Aditya Mohan

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amsks.github.io

Research Interests

Generalization in RL, Continual RL, Meta-RL, Automated RL

Academic Work Experience

Since 10.2021 **Ph.D. Student**, *Institute of Artificial Intelligence*, Leibniz University Hannover, Developing Robust and General (Meta-)RL methods, **Supervisor:** Marius Lindauer

09.2020 - 12.2020 **Research Intern**, *Learning and Intelligent Systems Lab*, Technical University of Berlin, Exploration in Reinforcement Learning through reward-shaping using trajectories generated from a planner, **Supervisors:** Ingmar Schubert, Marc Toussaint

Education

2019 – 2021 **M.Sc.**, *Autonomous Systems*, Technical University of Berlin and EURECOM, Grade: 1.5
Thesis: AI agents that quickly adapt to a partner for Ad-Hoc cooperation in the game of Hanabi (Grade 1.0 (1.0 being highest))
Supervisor: Klaus Obermayer

2014 – 2018 **B.Tech.**, *Electronics and Communication Engineering*, Manipal Institute of Technology, Grade: 1.7 (1.0 being highest)

Publications

Google Scholar DBLP 0000-0003-0092-3780

Journal & Conference Publications

[1] **A. Mohan**, A. Zhang, and M. Lindauer. "Structure in Deep Reinforcement Learning: A Survey and Open Problems". In: *Journal of Artificial Intelligence Research*. 2024.

[2] **A. Mohan***, C. Benjamins*, K. Wienecke, A. Dockhorn, and M. Lindauer. "AutoRL Hyperparameter Landscapes". In: *Proceedings of the Second International Conference on Automated Machine Learning*. 2023.

[3] M. Loni*, **A. Mohan***, M. Asadi, and M. Lindauer. "Learning Activation Functions for Sparse Neural Networks". In: *Proceedings of the Second International Conference on Automated Machine Learning*. 2023.

[4] C. Benjamins*, T. Eimer*, F. Schubert, **A. Mohan**, S. Döhler, A. Biedenkapp, B. Rosenhahn, F. Hutter, and M. Lindauer. "Contextualize Me - The Case for Context in Reinforcement Learning". In: *Transactions on Machine Learning Research* (2023).

[5] T. Ruhkopf, **A. Mohan**, D. Deng, A. Tornede, F. Hutter, and M. Lindauer. "MASIF: Meta-learned Algorithm Selection using Implicit Fidelity Information". In: *Transactions on Machine Learning Research* (2023).

Workshop Publications & Preprints

[6] **A. Mohan**, A. Zhang, and M. Lindauer. "A Patterns Framework for Incorporating Structure in Deep Reinforcement Learning". In: *16th European Workshop on Reinforcement Learning (EWRL 2023)*. 2023.

[7] **A. Mohan**, T. Ruhkopf, and M. 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.

[8] A. Tornede, D. Deng, T. Eimer, J. Giovanelli, **A. Mohan**, T. Ruhkopf, S. Segel, D. Theodorakopoulos, T. Tornede, H. Wachsmuth, and M. Lindauer. "AutoML in the Age of Large Language Models: Current Challenges, Future Opportunities and Risks". In: *ArXiv Preprint arXiv:2306.08107*. 2023.

[0] * indicates equal contribution of authors

Blog Posts

[9] **A. Mohan**. "Understanding AutoRL Hyperparameter Landscapes". In: *https://www.automl.org/automl-blog* (May 2023). URL: https://www.ml4aad.org/understanding-autorl-hyperparameter-landscapes/.

[10] **A. Mohan**. "Learning Activation Functions for Sparse Neural Networks: Improving Accuracy in Sparse Models". In: *https://www.automl.org/automl-blog* (May 2023). URL: https://www.ml4aad.org/learning-activation-functions-for-sparse-neural-networks-improving-accuracy-in-sparse-models/.

[11] **A. 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/.

[12] C.Benjamins **A. Mohan**. "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/.

[13] **A. Mohan**. "Bayesian Optimization and Hyperparameter Tuning". In: *Medium* (May 2021). URL: https://towardsdatascience.com/bayesian-optimization-and-hyperparameter-tuning-6a22f14cb9fa.

Community Involvement & Reviewing

2023 **AutoML Conf, Neurips, ICLR, CoLLAs, ICLR Tiny Papers**, Reviewer

2022 **AutoML Conf, ICML, ICLR**, Reviewer

2022 **DAC4AutoML, Dynamic Hyperparameter Configuration for RL**
Organizer

2022 **AutoMLConf 2022, Talk on Meta-Learning**
Host

Teaching Experience

Since 10.2023 **Machine Learning Project Course**, *Graduate Seminar*
Mentorship for pursuing novel directions in RL to work towards a master thesis topic.

Since 10.2022 **Reinforcement Learning**, *Graduate Lecture*
General course organization, deploying new teaching methods, and support in developing exercises. Lecture on Policy Gradients and Meta-RL.

04.2022 - 07.2022 **Reinforcement Learning**, *Graduate Seminar*
Content selection & presentation and report feedback. General course organization, including deploying new teaching methods.

Mentoring

01.2024 – 07.2024 **Dimitrios Timoleon**, *M.Sc. Thesis*
Generative self-predicitve abstractions for unsupervised skill discovery

01.2024 – 07.2024 **Dennis Jabs**, *M.Sc. Thesis*
Improving Policy Optimization using Differentiable Return Landscapes

06.2023 – 10.2023 **Wladislaw Petscherski**, *B.Sc. Thesis*
Effect of Activation Functions in Reinforcement Learning

01.2023 – 05.2023 **Lingxiao Kong**, *M.Sc. Thesis*
Impact of Hyperparameters on Sim2Real Transfer in Reinforcement Learning

10.2022 – 03.2022 **Konrad Wienecke**, *M.Sc. Thesis*
AutoRL Hyperparameter Landscapes