

André Biedenkapp

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Personal Information

Date of birth: 13.07.1992

Nationality: German

Research Interests

- Dynamic Algorithm Configuration [see, e.g., 1, 8, 11, 15, 18, 19, 22, 23]
- (Generalizable) Deep Reinforcement Learning [see, e.g., 7, 5, 20, 26, 27, 29, 35]
- Automated Machine Learning and Reinforcement Learning [see, e.g., 9, 14, 20, 21, 31]
- Learning to Learn [see, e.g., 16, 17, 44]

Work experience

Postdoctoral Researcher

Machine Learning Lab Subgroup Leader on Reinforcement Learning
Topic: Automated & Generalizable Reinforcement Learning

Albert-Ludwigs-University Freiburg

Since 10.2022

Parental Leave

06.05.2024 – 05.07.2024

Doctoral Researcher

Machine Learning Lab, Topic: Dynamic Algorithm Configuration

Albert-Ludwigs-University Freiburg

02.2018 – 10.2022

Student Assistant

Machine Learning Lab

Albert-Ludwigs-University Freiburg

10.2015 – 09.2017

Student Assistant

Chair of Computer Architecture

Albert-Ludwigs-University Freiburg

04.2014 – 09.2014

Education

PhD (Dr. rer. nat.)

Supervised by Prof. Frank Hutter and Prof. Marius Lindauer

Thesis: Dynamic Algorithm Configuration by Reinforcement Learning (Grade: **Summa Cum Laude**)

Albert-Ludwigs-University Freiburg

02.2018 – 10.2022

Summer School

In: Lille, France

Reinforcement Learning Summer SCHOOL (RLSS'19)

July 2019

Computer Science

Master of Science (M.Sc.), Supervisor: Prof. Frank Hutter

Thesis: Per Instance Algorithm Configuration (Grade: 1.0)

Albert-Ludwigs-University Freiburg

04.2015 – 10.2017

Computer Science

Bachelor of Science (B.Sc.), Supervisor: Prof. Wolfram Burgard

Thesis: Data Analysis for the Selection of Recording Channels on Multielectrode-Arrays (Grade: 1.7)

Albert-Ludwigs-University Freiburg

10.2011 – 03.2015

Professional Memberships and Affiliations

ELLIS (European Laboratory for Learning and Intelligent Systems)

since March 2025

Member

AutoRL.org

since January 2024

Co-Founder

GI (Gesellschaft für Informatik)

since February 2023

Member

COSEAL.net

since August 2022

Chair

Jointly with Alexander Tornede (until 2024), Theresa Eimer (since 2024) and Lennart Schäpermeier

AutoML.org Supergroup

since October 2017

Member

Collaboration

International

- | | |
|--|---|
| <ul style="list-style-type: none"> Prof. Carola Doerr (Sorbonne Université Paris, France) since 2020
1 competition win, 2 papers (1 award, 1 nomination), 1 grant | <ul style="list-style-type: none"> Asst. Prof. Martin S. Krejca (Institut Polytechnique de Paris, France) since 2021
1 best paper award |
| <ul style="list-style-type: none"> Asst. Prof. Jendrik Seipp (Linköping University, Sweden) 2021 – 2022
1 workshop paper | <ul style="list-style-type: none"> Dr. Nguyen Dang (St. Andrews University, Scotland) since 2021
2 papers (1 best paper award, 1 nomination) |
| <ul style="list-style-type: none"> Dr. Aleksandra Faust (Google DeepMind, United States of America) 2021 – 2023
1 journal paper, 1 ICML'2024 workshop | <ul style="list-style-type: none"> Dr. Nathan Lambert (HuggingFace, United States of America) 2020 – 2021
1 paper |
| <ul style="list-style-type: none"> Dr. Yingjie Miao (Google DeepMind, United States of America) 2021 – 2022
1 journal paper | <ul style="list-style-type: none"> Dr. Vu Nguyen (Amazon Research, Australia) since 2021
2 journal papers, 1 ICML'2024 workshop |
| <ul style="list-style-type: none"> Dr. Jack Parker-Holder (Google DeepMind, United Kingdom) 2021 – 2022
1 journal paper | <ul style="list-style-type: none"> Dr. Luis Pineda (Meta AI Research, Canada) 2020 – 2021
1 paper |
| <ul style="list-style-type: none"> Dr. Silvan Sievers (University of Basel, Switzerland) 2021 – 2022
1 workshop paper | <ul style="list-style-type: none"> Dr. Richard Song (Google DeepMind, United States of America) 2021 – 2022
1 journal paper |
| <ul style="list-style-type: none"> Dr. David Speck (University of Basel, Switzerland) since 2019
1 paper, 1 workshop paper | <ul style="list-style-type: none"> Dr. Hao Wang (Leiden University, Netherlands) 2019 – 2020
1 competition win |
| <ul style="list-style-type: none"> Dr. Phong Le (St. Andrews University, Scotland) since 2024
1 conference paper | |

National

- | | |
|--|--|
| <ul style="list-style-type: none"> Prof. Frank Hutter (University of Freiburg, Germany) since 2016
PhD Advisor 02.2018 – 10.2022
6 journal papers, 14 papers (1 best paper award, 1 runner up best paper award), 13 workshop papers | <ul style="list-style-type: none"> Prof. Marius Lindauer (Leibniz University Hanover, Germany) since 2016
PhD Advisor 02.2018 – 10.2022
4 journal papers, 8 papers, 9 workshop papers |
| <ul style="list-style-type: none"> Prof. Roberto Calandra (TU Dresden, Germany) 2020 – 2022
1 journal paper, 1 paper | <ul style="list-style-type: none"> Prof. Matthias Feurer (LMU Munich, Germany) 2019 – 2022
1 journal, 1 competition win, 1 workshop paper |
| <ul style="list-style-type: none"> Prof. Josif Grabocka (University of Technology Nuremberg, Germany) since 2022
3 conference papers (1 runner up best paper award), 2 workshop papers | <ul style="list-style-type: none"> Prof. Bodo Rosenhan (Leibniz University Hanover, Germany) 2020 – 2022
1 journal paper, 1 workshop paper |
| <ul style="list-style-type: none"> Dr. Steven Adriaensen (University of Freiburg, Germany) since 2019
1 journal paper, 2 conference papers | <ul style="list-style-type: none"> Dr. Thomas Elsken (Bosch Center of Artificial Intelligence, Germany) 2020 – 2021
1 workshop paper |
| <ul style="list-style-type: none"> Dr. Noor Awad (University of Freiburg, Germany) since 2019
2 journal paper, 1 paper, 1 competition win, 2 workshop papers, collaborated on 2 grant proposals | <ul style="list-style-type: none"> Dr. Katharina Eggersperger (University of Tübingen, Germany) 2017 – 2022
1 journal paper, 1 paper, 1 competition win, 1 workshop paper |

Conference Publications.....

- [11] T. Nguyen, P. Le, **A. Biedenkapp**, C. Doerr, and N. Dang. “On the Importance of Reward Design in Reinforcement Learning-based Dynamic Algorithm Configuration: A Case Study on OneMax with $(1+(\lambda, \lambda))$ -GA”. In: *Proceedings of the Genetic and Evolutionary Computation Conference (GECCO’25)*. Nominated for a best paper award. ACM, July 2025.
- [12] G. Shala, **A. Biedenkapp**, P. Krack, F. Walter, and J. Grabocka. “Efficient Cross-Episode Meta-RL”. In: *Proceedings of the Thirteenth International Conference on Learning Representations (ICLR’25)*. Published online: iclr.cc, Acceptance rate: 32.08%, Conference Rating: A*. 2025.
- [13] G. Shala, S. P. Arango, **A. Biedenkapp**, F. Hutter, and J. Grabocka. “HPO-RL-Bench: A Zero-Cost Benchmark for HPO in Reinforcement Learning”. In: *Proceedings of the Third International Conference on Automated Machine Learning (AutoML’24), ABCD Track. Runner up for the Best Paper Award*. 2024.
- [14] G. Shala, **A. Biedenkapp**, F. Hutter, and J. Grabocka. “Gray-Box Gaussian Processes for Automated Reinforcement Learning”. In: *Proceedings of the International Conference on Learning Representations (ICLR’23)*. Published online: iclr.cc, Acceptance rate: 31.8%, Conference Rating: A*. 2023.
- [15] **A. Biedenkapp***, N. Dang*, M. S. Krejca*, F. Hutter, and C. Doerr. “Theory-inspired Parameter Control Benchmarks for Dynamic Algorithm Configuration”. In: *Proceedings of the Genetic and Evolutionary Computation Conference (GECCO’22)*. **Joint first authorship**, Conference Rating: A, Won the Best Paper Award (GECH track). ACM, July 2022.
- [16] **A. Biedenkapp**, R. Rajan, F. Hutter, and M. Lindauer. “TempoRL: Learning When to Act”. In: *Proceedings of the Thirty-eighth International Conference on Machine Learning*. Acceptance rate: 21.5%, Conference Rating: A*. July 2021, pp. 914–924.
- [17] 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*. July 2021, pp. 2948–2958.
- [18] 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, Aug. 2021, pp. 1668–1674.
- [19] D. Speck*, **A. Biedenkapp***, F. Hutter, R. Mattmüller, and M. Lindauer. “Learning Heuristic Selection with Dynamic Algorithm Configuration”. In: *Proceedings of the Thirty-First International Conference on Automated Planning and Scheduling (ICAPS’21)*. **Joint first authorship**, Acceptance rate: ~30%, Conference Rating: A*. Aug. 2021, pp. 597–605.
- [20] B. Zhang, R. Rajan, L. Pineda, N. Lambert, **A. Biedenkapp**, K. Chua, F. Hutter, and R. Calandra. “On the Importance of Hyperparameter Optimization for Model-based Reinforcement Learning”. In: *Proceedings of the International Conference on Artificial Intelligence and Statistics (AISTATS’21)*. Acceptance rate: 29.8%, Conference Rating: A. Apr. 2021.
- [21] J. KH Franke, G. Köhler, **A. Biedenkapp**, and F. Hutter. “Sample-Efficient Automated Deep Reinforcement Learning”. In: *Proceedings of the International Conference on Learning Representations (ICLR’21)*. Published online: iclr.cc, Acceptance rate: 28.7%, Conference Rating: A*. May 2021.
- [22] G. Shala*, **A. Biedenkapp***, N. Awad, S. Adriaensen, F. Hutter, and M. Lindauer. “Learning Step-Size Adaptation in CMA-ES”. In: *Proceedings of the Sixteenth International Conference on Parallel Problem Solving from Nature (PPSN’20)*. **Joint first authorship**, Conference Rating: A. Sept. 2020, pp. 691–706.
- [23] **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. June 2020, pp. 427–434.

- [24] **A. Biedenkapp**, J. Marben, M. Lindauer, and F. Hutter. "CAVE: Configuration Assessment, Visualization and Evaluation". In: *Proceedings of the International Conference on Learning and Intelligent Optimization (LION'18)*. June 2018.
- [25] **A. Biedenkapp**, M. Lindauer, K. Eggensperger, C. Fawcett, H. Hoos, and F. Hutter. "Efficient Parameter Importance Analysis via Ablation with Surrogates". In: *Proceedings of the AAAI conference. Acceptance rate: 24.6%, Conference Rating: A**. Feb. 2017, pp. 773–779.

Workshop Contributions.....

- [26] A. Mohan, T. Eimer, C. Benjamins, M. Lindauer, and **A. Biedenkapp**. "Mighty: A Comprehensive Tool for studying Generalization, Meta-RL and AutoRL". In: *Eighteenth European Workshop on Reinforcement Learning*. 2025. URL: <https://openreview.net/forum?id=Q1DXH5NkUx>.
- [27] S. Prasanna, **A. Biedenkapp***, and R. Rajan*. "One Does Not Simply Estimate State: Comparing Model-based and Model-free Reinforcement Learning on the Partially Observable MordorHike Benchmark". In: *Eighteenth European Workshop on Reinforcement Learning*. ***Equal Contribution**. 2025. URL: <https://openreview.net/forum?id=lTyi0JwQqu>.
- [28] F. Ferreira, M. Schlageter, R. Rajan, **A. Biedenkapp**, and F. Hutter. "One-shot World Models Using a Transformer Trained on a Synthetic Prior". In: *NeurIPS 2024 Workshop on Open-World Agents*. 2024. URL: <https://openreview.net/forum?id=nzTbSMbRtz>.
- [29] T. Camaret Ndir, **A. Biedenkapp**, and N. Awad. "Inferring Behavior-Specific Context Improves Zero-Shot Generalization in Reinforcement Learning". In: *Seventeenth European Workshop on Reinforcement Learning*. 2024. URL: <https://openreview.net/forum?id=51XSWH0mgN>.
- [30] P. Bordne, M. A. Hasan, E. Bergman, N. Awad, and **A. Biedenkapp**. "CANDID DAC: Leveraging Coupled Action Dimensions with Importance Differences in DAC". In: *Proceedings of the Third International Conference on Automated Machine Learning (AutoML'24), Workshop Track*. 2024.
- [31] G. Shala, **A. Biedenkapp**, F. Hutter, and J. Grabocka. "Gray-Box Gaussian Processes for Automated Reinforcement Learning". In: *Workshop on Meta-Learning (MetaLearn@NeurIPS'22)*. 2022.
- [32] G. Shala, S. Pineda Arango, **A. Biedenkapp**, F. Hutter, and J. Grabocka. "AutoRL-Bench 1.0". In: *Workshop on Meta-Learning (MetaLearn@NeurIPS'22)*. 2022.
- [33] R. Sass, E. Bergman, **A. Biedenkapp**, F. Hutter, and M. Lindauer. "DeepCAVE: An Interactive Analysis Tool for Automated Machine Learning". In: *Workshop on Adaptive Experimental Design and Active Learning in the Real World (ReALML@ICML'22)*. 2022.
- [34] **A. Biedenkapp**, D. Speck, S. Sievers, F. Hutter, M. Lindauer, and J. Seipp. "Learning Domain-Independent Policies for Open List Selection". In: *Workshop on Bridging the Gap Between AI Planning and Reinforcement Learning (PRL@ICAPS'22)*. 2022.
- [35] C. Benjamins, T. Eimer, F. Schubert, **A. Biedenkapp**, B. Rosenhan, F. Hutter, and M. Lindauer. "CARL: A Benchmark for Contextual and Adaptive Reinforcement Learning". In: *Workshop on Ecological Theory of Reinforcement Learning (EcoRL@NeurIPS'21)*. Sept. 2021.
- [36] S. Izquierdo, J. Guerrero-Viu, S. Hauns, G. Miotto, S. Schrodli, **A. Biedenkapp**, T. Elsken, D. Deng, M. Lindauer, and F. Hutter. "Bag of Baselines for Multi-objective Joint Neural Architecture Search and Hyperparameter Optimization". In: *Workshop on Automated Machine Learning (AutoML@ICML'21)*. May 2021.
- [37] S. Müller, **A. Biedenkapp**, and F. Hutter. "In-Loop Meta-Learning with Gradient-Alignment Reward". In: *AAAI workshop on Meta-Learning Challenges (MetaLearning@AAAI'21)*. Feb. 2021.
- [38] N. Awad, G. Shala, D. Deng, N. Mallik, M. Feurer, K. Eggensperger, **A. Biedenkapp**, D. Vermetten, H. Wang, C. Doerr, M. Lindauer, and F. Hutter. "Squirrel: A Switching Hyperparameter Optimizer Description of the entry by AutoML.org & IOHprofiler to the NeurIPS 2020 BBO challenge". In: *arXiv:2012.08180* (Dec. 2020). **Winning entry of the BBO Competition@NeurIPS'20 on a meta-learnable search space.**

- [39] **A. Biedenkapp**, R. Rajan, F. Hutter, and M. Lindauer. “Towards TempoRL: Learning When to Act”. In: *Workshop on Inductive Biases, Invariances and Generalization in RL (BIG@ICML'20)*. July 2020.
- [40] 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.
- [41] **A. Biedenkapp**, H. F. Bozkurt, F. Hutter, and M. Lindauer. “Towards White-Box Benchmarks for Algorithm Control”. In: *IJCAI 2019 DSO Workshop*. Aug. 2019.
- [42] M. Lindauer, M. Feurer, K. Eggenberger, **A. Biedenkapp**, and F. Hutter. “Towards Assessing the Impact of Bayesian Optimization’s Own Hyperparameters”. In: *IJCAI 2019 DSO Workshop*. Aug. 2019.

Preprints

- [43] R. Fernandes, **A. Biedenkapp**, F. Hutter, and N. Awad. “A Llama walks into the 'Bar': Efficient Supervised Fine-Tuning for Legal Reasoning in the Multi-state Bar Exam”. In: *arXiv:2504.04945 [cs.LG]* (2025).
- [44] G. Shala, **A. Biedenkapp**, and J. Grabocka. “Hierarchical Transformers are Efficient Meta-Reinforcement Learners”. In: *arXiv:2402.06402* (2024).
- [45] M. Lindauer, K. Eggenberger, M. Feurer, **A. Biedenkapp**, J. Marben, P. Müller, and F. Hutter. “BOAH: A Tool Suite for Multi-Fidelity Bayesian Optimization & Analysis of Hyperparameters”. In: *arXiv:1908.06756* (Aug. 2019).

Blog Posts

- [46] T. Eimer, R. Rajan, A. Mohan, and **A. Biedenkapp**. “2023 in AutoRL”. In: *autorl.org* (Jan. 2024). URL: <http://autorl.org/blog/retrospective/#2023-in-autorl>.
- [47] **A. Biedenkapp**, R. Rajan, F. Hutter, and M. Lindauer. “TempoRL - Learning When to Act”. In: *Personal Blog* (May 2022). URL: <https://andrebiechenkapp.github.io/blog/2022/temporl/>.
- [48] **A. Biedenkapp**, N. Dang, M. S. Krejca, F. Hutter, and C. Doerr. “Theory-Inspired Parameter Control Benchmarks for DAC”. In: *Personal Blog* (May 2022). URL: <https://andrebiechenkapp.github.io/blog/2022/gecco/>.
- [49] N. Lambert, B. Zhang, R. Rajan, and **A. Biedenkapp**. “The Importance of Hyperparameter Optimization for Model-based Reinforcement Learning”. In: *https://bair.berkeley.edu/blog* (Apr. 2021). URL: <https://bair.berkeley.edu/blog/2021/04/19/mbrl/>.
- [50] R. Rajan, **A. Biedenkapp**, T. F. Runge, and J. Franke. “AutoRL: AutoML in the Realm of Deep Reinforcement Learning”. In: *https://www.automl.org/automl-blog* (Apr. 2021). URL: <https://www.automl.org/blog-autorl>.
- [51] **A. Biedenkapp**. “Learning Step-Size Adaptation in CMA-ES”. In: *https://www.automl.org/automl-blog* (Aug. 2020). URL: <https://www.automl.org/learning-step-size-adaptation-in-cma-es>.
- [52] **A. Biedenkapp**. “Dynamic Algorithm Configuration”. In: *https://www.automl.org/automl-blog* (Feb. 2020). URL: <https://www.automl.org/dynamic-algorithm-configuration>.
- [53] **A. Biedenkapp** and F. Hutter. “BOHB”. In: *https://www.automl.org/automl-blog* (Aug. 2018). URL: https://www.automl.org/blog_bohb.
- [54] **A. Biedenkapp**, K. Eggenberger, M. Feurer, and F. Hutter. “2nd AutoML Challenge”. In: *https://www.automl.org/automl-blog* (Aug. 2018). URL: <https://www.automl.org/blog-2nd-automl-challenge>.

- [55] **A. Biedenkapp**, G. Shala, S. Adriaensen, N. Awad, M. Lindauer, and F. Hutter. "Verfahren und Vorrichtung zum Lernen einer Strategie und Betreiben der Strategie". German pat. DE102020209281A1. Robert Bosch GmbH. Jan. 27, 2022. URL: <https://depatisnet.dpma.de/DepatisNet/depatisnet?action=bibdat&docid=DE102020209281A1>. *Further pat. req. filed in Japan (JP2022022177), USA (US20220027743) & China (CN113971460)*.
- [56] S. Müller, **A. Biedenkapp**, and F. Hutter. "Verbesserte Vorrichtung zum Anlernen von maschinellen Lernsysteme für Bildverarbeitung". German pat. DE202021100225. Robert Bosch GmbH. Mar. 25, 2021. URL: <https://depatisnet.dpma.de/DepatisNet/depatisnet?action=bibdat&docid=DE202021100225U1>. *Further pat. req. filed in the USA (US20220230416) & China (CN114861929)*.
- [57] D. Speck, **A. Biedenkapp**, R. Matmüller, J. Spitz, F. Hutter, and M. Lindauer. "Device and Method for Planning and Operation of a Technical System". European pat. EP3920103. Robert Bosch GmbH. Dec. 8, 2021. URL: <https://register.epo.org/application?number=EP20178576>. *Further pat. req. filed in the USA (US2021383245) & China (CN113759710)*. Forthcoming.
- [58] D. Speck, **A. Biedenkapp**, R. Matmüller, J. Spitz, F. Hutter, and M. Lindauer. "Vorrichtung und Verfahren zur Planung eines Betriebs eines technischen Systems". German pat. DE102020207114. Robert Bosch GmbH, Albert-Ludwigs-Universität Freiburg, and Gottfried Wilhelm Leibniz Universität Hannover. Dec. 9, 2021. URL: <https://depatisnet.dpma.de/DepatisNet/depatisnet?action=bibdat&docid=DE102020207114A1>.
- [59] **A. Biedenkapp**, F. Hutter, and M. Lindauer. "Verfahren zum Trainieren eines Algorithmus des maschinellen Lernens durch ein bestärkendes Lernverfahren". German pat. DE102022210480A1. Robert Bosch GmbH. Apr. 4, 2024. URL: <https://depatisnet.dpma.de/DepatisNet/depatisnet?action=bibdat&docid=DE102022210480A1>.

Teaching Experience

Automated Machine Learning

Graduate course

Lecturer

(Flipped Classroom)

04.2025 – 09.2025

Automated Reinforcement Learning

Seminar, Received a top grade (1.5) in the student teaching evaluation.

10.2024 – 02.2025

Responsible for setting up the seminar and grading.

Meta-Algorithmics & AutoML

Undergraduate lecture

04.2023

Guest Lecture as part of the "Artificial Intelligence Practice" course at the St. Andrews University

Dynamic Algorithm Configuration and Optimization

Seminar, Achieved the top grade (1.0) in the student teaching evaluation

10.2022 – 02.2023

Responsible for setting up the seminar. Jointly held with Prof. Frank Hutter and Dr. Noor Awad

Automated Machine Learning

Lab course

10.2022 – 02.2023

Responsible for setting up the lab course. Jointly held with Prof. Frank Hutter and Rhea Sukthankar

Teaching Assistant

Foundations of Deep Learning

(Flipped Classroom)

Graduate course, Ranked third place in the student teaching evaluation for the faculty.[†] 10.2023 – 03.2024

Grading of exercises & creating the exam. Preparation to release course as MOOC.

Automated Machine Learning

(Flipped Classroom)

Graduate course, Ranked first place in the student teaching evaluation for the faculty.[†] 04.2023 – 09.2023

Creation and grading of exercises & final project.

Automated Machine Learning

(Flipped Classroom)

Graduate course, Ranked third place in the student teaching evaluation for the faculty.[†] 04.2022 – 09.2022

Creation and grading of exercises & final project.

Automated Machine Learning

Massive Open Online Course (MOOC)*

Graduate course

Published 04.2021

Creation of coding exercises. Involved in setting up the MOOC

Automated Machine Learning

(Flipped Classroom)

Graduate course, Virtual, ranked first place in the student teaching evaluation.[†]

04.2021 – 09.2021

Creation and grading of exercises & final project. Setting up online teaching through Zoom and GitHub classroom.

Automated Machine Learning

(Flipped Classroom)

Graduate course, Virtual

04.2020 – 09.2020

Creation and grading of exercises & final project. Setting up online teaching through Zoom and GitHub classroom.

Automated Machine Learning

Graduate course

04.2019 – 09.2019

Creation and grading of exercises & final project

Machine Learning for Automated Algorithm Design

Graduate course

10.2018 – 03.2019

Creation and grading of exercises & final project

Machine Learning for Automated Algorithm Design

Graduate course

10.2017 – 03.2018

Creation and grading of exercises & final project

Hardware-Labcourse

Undergraduate course

04.2014 – 09.2014

Assisting students with practical exercises

Student Project and Thesis Supervision.....

MSc Thesis

P. Thakur

started 03.2025

Working Title: Ensembled Context Identification for improved Zero-Shot Reinforcement Learning

MSc Project

S. Kawoosa

started 01.2025

Working Title: Increasing Understanding of Prompt Decoding Strategies for Open LLMs

MSc Thesis

P. Bordne

started 01.2025

Working Title: Tackling the Primacy Bias in RL

MSc Project

R. Tirumanyam

started 11.2024

Working Title: On the Zero-Shot Generalizability of Contextual Offline Reinforcement Learning

MSc Thesis

S. Prasanna

09.2024 – 03.2025

One Does Not Simply Estimate State:

Comparing World Model-based and Model-free Reinforcement Learning on the MordorHike Benchmark

MSc Thesis

R. Clive Fernandes

03.2024 – 09.2024

Supervised Fine-Tuning of Open LLMs for Law: Training and Evaluation for Performance in

Legal Examinations

MSc Thesis

L. Gieringer

02.2024 – 08.2024

Towards General Offline RL-Based Dynamic Algorithm Configuration

MSc Thesis

J. Fix

02.2024 – 08.2024

Towards Dynamically Adjusting the Learning Rate for SGD Using Multi-Teacher Offline RL

* Available at <https://ki-campus.org/courses/automl-luh2021>

[†] See <https://www.tf.uni-freiburg.de/de/lehre/lehre/qualitaetsmanagement-in-der-lehre-neu>

MSc Project*P. Bordne, Published at AutoML'24 (Workshop Track)*

06.2023 – 04.2024

CANDID DAC: Introducing Coupled Action Dimensions with Importance Differences to Dynamic Algorithm Configuration

MSc Thesis*J. Hog, Joint supervision with R. Rajan and V. Nguyen; published in TMLR'25*

05.2023 – 12.2023

Meta Learning Through Time With Population-Based Bandits

MSc Project*J. Fix & L. Gieringer, Joint supervision with N. Awad*

05.2023 – 10.2023

Crowd Control: A case study in scaling individual DE population members using Offline RL for DAC

MSc Thesis at the University of St. Andrews*M. Hossain, Joint supervision with N. Dang*

04.2023 – 08.2023

Dynamic Algorithm Configuration with Proximal Policy Optimisation

MSc Thesis*F. Diederichs, Joint supervision with N. Awad*

09.2022 – 02.2023

On the Applicability of Offline Reinforcement Learning for Dynamic Algorithm Configuration of Differential Evolution

MSc Thesis*B. Zhang, Joint supervision with R. Rajan, Published at AISTATS'21*

04.2020 – 10.2020

On the Importance of Hyperparameter Optimization in Model-based Reinforcement Learning

MSc Project & Thesis*G. Shala, Published at PPSN'20*

04.2019 – 05.2020

Learning to Optimize CMA-ES

MSc Thesis*H. F. Bozkurt*

03.2019 – 11.2019

RL-DCBO: Reinforcement Learning Guided Dynamic Control for Bayesian Optimization

MSc Thesis*T. Eimer, Follow up work published at ICML'21*

12.2018 – 09.2019

Improved Meta-Learning for Algorithm Control through Self-Paced Learning

MSc Thesis*K. Hättig*

12.2018 – 09.2019

Model-Based Population Based Training

MSc Thesis*O. Brunner, Joint supervision with D. Speck at GKI-Freiburg*

11.2018 – 04.2019

Learning Domain-Independent Heuristics with Deep Neural Networks

MSc Project*T. Eimer & K. Hättig*

04.2018 – 12.2018

Algorithm State Description for Algorithm Control

Student Mentorship.....

Student Research Assistants:

- S. Prasanna (11.2023 – 04.2025)
- T. C. Ndir (10.2022 – 09.2024)
- F. Diederichs (11.2021 – 02.2023)
- L. Goldbach (04.2021 – 10.2021)
- S. Ohnemus (07.2020 – 10.2020)
- G. Shala (07.2020 – 10.2020)
- J. Marben (01.2020 – 06.2020)
- H. F. Bozkurt (03.2019 – 11.2019)

Student Teaching Assistants:

- A. Gupta (01.2025 – 09.2025)
- R. Tirumanyam (01.2025 – 09.2025)
- E. Hasani (04.2025 – 10.2025)
- S. Kawoosa (04.2025 – 10.2025)
- M. Mraz (12.2024 – 03.2025)
- T. Athanasiadis (10.2023 – 09.2024)
- A. Garg (10.2023 – 09.2024)
- G. Mouratidis (10.2023 – 04.2024)
- L. Zhang (10.2023 – 09.2024)
- R. C. Fernandez (10.2023 – 09.2024)
- L. Strack (10.2023 – 03.2024)
- I. Das (08.2023 – 09.2024)

Presentations

Invited Talks & Competitively-Selected Tutorials.....

Beyond Trial & Error: A Tutorial on Automated Reinforcement Learning

ECAI 2024 Half-Day Tutorial, Santiago de Compostela, Spain

10.2024

Jointly with Theresa Eimer

Automated Reinforcement Learning

AutoML 2024 Tutorial, Paris, France

09.2024

Jointly with Theresa Eimer

AutoRL with Applications to Sustainability

Invited AutoML School 2024 Tutorial, Hannover, Germany

09.2024

Jointly with Theresa Eimer

Meta-Algorithmics & AutoML

Invited Lecture (part of CS5011), University of St. Andrews, Scotland (online)

04.2023

Learning to Dynamically Optimise Algorithms

Seminar on Advances in Probabilistic Machine Learning, Aalto University Helsinki, Finland (online) 11.2022

Dynamic Algorithm Configuration

ELLIS Meetup Freiburg, Freiburg, Germany

03.2022

Advances of Dynamic Algorithm Configuration

Bosch Center for Artificial Intelligence, Renningen, Germany

06.2021

Algorithm Configuration: Challenges, Methods and Perspectives

IJCAI 2020 Tutorial, Online

01.2021

Jointly with Prof. Marius Lindauer

Algorithm Configuration: Challenges, Methods and Perspectives

PPSN 2020 Tutorial, Online

09.2020

Jointly with Prof. Marius Lindauer

Challenges of Dynamic Algorithm Configuration

Bosch Center for Artificial Intelligence, Renningen, Germany

03.2020

Dynamic Algorithm Configuration

Institut für Informationsverarbeitung (TNT), University of Hannover, Germany

01.2020

Conference Presentations.....

International Conference on Automated Machine Learning <i>AutoML (Oral, Runner Up Award for Best Paper)</i> HPO-RL-Bench: A Zero-Cost Benchmark for HPO in Reinforcement Learning	Paris 09.2024
The Genetic and Evolutionary Computation Conference <i>GECCO (Oral, Joint video presentation with all authors)</i> Theory-inspired Parameter Control Benchmarks for Dynamic Algorithm Configuration	Online 07.2022
International Conference on Machine Learning <i>ICML (Poster)</i> TempoRL: Learning When to Act	Online 07.2021
International Conference on Parallel Problem Solving from Nature <i>PPSN (Poster), Netherlands</i> Learning Step-SizeAdaptation in CMA-ES	Leiden 08.2020
European Conference on Artificial Intelligence <i>ECAI (Oral), Spain</i> Dynamic Algorithm Configuration: Foundation of a New Meta-Algorithmic Framework	Santiago de Compostela 08.2020
Learning and Intelligent Optimization Conference <i>LION (Oral), Greece</i> CAVE: Configuration Assessment, Visualization and Evaluation	Kalamata 06.2018
AAAI Conference on Artificial Intelligence <i>AAAI (Poster), California, USA</i> Efficient Parameter Importance Analysis via Ablation with Surrogates	San Francisco 02.2017

Workshop Presentations.....

Bridging the Gap Between AI Planning and Reinforcement Learning <i>PRL@ICAPS'22</i> Learning Domain-Independent Policies for Open List Selection	Online 06.2022
Inductive Biases, Invariances and Generalization in Reinforcement Learning <i>BIG@ICML'20</i> Towards TempoRL: Learning When to Act	Online 07.2020
Data Science Meets Optimisation <i>DSO@IJCAI'19, Macau (SAR), China</i> Towards White-box Benchmarks for Algorithm Control	Macau 08.2019

Funding Acquisition

Research grants, as proposal contributor.....

Alliance Sorbonne Université project under the Emergence 2023/24 funding call <i>Team member & involved in drafting the proposal, PI: Carola Doerr</i>	€ 60 000 09.2023 - 08.2025
DFG[‡] Collaborative Research Center "Small Data" <i>Involved in drafting project C04, WP PI: Noor Awad, WP co-PI: Joschka Bödecker</i>	10.2023 - 09.2027
CZS^{††} Breakthroughs project "ReScaLe" <i>Contributed to the draft of WP5, WP PI: Noor Awad, WP co-PI: Joschka Bödecker</i>	06.2021 - 05.2028

Scholarships, Honors and Awards

Best Paper Award Nomination <i>GECCO'25, On the Importance of Reward Design in Reinforcement Learning-based DAC [11]</i> L4EC Track – https://gecco-2025.sigevo.org/Best-Paper-Nominations	2025
Runner Up Best Paper Award <i>AutoML'24, HPO-RL-Bench: A Zero-Cost Benchmark for HPO in Reinforcement Learning [13]</i> https://2024.automl.cc/?page_id=1406	2024

[‡]Deutsche Forschungsgemeinschaft – German Research Council

^{††}Carl Zeiss Stiftung

Best Paper Award

GECCO'22, *Theory-inspired Parameter Control Benchmarks for Dynamic Algorithm Configuration* [15] 2022
GECH Track – https://gecco-2022.sigevo.org/Best-Paper-Awards#GECH_Track

Best Reviewers (Top 10%)

ICML'21 2021

Black-Box Optimization Competiton@NeurIPS'20

1st place

Part of the AutoML & IOHprofiler Team, 1st place on a meta-learning friendly search space 2020
Leaderboard: <https://bbochallenge.com/altleaderboard>

Black-Box Optimization Competiton@NeurIPS'20

3rd place*

Part of the AutoML & IOHprofiler Team, Leaderboard: <https://bbochallenge.com/leaderboard> 2020

*Due to a bug the initial evaluation failed. After re-evaluation our team would have gotten the third place.

Professional Service

Academic Self-Administration.....

Thesis Advisory Committee Membership

since June 2024, A. Hasan

University of Freiburg – CRC 1597 Small Data research project: C04

Thesis Advisory Committee Membership

since February 2024, B. Zhang

University of Freiburg – CRC 1597 Small Data research project: C04

Thesis Advisory Committee Membership

since January 2024, J. Hog

University of Freiburg – CRC 1597 Small Data research project: B01

Member in appointment committee

2023

Organizer.....

AutoRL Workshop@ICML'24

2024, Co-Organiser

Jointly with Theresa Eimer, Raghu Rajan, Julian Dierkes, Vu Nguyen and Aleksandra Faust

AutoML Conference - Online Experience Chair

2023, 2024 & 2025

Jointly with Gabi Kadlecová in 2024/25 and 2023 jointly with Hayeon Lee, Mohammed Abdelfattah & Richard Song

2nd AutoML Fall School

2022, Local Organiser

ELLIS Unit Meetups Freiburg

07.2022-12.2022, Co-Organiser with Simon Ging

Involved in setting up the first "ELLIS Social" followup event in 2023

Journal Reviewing.....

Journal of Artificial Intelligence Research

JAIR

2024, 2023, 2022

Machine Learning

MLJ

2024

Autonomous Agents and Multi-Agent Systems

JAAMAS

2023

IEEE Transactions on Evolutionary Computation

TEVC

2025, 2022

Computational Intelligence

CI

2022

Journal of the Association for Computing Machinery
2022, 2021

Journal of the ACM

Program Committee Membership at Conferences.....

AAAI Conference on Artificial Intelligence **AAAI**
2018

AutoML Conference **AutoML**
2025, 2024, 2023, 2022

European Conference on Artificial Intelligence **ECAI**
2020

International Conference on Machine Learning **ICML**
2025, 2024, 2023, 2021, 2019

International Conference on Learning Representations **ICLR**
2025

Neural Information Processing Systems **NeurIPS**
2025, 2023, 2022, 2021

NeurIPS Datasets and Benchmarks **NeurIPS DBT**
2021 (Track 1 & Track 2)

Reinforcement Learning Conference (Senior Reviewer) **RLC**
2025

Program Committee Membership at Workshops.....

ICLR Workshop on Agent Learning in Open-Endedness **ALOE**
2022

ICML Workshop on Automated Machine Learning **AutoML@ICML**
2021, 2020, 2019, 2018

European Workshop on Reinforcement Learning **EWRL**
2025, 2023, 2022

NeurIPS Workshop on Meta-Learning **MetaLearn@NeurIPS**
2019

Programming Skills

Excellent: Python, Bash, \LaTeX

Good: C, C#, C++, Julia

Basic: Matlab, Java

Selected Open-Source Projects

GitHub Page: <https://github.com/AndreBiedenkapp>

<https://github.com/automl/DAC> **DAC**

Role: Developer

DAC is the first dynamic algorithm configurator which enables configuration not only to specific problem instances but also at each time-step. To gain insights into the strengths and weaknesses of this reinforcement learning based configurator DAC comes with example white-box benchmarks.

<https://github.com/automl/DACBench> **DACBench**

Role: Contributor

DACBench is a benchmark library for Dynamic Algorithm Configuration. Its focus is on reproducibility and comparability of different DAC methods as well as easy analysis of the optimization process.

<https://github.com/automl/ParameterImportance> **PyImp**

Role: Developer

PyImp is an easy to use tool that helps developers to identify the most important parameters of their algorithms. Given the data of a configuration run with SMAC3, PyImp allows for usage of various parameter importance methods to determine which parameters have the most influence on the algorithms behaviour.

<https://github.com/automl/SMAC3>

SMAC3

Former Role: Contributor

Python implementation of SMAC (sequential model-based algorithm configuration). SMAC is a tool for automated algorithm configuration.

Languages

Native: German

Fluent: English

Basic: French