

Gabriele Röger

Curriculum Vitae – July 2023

Personal details

Dr. Gabriele Michaela Röger

Occupation: senior research associate and lecturer at University of Basel, Switzerland

Work address: University of Basel
Department of Mathematics and Computer Science
Spiegelgasse 1, 4051 Basel, Switzerland

Phone: +41 61 207 0537

Email: gabriele.roeger@unibas.ch

Website: <https://ai.dmi.unibas.ch/people/roeger/>

Education

6/2014 **PhD (Dr. rer. nat.)**
Albert-Ludwigs-Universität, Freiburg, Germany,
summa cum laude (with distinction)

5/2006–11/2011 **Ph.D. student (computer science)**
Albert-Ludwigs-Universität, Freiburg, Germany

4/2006 **Diplom computer science**
Albert-Ludwigs-Universität, Freiburg, Germany
university degree equivalent to MSc

7/2000 **Abitur (secondary school diploma)**

Employment

since 9/2021 **lecturer and senior research associate**
University of Basel, Switzerland

2/2023–7/2023 acting head of AI research group during M. Helmert's sabbatical

8/2017– 8/2021 **lecturer and research associate (PostDoc)**
University of Basel, Switzerland

8/2018–1/2019 acting head of AI research group during M. Helmert's sabbatical

6/2019–12/2019 maternity leave

7/2014–7/2017 **research associate (PostDoc)**
University of Basel, Switzerland

3/2016–9/2016 maternity leave

12/2011–6/2014 **research associate**
University of Basel, Switzerland

3/2009–5/2009 **research visit**
Technion – Israel Institute of Technology, Haifa, Israel

- 10/2008–11/2011 **research assistant and teaching assistant**
Albert-Ludwigs-Universität Freiburg, Germany
- 5/2006–9/2008 **research assistant**
Albert-Ludwigs-Universität Freiburg, Germany

Awards and honors

- 6/2022 **ICAPS 2022 Best Student Paper Runner-Up Award** for the paper
“Cost Partitioning Heuristics for Stochastic Shortest Path Problems”,
ICAPS 2022, virtual
with Thorsten Klößner, Florian Pommerening and Thomas Keller
- 5/2020 **SoCS 2020 Best Paper Award** for the paper
“An Atom-Centric Perspective on Stubborn Sets”,
SoCS 2020, held virtually
with Malte Helmert, Jendrik Seipp, and Silvan Sievers;
best of 45 submissions
- 7/2019 **ICAPS 2019 Best Paper Award** for the paper
“Lagrangian Decomposition for Optimal Cost Partitioning”,
ICAPS 2019, Berkeley, CA, USA
with Florian Pommerening, Malte Helmert, Hadrien Cambazard,
Louis-Martin Rousseau, and Domenico Salvagnin;
best among 135 submissions to the main track
- 6/2018 **Winner Deterministic Sequential Satisficing Track**
for the planning system “Fast Downward Stonesoup 2018”,
9th International Planning Competition,
at ICAPS 2018, Delft, The Netherlands
with Jendrik Seipp
- 6/2018 **Winner Deterministic Sequential Cost-bounded Track**
for the planning system “Fast Downward Stonesoup 2018”,
9th International Planning Competition,
at ICAPS 2018, Delft, The Netherlands
with Jendrik Seipp
- 6/2017 **ICAPS 2017 Best Student Paper Award** for the paper
“Unsolvability Certificates for Classical Planning”,
ICAPS 2017, Pittsburgh, USA
with Salomé Eriksson and Malte Helmert
- 6/2016 **ICAPS Best Dissertation Award**
ICAPS 2016, London, UK
- 1/2015 **AAAI 2015 Outstanding Paper Award** for the paper
“From Non-Negative to General Operator Cost Partitioning”,
AAAI 2015, Austin, Texas, USA
with Florian Pommerening, Malte Helmert, and Jendrik Seipp;
best among 1991 submissions

- 6/2014 **ICAPS 2014 Outstanding Paper Award** for the paper
“LP-based Heuristics for Cost-optimal Planning”,
 ICAPS 2014, Portsmouth, New Hampshire, USA
 with Florian Pommerening, Malte Helmert and Blai Bonet;
 best among 164 submissions
- 7/2013 **Outstanding PC Member Award**,
 AAAI 2013, Bellevue, Washington, USA
- 6/2011 **Sequential Optimization Award**
 for the planning system *“Fast Downward Stone Soup”*,
 7th International Planning Competition,
 at ICAPS 2011, Freiburg, Germany
 with Malte Helmert, Erez Karpas and Jendrik Seipp
- 6/2011 **Sequential Satisficing Award**
 for the planning system *“LAMA 2011”*,
 7th International Planning Competition,
 at ICAPS 2011, Freiburg, Germany
 with Silvia Richter, Matthias Westphal and Malte Helmert
- 6/2011 **Sequential Satisficing Runner-Up Award**
 for the planning system *“Fast Downward Stone Soup”*,
 7th International Planning Competition,
 at ICAPS 2011, Freiburg, Germany
 with Malte Helmert, Erez Karpas, Silvia Richter and Jendrik Seipp
- 9/2008 **Temporal Satisficing Runner-Up Award**
 for the planning system *“Temporal Fast Downward”*,
 7th International Planning Competition,
 at ICAPS 2011, Freiburg, Germany
 with Patrick Eyerich and Robert Mattmüller
- 7/2008 **Outstanding Paper Award** for the paper
“How Good is Almost Perfect?”, AAAI 2008, Chicago, Illinois, USA
 with Malte Helmert; of 937 submissions two received an award
- 12/2006 **Lehrpreis des Landes Baden-Württemberg (state teaching award)**
 for the *“Sommercampus”* event
 as a co-organizer

Scientific publications

The list of my publications (h-index 16) is available online at <https://ai.dmi.unibas.ch/people/roeger/index.html>.

Acquired funding

- 01/2021–12/2023 *Bringing AI Planning to the European AI On-Demand Platform (AIPlan4EU)*.
 Share of budget at University of Basel: 185 723 EUR, 1 post-doc.
 European Union Horizon 2020 Programme.
 Co-PI, Consortium with 16 partners. Overall project budget 5 000 000 EUR.

Teaching and supervision

I had 90 hours didactic/pedagogic training for the didactic certificate of the German state of Baden-Württemberg plus 28 hours didactic training at the University of Basel.

Teaching experience: as lecturer

- **Algorithmen und Datenstrukturen** at University of Basel.
 - Spring 2018, 2019, 2020, 2021 and 2022 jointly with Marcel Lüthi
- **Algorithmen und Datenstrukturen I** in the GymInf programme (education of future high school computer science teachers) coordinated by Université de Fribourg.
 - Fall 2021 jointly with Marcel Lüthi
- **Discrete Mathematics in Computer Science** at University of Basel.
 - Fall 2020, 2021 and 2022 jointly with Malte Helmert
- **Theoretical Computer Science** at University of Basel.
 - since Spring 2018, yearly as sole lecturer
 - Spring 2014, 2015, and 2016 jointly with Malte Helmert
- **Planning and Optimization** at University of Basel.
 - Fall 2018 jointly with Thomas Keller
 - Fall 2016, 2017, 2020, 2021 and 2022 jointly with Malte Helmert
- **Foundations of Artificial Intelligence** at University of Basel.
 - Spring 2017 jointly with Malte Helmert

Teaching experience: seminars and projects

This list only includes seminars where I was also responsible for design and organization. Seminars where I only supervised students are omitted.

- **Seminar and Project “Graphenalgorithmen”** at University of Basel.
Fall 2018 (with Florian Pommerening)
- **Seminar and Project “Recreational Computer Science from Langton’s Ant to Turing’s Subway”** at University of Basel.
Fall 2017 (with Malte Helmert)
- **Seminar and Project on Search and Optimization (Constraint Processing)** at University of Basel. Fall 2014
- **Seminar and Project on the Design of an AI Practical Lesson** at University of Freiburg. Winter 2010/2011

Teaching experience: supervised Master’s theses

- Céline Bastady, **Aircraft Maintenance Planning using Constraint Programming.**
University of Basel, August 2022
- Anonymous, **Unsolvability Proofs with Non-Linear Merge-and-Shrink Heuristics.**
University of Basel, March 2019 (with Salomé Eriksson)
- Marvin Buff, **NBS Applied to Planning.**
University of Basel, February 2019 (with Cedric Geissmann)
- Simon Wallny, **Using Value Abstraction for Optimal Multi-Agent Pathfinding with Increasing Cost Tree Search.**
University of Basel, April 2018
- Lukas Beck, **A Case Study on the Search Topology of Greedy Best-First Search.**
University of Basel, May 2014

- Salomé Simon, **A General LTL Framework for Describing Control Knowledge in Classical Planning.**
University of Basel, March 2014
- Lorenzo Luisoni, **Efficient Landmark Generation using Relaxed Planning.**
University of Basel, October 2013
- Gabriel Duss, **Computation of h^+ with Factored Planning.**
University of Basel, July 2013
- Patrick Mächler, **Pebbles in Motion — Polynomial Algorithms for Multi-Agent Path Planning Problems.**
University of Basel, August 2012

Teaching experience: supervised Bachelor's theses

- Lucas Galery Käser, **Finding Small Counterexamples of Expected Planner Behavior with Hill-Climbing.**
University of Basel, October 2020
- Gian-Andrea Wetten, **Combining Novelty-Guided and Bounded Suboptimal Search.**
University of Basel, July 2017
- Samuel Hugger, **Landmark-based Meta Best-First Search.**
University of Basel, June 2017
- Raphael Imahorn, **P^m -Kompilierung von Planungsaufgaben im Fast-Downward-Planungssystem als alternative Berechnung der h^m -Heuristik.**
University of Basel, January 2016
- Patrik Dürrenberger, **Solving the Traveling Tournament Problem with Heuristic Search.**
University of Basel, February 2015
- Manuela Lütolf, **A Learning AI for the game Risk using the TD(λ)-Algorithm.**
University of Basel, June 2013
- Lukas Beck, **Optimal Policies for the Canadian Traveler's Problem.**
University of Basel, October 2012
- Salomé Simon, **CSP- and SAT-based Inference Techniques Applied to Gnomine.**
University of Basel, July 2012
- Simon Wang, **Construction of Pattern Database Heuristics Using Cost-Partitioning.**
University of Basel, June 2012
- Jonas Sternisko, **Influence of the Finite Domain Representation on the Performance of Planning Systems.**
University of Freiburg, September 2009

Teaching experience: supervised diploma theses

- Hartmut Hanke, **Procedural Domain Control Knowledge for Temporal Planning.**
University of Freiburg, October 2010
- Matthias Exner, **Basic Action Theories with the same Expressive Power as ADL with Arithmetic Functions.**
University of Freiburg, June 2007

Teaching experience: supervised semester theses and projects

- Hagen Hübner, **External Search.**
University of Basel, June 2015

- Salomé Simon, **Vergleich der Qualität des Post-Hoc-Optimierungsheuristik mit der der Weighted Vertex-Cover-Heuristik auf dem 15-Puzzle.**
University of Basel, July 2013
- Yusra Alkhazraji, **Mutual Exclusion Invariant Synthesis for Planning Tasks.**
University of Freiburg, October 2011
- Patrick Eyerich, **Zu ADL gleichausdrucksstarke Basic-Action-Theorien im Situationskalkül.**
University of Freiburg, October 2010

Academic service

University of Basel

- Equal opportunities commissioner of the Department of Mathematics and Computer Science (co-commissioner Christine Zehrt) (Feb 2021 – April 2022)

Societies and scientific organizations

- **International Conference on Automated Planning and Scheduling:**
ICAPS president (2022–2024),
ICAPS president-elect (2020–2022),
ICAPS secretary (2018–2020),
Member of the ICAPS executive council (2018–2024)
- **Symposium on Combinatorial Search:**
Member of the SoCS council (2013–2017)

Conference and summer school organization

- **AAAI Conference on Artificial Intelligence:**
Associate program chair for AAAI 2021 (co-chair Yan Liu)
- **International Conference on Automated Planning and Scheduling:**
Program chair for ICAPS 2018 (co-chair Sven Koenig),
Workshop chair for ICAPS 2017 (co-chair Daniel Bryce) and 2020 (co-chair Christian Muise),
Remote participation chair for ICAPS 2014 (co-chair Sara Bernardini),
Local arrangement for ICAPS 2011
- **Dagstuhl Workshop on Planning and Operations Research:**
Organizer (co-organizers J. Christopher Beck, Daniele Maggazzini, Willem-Jan Van Hoeve)
- **ICAPS 2016 Summer School on Automated Planning and Scheduling:**
Co-chair (with Héctor Geffner and Federico Pecora)
- **Symposium on Combinatorial Search:**
Conference chair for SoCS 2013 (co-chair Malte Helmert)
- **ACAI Summer School on Automated Planning and Scheduling:**
Organizer of ACAI 2011 (with Michael Brenner, Malte Helmert, Bernhard Nebel)

Membership in programme committees of scientific conferences

- **AAAI Conference on Artificial Intelligence:**
PC member for AAAI 2011–2018, SPC member for AAAI 2020, 2023, area chair for AAAI 2019 and 2022
- **European Conference on Artificial Intelligence:**
PC member for ECAI 2012 and 2014, SPC member for ECAI 2020

- **International Conference on Automated Planning and Scheduling:**
PC member for ICAPS 2010–2017, SPC member for ICAPS 2019–2023
- **International Joint Conference on Artificial Intelligence:**
PC member for IJCAI 2011, 2013, 2018, 2023, SPC member for IJCAI 2015, 2017, 2019, 2020, 2022
- **Symposium on Combinatorial Search:**
PC member for SoCS 2012, 2013, 2015, 2017–2023

Reviewing for scientific journals

- **Journal of Artificial Intelligence Research:**
Editorial board member since 2016; already reviewed for JAIR 2012–2015
- **Artificial Intelligence:**
Reviewed for AIJ in 2010, 2014, 2017 and 2022
- **Autonomous Robots:**
Reviewed for AURO in 2020

Tutorials at scientific conferences and summer-schools

- Master class on **Abstraction and Cost-Partitioning in Automated Planning**
at the 14th Annual Symposium on Combinatorial Search (SoCS 2021), held virtually (with Silvan Sievers)
- Tutorial/lecture on **Classical Planning Heuristics**
at the International Summer School on Planning and Scheduling held in conjunction with ICAPS 2018, Delft, The Netherlands.
- Tutorial on **LP-based Heuristics for Cost-optimal Classical Planning**
held at ICAPS 2015, Jerusalem, Israel, 2015 (with Malte Helmert and Florian Pommerening)
- Tutorial on **A Beginner’s Introduction to Heuristic Search Planning**
held at AAAI 2015, Austin, Texas, USA, 2015 (with Malte Helmert)
- Tutorial on **Engineering a Heuristic Search Planner**
held at ICAPS 2013, Rome, Italy, 2013 (with Malte Helmert)

Outreach activities and non-technical presentations

- Presentation **Was ist Künstliche Intelligenz?**
at the lecture series “Herausforderung Digitalisierung. Perspektiven von Universität und Gesellschaft” at the University of Basel, Basel, 2020
- Debate article **Braucht es eine gesetzliche Regulierung für den energieintensiven Einsatz von KI?** for UNI NOVA – Research Magazine of the University of Basel, 2020
- Presentation **Die Auswirkungen von KI auf den Arbeitsmarkt**
at the festival “science + fiction – MACHINA SAPIENS”, Basel, 2017
- Presentation **Künstliche Intelligenz und die Arbeit der Zukunft**
at the FHNW School of Applied Psychology, Olten, 2015