

# Sebastian Blaes

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## EDUCATION

### PHD IN COMPUTER SCIENCE

MPI for Intelligent Systems, Tübingen, GER  
2017 – Present

### 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](#)  
LinkedIn:// [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 GROUP)

#### PHD RESEARCH

Jan 2017 – Present | Tuebingen, GER

Title: Autonomous State Representation Learning for Efficient Reinforcement Learning and Intrinsically Motivated Behaviour  
Supervision: Dr. Georg Martius  
Prof. Dr. Martin Butz  
Prof. Dr. Ludovic Righetti

### 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

## 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

## SKILLS

### LANGUAGES

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

### PROGRAMMING

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

## PERSONAL ACHIEVEMENTS

- 5 Transalps (by bike)
- 2 Half-Marathons

## TRAINING

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

## PUBLICATIONS

### 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

### CONFERENCES & WORKSHOP PROCEEDINGS

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

Pinneri\*, C., Sawant\*, S., Blaes, S., Martius, G. **"Extracting Strong Policies for Robotics Tasks from Zero-order Trajectory Optimizers"** In 9th International Conference on Learning Representations (ICLR 2021), May 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 2020, 2020

Blaes, S., Vlastelica, M., Zhu, J., Martius, G., **"Control What You Can: Intrinsically Motivated Task-Planning Agent"**, Advances in Neural Information Processing (NeurIPS'19), pages 12520 – 12531

M.Mundt, S. Blaes and T. Burwick, **"Feature Binding in Deep Convolution Networks with Recurrences, Oscillations and Top-Down Modulated Dynamics"**, ES-ANN'2016, Bruges, Belgium, pages 423 – 428

### REVIEWER FOR JOURNALS AND CONFERENCES

- NeurIPS'2021

### HONORS, AWARDS AND SCHOLARSHIPS

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