku Generation | *PyTorch, CLIP, T5, LoRA* Fall 2025

- Built VHaLM, a two-stage system: fuse frozen CLIP features to produce a unified multi-image description (LoRA-T5), then generate 5–7–5 haiku with rule-based structure checks and LLM reranking.
- Mined 2K+ coherent MS-COCO image triplets via a CLIP kNN graph and created pseudo-supervision with LLM-based caption fusion; validated the pipeline and analyzed trade-offs between meter strictness and visual relevance.

Honors and Awards

- **Outstanding Teaching Assistant for Fall 2024 Semester**, Wuhan University, Mar. 2025
- **University Scholarship for 2023–2024 Academic Year**, Wuhan University, Sep. 2024, Sep. 2023
- **Huang Zhangren Special Scholarship for Merit Student**, Wuhan University, Sep. 2023
- **Second Prize 34th Chinese Chemistry Olympiad of Zhejiang Province**, Jinhua No.1 High School, Sep. 2020

Technical Skills

Languages: Python, C, SQL
Systems/Tools: Linux, Git, HTCondor
Libraries: PyTorch, Gurobi, pandas, NumPy

Teaching and Teaching Assistantship

Course Grader Sep. 2025 – Dec. 2025

Department of Mathematics, University of Wisconsin–Madison

- **Math 535: Mathematical Methods in Data Science** (Graduate level)
- **Instructor:** Prof. Yukun Yue
- Graded assigned homework submissions and coordinated with the instructor on grading decisions and additional submissions.

Teaching Assistant Sep. 2024 – Jan. 2025

School of Computer Science, Wuhan University

- **C Programming** (Undergraduate level)
- **Instructor**: Prof. Yangfan He
- Provided lab support and resolved coding issues for 50+ students, and assisted in grading and analyzing assignment performance.
- Recorded weekly walkthrough videos to clarify key concepts.

Other Experience

Quantitative Finance Research Assistant Oct. 2022 – May. 2025

Wuhan University & E Fund Management Co., Ltd.

- **Supervisor:** Haodong Huang, Fund Manager at E Fund Management
- Pair Trading: Developed and implemented pair trading strategies to exploit price relationships between correlated assets.
- Style Rotation Strategy Research: Researched and developed strategies for style rotation to optimize portfolio performance based on market conditions.
- Dividend Factor Timing: Constructed dividend-based timing signals using fundamental and macroeconomic indicators; validated their predictive power on sector rotation and high-dividend stock strategies.

Summer School Student Jul. 2024 – Aug. 2024

Westlake University

- Studied number-theoretic aspects of Diophantine approximation and its applications to integer equations.
- Learned stochastic simulation techniques with applications to probabilistic modeling.

Summer School Student Jul. 2023 – Aug. 2023

University of Cambridge

- **Research Topic:** Reinforcement Learning
- **Group Project:** Multi-Agent Deep Learning Algorithm MADDPG
- **Grade:** A+