Aditya **Mohan**

PhD Candidate in Reinforcement Learning at Leibniz University Hannover

a.mohan@ai.uni-hannover.de | https://amsks.github.io/ | amsks | amsks | amsks96

🤖 *RL researcher with Prof. Dr. Marius Lindauer at Leibniz University Hannover (LUH)*
🤝 *Founding member of autorl.org*
⚡ *Focus on Generalization in RL, Meta-RL, and & State abstractions in RL*

Academic Career

Leibniz University Hannover — *Hannover, Germany*

Scientific Researcher — *Since Oct 2021*

- Generalization in Reinforcement Learning, Meta-Learning and Algorithm Configuration
- Supervisor: Prof. Marius Lindauer

Education

Leibniz University Hannover (LUH) — *Hannover, Germany*

PhD Student — *2022 - Present*

- Topic: Utilizing Task Structure to enhance Sequential Decision Making
- Supervisor: Prof. Marius Lindauer

Technical University of Berlin & EURECOM — *Berlin, Germany*

M.Sc. in Autonomous System — *2019 - 2021*

- Thesis: RL agents that quickly adapt to a partner for Ad-Hoc cooperation in the game of Hanabi (Grade 1.0)
- Supervisor: Prof. Klaus Obermayer

Manipal Institute of Technology — *Karnataka, India*

B.Tech. in Electronics and Communication Engineering — *2013 - 2016*

- Thesis: Development of Software for Autonomous Driving Support (Grade 1.0)
- Supervisor: Dr. S. Bhat M

Publications

Google Scholar **DBLP** **0000-0001-5561-5908**

Journal & Conference Publications

1. **Aditya Mohan**, Amy Zhang, and Marius Lindauer. "Structure in Deep Reinforcement Learning: A Survey and Open Problems". In: *Journal of Artificial Intelligence Research*. 2024.
2. Carolin Benjamins, Georgina Cenikj, Ana Nikolij, **Aditya Mohan**, Tome Eftimov, and M. Lindauer. "Instance Selection for Dynamic Algorithm Configuration with Reinforcement Learning: Improving Generalization". In: *The Genetic and Evolutionary Computation Conference* (2024).
3. Alexander Tornede, Difan Deng, Theresa Eimer, Joseph Giovanelli, **Aditya Mohan**, Tim Ruhkopf, Sarah Segel, Daphne Theodorakopoulos, Tanja Tornede, Henning Wachsmuth, and Marius Lindauer. "AutoML in the Age of Large Language Models: Current Challenges, Future Opportunities and Risks". In: *Transactions on Machine Learning Research* (2024).
4. **Aditya Mohan***, Carolin Benjamins*, Konrad Wienecke, Alexander Dockhorn, and Marius Lindauer. "AutoRL Hyperparameter Landscapes". In: *Proceedings of the Second International Conference on Automated Machine Learning*. 2023.
5. Carolin Benjamins*, Theresa Eimer*, Frederik Schubert, **Aditya Mohan**, Sebastian Döhler, Andre Biedenkapp, Bodo Rosenhahn, Frank Hutter, and Marius Lindauer. "Contextualize Me - The Case for Context in Reinforcement Learning". In: *Transactions on Machine Learning Research* (2023).

6. Mohammed Loni*, **Aditya Mohan***, Mehdi Asadi, and Marius Lindauer. “Learning Activation Functions for Sparse Neural Networks”. In: *Proceedings of the Second International Conference on Automated Machine Learning*. 2023.

7. Tim Ruhkopf, **Aditya Mohan**, Difan Deng, Alexander Tornede, Frank Hutter, and Marius Lindauer. “MASIF: Meta-learned Algorithm Selection using Implicit Fidelity Information”. In: *Transactions on Machine Learning Research* (2023).

Workshop & Preprints

1. **Aditya Mohan** and Marius Lindauer. “Towards Enhancing Representations in Reinforcement Learning using Relational Structure”. In: *17th European Workshop on Reinforcement Learning (EWRL 2024)*. 2024.

2. Jannis Becktepe, Julian Dierkes, Carolin Benjamins, **Aditya Mohan**, David Salinas, Raghu Rajan, Frank Hutter, Holger Hoos, Marius Lindauer, and Theresa Eimer. “ARLBench: Flexible and Efficient Benchmarking for Hyperparameter Optimization in Reinforcement Learning”. In: *17th European Workshop on Reinforcement Learning (EWRL 2024)*. 2024.

3. **Aditya Mohan**, Amy Zhang, and Marius Lindauer. “A Patterns Framework for Incorporating Structure in Deep Reinforcement Learning”. In: *16th European Workshop on Reinforcement Learning (EWRL 2023)*. 2023.

4. **Aditya Mohan**, Tim Ruhkopf, and Marius Lindauer. “Towards Meta-learned Algorithm Selection using Implicit Fidelity Information”. In: *ICML 2022 Workshop Adaptive Experimental Design and Active Learning in the Real World (ReALML 2022)*. 2022.

Blog Posts

1. **Aditya Mohan**. “Incorporating Structure in Deep Reinforcement Learning”. In: *https://www.automl.org/automl-blog* (Nov. 2024). URL: https://www.ml4aad.org/incorporating-structure-in-deep-reinforcement-learning/.

2. **Aditya Mohan**. “Experience-Driven Algorithm Selection: Making better and cheaper selection decisions”. In: *https://www.automl.org/automl-blog* (June 2023). URL: https://www.ml4aad.org/experience-driven-algorithm-selection-making-better-and-cheaper-selection-decisions/.

3. **Aditya Mohan**. “Understanding AutoRL Hyperparameter Landscapes”. In: *https://www.automl.org/automl-blog* (May 2023). URL: https://www.ml4aad.org/understanding-autorl-hyperparameter-landscapes/.

4. **Aditya Mohan**. “Bayesian Optimization and Hyperparameter Tuning”. In: *Medium* (May 2021). URL: https://towardsdatascience.com/bayesian-optimization-and-hyperparameter-tuning-6a22f14cb9fa.

5. **Aditya Mohan** and Carolin Benjamins. “CARL: A benchmark to study generalization in Reinforcement Learning”. In: *https://www.automl.org/automl-blog* (Nov. 2021). URL: https://www.ml4aad.org/carl-a-benchmark-to-study-generalization-in-reinforcement-learning/.

Organising

AutoML School 2024 — *Hannover, Germany*

Organiser — *Sept 2024*

DAC4AutoML Competition at AutoML Conference 2022 — *Baltimore, MA, USA*

Organiser — *Jul 2022*

Public Outreach

July 2024 **AI Grid Science Slam**, Popular Science Communication Format, Second Place in Audience Voting
Nov 2023 **"Nacht der Wissenschft"**, University Science Night: RL for all ages

Research Visits

Jul 2024 **Tome Eftimov at Jožef Stefan Institute**, Dynamic Algorithm Configuration and Instances *Ljubljana, Slovenia*
Jul 2023 **Tome Eftimov at Jožef Stefan Institute**, Dynamic Algorithm Configuration and Instances *Ljubljana, Slovenia*

Committees

2024 - Present **Member**, Hiring Committee of the Faculty of Computer Science *Leibniz Universität Hannover*

Reviewing

JAIR (2024), NeurIPS (2023), ICML (2022), AutoML Conf (2022, 2023, 2024), EWRL (2023, 2024), ICLR (2022, 2023), ICLR Tiny Papers (2023, 2024)

Teaching

Oct 2024 - Feb 2025 **Reinforcement Learning Project**, Graduate lecture: Creation of the course from the beginning and independent handling of most aspects.
Apr 2024 - Aug 2024 **Machine Learning Project**, Graduate lecture: Creation and grading of exercises & final project. Teaching concepts for virtual, hybrid, and in-person versions of the course
Oct 2023 - Feb 2024 **Reinforcement Learning**, Graduate lecture: Creation and grading of exercises & final project. Teaching concepts for virtual, hybrid, and in-person versions of the course, *Teaching evaluation: 1.5*
Oct 2022 - Feb 2023 **Reinforcement Learning**, Graduate lecture: Creation and grading of exercises & final project. Teaching concepts for virtual, hybrid, and in-person versions of the course, *Teaching evaluation: 1.5*
Apr 2022 - Jul 2022 **Reinforcement Learning Seminar**, Graduate lecture: Creation and grading of exercises & final project. Teaching concepts for virtual, hybrid, and in-person versions of the course, *Teaching evaluation: 1.0*

Mentoring

Since Apr 2024 **Tim Grunwald (ML Project, M.Sc Thesis)**, Multi-fidelity Algorithm Selection using Reinforcement Learning
Feb 2024 - Aug 2024 **Dimitrios Timoleon (M.Sc Thesis)**, Enhancing Reinforcement Learning using Transformer-based Self-Predictive Representations
Feb 2024 - Aug 20244 **Dennis Jabs (M.Sc Thesis)**, Improving Policy Optimization Using Return Landscapes
Since Jun 2023 **Wladislaw Petscherski (B.Sc Thesis, ML Project)**, Activation Functions for Transfer-learning in Reinforcement Learning
Jan 2023 - May 2023 **Lingxiao Kong (M.Sc Thesis)**, Impact of Hyperparameters on Sim2Real Transfer in Reinforcement Learning
Oct 2022 - Mar 2023 **Konrad Wienecke (M.Sc Thesis)**, Dynamic Hyperparameter Landscapes in Reinforcement Learning