

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, 6, 10, 13, 14, 17, 18]
- Learning to Learn [see, e.g., 11, 12]
- Deep Reinforcement Learning [see, e.g., 15, 25, 5]
- Automated Machine Learning and Reinforcement Learning [see, e.g., 9, 7, 15, 16, 21]

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] 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.
- [10] **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.
- [11] **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.
- [12] 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.
- [13] 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.
- [14] 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.
- [15] 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.
- [16] 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.
- [17] 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.
- [18] **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.

- [19] **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.
- [20] **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.....

- [21] 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.
- [22] 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.
- [23] 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.
- [24] **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.
- [25] 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.
- [26] S. Izquierdo, J. Guerrero-Viu, S. Hauns, G. Miotto, S. Schrod, **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.
- [27] 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.
- [28] 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.**
- [29] **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.
- [30] 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.
- [31] **A. Biedenkapp**, H. F. Bozkurt, F. Hutter, and M. Lindauer. "Towards White-Box Benchmarks for Algorithm Control". In: *IJCAI 2019 DSO Workshop*. Aug. 2019.
- [32] 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.
- [33] S. Prasanna, K. Farid, R. Rajan, and **A. Biedenkapp**. "Dreaming of Many Worlds: Learning Contextual World Models Aids Zero-Shot Generalization". In: *arXiv:2403.10967* (2024).
- [34] G. Shala, **A. Biedenkapp**, and J. Grabocka. "Hierarchical Transformers are Efficient Meta-Reinforcement Learners". In: *arXiv:2402.06402* (2024).
- [35] M. Lindauer, K. Eggensperger, 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.....

- [36] 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>.
- [37] **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/>.
- [38] **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/>.
- [39] 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/>.
- [40] 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>.
- [41] **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>.
- [42] **A. Biedenkapp**. “Dynamic Algorithm Configuration”. In: <https://www.automl.org/automl-blog> (Feb. 2020). URL: <https://www.automl.org/dynamic-algorithm-configuration>.
- [43] **A. Biedenkapp** and F. Hutter. “BOHB”. In: <https://www.automl.org/automl-blog> (Aug. 2018). URL: https://www.automl.org/blog_bohb.
- [44] **A. Biedenkapp**, K. Eggensperger, 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

- [45] **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.
- [46] 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>.
- [47] 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.
- [48] 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.
- [49] **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.....	
Machine Learning Lab <i>Postdoctoral Researcher</i> Topic: Automated Reinforcement Learning	Albert-Ludwigs-University Freiburg <i>Since 10.2022</i>
Past positions.....	
Machine Learning Lab <i>Doctoral Researcher</i> Topic: Dynamic Algorithm Configuration	Albert-Ludwigs-University Freiburg <i>02.2018 - 10.2022</i>
Machine Learning Lab <i>Student Assistant</i> Assisting in the implementation of research projects	Albert-Ludwigs-University Freiburg <i>10.2015 - 09.2017</i>
Chair of Computer Architecture <i>Student Assistant</i> Maintenance of the mobile robots for the Hardware-Labcourse	Albert-Ludwigs-University Freiburg <i>04.2014 - 09.2014</i>

Teaching Experience

Meta-Algorithmics & AutoML <i>Undergraduate lecture</i> Guest Lecture as part of the "Artificial Intelligence Practice" course at the St. Andrews University	<i>04.2023</i>
Dynamic Algorithm Configuration and Optimization <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>
Automated Machine Learning <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.....	
Foundations of Deep Learning <i>Graduate course</i> Grading of exercises & creating the exam.	(Flipped Classroom) <i>10.2023 - 03.2024</i>
Automated Machine Learning <i>Graduate course, Ranked first place in the student teaching evaluation</i> Creation and grading of exercises & final project.	(Flipped Classroom) <i>04.2023 - 09.2023</i>
Automated Machine Learning <i>Graduate course</i> Creation and grading of exercises & final project.	(Flipped Classroom) <i>04.2022 - 09.2022</i>
Automated Machine Learning <i>Graduate course</i> Creation of coding exercises. Involved in setting up the MOOC	Massive Open Online Course (MOOC) <i>Published 04.2021</i>
Automated Machine Learning <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.	(Flipped Classroom) <i>04.2021 - 09.2021</i>
Automated Machine Learning <i>Graduate course, Virtual</i> Creation and grading of exercises & final project. Setting up online teaching through Zoom and GitHub classroom.	(Flipped Classroom) <i>04.2020 - 09.2020</i>
Automated Machine Learning <i>Graduate course</i> Creation and grading of exercises & final project	<i>04.2019 - 09.2019</i>

Machine Learning for Automated Algorithm Design <i>Graduate course</i> Creation and grading of exercises & final project	10.2018 – 03.2019
Machine Learning for Automated Algorithm Design <i>Graduate course</i> Creation and grading of exercises & final project	10.2017 – 03.2018
Hardware-Labcourse <i>Undergraduate course</i> Assisting students with practical exercises	04.2014 – 09.2014

Student Supervision.....

MSc Thesis <i>L. Gieringer</i> <i>Working Title:</i> Towards General Offline RL-Based Dynamic Algorithm Configuration	<i>started 01.2024</i>
MSc Thesis <i>J. Fix</i> <i>Working Title:</i> Towards Dynamical Learning Rate Adaptation in Neural Network Optimization Using Multi-Teacher Offline RL	<i>started 01.2024</i>
MSc Project <i>P. Bordne</i> <i>Working Title:</i> Multi-Timescale Multi-Agent RL for Dynamic Algorithm Configuration	<i>started 06.2023</i>
MSc Thesis <i>J. Hog, Joint supervision with R. Rajan and V. Nguyen</i> Meta Learning Through Time With Population-Based Bandits	05.2023 – 12.2023
MSc Project <i>J. Fix & L. Gieringer, Joint supervision with N. Awad</i> Crowd Control: A case study in scaling individual DE population members using Offline RL for DAC	05.2023 – 10.2023
MSc Thesis at the University of St. Andrews <i>M. Hossain, Joint supervision with N. Dang</i> Dynamic Algorithm Configuration with Proximal Policy Optimisation	04.2023 – 08.2023
MSc Thesis <i>F. Diederichs, Joint supervision with N. Awad</i> On the Applicability of Offline Reinforcement Learning for Dynamic Algorithm Configuration of Differential Evolution	09.2022 – 02.2023
MSc Thesis <i>B. Zhang, Joint supervision with R. Rajan, Published at AISTATS'21</i> On the Importance of Hyperparameter Optimization in Model-based Reinforcement Learning	04.2020 – 10.2020
MSc Project & Thesis <i>G. Shala, Published at PPSN'20</i> Learning to Optimize CMA-ES	04.2019 – 05.2020
MSc Thesis <i>H. F. Bozkurt</i> RL-DCBO: Reinforcement Learning Guided Dynamic Control for Bayesian Optimization	03.2019 – 11.2019
MSc Thesis <i>T. Eimer, Follow up work published at ICML'21</i> Improved Meta-Learning for Algorithm Control through Self-Paced Learning	12.2018 – 09.2019
MSc Thesis <i>K. Hättig</i> Model-Based Population Based Training	12.2018 – 09.2019
MSc Thesis <i>O. Brunner, Joint supervision with D. Speck at GKI-Freiburg</i>	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	
<i>ECAI 2024 Tutorial, Santiago de Compostela, Spain</i>	10.2024
Jointly with Theresa Eimer	
Meta-Algorithmics & AutoML	
<i>Invited Lecture (part of CS5011), University of St. Andrews, Scotland (online)</i>	04.2023
Learning to Dynamically Optimise Algorithms	
<i>Seminar on Advances in Probabilistic Machine Learning, Aalto University Helsinki, Finland (online)</i>	11.2022
Dynamic Algorithm Configuration	
<i>ELLIS Meetup Freiburg, Freiburg, Germany</i>	03.2022
Advances of Dynamic Algorithm Configuration	
<i>Bosch Center for Artificial Intelligence, Renningen, Germany</i>	06.2021
Algorithm Configuration: Challenges, Methods and Perspectives	
<i>IJCAI 2020 Tutorial, Online</i>	01.2021
Jointly with Prof. Marius Lindauer	
Algorithm Configuration: Challenges, Methods and Perspectives	
<i>PPSN 2020 Tutorial, Online</i>	09.2020
Jointly with Prof. Marius Lindauer	
Challenges of Dynamic Algorithm Configuration	
<i>Bosch Center for Artificial Intelligence, Renningen, Germany</i>	03.2020
Dynamic Algorithm Configuration	
<i>Institut für Informationsverarbeitung (TNT), University of Hannover, Germany</i>	01.2020

Conference Presentations.....

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

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
DFG¹ 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
CZS² 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 <i>GECCO'22, Theory-inspired Parameter Control Benchmarks for Dynamic Algorithm Configuration</i> GECH Track	2022
Best Reviewers (Top 10%) <i>ICML'21</i>	2021
Black-Box Optimization Competiton@NeurIPS'20 <i>Part of the AutoML & IOHprofiler Team, 1st place on a meta-learning friendly search space</i> Leaderboard: https://bbchallenge.com/altleaderboard	1st place 2020
Black-Box Optimization Competiton@NeurIPS'20 <i>Part of the AutoML & IOHprofiler Team, Leaderboard: https://bbchallenge.com/leaderboard</i>	3rd place* 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 <i>2024, Co-Organiser</i> Jointly with Theresa Eimer, Raghu Rajan, Vu Nguyen and Aleksandra Faust
AutoML Conference - Online Experience Chair <i>2023 & 2024</i> Jointly with Gabi Kadlecová in 2024 and 2023 jointly with Hayeon Lee, Mohammed Abdelfattah & Richard Song
COSEAL Chair <i>since August 2022, Jointly with Alexander Tornede and Lennart Schäpermeier</i>
2nd AutoML Fall School <i>2022, Local Organiser</i>

¹Deutsche Forschungsgemeinschaft – German Research Council

²Carl 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

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

Program Committee Membership at Conferences

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

Program Committee Membership at Workshops

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

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