



Summary

I am a post-doc at the Philipps-Universität Marburg and the research cluster "TAM - The Adaptive Mind". My research explores computational approaches to sensory information processing in health and disease. I completed my Ph.D. at the Bernstein Center for Computational Neuroscience and the Charité - Berlin, funded by a scholarship from the Einstein Center for Neuroscience. I graduated Summa Cum Laude in June 2024. During my undergraduate studies, I was funded by the *Studienstiftung des Deutschen Volkes* for excellent academic achievement.

Qualifications

Postdoc, Theoretical Cognitive Neuroscience

PHILIPPS-UNIVERSITÄT MARBURG

Marburg, Germany

Nov. 2021 - present

- Funding: The Adaptive Mind, funded by the Hessian Ministry for Arts and Sciences
- **Supervision:** Dominik Endres
- **Projects:** Information processing in autism & psychosis, models of sensory attenuation, social inference in depression.
- Other: models for chronic pain, placebo effects in breast cancer treatment, formal concept analysis

Ph.D. fellow, Neuroscience

CHARITÉ UNIVERSITY CLINIC

Berlin, Germany

Oct. 2018 - June 2024

- Funding: Einstein Center for Neuroscience Berlin, Affiliation: Bernstein Center for Computational Neuroscience Berlin
- **Supervision:** Philipp Sterzer, Felix Blankenburg, Carsten Finke
- **Title:** Sensory processing in psychosis: Evidence for aberrant low-level information processing from multiple modalities and experiments.
- **Grade:** Summa Cum Laude (with distinction)
- **Note:** Thesis submission in 12/2022, defense March 6, 2024, graduation June 27, 2024

M.sc. & B.sc., Psychology

PHILIPPS-UNIVERSITY MARBURG

Marburg, Germany

Oct. 2013 - Sept. 2018

- M.sc. grade: 14.8/15 (with distinction)
- Focus: clinical psychology and neuroscience, Oct. 2017 - Sept. 2018
- **Master Thesis** with Dominik Endres: "A Bayesian Model for Chronic Pain", grade: 15/15
- B.sc. grade: 13.6/15 (very good), Oct. 2013 - Sept. 2017
- **Bachelor's thesis** with Dominik Endres: "Movement Primitives in Unconstrained Dance", grade: 15/15
- Data collection: motion capture; dimensionality reduction, model comparison

Abitur

DAHLMANNGYMNASIUM

Bad Segeberg, Germany

Sept. 2004 - May 2012

- Linguistic profile, **General grade: 1.0** (valedictorian)

Stipends and awards

Charité Berlin	Nominated for Humboldt Dissertation Prize (3,000€)	July 2024	Berlin
BCCN Berlin	Winner of Science Slam ("Is your brain a computer?")	Aug. 2022	Berlin
Charité - University Clinic Berlin	PhD Fellowship (~ 8,100€)	Nov. 2021 - Mar. 2022	Berlin
Einstein Center for Neurosciences	PhD Fellowship (~ 66,000€)	Oct. 2018 - Oct. 2021	Berlin
Einstein Foundation Berlin	Open Innovation in Science Award (5,000€)	Sept. 2019	Berlin
Studienstiftung des Dt. Volkes	Undergraduate & postgraduate fellow (~ 25,000€)	Dec. 2013 - Sept. 2018	Marburg

Jobs

Student research assistant

PERSONALIZED PSYCHOTHERAPY WORKGROUP & ASSOCIATIVE LEARNING GROUP

Marburg, Germany

Feb. 2015 - Aug. 2018

- 2017-2018: Supervisor: Eva-Lotta Brakemeier; tasks: manuscript editing, data management, ethics- and grant proposal editing
- 2015-2017: Supervisor: Anna Thorwart & Metin Üngör; tasks: data collection (behavioral and eye-tracking studies), tutoring (2015, 2016)

Research skills & interests

Software	<p>Python (intermediate-advanced): experimental software (<i>psychopy</i>), behavioral data pre-processing and analysis (<i>pandas</i>, <i>numpy</i>, <i>scipy</i>), graphical models (<i>pymc3</i>, <i>pymdp</i>), visualization (<i>matplotlib</i>, <i>seaborn</i>) and others</p> <p>R (good basic): generalized linear- and logistic models, teaching frequentist statistics in R at master's level e.g. data pre-processing, ANOVA, ANCOVA, regression</p> <p>JavaScript (good basic): programming of visual experiments to be implemented online (<i>jsPsych</i>)</p> <p>web-hosting using JATOS, recruitment using Prolific, SONA</p> <p>git (intermediate-advanced): version control in GitHub and GitLab, collaborative development, instructor in 2022</p> <p>LaTeX (advanced): instructor for different groups since 2021; Microsoft Office (advanced): PowerPoint, Word, Excel</p>
Experimental	<p>Behavioral psychophysics: perceptual decision-making: visual motion and orientation, auditory rate, bistability; task design, data collection, pre-processing, analysis, visualization</p> <p>fMRI, TMS: MRI: Siemens Prisma 3-Tesla System; TMS: MagPro R30 stimulator; data collection (in 2019)</p> <p>Motion Capture: Inertial motion capture system Xsens system; data collection, analysis (in 2016)</p> <p>Eye tracking: Tobii screen-based eye-tracking; data collection (from 2015-2016)</p>
Statistics	<p>Computational modelling: Partially Observable Markov Decision Processes (POMDPs), Active Inference, belief propagation, sum-product message passing, optimization</p> <p>Frequentist statistics: statistical tests, regression models (linear, logistic)</p>
Project management	EMF-Certificate 2023-2024 on on grant proposal writing, project management and leadership
Teaching	<p>2024: Evaluation of Psychological Interventions (applied statistics seminar in R, two parallel groups), Mandatory seminar of the master's program in psychology, Marburg</p> <p>2022: Introduction to Python and git, international Master's Program Medical Neuroscience Berlin (6 sessions)</p> <p>2015, 2016: Tutorials Associative learning, University of Marburg</p>
Supervision	<p>M.sc. Sophia Lieb (<i>current</i>): "Splitting" in Borderline Personality Disorder as aberrant belief propagation</p> <p>Sabrina Nasri-Roudsari (<i>current</i>): Computational models of perceptual inference in autism and psychosis</p> <p>Andreas Beskid (<i>current</i>): Experimental evidence for Bayesian accounts of pain</p> <p>B.sc. Thorben Haagt (<i>current</i>): A hierarchical model of perceptual inference and its alterations in autism and psychosis</p> <p>Sabrina Nasri-Roudsari (<i>completed</i>): Longitudinal modelling of nocebo effects in anti-hormonal-therapy</p> <p>Joni Blume (<i>completed</i>): Perceptual mechanisms in autism and psychosis: an online experiment.</p> <p>Rotations Janik Pawlowski (2022), Andreas Beskid (2023), Yael Gounitski (2021)</p>
Reviews	Peer-reviewer for <i>eLife</i> , <i>European Journal of Pain</i> , <i>Computational Psychiatry</i>

Internships and summer schools

Summer Schools

France, Switzerland

UNIVERSITÉ BORDEAUX, ETH ZÜRICH, STUDIENSTIFTUNG DES DT. VOLKES

2014 - 2021

- **Bordeaux 2021**: Advanced Scientific Programming in Python (ASPP) Summer School, Université de Bordeaux
- **Zürich 2019**: Computational Psychiatry Course (CPC), ETH Zuerich
- **Leysin 2015**: The Biology of Ageing, Studienstiftung des deutschen Volkes
- **Ftan 2014**: Behavior Change in Theory and Application, Studienstiftung des deutschen Volkes

Research Internship

Honolulu, Hawai'i, U.S.A.

HEALTH BEHAVIOR CHANGE RESEARCH GROUP

Apr. 2016 - Sept. 2016

- Editing and assisting on manuscripts and grant proposals
- Data analysis and administration of a project on prevention of childhood obesity

Commitments

<i>present</i>		
The Adaptive Mind	Young Pro Representative (organizing workshops, extra-curriculars)	since 07/2023
Studienstiftung des Deutschen Volkes	Selection commission member	since 10/2019
<i>past</i>		
Arbeiterkind e.V.	Speaker, mentor for first-generation academics	08/2019 - 12/2021
Scholar Minds	Co-founder, local academic mental health network	03/2019 - 08/2021
Studienstiftung des Deutschen Volkes	Regional fellow representative in Marburg	07/2017 - 07/2018
Student representative	Institutional review board (06/2014 - 02/2018), treasurer (11/2015 - 11/2017), faculty council rep. (01/2015 - 03/2016), appointment commission (10/2014 - 03/2015)	