

Theresa Eimer

RL TEAM LEAD AT LEIBNIZ UNIVERSITY HANNOVER

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- 🧑 AutoRL researcher with Prof. Dr. Marius Lindauer at Leibniz University Hannover (LUH)
- 👉 Founding member of autorl.org
- 🗣️ Host of the AutoML Podcast
- ⚡ Focus on AutoRL, Generalization in RL & Dynamic Algorithm Configuration

Academic Career

Leibniz University Hannover

Hannover, Germany

SCIENTIFIC RESEARCHER

Since Jan 2020

- Establishing general Reinforcement Learning methods for and with AutoML
- Since 2023: RL Team Lead

Meta AI

London, UK

RESEARCH INTERN

Sep 2022 - Feb 2023

- Generalization through Natural Language in Reinforcement Learning
- Host: Roberta Raileanu

Education

Leibniz University Hannover (LUH)

Hannover, Germany

PHD STUDENT

2020 - Nov 2024

- Thesis: Reinforcing Automated Machine Learning - Bridging AutoML and Reinforcement Learning (*summa cum laude*)
- Supervisor: Prof. Marius Lindauer. Committee: Prof. Wolfgang Nejdl, Prof. Joschka Boedecker, Jun.-Prof. Alexander Dockhorn

Albert-Ludwigs University Freiburg

Freiburg i.B., Germany

M.SC. IN COMPUTER SCIENCE

2016 - 2019

- Thesis: Improved Meta-Learning for Dynamic Algorithm Configuration (Grade 1.0)
- Supervisor: Prof. Frank Hutter

Karlstad University

Karlstad, Sweden

ERASMUS SEMESTER

2015 - 2016

University of Hamburg

Hamburg, Germany

B.SC. IN COMPUTER SCIENCE

2013 - 2016

- Thesis: On Thue Numbers (Grade 1.0)
- Supervisor: Dr. Frank Heitmann

Publications

🔗 Google Scholar 📄 DBLP 🆔 0000-0001-5561-5908

13 peer-reviewed publications – 419 citations – h-index 9 – i10 index 9

Journal & Conference Publications

- 1 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: *Transactions on Machine Learning Research* (2024).
- 2 C. Benjamins*, **T. Eimer***, F. Schubert, S. Döhler, A. Mohan, 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).
- 3 **T. Eimer**, M. Lindauer, and R. Raileanu. “Hyperparameters in Reinforcement Learning and How To Tune Them”. In: *Proceedings of the Fortieth International Conference on Machine Learning* (2023). Acceptance rate: 27.9%, Conference Rating: A*.

- 4 S. Adriaensen, A. Biedenkapp, G. Shala, N. Awad, **T. Eimer**, M. Lindauer, and F. Hutter. “Automated Dynamic Algorithm Configuration”. In: *Journal of Artificial Intelligence Research* 75 (2022). SCOPUS Rating 2022: Q2, pp. 1633–1699.
- 5 J. Parker-Holder, R. Rajan, X. Song, A. Biedenkapp, Y. Miao, **T. Eimer**, B. Zhang, V. Nguyen, R. Calandra, A. Faust, F. Hutter, and M. Lindauer. “Automated Reinforcement Learning (AutoRL): A Survey and Open Problems”. In: *Journal of Artificial Intelligence Research* (2022).
- 6 **T. Eimer**, A. Biedenkapp, F. Hutter, and M. Lindauer. “Self-Paced Context Evaluation for Contextual Reinforcement Learning”. In: *Proceedings of the Thirty-eighth International Conference on Machine Learning*. Acceptance rate: 21.5%, Conference Rating: A*. 2021.
- 7 **T. Eimer**, A. Biedenkapp, M. Reimer, S. Adriaensen, F. Hutter, and M. Lindauer. “DACBench: A Benchmark Library for Dynamic Algorithm Configuration”. In: *Proceedings of the Thirtieth International Joint Conference on Artificial Intelligence (IJCAI’21)*. Acceptance rate: 19.3%, Conference Rating: A*. ijcai.org, 2021.
- 8 A. Biedenkapp, H. F. Bozkurt, **T. Eimer**, F. Hutter, and M. Lindauer. “Dynamic Algorithm Configuration: Foundation of a New Meta-Algorithmic Framework”. In: *Proceedings of the European Conference on Artificial Intelligence (ECAI)*. Acceptance rate: 26.8%, Conference Rating: A. 2020.

Workshop & Preprints

- 1 J. Becktepe, J. Dierkes, C. Benjamins, D. Salinas, A. Mohan, R. Rajan, F. Hutter, H. Hoos, M. Lindauer, and **T. Eimer**. “ARLBench: Flexible and Efficient Benchmarking for Hyperparameter Optimization in Reinforcement Learning”. In: *17th European Workshop on Reinforcement Learning*. Oct. 2024.
- 2 C. Benjamins*, **T. Eimer***, F. Schubert, A. Biedenkapp, F. Hutter, B. Rosenhahn, and M. Lindauer. “CARL: A Benchmark for Contextual and Adaptive Reinforcement Learning”. In: *Ecological Theory of RL Workshop NeurIPS*. 2021.
- 3 Frederik Schubert*, **T. Eimer***, B. Rosenhahn, and M. Lindauer. “Automatic Risk Adaption in Distributional Reinforcement Learning”. In: *Workshop on Reinforcement Learning for Real Life (RL4RealLife@ICML’21)*. July 2021.
- 4 **T. Eimer**, C. Benjamins, and M. Lindauer. “Hyperparameters in Contextual RL are Highly Situational”. In: *Ecological Theory of RL Workshop NeurIPS*. 2021.
- 5 **T. Eimer**, A. Biedenkapp, F. Hutter, and M. Lindauer. “Towards Self-Paced Context Evaluation for Contextual Reinforcement Learning”. In: *Workshop on Inductive Biases, Invariances and Generalization in RL (BIG@ICML’20)*. July 2020.

Patents

- 1 **Eimer, T.**, F. Hutter, M. Lindauer, and Biedenkapp. “A method for training a machine learning algorithm by a reinforcement learning method”. German pat. G06N20/00. Robert Bosch GmbH. Oct. 4, 2024. [URL: https://worldwide.espacenet.com/patent/search/family/090246319/publication/DE102022210480A1?q=pn%3DDE102022210480A1](https://worldwide.espacenet.com/patent/search/family/090246319/publication/DE102022210480A1?q=pn%3DDE102022210480A1).

Blog Posts

- 1 **T. Eimer**. “Hyperparameter Tuning in Reinforcement Learning is Easy, Actually”. In: <https://www.automl.org/automl-blog> (June 2023). [URL: https://www.automl.org/hyperparameter-tuning-in-reinforcement-learning-is-easy-actually/](https://www.automl.org/hyperparameter-tuning-in-reinforcement-learning-is-easy-actually/).
- 2 **T. Eimer**. “Why You Should Try Science Communication During Your PhD”. In: <https://theeimer.github.io/blog/> (June 2023). [URL: https://theeimer.github.io/blog/2023/scicomm/](https://theeimer.github.io/blog/2023/scicomm/).

- 3 **T. Eimer** and C. Benjamins. “Contextualize Me – The Case for Context in Reinforcement Learning”. In: <https://www.automl.org/automl-blog> (June 2023). [URL: https://www.automl.org/contextualize-me-the-case-for-context-in-reinforcement-learning/](https://www.automl.org/contextualize-me-the-case-for-context-in-reinforcement-learning/).
- 4 **T. Eimer**. “Benchmarking Dynamic Algorithm Configuration”. In: <https://www.automl.org/automl-blog> (June 2021). [URL: https://www.automl.org/dacbench-benchmarking-dynamic-algorithm-configuration/](https://www.automl.org/dacbench-benchmarking-dynamic-algorithm-configuration/).
- 5 **T. Eimer**. “Self-Paced Context Evaluation for Contextual Reinforcement Learning”. In: <https://www.automl.org/automl-blog> (July 2021). [URL: https://www.automl.org/self-paced-context-evaluation-for-contextual-reinforcement-learning](https://www.automl.org/self-paced-context-evaluation-for-contextual-reinforcement-learning).

Collaborations

Since 2021 Dr. Vu Nguyen , Amazon Research - 1 Journal Paper, 1 Workshop	Australia
2021-2022 Dr. Jack Parker-Holder , Google DeepMind - 1 Journal Paper	UK
2022-2023 Dr. Roberta Raileanu , Meta - 1 Conference Paper	UK
Since 2021 Dr. Aleksandra Faust , Google DeepMind - 1 Journal Paper, 1 Workshop	USA
2021-2022 Dr. Yingjie Miao , Google DeepMind - 1 Journal Paper	USA
2021-2022 Dr. Richard Song , Google DeepMind - 1 Journal Paper	USA
Since 2020 Dr. Steven Adriaensen , Albert-Ludwigs University Freiburg - 1 Journal Paper, 1 Conference Paper	Germany
Since 2021 Dr. Noor Awad , Albert-Ludwigs University Freiburg - 1 Journal Paper	Germany
Since 2020 Dr. André Biedenkapp , Albert-Ludwigs University Freiburg - 3 Journal Papers, 3 Conference Papers, 2 Workshop Papers, 1 Workshop	Germany
2021-2022 Prof. Roberto Calandra , TU Dresden - 1 Journal Paper	Germany
Since 2024 Prof. Holger Hoos , RWTH Aachen - 1 Workshop Paper	Germany
Since 2020 Prof. Frank Hutter , Albert-Ludwigs University Freiburg - 3 Journal Papers, 3 Conference Papers, 1 Workshop Paper	Germany
Since 2020 Prof. Marius Lindauer (PhD Advisor) , Leibniz University Hannover - 4 Journal Papers, 4 Conference Papers, 5 Workshop Papers	Germany
2020-2023 Prof. Bodo Rosenhahn , Leibniz University Hannover - 1 Journal Paper, 2 Workshop Papers	Germany
Since 2023 Prof. Henning Wachsmuth , Leibniz University Hannover - 1 Journal Paper	Germany

Invited Talks and Tutorials

Autonomous Agents Research Group (University of Edinburgh)	Virtual
INVITED SPEAKER	Oct 2024
Hyperparameter Optimization in Reinforcement Learning	
European Conference of AI (ECAI)	Santiago de Compostela, Spain
TUTORIAL	Oct 2024
Beyond Trial & Error: A Tutorial On Automated Reinforcement Learning (together with Dr. André Biedenkapp)	
AutoML Conference	Paris, France
TUTORIAL	Sep 2024
Beyond Trial & Error: A Tutorial On Automated Reinforcement Learning (together with Dr. André Biedenkapp)	
AutoML Fall School	Hannover, Germany
TUTORIAL	Sep 2024
A Tutorial on Sustainable AutoRL (together with Dr. André Biedenkapp)	
COSEAL Workshop	Dresden, Germany
INVITED SPEAKER	May 2024
COSEAL for AutoRL	
Instadeep	Virtual
INVITED SPEAKER	Mar 2024
Automating Reinforcement Learning - Hyperparameters & Beyond	

AutoML Seminar Series

INVITED SPEAKER

Challenges in Hyperparameter Optimization for Reinforcement Learning

Virtual

Jun 2023

KompAKI Seminar Series

INVITED SPEAKER

Dynamic Algorithm Configuration for AutoML

Darmstadt, Germany

Jul 2022

Organising

AutoML Conference 2024

DIVERSITY CHAIR

Paris, France

Sep 2024

AutoRL Workshop at ICML 2024

ORGANISER

Vienna, Austria

Jul 2024

CLAIRE Paper Highlights

ORGANISER

May 2024

AutoML Conference 2022

DIVERSITY CHAIR

Baltimore, MA, USA

Jul 2022

DAC4AutoML Competition at AutoML Conference 2022

ORGANISER

Baltimore, MA, USA

Jul 2022

Public Outreach

Since 2024 **AutoML Podcast**, Host

Oct 2024 **Körber-Stiftung Science Slam**, Popular Science Communication Format

Sep 2024 **AutoML Conf Non-Traditional Content**, Musical Parody "On the Dangers of Grid Search"

Nov 2023 **"Nacht die Wissen schafft"**, University Science Night: RL for all ages

Nov 2023 **"What's Cooking?"**, Science cooking show: guest in the pilot episode

Sep 2023 **Phaeno Science Slam**, Popular Science Communication Format

May 2023 **AI Grid Science Slam**, Popular Science Communication Format, Second Place in Audience Voting

Apr 2023 **Meet the Scientist**, AI Days at Phaeno: RL for all ages

Research Visits

Jan 2025 **Holger Hoos at RWTH Aachen**, Design Decisions in RL

Aachen, Germany

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

Ljubljana, Slovenia

Mar 2023 **Carola Doerr at Sorbonne Université Paris**, Combining BO and ES

Paris, France

Funding & Fellowships

2024/25 **Zeit Zia Fellow**, Fellowship program to further female early career scientists' professional skills and connect them to mentors from industry and the public sector.

2024 **Klaus Tschira Boost Fund (Under review)**, "Unlocking Task Similarity in Reinforcement Learning", 120.000€

2024 **DFG Research Grant**, "RoGeRL: Robust and General Reinforcement Learning via AutoML", 335.000€, co-conception and co-writing with PI Prof. Marius Lindauer

Committees

Since 2023 **Member**, Diversity Committee of the Faculty of Electrical Engineering and Computer Science

2014 - 15 **Member**, Quality Assurance Committee of the Faculty of Computer Science

Leibniz University
Hannover
University of
Hamburg

Reviewing

REVIEWING

NeurIPS (2023), ICML (2022), ECML(2022), AutoML Conf (2022, 2023, 2024), GECCO (2023), PPSN (2024), ECJ (2021), EWRL (2023, 2024), ML Reproducibility Challenge (2023), ALOE Workshop (2023)

Teaching

Oct 2024 - **Reinforcement Learning Project: Robotics**, Graduate level project course: Course development
Feb 2025 & Co-Lecturer

Apr 2024 - **Advanced Topics in Reinforcement Learning**, Graduate lecture: Course development & Lecturer,
Sep 2024 *Teaching evaluation: 1.0 (best possible)*

Apr 2022 - **Social Responsibility in Machine Learning**, Graduate lecture: Selecting lecture content and
Jul 2023 developing a discussion-first teaching format, *Teaching evaluation: 1.0 (best possible)*

Social Responsibility in Machine Learning, Graduate seminar (Virtual): Content selection &
Apr 2021 - presentation and report feedback. General course organization including deploying new teaching
Sep 2021 methods for virtual courses

Oct 2020 - **Reinforcement Learning**, Graduate lecture: Creation and grading of exercises & final project.

Feb 2022 Teaching concepts for virtual, hybrid and in-person versions of the course, *Teaching evaluation: 1.5*

Apr 2020 - **Automated Machine Learning**, Graduate seminar (Virtual): Content selection & presentation and
Sep 2020 report feedback. General course organization including setting up online teaching through Zoom

Mentoring

Since Apr **Jannis Becktepe (Student Assistant)**, Benchmarking HPO for RL - *incoming PhD student with Prof.*
2024 *Sebastian Peitz*

Since Mar **Micha Henheik (BSc Thesis & Student Assistant)**, Parameter-free Dynamic Algorithm
2024 Configuration

Mar 2024 - **Lukas Fehring (MSc Thesis)**, Growing Neural Networks in RL - *PhD student with Prof. Marius*
Sep 2024 *Lindauer*

Sep 2023 - **Thorben Klamm (MSc Thesis)**, Generating Antibody Binding Site Sequences
Dec 2024

Sep 2023 - **Marc Speckmann (MSc Thesis)**, Learning Theory for Curriculum Learning
Jul 2024

Oct 2023 - **Melissa Schween (Student Assistant)**, Refining DAC for Learning Rate Control
Feb 2024

May 2023 - **Kai Lessmeister (MSc Thesis)**, Representation Transfer in Reinforcement Learning
Apr 2024

Jun 2021 - **Dren Fazlija (MSc Thesis)**, Self-Paced Context Evaluation for Dynamic Algorithm Configuration -
Dez 2021 *PhD student with Prof. Wolfgang Nejdl*

Jun 2021 - **Rasmus von Glahn (MSc Thesis)**, Optimizing Multiple Hyperparameters using a Reinforcement
Dez 2021 Learning Agent in high dimensional Search Space

May 2021 - **Tilman Räuker (MSc Thesis)**, Temporally Extended Reinforcement Learning for Dynamic
Nov 2021 Algorithm Configuration

Jul 2020 - **Maximilian Reimer (Student Assistant)**, Benchmarking Dynamic Algorithm Configuration
Aug 2021

Upskilling

- Nov 2024 **Project Management**, Introduction to Modern Concepts of Project Management (*Leibniz University Hannover*)
- Aug 2024 **Leadership**, Developing Leadership Skills III - Leading Teams (*Leibniz University Hannover*)
- Jun 2024 **Communication**, Voice Matters! - What It Takes To Bring Science Across (*Hilde Weeg*)
- Apr 2024 **Leadership**, Developing Leadership Skills II - Communication (*Leibniz University Hannover*)
- Feb 2024 **Leadership**, Developing Leadership Skills I - Self-Conception and Role Development (*Leibniz University Hannover*)
- Nov 2023 **Teaching**, Learning and Teaching With Digital Media (*Leibniz University Hannover*)
- Sep 2023 **Communication**, Workshop Technology Communication at the German Museum (*acatech*)
- Apr 2023 **Communication**, Coaching Session for Short Form Science Communication (*AI Grid*)

Software

- 24 - NOW **Head Developer**, **Hypersweeper**, new parallelization tool for ask-tell AutoML systems
- 24 - NOW **Head Developer**, **Mighty** MetaRL library
- 21 - NOW **Developer**, **CARL**, Benchmark for contextual reinforcement learning, 127 stars on GitHub
- 20 - NOW **Head Developer**, **DACBench** Benchmark for DAC, 27 stars on GitHub