

Jan Teusen (né Boelts)

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Summary

Machine learning researcher focusing on probabilistic and open-source methods for efficient model adaptation. Experienced in building reliable ML pipelines that bridge research and real-world applications.

Experience

appliedAI Institute for Europe, Transferlab

Munich

Senior AI Researcher

2024 – present

- Leading development of production ML systems: fine-tuning vision models (SAM with LoRA) for environmental monitoring, deployed as QGIS plugin for public sector use.
- Consulting on Large Industry Models (LIMs) for German automotive sector, evaluating specialized vs. general-purpose AI strategies for industrial applications.
- Developing and maintaining open-source software for accessible AI/ML tools, including the *sbi* package for simulation-based inference.
- Implementing MLOps pipelines with experiment tracking and model versioning for reproducible research-to-production workflows.
- Designing and delivering workshops on recent AI/ML topics for academics and industry professionals.

University of Tübingen, Machine Learning in Science

Tübingen

Doctoral Researcher, Supervisor: Jakob Macke

2021 – 2023

- Simulation-based inference for models of decision-making
- Accessible software tools for simulation-based inference

Technical University of Munich, Computational Neuroengineering

Munich

Doctoral Researcher, Supervisor: Jakob Macke

2018 – 2020

- Simulation-based inference for computational connectomics

Technical University of Berlin, Brain-Computer Interfaces

Berlin

Research Assistant, Supervisor: Benjamin Blankertz

2015

- Study design and analysis of EEG brain-computer interfaces

Various Institutions

Vancouver, Canada; Bogotá, Colombia

Research Intern

2013-2014

- Gained experience in diverse research areas including cognitive neuroscience, biomedical engineering, and fMRI data analysis.

Education

Ph.D. in Computer Science

University of Tübingen

Probabilistic Machine Learning for Neuroscience

2023

Advisor: Prof. Jakob Macke

M.Sc. in Computational Neuroscience

Technical University Berlin

With Distinction

2018

B.Sc. in Cognitive Science

University of Osnabrück

With Distinction

2015

Publications

Articles

Michael Deistler*, **Jan Boelts***, Peter Steinbach, Guy Moss, Thomas Moreau, Manuel Gloeckler, Jan-Matthis Lueckmann, ...& Jakob H Macke (2025), *Simulation-Based Inference: A Practical Guide*, *arXiv preprint arXiv:2508.12939*

Jan Boelts*, Michael Deistler*, Manuel Gloeckler, Álvaro Tejero-Cantero, Jan-Matthis Lueckmann, Guy Moss, ...& Jakob H Macke (2024), *sbi reloaded: a toolkit for simulation-based inference workflows*, *arXiv preprint arXiv:2411.17337*

Philipp Harth, Daniel Udvary, **Jan Boelts**, Daniel Baum, Jakob H. Macke, Hans-Christian Hege, Marcel Oberlaender (2024), *Dissecting origins of wiring specificity in dense cortical connectomes*, *bioRxiv*

Jan Boelts, Philipp Harth, Richard Gao, Daniel Udvary, Felipe Yanez, Daniel Baum, Hans-Christian Hege, Marcel Oberlaender, Jakob H Macke (2023), *Simulation-based inference for efficient identification of generative models in connectomics*, *PLOS Computational Biology*

Jan Boelts, Jan-Matthis Lueckmann, Richard Gao, Jakob H. Macke (2022), *Flexible and Efficient Simulation-Based Inference for Models of Decision-Making*, *eLife*

Poornima Ramesh, Jan-Matthis Lueckmann, **Jan Boelts**, Álvaro Tejero-Cantero, David S. Greenberg, Jakob H. Macke (2022), *GATSBI: Generative Adversarial Training for Simulation-Based Inference*, *ICLR*

Jan-Matthis Lueckmann, **Jan Boelts**, David S. Greenberg, Pedro J. Gonçalves, Jakob H. Macke (2021), *Benchmarking Simulation-Based Inference*, *AISTATS*

Álvaro Tejero-Cantero*, **Jan Boelts***, Michael Deistler*, Jan-Matthis Lueckmann*, Conor Durkan*, Pedro J. Gonçalves, David S. Greenberg, Jakob H. Macke (2020), *sbi – a toolbox for simulation-based inference*, *Journal of Open Source Software*

Jan Boelts, Jan-Matthis Lueckmann, Pedro J. Gonçalves, Jakob H. Macke (2019), *Model Selection via Neural Density Estimation*, *Conference in Cognitive Computing*

Jan Boelts, Cerquera, A., & Ruiz-Olaya, A. F. (2015), *Decoding of imaginary motor movements of fists applying spatial filtering in a BCI simulated application*, *In Artificial Computation in Biology and Medicine, Proceedings. Springer International Publishing.*

Talks

Conference talk “*Pyro Meets SBI: Unlocking Hierarchical Bayesian Inference for Complex Simulators*” (2025), *EuroSciPy Conference Cracow*

Conference talk “*Simulated data is all you need: Bayesian parameter inference for scientific simulators with SBI*” (2024), *EuroSciPy Conference Stettin*

Seminar talk “*Mind the Gap: Methods and Applicability of Simulation-Based Inference*” (2024), *TransferLab Seminar*

Invited talk “*Simulation-Based Inference for Computational Neuroscience*” (2022), *Bernstein Center for Computational Neuroscience, Berlin*

Community & outreach

Maintainer , <i>sbi</i> Python package for simulation-based inference	Since 2021
Reviewer , NeurIPS, AISTATS, ICML (best reviewer award 2024, 2025), ICLR, JOSS, PLOS	Since 2022
Lecturer , Teaching AI to German high-school students with KI macht Schule	Since 2021
Mentor , Neuromatch Academy, Computational Neuroscience Track; Google Summer of Code	2023
Co-organizer , SBI workshop 2022, SBI Hackathon 2024, and 2025	Since 2022