Wen-Chao Hu 胡文超

Ph.D. Candidate, LAMDA Group, Nanjing University
Supervisor: Prof. Yuan Jiang and Prof. Zhi-Hua Zhou

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Education

Nanjing University   Sep. 2021 - Present
Ph.D., School of Artificial Intelligence, LAMDA Group
- Major: Computer science and technology.
- Supervisor: Prof. Yuan Jiang and Prof. Zhi-Hua Zhou.

Sun Yat-sen University   Sep. 2017 – Jun. 2021
B.Eng., School of Intelligent Systems Engineering
- Major: Intelligence science and technology.
- GPA: 4.4 / 5.0 (ranked 1 / 204).
- I also minor in English (Sun Yat-sen university excellence in English talent development program).

Research Interests

My research interests focus on advancing reliable and efficient AI methods, particularly in the following areas:

- **Abductive Learning** and **Neuro-Symbolic Methods**: Integrating the power of data-driven AI (e.g., machine learning, LLMs) and knowledge-driven AI (e.g., logical reasoning) to build AI systems that are logically reliable and suitable for high-stakes applications (medicine, law, finance, etc.).
- **Optimization**: Developing efficient algorithms for joint optimization involving both continuous numerical variables and discrete symbolic structures, a core challenge in computer science (including but not limited to neuro-symbolic integration).

Awards

Outstanding Paper Award, AAAI 2025 (3 *outstanding papers out of* 12,957 *submissions*).

Second Prize (3*rd place*), greater bay area international algorithm competition, 2022 (¥100,000 *award*).

Outstanding Bachelor's Thesis, Sun Yat-sen university, 2021.

National Scholarship, 2018, 2019.

Publications

Efficient Rectification of Neuro-Symbolic Reasoning Inconsistencies by Abductive Reflection. ↗
Wen-Chao Hu, Wang-Zhou Dai, Yuan Jiang, and Zhi-Hua Zhou.
In Proceedings of the 39th AAAI Conference on Artificial Intelligence (AAAI 2025). ***Outstanding Paper Award***

Verification Learning: Make Unsupervised Neuro-Symbolic System Feasible. ↗
Lin-Han Jia, **Wen-Chao Hu**, Jie-Jing Shao, Lan-Zhe Guo, and Yu-Feng Li.
In Proceedings of the 42nd International Conference on Machine Learning (ICML 2025).

Knowledge-Enhanced Historical Document Segmentation and Recognition. ↗
En-Hao Gao, Yu-Xuan Huang, **Wen-Chao Hu**, Xin-Hao Zhu, and Wang-Zhou Dai.
In Proceedings of the 38th AAAI Conference on Artificial Intelligence (AAAI 2024, Oral).

ABLkit: A Python Toolkit for Abductive Learning. ⬈
Yu-Xuan Huang, **Wen-Chao Hu**, En-Hao Gao, and Yuan Jiang.
Frontiers of Computer Science, 2024, 18(6):186354.

Curriculum Abductive Learning. ⬈
Wen-Chao Hu, Qi-Jie Li, Lin-Han Jia, Cunjing Ge, Yu-Feng Li, Yuan Jiang, and Zhi-Hua Zhou.
Preprint, arXiv 2505.12275.

When is Prior Knowledge Helpful? Exploring the Evaluation and Selection of Unsupervised Pretext Tasks from a Neuro-Symbolic Perspective. ⬈
Lin-Han Jia, Si-Yu Han, **Wen-Chao Hu**, Jie-Jing Shao, Wen-Da Wei, Zhi Zhou, Lan-Zhe Guo and Yu-Feng Li.
Preprint, arXiv 2508.07299.

Projects

ABLkit ⌂⬈ 🗎⬈
- Core developer of the open-source package for abductive learning, ABLkit, which provides an efficient toolkit for abductive learning, leveraging the power of both data and knowledge.
- Tools used: Python (PyTorch, etc.), SWI-Prolog (for first-order logic), MiniSAT (for SAT solving), Z3 (for SMT solving), Gurobi (for mixed-integer optimization), etc.

Teaching Assistant

Digital Signal Processing (with Prof. Wei Wang; 2022 fall, 2023 fall, 2025 spring, 2025 fall)

Introduction to Machine Learning (with Prof. Zhi-Hua Zhou; 2022 fall, 2024 spring)

Mathematical Logic (with Dr. Cunjing Ge; 2023 spring, 2024 spring)

Symbolic Learning (with Assoc. Prof. Wang-Zhou Dai; 2022 spring)

Operating Systems (with Dr. Xintao Niu and Huayao Wu; 2022 spring)

Academic Service

Server Administrator for LAMDA group, 2021-2022.

PC Member or Reviewer for Conferences: NeurIPS (2024, 2025), NeSy (2024, 2025), IJCLR (2024), ICLR (2025), AISTATS (2025, 2026), ICML (2025), IJCAI (2025).

Volunteer for Conferences: MLA (2023), IJCLR (2024).

Skills

Programming: Python, PyTorch, Prolog, SAT/SMT solvers, MATLAB, C/C++, bash, HTML/CSS.

Academic Writing: LaTeX, Markdown.

Language Proficiency: English (TOEFL: 109, R/L/W/S: 27/29/26/27; CET-4: 631; CET-6: 608).