

Maximilian Hüttenrauch

AI RESEARCHER

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Experience

WORK EXPERIENCE

appliedAI Initiative GmbH

AI RESEARCHER

Heilbronn

Nov. 2023 - Feb. 2025

- Develop and maintain open source software and provide insights on current trends in reinforcement learning as a part of the Innovation Lab within appliedAI.

INTERNSHIPS

Fraunhofer Institute for High Frequency Physics and Radar Techniques

INTERNSHIP

Wachtberg

Jan. 2014 - Mar. 2014

- Implementation of a signal model to suppress ghost targets in radar imaging.

Imagelab, Universidade Estadual de Campinas

INTERNSHIP

Limeira, Brazil

Sep. 2013 - Oct. 2013

- Implementation of computer vision algorithms for detection and segmentation in Matlab.

STUDENT SUPERVISION

SUPERVISION OF BACHELOR AND MASTER THESES

Jan. 2020 - Dec. 2022

- Denis Blessing M.Sc. - A General Framework for Modular Function Approximation.
- Lyubomira Dimitrova M.Sc. - Swarm Reinforcement Learning with Graph Neural Networks.
- Felix Köhler M.Sc. - Gradient-based Episodic Reinforcement Learning using Differentiable Physics Simulators.
- Yuhe Gong M.Sc. - Incorporating Step-based Feedback into Episodic Reinforcement Learning.
- Philipp Dahlinger M.Sc. - Information Theoretic Trust Regions for Gradient Descent.
- Robin Rude M.Sc. - Bayesian and Attentive Aggregation for Multi-Agent Deep Reinforcement Learning.
- Philipp Theyssen B.Sc. - Recursive Surrogate-Modeling for Stochastic Search.

TEACHING ASSISTANT

Sep. 2013 - Dec. 2022

- Head Teaching Assistant Lecture Kognitive Systeme.
- Student and teaching assistant for various labs and courses (including Intelligent Multi-Agent Systems, Autonomous Mobile Robotics) at TU Darmstadt, University of Lincoln and KIT.

Education

Karlsruhe Institute of Technology, Bosch Center for AI, University of Lincoln

Karlsruhe, Tübingen, Lincoln UK

PH.D. IN COMPUTER SCIENCE

Mar. 2017 - Nov. 2024

- Focus on reinforcement learning, policy search and optimization methods for multi-agent systems

Machine Learning Summer School 2020

Tübingen

COURSES ON A VARIETY OF TOPICS IN MODERN MACHINE LEARNING TAUGHT BY WORLD-LEADING EXPERTS

Jul. 2020

TU Darmstadt

Darmstadt

M.SC. IN ELECTRICAL ENGINEERING AND INFORMATION TECHNOLOGY

Apr. 2014 - Sep. 2016

- Focus on signal processing and machine learning

TU Darmstadt

Darmstadt

B.SC. IN ELECTRICAL ENGINEERING AND INFORMATION TECHNOLOGY

Apr. 2009 - Sep. 2013

- Focus on signal processing for radar imaging

Universität Mainz

Mainz

GEOLOGY (NO DEGREE)

Sep. 2007 - Mar. 2009

Rheingauschule

Geisenheim

ABITUR

2005

Skills

Libraries	Numpy, Tensorflow, PyTorch
Programming	Python, Matlab, \LaTeX , git, slurm
Languages	German (native), English (fluent), Portuguese (basic), French (basic)

Awards

2015 **Winner**, IEEE Signal Processing Cup 2015 (ICASSP 2015)

Brisbane, Australia

Publications

JOURNAL ARTICLES [3]

Robust Black-Box Optimization for Stochastic Search and Episodic Reinforcement Learning

Hüttenrauch, M., Neumann, G.,

Journal of Machine Learning Research 25.153 (2024) pp. 1–44. JMLR.org

2024

Deep Reinforcement Learning for Attacking Wireless Sensor Networks

Parras, J., **Hüttenrauch, M.**, Zazo, S., Neumann, G.,

Sensors 21.12 (2021) p. 4060. MDPI

2021

Deep Reinforcement Learning for Swarm Systems

Hüttenrauch, M., Šošić, A., Neumann, G.,

Journal of Machine Learning Research 20.54 (2019) pp. 1–31. JMLR.org

2019

CONFERENCE PROCEEDINGS / WORKSHOPS [4]

Information-Theoretic Trust Regions for Stochastic Gradient-Based Optimization

Dahlinger, P., Becker, P., **Hüttenrauch, M.**, Neumann, G.,

OPT 2023: Optimization for Machine Learning, NeurIPS 2023

2023

Coordinate Ascent MORE with Adaptive Entropy Control for Population-Based Regret Minimization

Hüttenrauch, M., Neumann, G.,

Workshop: Evolutionary reinforcement learning (GECCO)

virtual

2021

Local communication protocols for learning complex swarm behaviors with deep reinforcement learning

Hüttenrauch, M., Šošić, A., Neumann, G.,

Proceedings of the Eleventh International Conference on Swarm Intelligence, ANTS 2018

Rome, Italy

2018

Guided Deep Reinforcement Learning for Swarm Systems

Hüttenrauch, M., Šošić, A., Neumann, G.,

Autonomous Robots and Multirobot Systems (ARMS) Workshop, AAMAS 2017

São Paulo, Brazil

2017

Reviewing

CONFERENCES

- International Conference on Robot Learning (CoRL) - 2022, 2021, 2020, 2018
- International Conference on Intelligent Robots and Systems (IROS) - 2022, 2021, 2020, 2019, 2018
- AAAI Conference on Artificial Intelligence (AAAI) - 2020, 2017
- Advances in Neural Information Processing Systems (NeurIPS) - 2019, 2018
- International Conference on Machine Learning (ICML) - 2019
- International Conference on Robotics and Automation (ICRA) - 2019, 2018
- European Workshop on Reinforcement Learning (EWRL) - 2018
- International Conference on Humanoid Robots (HUMANOIDS) - 2017

JOURNALS

- IEEE Transactions on Cybernetics - 2019
- Neurocomputing (NEUCOM) - 2018
- Robotics and Autonomous Systems (RAS) - 2017

Voluntary Activities

KOHI Kulturraum e.V.

Karlsruhe

MEMBER

Jan. 2022 - PRESENT

- Voluntary work to support cultural events.