

Till Hofmann

Curriculum Vitae

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Germany

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Education

- 09/23 **PhD**, *Computer Science*, RWTH Aachen University
Supervisor: Prof. Gerhard Lakemeyer, PhD
Grade: *summa cum laude*
Thesis: *Towards Bridging the Gap between High-Level Reasoning and Execution on Robots*
- 04/15–03/17 **Master of Science**, *Computer Science*, RWTH Aachen University, minor: Physics.
Grade: 1.2 (equivalent GPA: 3.8).
Thesis: *Generating Macro Actions from a Plan Database for Planning on Mobile Robots*
- 10/11–03/15 **Bachelor of Science**, *Computer Science*, RWTH Aachen University, minor: Physics
Grade: 1.6. (equivalent GPA: 3.4).
Thesis: *Continual Planning and Execution Monitoring in the Agent Language Golog on a Mobile Robot*
- 09/08–06/10 **Abitur**, *Kepler-Gymnasium*, Tübingen, majors: Computer Science, Physics
Grade: 1.0 (equivalent GPA: 4.0)

Research Experience

- since 09/26 **Postdoctoral Researcher**, *University of Oxford*, Prof. De Giacomo
▷ First-order synthesis with procedural GOLOG specifications
▷ Framed Autonomy in industrial robotics as part of the EU project euroFMX
- 04/23–08/26 **Postdoctoral Researcher**, *Chair for Machine Learning and Reasoning, RWTH*, Prof. Geffner
ERC project on *Representation Learning for Acting and Planning*
- 01/25–03/25 **Visiting Researcher**, *University of Toronto*, Prof. McIlraith
Developed novel methods for Generalized Planning
- 04/17–03/23 **Doctoral Researcher**, *Knowledge-Based Systems Group, RWTH*, Prof. Lakemeyer
▷ DFG project on *Constraint-based Transformations of Abstract Task Plans into Executable Actions for Robots*
▷ Associate of the DFG RTG *Uncertainty and Randomness in Algorithms, Verification, and Logic (UnRAVeL)*
- 07/20–10/20 **Robotics Research Intern**, *Google X, Munich*, <https://intrinsic.ai>
Developed task planning and high-level behavior control methods for industrial robots
- 04/17–06/20 **Team Lead**, *Carologistics, RoboCup Logistics League*
▷ Coordinated a team of 10 students and researchers
▷ Successfully participated in three national and three international RoboCup competitions (2x world champion)
- 10/18–01/19 **Visiting Researcher**, *Artificial Intelligence and its Applications Institute, University of Edinburgh*, Dr. Belle
Developed an abstraction framework for reasoning with probabilistic belief (AAMAS23)
- 10/15–03/16 **Autonomous Driving Research Intern**, *Mercedes-Benz Research & Development North America, Sunnyvale, CA, USA*, Team Vehicle Intelligence
Improved trajectory planning for self-driving cars
- 01/13–03/17 **Student Research Assistant**, *Knowledge-Based Systems Group, RWTH*

Scholarships & Awards

- 01/25–03/25 **Kármán Fellowship**, *RWTH Exploratory Research Space (ERS)*
Fellowship supporting my research visit at the University of Toronto

- 11/24 **Friedrich Wilhelm Prize, RWTH**
Awarded for outstanding achievements in my PhD thesis
- 09/24 **Borcher's Medal, RWTH**
Recognized for completing my doctorate with *summa cum laude* honors
- 01/23 **ICT Young Researcher Award, Profile Area ICT, RWTH, 1st prize**
Awarded for outstanding research in Information and Communication Technologies
- 12/21 **Best Tool Paper Award, "TACoS: A Tool for MTL Controller Synthesis", 19th International Conference on Software Engineering and Formal Methods**
- 07/19 **World Champion, RoboCup Logistics League, Team Carologistics**
- 10/18–01/19 **Research Scholarship, German Academic Exchange Service (DAAD)**
Scholarship supporting my research visit at the University of Edinburgh
- 09/17 **Springorum Commemorative Coin, RWTH Aachen University**
Awarded for being in the top 10% of computer science graduates
- 07/17 **World Champion, RoboCup Logistics League, Team Carologistics**
- 10/16–03/17 **Dean's List, RWTH Aachen University**
- 10/16–03/17 **Deutschlandstipendium, Miltenyi Biotec**
- 10/15–09/16 **Deutschlandstipendium, IBM Germany**

Community Leadership & Service

- Journal Reviewer Journal of Artificial Intelligence Research (JAIR) (2025), Information and Computation (2025), AI Magazine (2025), Autonomous Agents and Multi-Agent Systems (JAAMAS) (2024), Artificial Intelligence Journal (AIJ) (2023), Robotics and Autonomous Systems (RAS) (2022)
- PC Member WADT'26, KR'26, ICAPS'26, AAAI'26, AAAI-AIA'26, KR'25, ECAI'25, RoboCup'25, ICAPS'25, AAAI'25, KR'24, IJCAI'24, ICAPS'24, ECAI'24, AAAI'24, KR'23, IJCAI'23, ICAPS'23, AAAI'23, IJCAI'22, AAAI'22, IROS'21, IJCAI'21, AAAI'21
- 2026 **Co-Organizer, ICAPS Workshop on Generalization in Planning (GenPlan)**
- 2024–2026 **Executive, RoboCup Logistics League**
 - ▷ Serving as lead organizer of the competition
 - ▷ Founding executive of the new RoboCup Smart Manufacturing League, starting in 2026
- 2024 **Co-Organizer, Workshop on Symbolic XAI**
- 2018–2020 **Technical Committee Member, RoboCup Logistics League**

Invitation-Only Research Seminars

- 2026 **User-Aligned Assessment of AI Systems, Schloss Dagstuhl – Leibniz Center for Informatics**
- 2024 **Trustworthiness and Responsibility in AI – Causality, Learning, and Verification, Schloss Dagstuhl – Leibniz Center for Informatics**
- 2022 **Cognitive Robotics, Schloss Dagstuhl – Leibniz Center for Informatics**

Teaching Experience

- Summer 2025 **Lecturer (independent teaching), Uncertainty in Robotics, Master's course**
Teaching fundamentals of probabilistic robotics:
Bayes filter, Particle filter, Kalman filter, localization, mapping, SLAM, motion planning
student evaluation: course: 1.5, lecturer: 1.3 (German grading system)
- Winter 2024 **Co-Instructor, Robot Task and Motion Planning, Lab course**
- Summer 2024 **Instructor, Causal Inference, Proseminar**

Summer 2024	Teaching Assistant , <i>Actions and Planning in AI: Learning, Models, and Algorithms</i> , Master's course
Winter 2023	Teaching Assistant , <i>Social and Technological Change</i> , Master's course
Summer 2023	Teaching Assistant , <i>Actions and Planning in AI: Learning, Models, and Algorithms</i> , Master's course
Summer 2021	Teaching Assistant , <i>The Logic of Knowledge Bases</i> , Master's course
Winter 2020	Teaching Assistant , <i>Centralized Goal Reasoning for Logistics Robots</i> , Lab course
Summer 2020	Teaching Assistant , <i>Uncertainty in Robotics</i> , Master's course
Winter 2019	Teaching Assistant , <i>High-Level Agent Programming for Logistics Robots</i> , Lab course
Summer 2019	Lecturer , <i>Robotics for Future Industrial Applications</i> , Summer school
Summer 2018	Lecturer , <i>Robotics for Future Industrial Applications</i> , Summer school
Summer 2018	Teaching Assistant , <i>Reasoning, Planning, and Scheduling with Uncertainty</i> , Seminar
Winter 2017	Co-Instructor , <i>Robust Planning and Execution for Logistics Robots</i> , Lab course
Summer 2017	Lecturer , <i>Robotics for Future Industrial Applications</i> , Summer school
Summer 2017	Teaching Assistant , <i>Selected Topics on Planning and Plan Execution for Robotics Systems</i> , Seminar

Invited Talks

Hofmann, Till (2022). "Machine Learning – Eine Standortbestimmung". Invited Talk. DGN-Kongress (Deutsche Gesellschaft für Neurologie).

Peer-Reviewed Journal Publications

Hofmann, Till and Stefan Schupp (2023). "Controlling Timed Automata against MTL Specifications with TACoS". In: *Science of Computer Programming* 225, p. 102898. DOI: 10.1016/j.scico.2022.102898.

Peer-Reviewed Conference Publications

Chen, Dillon Z., **Till Hofmann**, Toryn Q. Klassen, and Sheila A. McIlraith (2026b). "Satisficing and Optimal Generalised Planning via Goal Regression". In: *Proceedings of the 40th AAAI Conference on Artificial Intelligence (AAAI)*. DOI: 10.1609/aaai.v40i43.40938.

Hofmann, Till, Stefan Schupp, and Gerhard Lakemeyer (2026). "Decidable Reasoning about Time in Finite-Domain Situation Calculus Theories". In: *Proceedings of the 33rd International Symposium on Temporal Representation and Reasoning (TIME)*.

Ma, Wenbo, Daniel Swoboda, Matteo Tschesche, and **Till Hofmann** (2026). "WorkBenchMark: A LEGO-based Assembly Benchmark with an Assembly-by-Disassembly Baseline for the Smart Manufacturing League". In: *RoboCup 2026: Robot World Cup XXIX*. URL: <https://workbenchmark.github.io/>. to appear.

Dissanayaka, Supun, Alexander Ferrein, **Till Hofmann**, Kosuke Nakajima, Mario Sanz-Lopez, Jesus Savage, Daniel Swoboda, Matteo Tschesche, Wataru Uemura, Tarik Viehmann, and Shohei Yasuda (2025). "From Production Logistics to Smart Manufacturing: The Vision for a New RoboCup Industrial League". In: *RoboCup 2025: Robot World Cup XXVIII*. DOI: 10.48550/arXiv.2507.11402. to appear.

Hofmann, Till and Jens Claßen (2025). "LTLf Synthesis on First-Order Agent Programs in Nondeterministic Environments". In: *Proceedings of the 39th AAAI Conference on Artificial Intelligence (AAAI)*, pp. 14976–14986. DOI: 10.1609/aaai.v39i14.33642.

- Tschesche, Matteo, **Till Hofmann**, Alexander Ferrein, and Gerhard Lakemeyer (2025). “Using Off-the-Shelf Deep Neural Networks for Position-Based Visual Servoing”. In: *RoboCup 2024: Robot World Cup XXVII*, pp. 32–43. DOI: 10.1007/978-3-031-85859-8_3.
- Hofmann, Till** and Hector Geffner (2024). “Learning Generalized Policies for Fully Observable Non-Deterministic Planning Domains”. In: *Proceedings of the 33rd International Joint Conference on Artificial Intelligence (IJCAI)*, pp. 6733–6742. DOI: 10.24963/ijcai.2024/744.
- Hofmann, Till** and Vaishak Belle (2023). “Abstracting Noisy Robot Programs”. In: *Proceedings of the 22nd International Conference on Autonomous Agents and Multiagent Systems (AAMAS)*. arXiv: 2204.03536.
- Viehmann, Tarik, Nicolas Limpert, **Till Hofmann**, Mike Henning, Alexander Ferrein, and Gerhard Lakemeyer (2023). “Winning the RoboCup Logistics League with Visual Servoing and Centralized Goal Reasoning”. In: *RoboCup 2022: Robot World Cup XXV*, pp. 300–312. DOI: 10.1007/978-3-031-28469-4_25.
- Habering, Daniel, **Till Hofmann**, and Gerhard Lakemeyer (2021). “Using Platform Models for a Guided Explanatory Diagnosis Generation for Mobile Robots”. In: *Proceedings of the 30th International Joint Conference on Artificial Intelligence (IJCAI)*, pp. 1908–1914. DOI: 10.24963/ijcai.2021/263.
- Hofmann, Till** and Stefan Schupp (2021). “TACoS: A Tool for MTL Controller Synthesis”. In: *Proceedings of the 19th International Conference on Software Engineering and Formal Methods (SEFM)*, pp. 372–379. DOI: 10.1007/978-3-030-92124-8_21.
- Hofmann, Till**, Tarik Viehmann, Mostafa Gomaa, Daniel Habering, Tim Niemueller, and Gerhard Lakemeyer (2021). “Multi-Agent Goal Reasoning with the CLIPS Executive in the RoboCup Logistics League”. In: *Proceedings of the 13th International Conference on Agents and Artificial Intelligence (ICAART)*, pp. 80–91. DOI: 10.5220/0010252600800091.
- Mataré, Victor, Tarik Viehmann, **Till Hofmann**, Gerhard Lakemeyer, Alexander Ferrein, and Stefan Schiffer (2021). “Portable High-Level Agent Programming with Golog++”. In: *Proceedings of the 13th International Conference on Agents and Artificial Intelligence (ICAART)*, pp. 218–227. DOI: 10.5220/0010253902180227.
- Viehmann, Tarik, **Till Hofmann**, and Gerhard Lakemeyer (2021). “Transforming Robotic Plans with Timed Automata to Solve Temporal Platform Constraints”. In: *Proceedings of the 30th International Joint Conference on Artificial Intelligence (IJCAI)*, pp. 2083–2089. DOI: 10.24963/ijcai.2021/287.
- Hofmann, Till**, Tim Niemueller, and Gerhard Lakemeyer (2020). “Macro Operator Synthesis for ADL Domains”. In: *Proceedings of the 24th European Conference on Artificial Intelligence (ECAI)*. DOI: 10.3233/FAIA200164.
- Hofmann, Till**, Nicolas Limpert, Victor Mataré, Alexander Ferrein, and Gerhard Lakemeyer (2019). “Winning the RoboCup Logistics League with Fast Navigation, Precise Manipulation, and Robust Goal Reasoning”. In: *RoboCup 2019: Robot World Cup XXIII*, pp. 504–516. DOI: 10.1007/978-3-030-35699-6_41.
- Niemueller, Tim, **Till Hofmann**, and Gerhard Lakemeyer (2019). “Goal Reasoning in the CLIPS Executive for Integrated Planning and Execution”. In: *Proceedings of the 29th International Conference on Automated Planning and Scheduling (ICAPS)*, pp. 754–763. DOI: 10.1609/icaps.v29i1.3544.
- Hofmann, Till**, Victor Mataré, Tobias Neumann, Sebastian Schönitz, Christoph Henke, Nicolas Limpert, Tim Niemueller, Alexander Ferrein, Sabina Jeschke, and Gerhard Lakemeyer (2018). “Enhancing Software and Hardware Reliability for a Successful Participation in the RoboCup Logistics League 2017”. In: *RoboCup 2017: Robot World Cup XXI*, pp. 486–497. DOI: 10.1007/978-3-030-00308-1_40.
- Hofmann, Till**, Tim Niemueller, and Gerhard Lakemeyer (2017). “Initial Results on Generating Macro Actions from a Plan Database for Planning on Autonomous Mobile Robots”. In: *Proceedings of the 27th International Conference on Automated Planning and Scheduling (ICAPS)*, pp. 498–503. DOI: 10.1609/icaps.v27i1.13868.
- Hofmann, Till**, Tim Niemueller, Jens Claßen, and Gerhard Lakemeyer (2016). “Continual Planning in Golog”. In: *Proceedings of the 30th Conference on Artificial Intelligence (AAAI)*, pp. 3346–3353. DOI: 10.1609/aaai.v30i1.10414.

- Chen, Dillon Z., **Till Hofmann**, Toryn Q. Klassen, and Sheila A. McIlraith (2026a). “Learning Bilevel Policies over Symbolic World Models for Long-Horizon Planning”. In: *ICAPS Workshop on Generalized Planning (GenPlan)*. arXiv: 2605.15975. to appear.
- Hofmann, Till**, Dillon Z. Chen, Toryn Q. Klassen, and Sheila A. McIlraith (2026). “Abstraction via Skolemization for Generalized Planning (and Beyond)”. In: *Proceedings of the KR Workshop on Theory and Methods for Abstraction (THEMA)*. to appear.
- Kalra, Samridhi, **Till Hofmann**, and Hector Geffner (2026). “Learning General Policies for Partially Observable Deterministic Planning”. In: *ICAPS Workshop on Generalized Planning (GenPlan)*. to appear.
- Chen, Dillon Z., **Till Hofmann**, Toryn Q. Klassen, and Sheila A. McIlraith (2025). “Moose: Satisficing and Optimal Generalised Planning via Goal Regression”. In: *Proceedings of the First International Workshop on Trends in Knowledge Representation and Reasoning (TKR)*, pp. 46–68. DOI: 10.5281/zenodo.15799038.
- Hofmann, Till** and Jens Claßen (2024). “Strategy Synthesis for First-Order Agent Programs over Finite Traces”. In: *Proceedings of the 35th Nordic Workshop on Programming Theory (NWPT)*.
- Hofmann, Till** and Vaishak Belle (2022). “Using Abstraction for Interpretable Robot Programs in Stochastic Domains”. In: *KR Workshop on Explainable Logic-Based Knowledge Representation (XLoKR)*. DOI: 10.48550/arXiv.2207.12763.
- Swoboda, Daniel, **Till Hofmann**, Tarik Viehmann, and Gerhard Lakemeyer (2022). “Towards Using Promises for Multi-Agent Cooperation in Goal Reasoning”. In: *ICAPS Workshop on Planning and Robotics (PlanRob)*. DOI: 10.48550/arXiv.2206.09864.
- Mataré, Victor, Stefan Schiffer, Alexander Ferrein, Tarik Viehmann, **Till Hofmann**, and Gerhard Lakemeyer (2020). “Constraint-Based Plan Transformation in a Safe and Usable GOLOG Language”. In: *IROS Workshop on Bringing Constraint-Based Robot Programming to Real-World Applications (CobaRoP)*. URL: https://iros2020-workshop-cobarop.gitlab.io/abstracts/3463_CobaRoP_EA_Matare.pdf.
- Hofmann, Till** and Gerhard Lakemeyer (2018). “A Logic for Specifying Metric Temporal Constraints for Golog Programs”. In: *Proceedings of the 11th Cognitive Robotics Workshop 2018 (CogRob)*, pp. 36–46.
- Hofmann, Till**, Victor Mataré, Stefan Schiffer, Alexander Ferrein, and Gerhard Lakemeyer (2018). “Constraint-Based Online Transformation of Abstract Plans into Executable Robot Actions”. In: *AAAI Spring Symposium: Integrating Representation, Reasoning, Learning, and Execution for Goal Directed Autonomy (SIRLE)*.
- Niemueller, Tim, **Till Hofmann**, and Gerhard Lakemeyer (2018). “CLIPS-based Execution for PDDL Planners”. In: *ICAPS Workshop on Integrated Planning, Acting, and Execution (IntEx)*. URL: <https://kbsg.rwth-aachen.de/~hofmann/papers/clips-exec-pddl.pdf>.

Poster Presentations

- Hofmann, Till**, Stefan Schupp, and Gerhard Lakemeyer (2022). “Controlling Golog Programs against MTL Constraints”. Poster. Dagstuhl Seminar on Cognitive Robotics.
- Hofmann, Till** and Gerhard Lakemeyer (2020). “Controller Synthesis for Golog Programs over Finite Domains with Metric Temporal Constraints”. Poster. 17th International Conference on Principles of Knowledge Representation and Reasoning. arXiv: 2102.09837.

Thesis Supervision

- Alhabboub, Hani Alassiri (June 2026). “Semantic Space Abstractions for Partially Observable Deterministic Task and Motion Planning”. Primary advisor. Master’s Thesis.
- Huang, Chanjuan (July 2026). “Generalized Planning with Lifted Temporal Goals”. Primary advisor. Master’s Thesis.
- Kalra, Samridhi (Mar. 2026). “Learning General Policies for Partially Observable Deterministic (POD) Planning”. Primary advisor. Master’s Thesis.
- König, Marleen (Nov. 2025). “Learning General Policies for Qualitative Numeric Planning Problems”. Primary advisor. Bachelor’s thesis.
- Liu, Xinyu (June 2025). “Symmetry Reduction for MTL Controller Synthesis”. Secondary advisor. Master’s Thesis.
- Maheshwari, Nirmal (June 2025). “Learning Symbolic State Descriptions from Images Using Scene Graph Generation”. Primary advisor. Master’s Thesis.

Lu, Cheng-Yo (Oct. 2024). "Synthesizing MTL Controllers with Zones". Secondary advisor. Bachelor's thesis.

Swoboda, Daniel (Mar. 2024). "Jointly Learning Skill Execution and Domain Grounding for Robot Task and Motion Planning". Primary advisor. Master's Thesis.

Ginter, Sonja (Apr. 2023). "Using Reinforcement Learning as Goal Selector in Goal Reasoning". Secondary advisor. Master's Thesis.

Meer, Anna-Maria (July 2022). "An Approach to Instance Segmentation and Pose Estimation for Automated Dismantling of Lithium-Ion Batteries for High-Quality Recycling". Secondary advisor. Master's Thesis.

Tschesche, Matteo (May 2022). "Whole-Body Manipulation on Mobile Robots Using Parallel Position-Based Visual Servoing". Primary advisor. Master's Thesis.

Doychev, Ivaylo (Oct. 2021). "Goal Reasoning with the CLIPS Executive in ROS2". Secondary advisor. Bachelor's thesis.

Gomaa, Mostafa (Aug. 2020). "Centralized Goal Reasoning and Scheduling Using Mixed Integer Programming for Logistics Robots". Primary advisor. Master's Thesis.

Swoboda, Daniel (Sept. 2020). "Sharing Promises and Requests in Multi-Agent Goal Reasoning for Logistics Robots". Primary advisor. Bachelor's thesis.

Habering, Daniel (Aug. 2019). "Using Platform Models for a Guided Explanatory Diagnosis Generation for Mobile Robots". Primary advisor. Master's Thesis.

Viehmnn, Tarik (Dec. 2019). "Transforming Robotic Plans with Timed Automata to Solve Temporal Platform Constraints". Primary advisor. Master's Thesis.