

Sota Moriyama

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Research Interests

My research interests lie in neuro-symbolic AI, with a particular focus on differentiable SAT/MaxSAT and Answer Set Programming solvers. I am interested in integrating symbolic reasoning methods with graph neural networks and other learning-based techniques to develop more robust, interpretable, and trustworthy AI systems.

Education

- 2025.04 – **PhD candidate in Informatics, The Graduate University for Advanced Studies, SOKENDAI.**
Research: Neurosymbolic AI with differentiable SAT, MaxSAT and ASP solving.
- 2023.04 – 2025.03 **M.S. in Informatics, Institute of Science Tokyo.**
Research: Expanding Graph Attention Networks for Finding Minimal-Unsatisfiable and Maximum-Satisfiable Sets of Clauses
- 2019.04 – 2023.03 **B.S. in Informatics, Tokyo University of Science.**
Research: Multi-source transfer learning for CNNs.

Research Publications

Conferences

- 1 Thomas Eiter, Katsumi Inoue, and **Sota Moriyama**, “Neural Decision-Propagation for Answer Set Programming,” in *The 35th International Joint Conference on Artificial Intelligence*, 2026, to appear.
- 2 **Sota Moriyama** and Katsumi Inoue, “Graph-Based Attention for Differentiable MaxSAT Solving,” in *The 23rd International Conference on Principles of Knowledge Representation and Reasoning, Recently Published Research track*, 2026, to appear.
- 3 Thomas Eiter, Katsumi Inoue, Nelson Higuera, and **Sota Moriyama**, “T-norm Selection for Object Detection in Autonomous Driving with Logical Constraints,” in *Advances in Neural Information Processing Systems*, vol. 38, 2025, pp. 86 906–86 933.
- 4 **Sota Moriyama** and Katsumi Inoue, “Graph-Based Attention for Differentiable MaxSAT Solving,” in *Advances in Neural Information Processing Systems*, vol. 38, 2025, pp. 137 740–137 768.
- 5 **Sota Moriyama**, Koji Watanabe, and Katsumi Inoue, “GNN Based Extraction of Minimal Unsatisfiable Subsets,” in *The 32nd International Conference on Inductive Logic Programming*, ser. LNCS, Springer, 2023, pp. 77–92.

Workshops

- 1 Thomas Eiter, Katsumi Inoue, and **Sota Moriyama**, “Neural Decision-Propagation for Answer Set Programming,” in *The 19th Workshop on Answer Set Programming and Other Programming Paradigms*, 2026, to appear.
- 2 **Sota Moriyama**, “Differentiable Answer Set Programming for Neurosymbolic AI,” in *The 22nd Doctoral Consortium and Summer School on Logic Programming*, 2026, to appear.
- 3 Thomas Eiter, Nelson Higuera, Katsumi Inoue, and **Sota Moriyama**, “A Constraint-Based Visual Dataset Generator,” in *The Seventh Workshop on Trends and Applications of Answer Set Programming*, 2024.


Preprints

- 1 Thomas Eiter, Katsumi Inoue, and **Sota Moriyama**, “Neural Decision-Propagation for Answer Set Programming,” 2026. arXiv: 2605.01797.
- 2 **Sota Moriyama**, Koji Watanabe, Katsumi Inoue, and Akihiro Takemura, “MOD-CL: Multi-label Object Detection with Constrained Loss,” 2024. arXiv: 2403.07885.




Domestic Conferences

6 presentations at Japanese academic venues, including the Annual Conference of the Japanese Society for Artificial Intelligence (JSAI), JSAI SIG-FPAI, and PPL. Topics include differentiable MaxSAT solving, logical constraints, neuro-symbolic AI, and graph neural networks.






Research Service

2026  Reviewer, International Conference on Learning Representations (ICLR).





Fellowships and Grants

- 2026.04 – 2028.03  **JSPS Research Fellowship for Young Scientists (DC2).**
Trustworthy Deep Models with Graph Learning Techniques Based on Logical Constraints.
- 2025.10 – 2025.11  **SOKENDAI Student Dispatch Program.**
Research visit to Professor Thomas Eiter’s lab at TU Wien.
- 2025.04 – 2026.03  **SOKENDAI Special Researcher (JST SPRING).**
Neuro-symbolic AI from combination of Maximum Satisfiability and Graph Neural Networks.



Awards

- 2026.04  **JSAI SIG Research Award 2025**, Japanese Society for Artificial Intelligence.
- 2025.03  **Inose Student Encouragement Award**, National Institute of Informatics.
- 2023.12  **ROAD-R Challenge for NeurIPS 2023 (Task 2): 1st Place Award.**
 **ROAD-R Challenge for NeurIPS 2023 (Task 1): 3rd Place Award.**
- 2023.03  **World AI Competition YAMAGUCHI (2022): 3rd Place Award.**





Experience

- 2024.09–2025.03  Research Assistant, National Institute of Informatics.
- 2024.09–2025.04  Research internship / part-time work, Sony Group Corporation.
- 2024.03–2024.04  Research internship, Sony Group Corporation.
- 2024.01–2024.03  Research internship, Hitachi, Ltd.

Skills

- Languages  Japanese: Native.
English: Fluent; TOEIC 980 (2023); attended an international school for seven years.
- Programming  Python/PyTorch, Java, C/C++, Linux, JavaScript.

GitHub Implementations

- SGAT-MS  github.com/sotam2369/SGAT-MS
- NeuroMUSX  github.com/sotam2369/NeuroMUSX
- MOD-CL  github.com/sotam2369/MOD-CL
- MOD-ECL  github.com/pudumagico/MOD-ECL