Luca M. Schulze Buschoff ✉ **lucaschulzebuschoff@gmail.com**

Education

Ph. D. Computer Science 06.2023 –
MPI for Biological Cybernetics & Helmholtz Munich
Supervisor: Dr. Eric Schulz

M. Sc. Neural and Behavioral Science 2019 – 2023
University of Tübingen
Thesis: The acquisition of physical knowledge in neural networks
Supervisors: Dr. Marcel Binz & Dr. Eric Schulz, MPI for Biological Cybernetics

B. Sc. Psychology 2016 – 2019
University of Osnabrück
Thesis: The role of heartbeat during fast sensorimotor transformations
Supervisors: Dr. Sven Ohl & Prof. Martin Rolfs, Humboldt-Universität zu Berlin

Research Internships

Stanford University, Prof. Tobias Gerstenberg 02.26 – 04.26
Visual cognition task library

University of Tübingen, Prof. Felix Wichmann 11.20 – 02.21
Error consistency in humans and neural networks

University of Tübingen, Prof. Philipp Berens 09.20 – 11.20
Model comparisons in approximate Bayesian computation

Berlin School of Mind and Brain, Mind Brain Body Institute 11.18 – 12.18
Influence of cardiac cycle activity on perceived object distance

Humboldt-Universität zu Berlin, Dr. Sven Ohl 08.18 – 09.18
Influence of cardiac cycle activity on saccadic eye movements

Professional Experience

Student research assistant

Dr. Eric Schulz, *MPI for Biological Cybernetics*	01.22 – 01.23
Prof. Felix Wichmann, *University of Tübingen*	04.21 – 12.21
Prof. Philipp Berens, *University of Tübingen*	03.20 – 08.20
Prof. Thomas Staufenbiel, *University of Osnabrück*	04.18 – 09.19

Teaching assistant

Statistics I & II, *University of Osnabrück*	10.18 – 08.19
Test theory, *University of Osnabrück*	04.18 – 08.18
Research methods, *University of Osnabrück*	10.17 – 03.18

External Funding

International Research Fellowship for Computer Scientists (IFI), DAAD
Research internship at Stanford University, Prof. Tobias Gerstenberg

Invited talks

Causality In Cognition Lab, *Stanford University*
Enigma Project, *Stanford University*
CogToolsLab, *Stanford University*

Pre-prints

Post-training makes large language models less human-like
M. Binz, ..., **L. M. Schulze Buschoff**, ..., E. Schulz
arXiv

Next state prediction gives rise to entangled, yet compositional representations of objects
T. Saanum, **L. M. Schulze Buschoff**, P. Dayan, E. Schulz
arXiv

Publications

Can vision language models learn intuitive physics from interaction?
L. M. Schulze Buschoff, K. Voudouris, C. Demircan, E. Schulz
International Conference on Machine Learning (ICML 2026)

A foundation model to predict and capture human cognition
M. Binz, ..., **L. M. Schulze Buschoff**, ..., E. Schulz
Nature (2025)

Testing the Limits of Fine-Tuning for Improving Visual Cognition in Vision Language Models
L. M. Schulze Buschoff*, K. Voudouris*, E. Akata, M. Bethge, J. B. Tenenbaum, E. Schulz
International Conference on Machine Learning (ICML 2025)

metabench – A Sparse Benchmark to Measure General Ability in Large Language Models
A. Kipnis, K. Voudouris, **L. M. Schulze Buschoff**, E. Schulz
International Conference on Learning Representations (ICLR 2025)

Visual cognition in multimodal large language models
L. M. Schulze Buschoff*, E. Akata*, M. Betthge, E. Schulz
Nature Machine Intelligence (2025)

The Acquisition of Physical Knowledge in Generative Neural Networks
L. M. Schulze Buschoff, E. Schulz, M. Binz
International Conference on Machine Learning (ICML 2023)

Trivial or Impossible—dichotomous data difficulty masks model differences (on ImageNet and beyond)
K. Meding*, **L. M. Schulze Buschoff***, R. Geirhos, F. A. Wichmann
International Conference on Learning Representations (ICLR 2022)

Workshop publications

ImageNet suffers from dichotomous data difficulty
K. Meding*, **L. M. Schulze Buschoff***, R. Geirhos, F. A. Wichmann
ImageNet: past, present, and future workshop (NeurIPS 2021 workshop)

Reviewing Activity

Conferences
ICLR *(Top 200 Reviewer (∼1%), 2026)*
ICML
Neurips
CogSci
Re-Align workshop at ICLR
World models workshop at ICML
Behavioral ML workshop at NeurIPS

Journals
Computational Brain & Behavior