

# André Biedenkapp

✉ [biedenka@cs.uni-freiburg.de](mailto:biedenka@cs.uni-freiburg.de) • [github.com/andrebiedenkapp](https://github.com/andrebiedenkapp)

## Personal Information

**Date of birth:** 13.07.1992

**Nationality:** German

## Research Interests

- Dynamic Algorithm Configuration [see, e.g., 1, 6, 12, 15, 16, 19, 20]
- Learning to Learn [see, e.g., 13, 14]
- Deep Reinforcement Learning [see, e.g., 17, 27, 5]
- Automated Machine Learning and Reinforcement Learning [see, e.g., 11, 7, 17, 18, 23]

## Education

### PhD (Dr. rer. nat.)

Albert-Ludwigs-University Freiburg

Supervised by Prof. Frank Hutter and Prof. Marius Lindauer

2018 – 2022

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

### Summer School

**Reinforcement Learning Summer SCHOOL (RLSS'19)**

In: Lille, France

July 2019

Topics: Reinforcement Learning and Bandits

### Computer Science

Albert-Ludwigs-University Freiburg

Master of Science (M.Sc.)

2014 – 2017

Thesis: Per Instance Algorithm Configuration (Grade: 1.0)

Supervisor: Prof. Dr. Frank Hutter

### Computer Science

Albert-Ludwigs-University Freiburg

Bachelor of Science (B.Sc.)

2011 – 2014

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

Supervisor: Prof. Dr. Wolfram Burgard

## Publications

 [Google Scholar](#)

 [DBLP](#)

 [0000-0002-8703-8559](#)

Journal and conference rankings are according to CORE'20 (<https://www.core.edu.au/conference-portal>)

### Thesis

- [1] **A. Biedenkapp**. “Dynamic Algorithm Configuration by Reinforcement Learning”. *Grade: Summa Cum Laude (best possible grade)*. PhD thesis. Freiburg, Germany: University of Freiburg, Department of Computer Science, Machine Learning Chair, Oct. 2022.
- [2] **A. Biedenkapp**. “Per Instance Algorithm Configuration”. *Grade: 1.0 (best possible grade)*. Master's Thesis. Freiburg, Germany: University of Freiburg, Department of Computer Science, Machine Learning Chair, 2017.
- [3] **A. Biedenkapp**. “Data Analysis for the Selection of Recording Channels on Multielectrode-Arrays”. Bachelor's Thesis. Freiburg, Germany: University of Freiburg, Department of Computer Science, Autonomous Intelligent Systems, Mar. 2014.

### Journal Publications

- [4] R. Rajan, J. L. B. Diaz, S. Guttikonda, F. Ferreira, **A. Biedenkapp**, J. O. von Hartz, and F. Hutter. “MDP Playground: An Analysis and Debug Testbed for Reinforcement Learning”. In: *Journal of Artificial Intelligence Research (JAIR)* 77 (2023). *Journal Rating: A*, pp. 821–890.
- [5] C. Benjamins, T. Eimer, F. Schubert, A. Mohan, S. Döhler, **A. Biedenkapp**, B. Rosenhan, F. Hutter, and M. Lindauer. “Contextualize Me – The Case for Context in Reinforcement Learning”. In: *Transactions on Machine Learning Research (TMLR)* (2023). ISSN: 2835-8856. URL: <https://openreview.net/forum?id=Y42xVBQusn>.

- [6] 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 (JAIR)* 75 (2022). *Journal Rating: A*, pp. 1633–1699. DOI: <https://doi.org/10.1613/jair.1.13922>.
- [7] 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 (JAIR)* 74 (2022). *Journal Rating: A*, pp. 517–568. DOI: <https://doi.org/10.1613/jair.1.13596>.
- [8] M. Lindauer, K. Eggenberger, M. Feurer, **A. Biedenkapp**, D. Deng, C. Benjamins, R. Sass, and F. Hutter. “SMAC3: A Versatile Bayesian Optimization Package for Hyperparameter Optimization”. In: *Journal of Machine Learning Research (JMLR) – MLOSS* 23.54 (2022). *Journal Rating: A\**, pp. 1–9. URL: <http://jmlr.org/papers/v23/21-0888.html>.

## Conference Publications.....

- [9] S. Prasanna, K. Farid, R. Rajan, and **A. Biedenkapp**. “Dreaming of Many Worlds: Learning Contextual World Models Aids Zero-Shot Generalization”. In: *Proceedings of the First Reinforcement Learning Conference (RLC’24)*. 2024.
- [10] 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)*. 2024.
- [11] 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](https://iclr.cc), Acceptance rate: 31.8%, Conference Rating: A\*. 2023.
- [12] **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.
- [13] **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.
- [14] 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.
- [15] 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](https://ijcai.org), Aug. 2021, pp. 1668–1674.
- [16] 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.
- [17] 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.
- [18] 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](https://iclr.cc), Acceptance rate: 28.7%, Conference Rating: A\*. May 2021.

- [19] 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.
- [20] **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.
- [21] **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.
- [22] **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 Publications & Preprints.....

- [23] 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.
- [24] 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.
- [25] 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.
- [26] **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.
- [27] 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.
- [28] S. Izquierdo, J. Guerrero-Viu, S. Hauns, G. Miotto, S. Schrodi, **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.
- [29] 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.
- [30] 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**.
- [31] **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.
- [32] 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.
- [33] **A. Biedenkapp**, H. F. Bozkurt, F. Hutter, and M. Lindauer. “Towards White-Box Benchmarks for Algorithm Control”. In: *IJCAI 2019 DSO Workshop*. Aug. 2019.
- [34] M. Lindauer, M. Feurer, K. Eggensperger, **A. Biedenkapp**, and F. Hutter. “Towards Assessing the Impact of Bayesian Optimization’s Own Hyperparameters”. In: *IJCAI 2019 DSO Workshop*. Aug. 2019.

- [35] T. Camaret Ndir, **A. Biedenkapp**, and N. Awad. “Inferring Behavior-Specific Context Improves Zero-Shot Generalization in Reinforcement Learning”. In: *arXiv:2404.09521* (2024).
- [36] G. Shala, **A. Biedenkapp**, and J. Grabocka. “Hierarchical Transformers are Efficient Meta-Reinforcement Learners”. In: *arXiv:2402.06402* (2024).
- [37] 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.....

- [38] 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>.
- [39] **A. Biedenkapp**, R. Rajan, F. Hutter, and M. Lindauer. “TempoRL - Learning When to Act”. In: *Personal Blog* (May 2022). URL: <https://andrebieenkapp.github.io/blog/2022/temporl/>.
- [40] **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://andrebieenkapp.github.io/blog/2022/gecco/>.
- [41] 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/>.
- [42] 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>.
- [43] **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>.
- [44] **A. Biedenkapp**. “Dynamic Algorithm Configuration”. In: <https://www.automl.org/automl-blog> (Feb. 2020). URL: <https://www.automl.org/dynamic-algorithm-configuration>.
- [45] **A. Biedenkapp** and F. Hutter. “BOHB”. In: <https://www.automl.org/automl-blog> (Aug. 2018). URL: [https://www.automl.org/blog\\_bohb](https://www.automl.org/blog_bohb).
- [46] **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>.

## Patents

- [47] **A. Biedenkapp**, G. Shala, S. Adriaensen, N. Awad, M. Lindauer, and F. Hutter. “Method and Device for Learning a Strategy and for Implementing the Strategy”. U.S. pat. req. 17/305,586. Robert Bosch GmbH. July 9, 2021. Filed.
- [48] S. Müller, **A. Biedenkapp**, and F. Hutter. “Verbesserte Vorrichtung zum Anlernen von maschinellen Lernsysteme für Bildverarbeitung”. German pat. DE202021100225. Robert Bosch GmbH. Feb. 12, 2021. URL: <https://depatisnet.dpma.de/DepatisNet/depatisnet?action=bibdat&docid=DE202021100225U1>.
- [49] D. Speck, **A. Biedenkapp**, R. Matmüller, F. Hutter, and M. Lindauer. “Device and Method for Planning and Operation of a Technical System”. U.S. pat. req. 17/242,790. Robert Bosch GmbH. Apr. 28, 2021. Filed.
- [50] D. Speck, **A. Biedenkapp**, R. Matmüller, F. Hutter, and M. Lindauer. “Device and Method for Planning and Operation of a Technical System”. European pat. req. EP20178576.3 – 1203. Robert Bosch GmbH. *Also filed requests for US patent and CN patent*. June 1, 2020. URL: <http://v3.espacenet.com/textdoc?IDX=EP3920103>. Filed.

- [51] **A. Biedenkapp**, H. F. Bozkurt, F. Hutter, and M. Lindauer. "Method, Device and Computer Program for Adjusting a Hyperparameter". European pat. req. EP3748551. Robert Bosch GmbH. June 11, 2020. URL: <http://v3.espacenet.com/textdoc?IDX=EP3748551>. Filed.

## Work experience

Position held.....	
<b>Machine Learning Lab</b> <i>Postdoctoral Researcher</i> Topic: Automated Reinforcement Learning	<b>Albert-Ludwigs-University Freiburg</b> <i>Since 10.2022</i>
Past positions.....	
<b>Machine Learning Lab</b> <i>Doctoral Researcher</i> Topic: Dynamic Algorithm Configuration	<b>Albert-Ludwigs-University Freiburg</b> <i>02.2018 - 10.2022</i>
<b>Machine Learning Lab</b> <i>Student Assistant</i> Assisting in the implementation of research projects	<b>Albert-Ludwigs-University Freiburg</b> <i>10.2015 - 09.2017</i>
<b>Chair of Computer Architecture</b> <i>Student Assistant</i> Maintenance of the mobile robots for the Hardware-Labcourse	<b>Albert-Ludwigs-University Freiburg</b> <i>04.2014 - 09.2014</i>

## Teaching Experience

<b>Meta-Algorithmics &amp; AutoML</b> <i>Undergraduate lecture</i> Guest Lecture as part of the "Artificial Intelligence Practice" course at the St. Andrews University		<i>04.2023</i>
<b>Dynamic Algorithm Configuration and Optimization</b> <i>Seminar, Achieved the top grade (1.0) in the student teaching evaluation</i> Responsible for setting up the seminar. Jointly held with Prof. Frank Hutter and Dr. Noor Awad		<i>10.2022 - 02.2023</i>
<b>Automated Machine Learning</b> <i>Lab course</i> Responsible for setting up the lab course. Jointly held with Prof. Frank Hutter and Rhea Sukthanker		<i>10.2022 - 02.2023</i>
Teaching Assistant.....		
<b>Foundations of Deep Learning</b> <i>Graduate course</i> Grading of exercises & creating the exam.	<b>(Flipped Classroom)</b>	<i>10.2023 - 03.2024</i>
<b>Automated Machine Learning</b> <i>Graduate course, Ranked first place in the student teaching evaluation</i> Creation and grading of exercises & final project.	<b>(Flipped Classroom)</b>	<i>04.2023 - 09.2023</i>
<b>Automated Machine Learning</b> <i>Graduate course</i> Creation and grading of exercises & final project.	<b>(Flipped Classroom)</b>	<i>04.2022 - 09.2022</i>
<b>Automated Machine Learning</b> <i>Graduate course</i> Creation of coding exercises. Involved in setting up the MOOC	<b>Massive Open Online Course (MOOC)</b>	<i>Published 04.2021</i>
<b>Automated Machine Learning</b> <i>Graduate course, Virtual, Ranked first place in the student teaching evaluation</i> Creation and grading of exercises & final project. Setting up online teaching through Zoom and GitHub classroom.	<b>(Flipped Classroom)</b>	<i>04.2021 - 09.2021</i>
<b>Automated Machine Learning</b> <i>Graduate course, Virtual</i> Creation and grading of exercises & final project. Setting up online teaching through Zoom and GitHub classroom.	<b>(Flipped Classroom)</b>	<i>04.2020 - 09.2020</i>

**Automated Machine Learning***Graduate course*

04.2019 – 09.2019

Creation and grading of exercises &amp; final project

**Machine Learning for Automated Algorithm Design***Graduate course*

10.2018 – 03.2019

Creation and grading of exercises &amp; final project

**Machine Learning for Automated Algorithm Design***Graduate course*

10.2017 – 03.2018

Creation and grading of exercises &amp; final project

**Hardware-Labcourse***Undergraduate course*

04.2014 – 09.2014

Assisting students with practical exercises

**Student Supervision.....****MSc Thesis***L. Gieringer*

started 01.2024

*Working Title:* Towards General Offline RL-Based Dynamic Algorithm Configuration**MSc Thesis***J. Fix*

started 01.2024

*Working Title:* Towards Dynamical Learning Rate Adaptation in Neural Network Optimization Using Multi-Teacher Offline RL**MSc Project***P. Bordne*

started 06.2023

*Working Title:* Multi-Timescale Multi-Agent RL for Dynamic Algorithm Configuration**MSc Thesis***J. Hog, Joint supervision with R. Rajan and V. Nguyen*

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*  
Learning Domain-Independent Heuristics with Deep Neural Networks

11.2018 – 04.2019

### MSc Project

*T. Eimer & K. Hättig*  
Algorithm State Description for Algorithm Control

04.2018 – 12.2018

## Presentations

---

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

#### Beyond Trial & Error: A Tutorial on Automated Reinforcement Learning

*ECAI 2024 Tutorial, Santiago de Compostela, Spain*  
Jointly with Theresa Eimer

10.2024

#### 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*  
Jointly with Prof. Marius Lindauer

01.2021

#### Algorithm Configuration: Challenges, Methods and Perspectives

*PPSN 2020 Tutorial, Online*  
Jointly with Prof. Marius Lindauer

09.2020

#### 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.....

#### The Genetic and Evolutionary Computation Conference

*GECCO (Oral, Joint video presentation with all authors)*  
Theory-inspired Parameter Control Benchmarks for Dynamic Algorithm Configuration

Online  
07.2022

#### International Conference on Machine Learning

*ICML (Poster)*  
TempoRL: Learning When to Act

Online  
07.2021

#### International Conference on Parallel Problem Solving from Nature

*PPSN (Poster), Netherlands*  
Learning Step-Size Adaptation in CMA-ES

Leiden  
08.2020

#### European Conference on Artificial Intelligence

*ECAI (Oral), Spain*  
Dynamic Algorithm Configuration: Foundation of a New Meta-Algorithmic Framework

Santiago de Compostela  
08.2020

#### Learning and Intelligent Optimization Conference

*LION (Oral), Greece*  
CAVE: Configuration Assessment, Visualization and Evaluation

Kalamata  
06.2018

## AAAI Conference on Artificial Intelligence

AAAI (Poster), California, USA

Efficient Parameter Importance Analysis via Ablation with Surrogates

San Francisco

02.2017

## Workshop Presentations

### Bridging the Gap Between AI Planning and Reinforcement Learning

PRL@ICAPS'22

Learning Domain-Independent Policies for Open List Selection

Online

06.2022

### Inductive Biases, Invariances and Generalization in Reinforcement Learning

BIG@ICML'20

Towards TempoRL: Learning When to Act

Online

07.2020

### Data Science Meets Optimisation

DSO@IJCAI'19, Macau (SAR), China

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

€ 60 000

Team member & involved in drafting the proposal, PI: Carola Doerr

09.2023 - 08.2025

### DFG<sup>1</sup> Collaborative Research Center "Small Data"

Involved in drafting project C04, WP PI: Noor Awad, WP co-PI: Joschka Bödecker

10.2023 - 09.2027

### CZS<sup>2</sup> Breakthroughs project "ReScaLe"

Contributed to the draft of WP5, WP PI: Noor Awad, WP co-PI: Joschka Bödecker

06.2021 - 05.2028

## Scholarships, Honors and Awards

### Best Paper Award

GECCO'22, Theory-inspired Parameter Control Benchmarks for Dynamic Algorithm Configuration

2022

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://bbchallenge.com/altleaderboard>

### Black-Box Optimization Competiton@NeurIPS'20

3rd place\*

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

2020

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

## Professional Service

Organizer

### AutoRL Workshop@ICML'24

2024, Co-Organiser

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

### AutoML Conference - Online Experience Chair

2023 & 2024

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

### COSEAL Chair

since August 2022, Jointly with Alexander Tornede and Lennart Schäpermeier

### 2nd AutoML Fall School

2022, Local Organiser

<sup>1</sup>Deutsche Forschungsgemeinschaft – German Research Council

<sup>2</sup>Carl Zeiss Stiftung



## 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

<b>Autonomous Agents and Multi-Agent Systems</b> 2023	<b>JAAMAS</b>
<b>Journal of Artificial Intelligence Research</b> 2024, 2023, 2022	<b>JAIR</b>
<b>IEEE Transactions on Evolutionary Computation</b> 2022	<b>TEVC</b>
<b>Computational Intelligence</b> 2022	<b>CI</b>
<b>Journal of the Association for Computing Machinery</b> 2022, 2021	<b>Journal of the ACM</b>

## Program Committee Membership at Conferences

<b>AAAI Conference on Artificial Intelligence</b> 2018	<b>AAAI</b>
<b>AutoML Conference</b> 2024, 2023, 2022	<b>AutoML</b>
<b>European Conference on Artificial Intelligence</b> 2024, 2020	<b>ECAI</b>
<b>International Conference on Machine Learning</b> 2024, 2023, 2021, 2019	<b>ICML</b>
<b>International Conference on Learning Representations</b> 2024	<b>ICLR</b>
<b>Neural Information Processing Systems</b> 2023, 2022, 2021	<b>NeurIPS</b>
<b>NeurIPS Datasets and Benchmarks</b> 2021 (Track 1 & Track 2)	<b>NeurIPS DBT</b>

## Program Committee Membership at Workshops

<b>ICLR Workshop on Agent Learning in Open-Endedness</b> 2022	<b>ALOE</b>
<b>ICML Workshop on Automated Machine Learning</b> 2021, 2020, 2019, 2018	<b>AutoML@ICML</b>
<b>European Workshop on Reinforcement Learning</b> 2023, 2022	<b>EWRL</b>
<b>NeurIPS Workshop on Meta-Learning</b> 2019	<b>MetaLearn@NeurIPS</b>

## 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