Daniel Swoboda

Doctoral Researcher

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Doctoral researcher in AI for robotics, working at the intersection of machine learning and planning. I build methods that learn to plan and act — spanning task and motion planning, generalised planning, and neuro-symbolic representation learning — so robots can operate reliably in cluttered, real-world environments.

EDUCATION

PhD — Computer Science April 2024 – Present

RWTH Aachen University · Aachen, Germany

- Chair of Machine Learning and Reasoning; advised by Prof. Hector Geffner
- Focus: Artificial Intelligence, Robotics, Task and Motion Planning, Neuro-Symbolic AI

Master of Science — Computer Science (Minor in Philosophy) October 2020 – March 2024

RWTH Aachen University · Aachen, Germany

- Final grade 1.3 (German scale; 1.0 = best), with Distinction
- Thesis: Jointly Learning Skill Execution and Domain Grounding; advised by Prof. Hector Geffner

Visiting Graduate Student — Kim Jaechul Graduate School of AI February 2022 – August 2022

Korea Advanced Institute of Science and Technology (KAIST) · Daejeon, South Korea

- Coursework in Robot Task and Motion Planning

Bachelor of Science — Computer Science (Minor in Philosophy) October 2017 – September 2020

RWTH Aachen University · Aachen, Germany

- Thesis: Sharing Promises and Requests in Multi-Agent Goal Reasoning for Logistics Robots; advised by Prof. Gerhard Lakemeyer

EXPERIENCE

Doctoral Researcher April 2024 – Present

Chair of Machine Learning and Reasoning, RWTH Aachen University · Aachen, Germany

- Bringing learning and symbolic planning together for robot task and motion planning — guiding planning with signals about geometric feasibility, and grounding symbolic plans into continuous control.

Student Research Assistant January 2024 – March 2024

Chair of Machine Learning and Reasoning, RWTH Aachen University · Aachen, Germany

- Neuro-symbolic AI for robotics: integrating skill learning from demonstration with symbolic planning for long-horizon tasks on domestic robots.

Student Research Assistant March 2020 – December 2023

Knowledge-Based Systems Group (UnRAVeL Research Training Group), RWTH Aachen University · Aachen, Germany

- Multi-robot cooperation in goal reasoning: designed a lightweight form of high-level multi-agent cooperation based on sharing partial world states.
- Contributed to an open-source goal-reasoning framework for ROS 2.

AWARDS & HONOURS

RoboCup — 1st Place, Logistics League — World champions — Salvador, Brazil 2025

RWTH Certificate International — For exceptional dedication to internationalisation 2023

RoboCup — 1st Place, Logistics League — World champions — Bangkok, Thailand 2022

RoboCup Asia-Pacific — 1st Place, Logistics League — Remote 2021

RoboCup — 1st Place, Logistics League — Remote 2021

International Micro Air Vehicle Competition — 3rd Place, Indoor Competition — Madrid, Spain 2019

SERVICE & OUTREACH

Team Lead & Core Developer — Carologistics (RoboCup Logistics League) March 2020 – Present
RWTH Aachen University · Aachen, Germany

Mentor — RWTH BeBuddy Program October 2022 – Present
RWTH Aachen University · Aachen, Germany

SKILLS & LANGUAGES

Programming	Python, C++
Frameworks & Tools	PyTorch, ROS 2, PDDLStream, Docker, Linux
Languages	German — Native, English — C2 (IELTS 8.5), Korean — A2