Benjamin Alt

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RELEVANT PROFESSIONAL EXPERIENCE

AICOR Institute for Artificial Intelligence, University of Bremen
📍 Bremen, Germany
Technical Director
Apr 2025 - today

- Develop an ecosystem for open-source cognitive robotics
- Establish a deep and broad network of research and industry partners
- Acquire funding for research and technology transfer
- Coordinate technology transfer activities

ArtiMinds Robotics
📍 Karlsruhe, Germany
Senior Team Lead Research
Oct 2024 - Mar 2025

- Led a team of 7 full-time and student researchers
- Coordinated AI technology transfer in customer projects and commercial product development
- Established and expanding long-term research partnerships with >20 academic institutions and >15 industry partners
- Led 8 publicly funded research projects on cognitive robotics with >2M € of grant volume
- Acquired >800k € of grant volume for 2 publicly funded research projects on advanced industrial robotics

Senior Research Scientist
Jan 2023 - Sep 2024

- Researched and published on scalable, interpretable artificial intelligence for industrial robots (8 conference papers)
- Acquired and realized 5 publicly funded research projects in excess of 1.4M € of grant volume
- Conducted in-house consulting on AI methods, applications and technology transfer
- Mentored and supervised 14 graduate and undergraduate students

Research Scientist
Oct 2019 - Dec 2022

- Researched and published on semi-symbolic robot program inference with deep neural networks (5 conference papers, 2 book chapters)
- Implemented and patented a commercial AI solution for the data-driven optimization of industrial production processes
- Acquired and realized 6 publicly funded research projects in excess of 1.5M € of grant volume
- Mentored and supervised 16 graduate and undergraduate students

EDUCATION

University of Bremen
📍 Bremen, Germany
Ph.D. Computer Science   *cum laude*
2020 - 2025

- Dissertation: *Neurosymbolic Robot Programming - A Framework for AI-Enabled Programming of Robot Manipulation Tasks* (% PDF)
- Advisor: Prof. Michael Beetz, AICOR Institute for Artificial Intelligence

Karlsruhe Institute of Technology
📍 Karlsruhe, Germany
M.Sc. Computer Science   *with distinction*
2017 – 2019

- Thesis: *Automatic Parameterization of Robot Programs via Learning of Neural Program Representations*
- Areas of Specialization: Robotics and Automation; Anthropomatics and Cognitive Systems
- Merit scholarship of the German Acad. Scholarship Foundation (Studienstiftung des deutschen Volkes)

B.Sc. Computer Science
2015 – 2017

- Thesis: *Machine Learning for Pose Optimization: An Integrated Framework for the Development and Monitoring of Adaptive Robot Programs*

Institut d'Études Politiques de Paris (SciencesPo)
📍 Reims, France
B.A. Political Science   *summa cum laude*
2012 – 2015

Reims, France
- Areas of Specialization: Law, History, Economics
- 2014-2015 at Princeton University with a focus on Mathematics & Computer Science

SELECTED PUBLICATIONS

Conference Papers

- B. Alt, C. Kienle, D. Katic, R. Jäkel, and M. Beetz, "Shadow Program Inversion with Differentiable Planning: A Framework for Unified Robot Program Parameter and Trajectory Optimization", in *2025 IEEE International Conference on Robotics and Automation (ICRA)*, IEEE, 2025. DOI: `10.48550/arXiv.2409.08678` arXiv: `2409.08678 [cs]`.

- B. Alt et al., "Domain-Specific Fine-Tuning of Large Language Models for Interactive Robot Programming", in *European Robotics Forum 2024*, C. Secchi and L. Marconi, Eds., vol. 32, Springer Nature Switzerland, 2024, pp. 274–279. DOI: `10.1007/978-3-031-76424-0_49` arXiv: `2312.13905 [cs]`.

- B. Alt et al., "RoboGrind: Intuitive and Interactive Surface Treatment with Industrial Robots", in *2024 IEEE International Conference on Robotics and Automation (ICRA)*, IEEE, 2024, pp. 1–8. DOI: `10.1109/ICRA57147.2024.10611143` arXiv: `2402.16542 [cs]`.

- B. Alt, F. K. Kenfack, A. Haidu, D. Katic, R. Jäkel, and M. Beetz, "Knowledge-Driven Robot Program Synthesis from Human VR Demonstrations", in *Proceedings of the 20th International Conference on Principles of Knowledge Representation and Reasoning*, IJCAI, 2023, pp. 34–43. DOI: `10.24963/kr.2023/4`

- B. Alt, D. Katic, R. Jäkel, and M. Beetz, "Heuristic-Free Optimization of Force-Controlled Robot Search Strategies in Stochastic Environments", in *2022 IEEE/RSJ International Conference on Intelligent Robots and Systems (IROS)*, IEEE, 2022, pp. 8887–8893. DOI: `10.1109/IROS47612.2022.9982093`

- B. Alt, D. Katic, R. Jäkel, A. K. Bozcuoglu, and M. Beetz, "Robot Program Parameter Inference via Differentiable Shadow Program Inversion", in *2021 IEEE International Conference on Robotics and Automation (ICRA)*, IEEE, 2021, pp. 4672–4678. DOI: `10.1109/ICRA48506.2021.9561206`

Patents

- B. Alt, R. Jäkel, and D. Katic, "Method and System for Determining Optimized Program Parameters for a Robot Program", pat. WO2022022784A1, 2022.

2 book chapters, 1 journal article (peer reviewed), 15 conference papers (all peer reviewed), 2 workshop publications.
Full list of publications: ⚲ benjaminalt.github.io/publications

SKILLS

Robotics	Task and motion planning, force control, 3D visual perception, robot programming, human-robot interaction, model predictive control, manipulation of deformable objects
Machine learning	Deep learning, imitation learning, learning from demonstration, differentiable programming, model-based optimization, interpretability, informed machine learning
Research management	Grant acquisition, science communication, stakeholder management, technology transfer, strategic planning
Leadership	Team leadership, mentoring, talent acquisition
Programming languages	Python (8 years of professional experience), C++ (3 years), Prolog (1 year), Java
Development tools	Git, DVC, Jira, CMake, Jenkins CI
Frameworks	PyTorch, NumPy, Keras, ROS, Qt

Karlsruhe, November 21, 2025

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