

# Minghao Liu

## *Curriculum Vitae*

State Key Laboratory of Computer Science,  
Institute of Software, Chinese Academy of Sciences  
Beijing, China

Email: [liumh@ios.ac.cn](mailto:liumh@ios.ac.cn)  
Phone: (+86) 155-1046-3420  
<https://minghao-liu.github.io/>

## RESEARCH INTERESTS

Automated reasoning; Constraint programming; SAT/SMT solving; Combinatorial optimization; Neuro-symbolic methods.

## EDUCATION

### University of Chinese Academy of Sciences

*Ph.D. Candidate in Computer Science*

Supervised by Prof. Jian Zhang.

Beijing, China

*Sept. 2017 – June 2023*

*(expected)*

### Northeast Normal University

*B.Sc. in Computer Science*

GPA: 3.9, Rank: 2/73.

Changchun, China

*Sept. 2013 – June 2017*

## PUBLICATIONS

### Conference Papers

1. **Minghao Liu**, Pei Huang, Fuqi Jia, Fan Zhang, Yuchen Sun, Shaowei Cai, Feifei Ma, and Jian Zhang. “Can Graph Neural Networks Learn to Solve the MaxSAT Problem?”, *The 37th AAAI Conference on Artificial Intelligence (AAAI), Student Abstract and Poster Program*, 2023. (Accepted)
2. Pei Huang, Yuting Yang, **Minghao Liu**, Fuqi Jia, Feifei Ma, and Jian Zhang. “ $\epsilon$ -weakened Robustness of Deep Neural Networks”, *The 31st ACM SIGSOFT International Symposium on Software Testing and Analysis (ISSTA)*, 2022.
3. Pei Huang, Yuting Yang, Fuqi Jia, **Minghao Liu**, FeiFei Ma, and Jian Zhang. “Word Level Robustness Enhancement: Fight Perturbation with Perturbation”, *The 36th AAAI Conference on Artificial Intelligence (AAAI)*, 2022.
4. Pei Huang, Rundong Li, **Minghao Liu**, Feifei Ma, and Jian Zhang. “Efficient SAT-Based Minimal Model Generation Methods for Modal Logic S5”, *The 24th International Conference on Theory and Applications of Satisfiability Testing (SAT)*, 2021.

5. **Minghao Liu**, Fan Zhang, Pei Huang, Shuzi Niu, Feifei Ma, and Jian Zhang. “Learning the Satisfiability of Pseudo-Boolean Problem with Graph Neural Networks”, *The 26th International Conference on Principles and Practice of Constraint Programming (CP)*, 2020.
6. Pei Huang, **Minghao Liu**, Ping Wang, Wenhui Zhang, Feifei Ma, and Jian Zhang. “Solving the Satisfiability Problem of Modal Logic S5 Guided by Graph Coloring”, *The 28th International Joint Conference on Artificial Intelligence (IJCAI)*, 2019.
7. Pei Huang, **Minghao Liu**, Cunjing Ge, Feifei Ma, and Jian Zhang. “Investigating the Existence of Orthogonal Golf Designs via Satisfiability Testing”, *The 44th International Symposium on Symbolic and Algebraic Computation (ISSAC)*, 2019.
8. **Minghao Liu**, Feifei Ma, and Jun Yan. “A Community-Division Based Algorithm for Finding Relations Among Linear Constraints”, *The 11th International Conference on Knowledge Science, Engineering and Management (KSEM)*, 2018.

## Journal Papers

9. Jian Gao, Yiqi Lv, **Minghao Liu**, Shaowei Cai, and Feifei Ma. “Improving Simulated Annealing for Clique Partitioning Problems”, *Journal of Artificial Intelligence Research*, 2022.
10. Yupeng Zhou, **Minghao Liu**, Feifei Ma, Na Luo, and Minghao Yin. “Modelling and Solving the Supply Marketing Order Allocation Problem with Time Consistency and Bundle Discounts”, *Journal of the Operational Research Society*, 2021.

## PRESENTATIONS

1. “Automated Reasoning: Principle and Application”, Presentation at *ByteDance AI Lab*, Beijing, China. Oct. 2022.
2. “Learning the Satisfiability of Pseudo-Boolean Problem with Graph Neural Networks”, Presentation at *CP 2020*, Online. Sept. 2020.
3. “Learning the Satisfiability of Pseudo-Boolean Problem with Graph Neural Networks”, Presentation at *Northeast Normal University*, Changchun, China. July 2020.
4. “A Community-Division Based Algorithm for Finding Relations Among Linear Constraints”, Presentation at *KSEM 2018*, Changchun, China. Aug. 2018.

## TEACHING

## Foundations of Theoretical Computer Science

Spring 2020; Spring 2021

Teaching Assistant, University of Chinese Academy of Sciences

Lecturer: Prof. Tian Liu (Peking University)

## SELECTED AWARDS AND SCHOLARSHIPS

SMT Competition, Nonlinear Real Arithmetic (QF_NRA) Track, 2nd Place	Aug. 2022
First Prize Scholarship of UCAS ( <i>Top 10%</i> )	Oct. 2021
Guangdong Intelligent Manufacturing Innovation Contest, 3rd Place	Dec. 2019
The NENU Medalist ( <i>The highest honor for undergraduate students; Top 0.5%</i> )	June 2017
ACM International Collegiate Programming Contest, Asia Regional, Gold Medal	Sept. 2016
National Scholarship of China ( <i>Top 2%</i> )	Nov. 2014

## ACADEMIC SERVICE

**PC Member:** AAAI 2023.

Last updated: Jan. 26th, 2023