Ann-Kathrin Schalkamp

Curriculum Vitae

San Francisco, California, United States
aschalkamp.github.io
aschalkamp

Advancing medicine through data-driven approaches.

First author nature medicine publication:	**Proficient with a diverse range of data:**	**Independent researcher:**
Developed a predictive model using smartwatch data to identify Parkinson's seven years before clinical diagnosis in the general population, outperforming existing markers.	Completed projects using data from genetics, biospecimen, brain imaging, digital sensors, clinical assessments, and EHRs.	Shaped research direction of my PhD due to interest in digital sensor data.

Education

01/04/2021–04/25/2024 **Ph.D. passed without corrections**, *Cardiff University*,
Thesis: "Addressing Parkinson's Disease Risk Analysis, Early Diagnosis, Progression, and Stratification using Data-Driven Approaches in Deeply Phenotyped Cohorts" *Prof. Dr. Caleb Webber & Dr. Cynthia Sandor*,
Biomarkers, Machine Learning, High Performance Computing

- initiated projects on digital biomarkers leading to three publications
- compared risk prediction models based on biological, clinical, and digital data
- performed longitudinal data analysis with mixed models and assessed prognostic value
- conducted quantitative comparison of data-driven Parkinson's disease subtypes

10/01/2018–11/06/2020 **Cognitive Science M.Sc. first-class**, *University of Tübingen*,
Thesis: "Building a trajectory model of cognitive and motor aging: exploring predictors in large-scale, longitudinal data of elderly using machine learning techniques" *Prof. Dr. Philipp Berens & Dr. Fabian Sinz*,
Statistical and Probabilistic Machine Learning, Computational Psychiatry, Data Literacy

10/01/2015–09/26/2018 **Cognitive Science B.Sc. first-class**, *University of Osnabrück*,
Thesis: "Analyzing event-related potentials in 8-channel EEG data using machine learning methods" *Prof. Dr. Gordon Pipa & M.Sc. Olivera Stojanovic*,
Linear Algebra, Statistics, Algorithms and Data Structures, Neurobiology, Neuropsychology

10/01/2017–02/28/2018 Semester abroad with Erasmus at KU Leuven, Belgium.

Achievements

Awards
- runner-up for PGR student of the year 2023
- honorary position at Imperial College London
- best talk award at UKDRI PD ECR meeting 2023
- runner-up for research proposal at UCL biomarker course 2022
- Master's thesis nominated for ILW Förderpreis 2020/21

Engagement
- invited talk at Parkinson's awareness Day 2023 and Wales RIG 2024
- newspaper and radio interviews including BBC news
- participated in Neurohack 2022 with a project on dementia diagnosis

Skills

Programming	python (pandas, scikit-learn, pytorch), R (lme4, brms), Matlab (SPM), git, bash
Domain Knowledge	Parkinson's disease, digital health technologies
Data Handling	digital sensors, brain imaging, genetics, electronic health records

Experience

09/03/2024–today **Postdoctoral Scholar**, *UCSF: Bakar Computational Health Sciences Institute*
electronic medical records, real-world evidence

07/01/2024–08/02/2024 **Research Associate**, *Imperial College London: Translational Machine Intelligence Lab*
digital risk score for Parkinson's disease, large language model for scientific publications

01/15/2024–06/30/2024 **Research Assistant**, *Imperial College London: Translational Machine Intelligence Lab*
digital risk score for Parkinson's disease, digital monitoring of non-motor symptoms

10/01/2019–04/30/2020 **Laboratory Internship**, *University of Tübingen: NeuroMADLAB*
performed a mega-analysis of resting-state fMRI data for depression classification.

03/01/2019–03/01/2020 **Research Assistant**, *University of Tübingen: Methods of Machine Learning*
prepared LaTeXscripts for two courses.

10/01/2016–04/01/2017 **Teaching Assistant**, *University of Osnabrück: Department of Computer Science*
tutored the course Algorithms and Data Structures.

Publications

Peer-reviewed Journals

1. **Ann-Kathrin Schalkamp**, Neil A Harrison, Kathryn J Peall, Cynthia Sandor, "Digital outcome measures from smartwatch data relate to non-motor features of Parkinson's disease", *npj Parkinson's Disease* (2024), Springer Science and Business Media LLC. `https://www.nature.com/articles/s41531-024-00719-w`.
2. **Ann-Kathrin Schalkamp**, Stefanie Lerche, ...,Fabian H Sinz, Kathrin Brockmann, "Machine learning-based personalized composite score dissects risk and protective factors for cognitive and motor function in older participants", *Frontiers in Aging Neuroscience* (2024), . `https://www.frontiersin.org/journals/aging-neuroscience/articles/10.3389/fnagi.2024.1447944/full`.
3. **Ann-Kathrin Schalkamp**, Neil A Harrison, Kathryn J Peall, Cynthia Sandor, "Wearable movement-tracking data identify Parkinson's disease years before clinical diagnosis", *Nature Medicine* (2023), Springer Science and Business Media LLC. `https://doi.org/10.1038/s41591-023-02440-2`.
4. Joshua Stevenson-Hoare, **Ann-Kathrin Schalkamp**, Cynthia Sandor, John Hardy, Valentina Escott-Price, "New cases of dementia are rising in elderly populations in Wales", *Journal of the Neurological Sciences* (2023), Elsevier BV. `https://doi.org/10.1016/j.jns.2023.120715`.
5. Cynthia Sandor, Stephanie Millin, Andrew Dahl, **Ann-Kathrin Schalkamp**, Michael Lawton, Leon Hubbard, Nabila Rahman, Nigel Williams, Yoav Ben-Shlomo, Donald G. Grosset, Michele T. Hu, Jonathan Marchini, Caleb Webber, "Universal clinical Parkinson's disease axes identify a major influence of neuroinflammation", *Genome Medicine* (2022), Springer Science and Business Media LLC. `https://doi.org/10.1186/s13073-022-01132-9`.
6. **Ann-Kathrin Schalkamp**, Nabila Rahman, Jimena Monzón-Sandoval, Cynthia Sandor, "Deep phenotyping for precision medicine in Parkinson's disease", *Disease Models & Mechanisms* (2022), The Company of Biologists. `https://doi.org/110.1242/dmm.049376`.
7. Claire L. MacIver, Grace Bailey, Pedro Luque Laguna, Megan E. Wadon, **Ann-Kathrin Schalkamp**, Cynthia Sandor, Derek K. Jones, Chantal M. W. Tax, Kathryn J. Peall, "Macro- and micro-structural insights into primary dystonia: a UK Biobank study", *Journal of Neurology* (2023), Springer Science and Business Media LLC. `https://doi.org/10.1007/s00415-023-12086-2`.

Pre-prints

1. **Ann-Kathrin Schalkamp**, Kathryn J. Peall, Neil A. Harrison, Valentina Escott-Price, Payam Barnaghi, Cynthia Sandor, "Digital risk score sensitively identifies presence of α-synuclein aggregation or dopaminergic deficit", *medRxiv* (2024), `https://www.medrxiv.org/content/10.1101/2024.09.05.24313156v1`.
2. Marirena Bafaloukou, **Ann-Kathrin Schalkamp**, .., Payam Barnaghi, "An Interpretable Machine Learning Tool for In-Home Screening of Agitation Episodes in People Living with Dementia", *medRxiv* (2024), `https://www.medrxiv.org/content/10.1101/2024.07.30.24311178v1`.
3. **Ann-Kathrin Schalkamp**, Kathryn J. Peall, Neil A. Harrison, Valentina Escott-Price, Cynthia Sandor, "Leveraging long-term smartwatch data to inform Parkinson's disease progression, subtypes, and risk", *medRxiv* (2023), `https://www.medrxiv.org/content/10.1101/2023.09.13.23295404`.

Conferences

Conference Talks

1. **Ann-Kathrin Schalkamp**, "Early detection and monitoring of Parkinson's disease", *UKDRI PD ECR meeting* (2023). Best talk award.
2. **Ann-Kathrin Schalkamp**, "Seeing Parkinson's disease coming", *Connectome* (2022). Invited talk.

Conference Posters

1. Marirena Bafaloukou, **Ann-Kathrin Schalkamp**, Cynthia Sandor, Ramin Nilforooshan, Payam Barnaghi, "Predicting incident dementia in the UK Biobank with smartwatches", *Alzheimer's Association International Conference* (2024).
2. **Ann-Kathrin Schalkamp**, Neil A Harrison, Kathryn J Peall, Valentina Escott-Price, Payam Barnaghi, Cynthia Sandor, "Identifying diverse agitation profiles in dementia: Insights from longitudinal in-home monitoring data", *Alzheimer's Association International Conference* (2024).
3. **Ann-Kathrin Schalkamp**, Neil A Harrison, Kathryn J Peall, Cynthia Sandor, "Seeing Parkinson's disease coming", *Cold Spring Harbor Laboratory Biological Data Science conference* (2022).
4. **Ann-Kathrin Schalkamp**, Cynthia Sandor, "Genetics of Parkinson's disease: clinical diagnosis vs molecular imaging", *European Society of Human Genetics Conference* (2022).

References

Dr. Vivek Rudrapatna	University of California, San Francisco: v.rudrapatna@ucsf.edu
Dr. Cynthia Sandor	Imperial College London: c.sandor@imperial.ac.uk
Prof. Payam Barnaghi	Imperial College London: p.barnaghi@imperial.ac.uk
Prof. Neil Harrison	Cardiff University: HarrisonN4@cardiff.ac.uk
Prof. Valentine Escott-Price	Cardiff University: EscottPriceV@cardiff.ac.uk