

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, 15, 18, 19, 22, 23]
- Automated Machine Learning and Reinforcement Learning [see, e.g., 9, 14, 20, 21, 29]
- (Generalizable) Deep Reinforcement Learning [see, e.g., 7, 5, 20, 27, 33]
- Learning to Learn [see, e.g., 16, 17, 41]

Work experience

Position held.....

Postdoctoral Researcher

Albert-Ludwigs-University Freiburg

Machine Learning Lab Subgroup Leader on Reinforcement Learning

Since 10.2022

Topic: Automated Reinforcement Learning

Parental Leave

06.05.2024 – 05.07.2024

Past positions.....

Doctoral Researcher

Albert-Ludwigs-University Freiburg

Machine Learning Lab

02.2018 - 10.2022

Topic: Dynamic Algorithm Configuration

Student Assistant

Albert-Ludwigs-University Freiburg

Machine Learning Lab

10.2015 – 09.2017

Assisting in the implementation of research projects

Student Assistant

Albert-Ludwigs-University Freiburg

Chair of Computer Architecture

04.2014 – 09.2014

Maintenance of the mobile robots for the Hardware-Labcourse

Education

PhD (Dr. rer. nat.)

Albert-Ludwigs-University Freiburg

Supervised by Prof. Frank Hutter and Prof. Marius Lindauer

02.2018 - 10.2022

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.)

04.2015 – 10.2017

Thesis: Per Instance Algorithm Configuration (Grade: 1.0)

Supervisor: Prof. Dr. Frank Hutter

Computer Science

Albert-Ludwigs-University Freiburg

Bachelor of Science (B.Sc.)

10.2011 – 03.2015

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

Supervisor: Prof. Dr. Wolfram Burgard

Collaboration

International

- Prof. Carola Doerr since 2020
(Sorbonne Université Paris, France)
1 competition win, 2 papers (1 award), 1 grant
- Asst. Prof. Jendrik Seipp 2021 – 2022
(Linköping University, Sweden)
1 workshop paper
- Dr. Aleksandra Faust 2021 – 2023
(Google DeepMind, United States of America)
1 journal paper, 1 ICML'2024 workshop
- Dr. Yingjie Miao 2021 – 2022
(Google DeepMind, United States of America)
1 journal paper
- Dr. Jack Parker-Holder 2021 – 2022
(Google DeepMind, United Kingdom)
1 journal paper
- Dr. Silvan Sievers 2021 – 2022
(University of Basel, Switzerland)
1 workshop paper
- Dr. David Speck since 2019
(University of Basel, Switzerland)
1 paper, 1 workshop paper
- Dr. Phong Le since 2024
(St. Andrews University, Scotland)
1 conference paper
- Asst. Prof. Martin S. Krejca since 2021
(Institut Polytechnique de Paris, France)
1 best paper award
- Dr. Nguyen Dang since 2021
(St. Andrews University, Scotland)
2 papers (1 best paper award)
- Dr. Nathan Lambert 2020 – 2021
(HuggingFace, United States of America)
1 paper
- Dr. Vu Nguyen since 2021
(Amazon Research, Australia)
2 journal papers, 1 ICML'2024 workshop
- Dr. Luis Pineda 2020 – 2021
(Meta AI Research, Canada)
1 paper
- Dr. Richard Song 2021 – 2022
(Google DeepMind, United States of America)
1 journal paper
- Dr. Hao Wang 2019 – 2020
(Leiden University, Netherlands)
1 competition win

National

- Prof. Frank Hutter since 2016
(University of Freiburg, Germany)
PhD Advisor 02.2018 – 10.2022
6 journal papers, 14 papers (1 best paper award, 1 runner up best paper award), 13 workshop papers
- Prof. Roberto Calandra 2020 – 2022
(TU Dresden, Germany)
1 journal paper, 1 paper
- Prof. Josif Grabocka since 2022
(University of Technology Nuremberg, Germany)
3 conference papers (1 runner up best paper award), 2 workshop papers
- Dr. Steven Adriaenssen since 2019
(University of Freiburg, Germany)
1 journal paper, 2 conference papers
- Dr. Noor Awad since 2019
(University of Freiburg, Germany)
2 journal paper, 1 paper, 1 competition win, 2 workshop papers, collaborated on 2 grant proposals
- Dr. Robert Mattmüller 2020 – 2021
(University of Freiburg, Germany)
1 paper, 1 workshop paper
- Prof. Marius Lindauer since 2016
(Leibniz University Hanover, Germany)
PhD Advisor 02.2018 – 10.2022
4 journal papers, 8 papers, 9 workshop papers
- Prof. Matthias Feurer 2019 – 2022
(LMU Munich, Germany)
1 journal, 1 competition win, 1 workshop paper
- Prof. Bodo Rosenhan 2020 – 2022
(Leibniz University Hanover, Germany)
1 journal paper, 1 workshop paper
- Dr. Thomas Elsken 2020 – 2021
(Bosch Center of Artificial Intelligence, Germany)
1 workshop paper
- Dr. Katharina Eggersperger 2017 – 2022
(University of Tübingen, Germany)
1 journal paper, 1 paper, 1 competition win, 1 workshop paper
- Prof. Florian Walter 2024 – 2025
(University of Technology Nuremberg, Germany)
1 conference paper

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] J. Hog, R. Rajan, **A. Biedenkapp**, N. Awad, F. Hutter, and V. Nguyen. "Meta-learning Population-based Methods for Reinforcement Learning". In: *Transactions on Machine Learning Research (TMLR)* (2025). ISSN: 2835-8856. URL: <https://openreview.net/forum?id=d9htascfP8>.
- [5] S. Prasanna, K. Farid, R. Rajan, and **A. Biedenkapp**. "Dreaming of Many Worlds: Learning Contextual World Models Aids Zero-Shot Generalization". In: *Reinforcement Learning Journal* 3 (2024), pp. 1317–1350. URL: <https://rlj.cs.umass.edu/2024/papers/Paper167.html>.
- [6] 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. DOI: <https://doi.org/10.1613/jair.1.14314>.
- [7] 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>.
- [8] 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>.
- [9] 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>.
- [10] 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.....

- [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)*. 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. Eggenberger, 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] 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>.
- [27] 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>.
- [28] 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.
- [29] 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.
- [30] 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.
- [31] 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.
- [32] **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.
- [33] 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.
- [34] 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.
- [35] 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.
- [36] 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**.
- [37] **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.
- [38] 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.
- [39] **A. Biedenkapp**, H. F. Bozkurt, F. Hutter, and M. Lindauer. "Towards White-Box Benchmarks for Algorithm Control". In: *IJCAI 2019 DSO Workshop*. Aug. 2019.
- [40] 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.

Preprints.....

- [41] G. Shala, **A. Biedenkapp**, and J. Grabocka. "Hierarchical Transformers are Efficient Meta-Reinforcement Learners". In: *arXiv:2402.06402* (2024).

- [42] 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

- [43] 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>.
- [44] **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/>.
- [45] **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/>.
- [46] 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/>.
- [47] 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>.
- [48] **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>.
- [49] **A. Biedenkapp**. “Dynamic Algorithm Configuration”. In: <https://www.automl.org/automl-blog> (Feb. 2020). URL: <https://www.automl.org/dynamic-algorithm-configuration>.
- [50] **A. Biedenkapp** and F. Hutter. “BOHB”. In: <https://www.automl.org/automl-blog> (Aug. 2018). URL: https://www.automl.org/blog_bohb.
- [51] **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

 Google Patents

- [52] **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).
- [53] 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).
- [54] 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.
- [55] 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>.

- [56] **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 <i>Graduate course</i> Lecturer	(Flipped Classroom) 04.2025 – 09.2025
Automated Reinforcement Learning <i>Seminar, Received a top grade (1.5) in the student teaching evaluation.</i> Responsible for setting up the seminar and grading.	10.2024 – 02.2025
Meta-Algorithmics & AutoML <i>Undergraduate lecture</i> Guest Lecture as part of the "Artificial Intelligence Practice" course at the St. Andrews University	04.2023
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	10.2022 – 02.2023
Automated Machine Learning <i>Lab course</i> Responsible for setting up the lab course. Jointly held with Prof. Frank Hutter and Rhea Sukthanker	10.2022 – 02.2023
Teaching Assistant.....	
Foundations of Deep Learning <i>Graduate course, Ranked third place in the student teaching evaluation for the faculty.[†]</i> Grading of exercises & creating the exam. Preparation to release course as MOOC.	(Flipped Classroom) 10.2023 – 03.2024
Automated Machine Learning <i>Graduate course, Ranked first place in the student teaching evaluation for the faculty.[†]</i> Creation and grading of exercises & final project.	(Flipped Classroom) 04.2023 – 09.2023
Automated Machine Learning <i>Graduate course, Ranked third place in the student teaching evaluation for the faculty.[†]</i> Creation and grading of exercises & final project.	(Flipped Classroom) 04.2022 – 09.2022
Automated Machine Learning <i>Graduate course</i> Creation of coding exercises. Involved in setting up the MOOC	Massive Open Online Course (MOOC)* Published 04.2021
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) 04.2021 – 09.2021
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) 04.2020 – 09.2020
Automated Machine Learning <i>Graduate course</i> Creation and grading of exercises & final project	04.2019 – 09.2019
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

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

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

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

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****Paris***AutoML (Oral, Runner Up Award for Best Paper)*

09.2024

HPO-RL-Bench: A Zero-Cost Benchmark for HPO in Reinforcement Learning

The Genetic and Evolutionary Computation Conference**Online***GECCO (Oral, Joint video presentation with all authors)*

07.2022

Theory-inspired Parameter Control Benchmarks for Dynamic Algorithm Configuration

International Conference on Machine Learning**Online***ICML (Poster)*

07.2021

TempoRL: Learning When to Act

International Conference on Parallel Problem Solving from Nature**Leiden***PPSN (Poster), Netherlands*

08.2020

Learning Step-SizeAdaptation in CMA-ES

European Conference on Artificial Intelligence**Santiago de Compostela***ECAI (Oral), Spain*

08.2020

Dynamic Algorithm Configuration: Foundation of a New Meta-Algorithmic Framework

Learning and Intelligent Optimization Conference**Kalamata***LION (Oral), Greece*

06.2018

CAVE: Configuration Assessment, Visualization and Evaluation

AAAI Conference on Artificial Intelligence**San Francisco***AAAI (Poster), California, USA*

02.2017

Efficient Parameter Importance Analysis via Ablation with Surrogates

Workshop Presentations.....**Bridging the Gap Between AI Planning and Reinforcement Learning****Online***PRL@ICAPS'22*

06.2022

Learning Domain-Independent Policies for Open List Selection

Inductive Biases, Invariances and Generalization in Reinforcement Learning**Online***BIG@ICML'20*

07.2020

Towards TempoRL: Learning When to Act

Data Science Meets Optimisation**Macau***DSO@IJCAI'19, Macau (SAR), China*

08.2019

Towards White-box Benchmarks for Algorithm Control

Funding Acquisition

Research grants, as proposal contributor.....

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

Scholarships, Honors and Awards

Runner Up for the Best Paper Award	
<i>AutoML'24, HPO-RL-Bench: A Zero-Cost Benchmark for HPO in Reinforcement Learning</i>	<i>2024</i>
<i>https://2024.automl.cc/?page_id=1406</i>	
Best Paper Award	
<i>GECCO'22, Theory-inspired Parameter Control Benchmarks for Dynamic Algorithm Configuration</i>	<i>2022</i>
<i>GECH Track – https://gecco-2022.sigev.org/Best-Paper-Awards#GECH_Track</i>	
Best Reviewers (Top 10%)	
<i>ICML'21</i>	<i>2021</i>
Black-Box Optimization Competiton@NeurIPS'20	1st place
<i>Part of the AutoML & IOHprofiler Team, 1st place on a meta-learning friendly search space</i>	<i>2020</i>
<i>Leaderboard: https://bbochallenge.com/altleaderboard</i>	
Black-Box Optimization Competiton@NeurIPS'20	3rd place*
<i>Part of the AutoML & IOHprofiler Team, Leaderboard: https://bbochallenge.com/leaderboard</i>	<i>2020</i>
<i>*Due to a bug the initial evaluation failed. After re-evaluation our team would have gotten the third place.</i>	

Professional Service

Academic Self-Administration.....

Thesis Advisory Committee Membership
<i>since June 2024, A. Hasan</i>
<i>University of Freiburg – CRC 1597 Small Data research project: C04</i>
Thesis Advisory Committee Membership
<i>since February 2024, B. Zhang</i>
<i>University of Freiburg – CRC 1597 Small Data research project: C04</i>
Thesis Advisory Committee Membership
<i>since January 2024, J. Hog</i>
<i>University of Freiburg – CRC 1597 Small Data research project: B01</i>
Member in appointment committee
<i>since June 2023</i>

Membership.....

AutoRL.org	Co-Founder
<i>since January 2024</i>	
AutoML.org Supergroup	Member
<i>since October 2017</i>	
COSEAL.net	Chair
<i>since August 2022</i>	
<i>Jointly with Alexander Tornede (until 2024), Theresa Eimer (since 2024) and Lennart Schäpermeier</i>	

[‡]Deutsche Forschungsgemeinschaft – German Research Council

^{††}Carl Zeiss Stiftung

AutoML.org Supergroup
since October 2017

Member

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

2022

Computational Intelligence

CI

2022

Journal of the Association for Computing Machinery

Journal of the ACM

2022, 2021

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**
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