

Nadine Spychala

Curriculum Vitae

Education

- since 2020 **PhD in Informatics**
University of Sussex, Brighton
- 2016 – 2019 **Master of Arts in Philosophy**
Carl-von-Ossietzky University, Oldenburg
- 2013 – 2016 **Master of Science in Neurocognitive Psychology**
Carl-von-Ossietzky University, Oldenburg
- 2009 – 2012 **Bachelor of Science in Psychology**
University of Hamburg, Hamburg

Doctoral Thesis

- Title ***Measures of complexity and emergence: a validation study***
(preliminary)
- Supervisors Dr. Lionel Barnett & Professor Anil Seth
- Description The aim of my PhD project is to validate information-theoretic measures of complexity and emergence in both simulated and empirical data, and to investigate how they may inform differences in states of consciousness.

Master Thesis

- Title ***The dynamics of integrated information in variational inference: a simulation study***
- Supervisor Professor Dirk Ostwald
- Description In this thesis, I investigated the dynamics of integrated information in variational inference using an integrated information measure for time-series models (Barrett & Seth, 2011) and black-box variational inference (Ranganath, Gerrish, & Blei, 2016).

Master Thesis

Title	<i>Towards free robotic hand control with EEG motor imagery</i>
Supervisors	Professor Stefan Debener & Dr. Niclas Braun
Description	In this thesis, I investigated robotic hand control via motor imagery and experiences of embodiment in an EEG brain-computer interface.

Bachelor Thesis

Title	<i>Non-random samples in psychological research</i>
Supervisors	Professor Martin Spieß & Dr. Nils Skotara
Description	In this thesis, I investigated how findings generalize in experimental psychology taking into account different sampling methods.

Experience

Work (selection)

09/2022 - 01/2023	Mentor for open-source practices within the Open Life Science mentoring & training program. Supported my mentee in open-sourcing their social justice learning platform Pyxium .
06/2022 – 09/2022	Supervisor for master thesis on machine learning & emergence: “Exploring Causal Emergence in Genetic Algorithms”
05/2021 & 02/2022 - 06/2022	Teaching assistant for Fundamentals in Machine Learning (Dr. Adam Barrett & Dr. Ivor Simpson), DEPARTMENT OF INFORMATICS, UNIVERSITY OF SUSSEX, Brighton.
10/2021 – 11/2022	Teaching assistant for Algorithmic Datascience (Dr. Adam Barrett & Dr. Ivor Simpson), DEPARTMENT OF INFORMATICS, UNIVERSITY OF SUSSEX, Brighton.
07/2020 – 09/2020	Psychologist for unaccompanied refugee minors, BAHIA CLEARINGSTELLE GGMBH, Bremen.
01/2018 – 02/2019	Data scientist in medical education research, DEPARTMENT OF HUMAN MEDICINE, CARL VON OSSIETZKY UNIVERSITY, Oldenburg.
10/2015 – 02/2016	Teaching assistant for EEG methods in psychology class (Prof. Stefan Debener), NEUROPSYCHOLOGY LAB, CARL VON OSSIETZKY UNIVERSITY, Oldenburg.
04/2015 – 07/2016	Teaching assistant in German for refugees, LANGUAGE CENTRE, CARL VON OSSIETZKY UNIVERSITY, Oldenburg.

Internships and Further Education (selection)

07-08/2022	Neurohackademy summer school on neuroimaging and data science, online.
04/2022	Collaborations Workshop 2022 from the Software Sustainability Institute. The workshop's theme was on code review, ethics, hybrid working, software sustainability. See co-authored speed blog post on code review.
09/2021 – 01/2022	Open Life Science mentoring & training program for Open Science ambassadors. Obtained mentoring for my project <i>Building a Python library for measures of emergence and complexity</i> (see GitHub repository , slides , or a speed blog post on this project).
03/2019	Spring school in Computational Cognitive Science, <i>International Interdisciplinary Computational Cognitive Science Spring School</i> (IICSSS), BERNSTEIN CENTER FREIBURG, Freiburg.

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- 10/2014 – 02/2015 **Semester abroad**, DEPARTMENT OF COGNITIVE SCIENCE, JAGIELLONIAN UNIVERSITY, Cracow.
- 10/2014 – 01/2015 **Internship in consciousness research**, CONSCIOUSNESS LAB (Prof. Michał Wierzbicki), INSTITUTE OF PSYCHOLOGY, JAGIELLONIAN UNIVERSITY, Cracow. I investigated the relationship between pain and the sense of ownership using electrical stimuli and the rubber hand illusion.
- 06/2013 – 08/2013 **Internship in human rights work**, EQUALITY CALIFORNIA, Los Angeles. I worked on the public education projects *The Breakthrough Conversation & Health Happens With Equality*. I also initiated a project on biphobia.

Attended Hackathons

- 06/2022 **OHBM Hackathon** on [DataLad-Dataverse project](#), Glasgow.
- 07/2020 **OHBM Hackathon** on [cross decomposition methods in Python](#), online.
- 11/2019 **Brainhack Global** on EEG, *Sonifying EEG*, CHILD MIND INSTITUTE, New York.
- 03/2019 **Brainhack on deep learning**, *Deep Frankenstein: dissecting and sewing artificial neural networks*, UNIVERSITY OF WARSAW, Warsaw.

Other Extracurricular Activities/Voluntary Work (selection)

- since 2023 **Software Sustainability Institute (SSI) Fellow**. During my fellowship, I aim to send a strong signal for SSI's slogan "better software, better research" by providing software development workshops to research communities I'm involved in myself. See my [fellowship profile](#).
- 10/2022 Core organizer of an **online symposium** titled *Rethinking Computational Approaches to the Mind - Fundamental Challenges and Future Perspectives*. See [event website](#).
- since 08/2022 Part of organizing team of the **Artificial Life conference 2023**
- 04/2022 **Collaborations Workshop 2022 from the Software Sustainability Institute**. The workshop's theme was on code review, ethics, hybrid working, software sustainability. See co-authored [speed blog post](#) on code review.
- since 10/2020 **Working group on structural & cultural problems in science**, *Better Together - improving culture & incentives in academia*. This is volunteer-based group work led by me to discuss and write about problems people encounter in (neuro)science, advocate for change, and propose ideas for improvement. It evolved from the Neuromatch conference 3.0 special session [Better together: Let's improve the culture in neuroscience](#) as a follow-up project.
- since 09/2021 **Open-source project ComplexPy**, *ComplexPy - a Python library for measures of emergence and complexity*. This is a Python-based open-source project led by me to make measures of emergence and complexity more accessible, improve research on & applications of those measures, and increase inclusivity (see [github repository](#), [slides](#), or a [speed blog post](#) on this project).
- 06/2022 **Discussion session on emergence at the 24th conference of the Association of the Scientific Study of Consciousness**, *Formal approaches to emergence - current perspectives & possible applications*, organized by me, Pedro Mediano & Fernando Rosas.
- 08/2019 – 12/2019 **Volunteer work at GrowNYC**, New York. Worked as an environmental sustainability volunteer in New York's Zero Waste and Greenmarket programs.

Computer & Technical Skills

Programming R, MATLAB/GNU Octave, PYTHON

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 twitter: @NadineSpychala

Languages

Statistics & Science Blog <https://nadinespy.github.io/>

github <https://github.com/nadinespy>

Publications/Scientific Contributions

- Article Fincke, F., Prediger, S., Schick, K., Fürstenberg, S., Spychala, N., Berberat, P. O., Harendza, S., Kadmon, M. (2020). [Entrustable professional activities and facets of competence in a workplace-based assessment for final year undergraduate medical students](#). *Medical Teacher*.
- Article Spychala, N., Debener, S., Bongartz, E., Müller, H. H. O., Philipsen, A., Thorne, J., & Braun, N. (2019). [Exploring Self-Paced Embodiable Neurofeedback for Post-Stroke Motor Rehabilitation](#). *Frontiers in Human Neuroscience*.
- See corresponding [GitHub repository](#).
- Article Braun, N., Debener, S., Spychala, N., Bongartz, E., Sorös, P., Müller, H. H. O., & Philipsen, A. (2018). [The senses of agency and ownership: a review](#). *Frontiers in Psychology*.
- Article Siedlecka, M., Spychala, N., Łukowska, M., Wiercioch, K., & Wierzchoń, M. (2017). [Rubber hand illusion increases pain caused by electric stimuli](#). *The Journal of Pain*.
- Poster *Towards embodied feedback for post-stroke rehabilitation*, presented at the 6TH MIND, BRAIN & BODY SYMPOSIUM, MIND & BRAIN SCHOOL BERLIN, 15th March 2018, Berlin.
- Poster *Towards free robotic hand control with EEG motor imagery*, presented at the 4TH MIND, BRAIN & BODY SYMPOSIUM, MIND & BRAIN SCHOOL BERLIN, 16th March 2016, Berlin.

Scholarships

- since 2020 Leverhulme Doctoral Scholarship at the University of Sussex, UK
- since 2023 Software Sustainability Institute Fellowship
- 2010 – 2018 Scholarship holder of the German National Academic Foundation
- 10/2014 – 02/2015 Erasmus+ scholarship holder

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