

Sebastian Blaes

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EDUCATION

PHD IN COMPUTER SCIENCE

MPI for Intelligent Systems, Tübingen, GER
2017 – 2022

MSC IN COMPUTER SCIENCE

Goethe University, Frankfurt, GER
2013 – 2017
With Distinction

MSC IN PHYSICS

Goethe University, Frankfurt, GER
2012 – 2015
With Distinction

BSC IN PHYSICS

Goethe University, Frankfurt, GER
2008 – 2012

LINKS

<https://www.sblaes.com>

[Github:// s-bl](https://github.com/s-bl)

[LinkedIn:// sebastian-blaes](https://www.linkedin.com/in/sebastian-blaes)

COURSEWORK

PHD

- Seminar: AI, Science, Society, Responsibility
- Machine Learning: Algorithms and Theory
- Probabilistic Inference

GRADUATE

- Theoretical Neuroscience
- Approximation Algorithms
- Semantics and Analysis of Functional Programming Languages
- Computational Neuroscience
- Operating Systems
- Theoretical Computer Science
- Quantum Computing and Information Theory
- Machine Learning
- Electronics and Sensors
- Digital Electronics

UNDERGRADUATE

- Brain Dynamics: From Neuron to Cortex
- Plasma Physics
- Visual System: Principles of Attention

RESEARCH

MAX-PLANCK-INSTITUTE FOR INTELLIGENT SYSTEMS (AUTONOMOUS LEARNING / ROBUST ML GROUP)

POSTDOCTORAL RESEARCHER

2022 – Present | Tuebingen, GER

Topics: Model-Based & Intrinsically Motivated RL,
Robotics for Sustainable Agriculture

MAX-PLANCK-INSTITUTE FOR INTELLIGENT SYSTEMS (AUTONOMOUS LEARNING GROUP)

PHD RESEARCH

Jan 2017 – 2022 | Tuebingen, GER

Title: Nature-Inspired Inductive Biases in Learning Robots

Supervision: Dr. Georg Martius
Prof. Dr. Martin Butz

FRANKFURT INSTITUTE FOR ADVANCED STUDIES (BURWICK LAB)

GRADUATE RESEARCH

2017 | Frankfurt a. M., GER

Title: Deep Convolutional Networks for Visual Object Recognition:
Few-Shot Learning of New Categories

Supervision: Dr. Thomas Burwick
Prof. Dr. Jochen Triesch

FRANKFURT INSTITUTE FOR ADVANCED STUDIES (BURWICK LAB)

GRADUATE RESEARCH

2015 | Frankfurt a. M., GER

Title: Attentional Selection and Suppression Mechanism in an Oscillatory
Neural Network Model

Supervision: Dr. Thomas Burwick
Prof. Dr. Jochen Triesch

GOETHE UNIVERSITY (INSTITUTE FOR APPLIED PHYSICS)

UNDERGRADUATE RESEARCH

2012 | Frankfurt a. M., GER

Title: Plasma Confinement of the Weibel Type

Supervision: Prof. Dr. Joachim Jacoby

PUBLICATIONS

CONFERENCES

Li, C., Vlastelica, M., Blaes, S., Frey, J., Grimminger, F., Martius, G., **"Learning Agile Skills via Adversarial Imitation of Rough Partial Demonstrations"**, In Conference on Robot Learning (CoRL), 2022

Sancaktar, C., Blaes, S., Martius, G., **"Curious Exploration via Structured World Models Yields Zero-Shot Object Manipulation"**, In Conference on Neural Information Processing Systems (NeurIPS), 2022

Vlastelica*, M., Blaes*, S., Pinneri, C., Martius, G., **"Risk-Averse Zero-Order Trajectory Optimization"**, In Conference on Robot Learning (CoRL), 2021, *Equal Contribution

Pinneri*, C., Sawant*, S., Blaes, S., Martius, G., **"Extracting Strong Policies for Robotics Tasks from Zero-order Trajectory Optimizers"**, In International Conference on Learning Representations (ICLR 2021), 2021

Pinneri, C., Sawant, S., Blaes, S., Achterhold, J., Stueckler, J., Rolinek, M., Martius, G., **"Sample-efficient Cross-Entropy Method for Real-time Planning"**, In Conference on Robot Learning (CoRL), 2020

SKILLS

LANGUAGES

- German – Native Speaker
- English – Fluent in Spoken and Written English

PROGRAMMING

- C/C++
- Python
- Java
- Matlab
- Haskell

TRAINING

SUMMER SCHOOLS

- Transylvanian Machine Learning Summer School (TMLSS) (2018)
- Deep Learning and Reinforcement Learning Summer School by Vector Institute (2018)

Blaes, S., Vlastelica, M., Zhu, J., Martius, G., **"Control What You Can: Intrinsically Motivated Task-Planning Agent"**, In Conference on Neural Information Processing Systems (NeurIPS), 2019

M.Mundt, S. Blaes and T. Burwick, **"Feature Binding in Deep Convolution Networks with Recurrences, Oscillations and Top-Down Modulated Dynamics"**, In European Symposium on Artificial Neural Networks (ESANN), 2016

JOURNALS

S. Blaes and T. Burwick, **"Few-Shot Learning in Deep Networks through Global Prototyping"**, Neural Networks, 94 (2017) 159-172

S. Blaes and T. Burwick, **"Attentional Bias through Oscillatory Coherence between Excitatory Activity and Inhibitory Minima"**, Neural Computation, 27 (2015) 1405-1437

Teske, C., Y. Liu, S. Blaes and J. Jacoby, **"Electron Density and Plasma Dynamics of a Spherical Theta Pinch"**, Physics of Plasmas (1994–present) 19, no. 3 (2012): 033505

UNDER REVIEW

Li, C., Blaes, S., Kolev, P., Vlastelica, M., Frey, J., Martius, G., **"Versatile Skill Control via Self-supervised Adversarial Imitation of Unlabeled Mixed Motions"**, In International Conference on Robotics and Automation (ICRA), 2023

N. Gürtler, S. Blaes, P. Kolev, F. Widmaier, M. Wüthrich, S. Bauer, B. Schölkopf and G. Martius, **"Benchmarking Offline Reinforcement Learning on Real-Robot Hardware"**, In Conference on Robot Learning (CoRL), 2022

HONORS, AWARDS AND SCHOLARSHIPS

- Scholar of the International Max Planck Research School (IMPRS) for Intelligent Systems (IS)

PROFESSIONAL SERVICES

- Reviewer at NeurIPS'21/22 and ICLR'22
- Co-organizer of the NeurIPS'22 Real Robot Challenge

EXPERIENCE

TEACHING ASSISTANT

2018 | MPI-IS Tuebingen

- Reinforcement Learning
2018 | 2020/2021

2014 – 2016 | Goethe University

- Introduction to Programming I (C++)
- Introduction to Programming II (Functional Programming, Databases)
- Theoretical Computer Science I (Algorithm Engineering and Analysis)

WORKSHOP INSTRUCTOR

- 2020: Tübingen Robust Learning Symposium
- 2018: One day Workshop on Machine Learning at Leipzig University, GER

LAB INSTRUCTOR | GOETHE UNIVERSITY

2012 – 2014 | Frankfurt a. M., GER

- Lab Experiments: Electricity and Magnetism

IT ASSISTANT | WACHENDORF ELEKTRONIK GMBH & CO. KG

2004 – 2006 | Geisenheim, GER

- PHP Programming
- IT Support