Beate Ehrhardt, Ph.D.

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📞 +44 79 06065528   🌐 Webpage   Maiden name: Franke

Work Experience

Senior Research Statistician at "AstraZeneca", Cambridge, UK   2016-present

- Design and analysis of complex experiments to inform strategic decision making across the preclinical pipeline for (mainly) oncology.

- Analysis methods in R included mixed effects models, optimal experimental design, Bayesian statistics, multiple testing, clustering and machine learning (on-going)

- In-vitro: organs-on-chips, cell-based assays, mass spectrometry, RNA-Seq, siRNA; in-vivo: neurobehavioral screens and xenografts

- Collaboration in multidisciplinary teams: turn scientific question into a mathematical problem, identify the right data and deliver predictive analytics.

- Development of an analysis pipeline for a novel experiment: establishing for the first time a standard of good statistical practice for organs-on-chips. We currently write up a manuscript for publication.

Exploratory data analysis at the insurance company "VHV", Hannover, Germany   07-09/2010

- Identification of customers with a discrepancy between expected and observed loss for car insurance data using SAS during an internship.

Statistical modeling at the "Institute for Epidemiology and Prevention Research", Bremen, Germany   2009–2010

- Application of linear and generalized linear models for cohort studies and intervention programs using SAS, e.g. to analyze dietary and lifestyle induced health effects.

Education

PhD in Statistics at University College London, UK   2012–2016

PhD thesis on "Understanding community structure in large networks"
Supervisor: Professor Patrick J. Wolfe

- Development of a new hypothesis test for the quality of communities in networks where the data are non identical and dependent.

- MATLAB code to compute corresponding p-values for networks with up to 10000 nodes, and either Bernoulli, Poisson, or negative Binomial distributed edges.

- Application to five social networks identifying covariates that represent the structure of the connections, while delivering statistical guarantees for the decisions made.

Diploma in Mathematics (equivalent to UK MSc) at University of Bremen, Germany   2006–2012

- Statistical research in genetics (1 year): simulation study in R to determine when we can use genes to overcome bias due to confounding.

Participation in the Erasmus Student Exchange in Mathematics at Cardiff University, UK   2008–2009

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Papers

B. Ehrhardt and P. J. Wolfe (2018) "Network modularity in the presence of covariates". Accepted at SIAM Review.

B. Franke et al. (2016) "Statistical inference, learning and models in big data". *International Statistical Review*, **84**(3), 371–389.

Technical and Language Skills

Programming	R and MATLAB (expert, 7+ and 4 years), SAS (intermediate, 1 year), Python and GraphPad Prism (basic, 0.5 year)
Typography	LaTeX, Microsoft Word, Excel, Power Point, HTML
Languages	English (proficient), German (native)

Communication Skills

Academic Presentations
9 international presentations and posters; selected here are invited seminars and talks, and upcoming conferences

Royal Statistical Society 2018 International Conference, Cardiff, UK, presentation.	09/2018
AI Summit, London, UK, participation.	06/2018
Seminar on Economic Risk, Humboldt University, Berlin, Germany, presentation.	01/2016
CABDyN Network Journal Club, Oxford, UK, presentation.	04/2015
McGill Statistics Seminar Series, Montreal, Canada, presentation.	03/2015
Royal Statistical Society 2014 International Conference, Sheffield, UK, presentation.	09/2014

Teaching

Machine Leaning book club: Seminar on "Classification & training models"	02/2018
Bayesian statistics book club: Seminar on "Multivariate regression"	05/2017
Supervision of a summer student project	07–09/2014
Student Teaching Assistant	
"Introduction to Probability and Statistics", University College London, UK	2013
"Statistics within Natural Sciences", University of Bremen, Germany	2008, 2009

Awards and Honours

Invited research visit at the Fields institute, Toronto, Canada. Program on Inference, Statistical Learning, and Models for Big Data	01–03/2015
Captain of the winning team of the 2014 RSS Statistical Analytics Challenge. Our team identified structurally similar regions of the brain by analyzing high-dimensional and inhomogeneous fMRI data using spectral clustering and graphical models coded in R.	05–07/2014

Volunteer Experience

Co-organizer of the seminar series "UCL Women in Mathematical Sciences"	2013
Member of Green Impact to improve the environmental impact and sustainability at UCL	2012/2013

Referees

Available upon request