Marvin Schmitt

PhD Researcher · Bayesian Statistics & Deep Learning

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Education

since 2021	**PhD in Computer Science** Cluster of Excellence SimTech, University of Stuttgart • Junior Research Group for Bayesian Statistics, supervised by Dr. Paul-Christian Bürkner • Focus: Bayesian model comparison, probabilistic machine learning, simulation-based inference • Tools: R, Python, Stan
2022	**M.Sc. in Data and Computer Science** Heidelberg University • grade 1.0 / 4.0 (best: 1.0) • Master thesis: *Visualization of Distribution and Uncertainty of Posterior Model Probabilities* • Tools: Python, C++, Java, OpenGL
2018 – 2021	**M.Sc. in Psychology** Heidelberg University • grade 1.0 / 4.0 (best: 1.0) • Master thesis: *Did you Miss Me? Model Misspecification in Bayesian Parameter Estimation Tasks with Invertible Neural Networks* • Tools: R, Python
2014 – 2018	**B.Sc. in Psychology** Heidelberg University • grade 1.2 / 4.0 (best: 1.0) • Bachelor thesis: *Influence of suggestive questions on usability tests* • Tools: R, SPSS
2006 – 2014	**Abitur (A-levels)** Auguste-Viktoria-Gymnasium, Trier • grade 1.1 / 4.0 (best: 1.0) • Stayed in southern India to foster the school's humanitarian UNESCO project with local representatives. • Stayed in Illinois, US, for a CertiLingua research project on the impact of the religious education system in the US.

Work Experience

since 2021	**Research Associate** SimTech Cluster of Excellence, University of Stuttgart • Supervised by Dr. Paul-Christian Bürkner. • Cyber Valley project *Meta-Uncertainty in Bayesian Model Comparison*. • Researching methods to improve current Bayesian model comparison workflows through extensive simulations.
2017 – 2019	**Workshop Assistant and Business Consultant** Freelance • Assisted with conception and realization of business workshops on communication, leadership development, group coaching, conflict, change, and personality. • Developed a manuscript generation software to create custom training material with Python, Flask and LaTeX.
2017 – 2019	**Network Officer** Marsilius-Kolleg Center for Advanced Study • Organized and coordinated IT-tasks and due diligence. • Implemented a live streaming solution for live events based on UDP multicast (internal) and RTMP (external). • Established a network-wide media center based on Samba. • Maintained the center's website and digital knowledge base in Imperia CMS with HTML, CSS, PHP, JavaScript. • Assisted in organizing and hosting symposia, conferences, and talks.
2018	**Research Intern** Quantitative Research Methods, Institute for Psychology • Supervised by Dr. Veronika Lerche • Developed an algorithm to derive expectation measures from eye-tracking data. • Gained first on-hands experience with Machine Learning techniques in R.
2017	**Consultant Intern** MC Hische Unternehmensberatung • Assisted in the preparation and realization of business workshops. • Facilitated a book publication with focus on content, style guidelines, and typesetting.

Teaching

Summer 2022	**Lecture & Exercise,** Statistical Inference at Fresenius UAS, Heidelberg
Summer 2022	**Exercise,** Bayesian Statistics and Probabilistic Machine Learning at University of Stuttgart
Winter 2021/22	**Lecture & Exercise,** Statistical Inference at Fresenius UAS, Heidelberg
Winter 2021/22	**Seminar,** Introduction to Statistics with R for PhD researchers at Heidelberg University
Summer 2021	**Exercise,** Descriptive Statistics & Probability Theory at Fresenius UAS, Heidelberg
Summer 2021	**Lecture & Exercise,** Statistical Inference at Fresenius UAS, Heidelberg
Winter 2020/21	**Seminar (TA),** Statistics with R at Heidelberg University
Winter 2020/21	**Lecture & Exercise,** Statistical Inference at Fresenius UAS, Heidelberg
Summer 2020	**Seminar (TA),** Programming with R at Heidelberg University
2020	**Seminar,** Communication Techniques at Fresenius UAS, Wiesbaden
2017	**Workshop,** Group Coaching at Fresenius UAS, Frankfurt
2016–2019	**Tutorial,** Descriptive Statistics, Probability Theory & Statistical Inference at Heidelberg University

Extracurricular Activities & Awards

2019 – 2021	**Scholarship holder,** German Academic Scholarship Foundation (Studienstiftung d. dt. Volkes)
2018	**Didactic certificate for tutors,** Heidelberg University
2016 – 2021	**Elected representative,** Examination board M.Sc. & Diploma Psychology (break 10/2016 – 09/2017)
2016 – 2021	**Elected representative,** Institute Council (Fachrat) Psychology
2016 – 2020	**Member,** Student Council (Fachschaft) Psychology
2014	**Award for remarkable social commitment,** Auguste-Viktoria-Gymnasium Trier

Skills

Languages	German (native), English (fluent), French (basic), Latin (basic), Norwegian (basic)
Programming	Python, R, occasionally: C++, JavaScript, HTML, CSS
Data Science	Python (Tensorflow/keras, PyTorch, sklearn, scipy, numpy, pandas), R (brms, lme4, afex, tidyverse), Stan
Visualization	Python (matplotlib, seaborn), R (ggplot2, plotly, rgl, shiny, gganimate)
Documentation	LaTeX (KOMA, tikZ), git, Imperia, Markdown, RMarkdown, Jupyter, sphinx, roxygen, Quarto

Publications

[1] **Marvin Schmitt**, Stefan T. Radev, and Paul-Christian Bürkner. Meta-Uncertainty in Bayesian Model Comparison. *AISTATS (accepted)*, 2023.

[2] **Marvin Schmitt**, Paul-Christian Bürkner, Ullrich Köthe, and Stefan T. Radev. Detecting Model Misspecification in Amortized Bayesian Inference with Neural Networks, 2021. arXiv pre-print.