Luca M. Schulze Buschoff

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EDUCATION	**Ph. D. Computational Cognitive Science and Machine Learning**	06.2023 –
	MPI for Biological Cybernetics and Helmholtz Munich	
	Supervisor: Dr. Eric Schulz	
	M. Sc. Neural and Behavioral Science, University of Tübingen	2019 – 2023
	Thesis: The acquisition of physical knowledge in neural networks	
	Supervisors: Dr. Marcel Binz & Dr. Eric Schulz, MPI for Biological Cybernetics	
	B. Sc. Psychology, University of Osnabrück	2016 – 2019
	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 in humans	
	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**, MPI for Biological Cybernetics	
	Computational Principles of Intelligence, Dr. Eric Schulz	01.22 – 01.23
	Student research assistant, University of Tübingen	
	Neural Information Processing, Prof. Felix Wichmann	04.21 – 12.21
	Data Science for Vision Research, Prof. Philipp Berens	03.20 – 08.20
	Student research assistant, University of Osnabrück	
	Statistics and Methodology, Prof. Thomas Staufenbiel	04.18 – 09.19
	Teaching assistant, University of Osnabrück	
	Statistics I & II	10.18 – 08.19
	Test theory	04.18 – 08.18
	Research methods	10.17 – 03.18

SUBMITTED   Can vision language models learn intuitive physics from interaction?
                L. M. Schulze Buschoff*, K. Voudouris*, C. Demircan, E. Schulz
                Under review at ICML 2026

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

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

REVIEWING   **Conferences**
ACTIVITY   ICLR
                ICML
                CogSci
                Re-Align workshop at ICLR
                World models workshop at ICML
                Behavioral ML workshop at NeurIPS

                Journals
                Computational Brain & Behavior