

# Christian Hennig - Curriculum Vitae

(As of May 2019)

Born 14 December 1966

Current position: Associate Professor, Dipartimento di Scienze Statistiche "Paolo Fortunati", Università di Bologna

## 1 Education and Qualifications

**1986** Abitur (German grammar school degree)

**1993** Diploma in Mathematics, Faculty of Mathematics, University of Hamburg

**1997** Doctor rer.nat. (PhD), Faculty of Mathematics, University of Hamburg, thesis title "Datenanalyse mit Modellen für Cluster Linearer Regression" (*"Data analysis by means of models for clusterwise linear regression"*), "summa cum laude" examined by Professor K. Behnen and Professor D. Pfeifer

**2001** Certificate "Qualified teaching in science and continuing education", IZHD Centre for University Didactics, University of Hamburg

**2005** German Habilitation with thesis "*Cluster Stability, Cluster Validation and the Principle of Asymmetry in Cluster Analysis*" accepted by the University of Hamburg. Referees: Prof. Adrian E. Raftery, Prof. Christine Müller, Prof. Gunther Ritter.

**2017** Abilitazione Scientifica Nazionale Settore Concorsuale 13/D1 - I Fascia, valid 31 March 2017-31 March 2023.

## 2 Professional history

**Oct 1993-Mar 1997** University Assistant, Institute for Mathematical Stochastics, University of Hamburg

**Oct 1997-Mar 2005** University Lecturer (fixed term postdoctoral position), Institute for Mathematical Stochastics, University of Hamburg, interrupted by leave Oct 2001-Sep 2003

**Oct 2001-Sep 2003** University Lecturer (fixed term postdoctoral position), Seminar for Statistics, ETH Zürich

**April 2005-September 2010** Lecturer at Department of Statistical Science, University College London

**September 2010-October 2018** Senior Lecturer at Department of Statistical Science, University College London

## 3 Research activities

### 3.1 Positions in scientific societies

- Scientific Secretary of the International Federation of Classification Societies (since 2014)

- Member of the IFCS Task Force for Benchmarking in Cluster Analysis (since 2012)
- Chair of the Data Analysis and Numerical Classification working group of the GfKI (German Classification Society), 2011-2014
- Treasurer of the British Classification Society (since 2009)
- Member of the Advisory Board of the GfKI (since 2014)
- Membership German Classification Society GfKI, British Classification Society, Fachgruppe Stochastik der Deutschen Mathematischen Gesellschaft, International Association of Statistical Computing (ISI), Institute of Mathematical Statistics

### **3.2 Editorial positions**

- Statistics and Computing (Associate Editor since 2007)
- Computational Statistics and Data Analysis (Associate Editor since 2008)
- Advances in Data Analysis and Classification (Associate Editor since 2012)
- Statistical Methods and Applications (Associate Editor since 2014)
- Archives of Data Science Series B (Editor since 2018; first issue in preparation)
- Active reviewer over 20 years for many journals including Annals of Statistics, Journal of the American Statistical Society, Journal of Machine Learning Research, Journal of the Royal Statistical Society B, Electronic Journal of Statistics, Journal of Multivariate Analysis, Systematic Biology, Pattern Recognition, and many more

### **3.3 Grant**

- EPSRC Research Grant EP/K033972/1 "A multicriterion approach for cluster validation", 1 June 2013-31 May 2017, £ 98,024

### **3.4 Statistical Advisory**

Statistical advisory for more than 100 clients: mostly scientists at University of Hamburg, ETH Zürich and UCL, but also businesses such as TV Movie, Hamburg, ecommara, London, Trustmark, Zürich, Department of Public Health, Highbury and Islington Council, London.

### **3.5 Conference organisation**

- Autumn meeting of the Data Analysis and Numerical Classification working group of the GfKI (German Classification Society), Hamburg, 1999 (main organiser).
- AGM of the British Classification Society, London, 2010 (main organiser)
- Variable Selection and Dimension Reduction in Clustering and Classification - autumn meeting of the British Classification Society and the Data Analysis and Numerical Classification working group of the GfKI (German Classification Society), UCL, 8-9 November 2013 (main organiser)

## 4 Selected Presentations

### 4.1 Invited keynote speaker

- “ $k$ -quantiles clustering” (with Cinzia Viroli and Laura Anderlucci), 4th International Workshop on Proximity Data, Multivariate Analysis and Classification, Salamanca, April 2019
- “Exploration of the variability of variable selection based on distances between bootstrap sample results” (with Willi Sauerbrei), 3rd International Workshop on Proximity Data, Multivariate Analysis and Classification, Valladolid, October 2017
- “Model-based clustering for data that don’t follow the model, and estimating the number of clusters” (with Pietro Coretto), European Conference on Data Analysis, Wroclaw September 2017
- “Decisions that are needed when using cluster analysis, and research that helps with making them”, Conference of the International Federation of Classification Societies, Tokyo, August 2017
- “Gaussian and not-so-Gaussian clustering with robustness against outliers and a stab at the number of clusters” (with Pietro Coretto), Workshop on Model-Based Clustering and Classification, Catania, September 2016
- “Flexible parametric bootstrap for testing homogeneity against clustering and assessing the number of clusters” (with Chien-Ju Lin), Jubilee meeting 25 years VOC (Dutch/Flemish classification society), Kerkrade, November 2014
- “Measurement of quality in cluster analysis”, Conference of the Portuguese Classification Society JOCLAD, Lisbon, April 2014
- “The noise component in model-based cluster analysis” (with Pietro Coretto), Conference of the GfKI (German classification society), Karlsruhe, March 2007

### 4.2 Discussion paper meetings of the Royal Statistical Society

- Invited presenter of discussion paper “Beyond subjective and objective in statistics” with Andrew Gelman, 12 April 2017
- Invited presenter of discussion paper “How to find an appropriate clustering for mixed-type variables with application to socio-economic stratification” with Tim Liao, 14 November 2012
- Invited proposer of vote of thanks (main discussant; with collaboration of Cinzia Viroli) of T. Cannings and R. Samworth “Random-projection ensemble classification”, 15 March 2017

### 4.3 Invited semi-plenary speaker at major conferences

- “Multivariate cluster validation by measurement of clustering characteristics relevant to the user”, 17th Conference of the Applied Stochastic Models and Data Analysis International Society, London, June 2017
- “Assessing the quality of a clustering”, PyData, London May 2016

- “The Role of Model Assumptions in Statistics”, DAGSTAT (Conference of the German Consortium in Statistics), Dortmund, March 2010
- “How to merge Gaussian mixture components”, CLADAG-2009, Catania, September 2009
- “Design of Dissimilarity Measures: a New Dissimilarity between Species Distribution Areas” (with Bernhard Hausdorf), Conference of the International Federation of Classification Societies, Ljubljana, July 2006
- “Clusterwise assessment of cluster stability”, SMABSEAM (European Association for Methodology in the Social Sciences) conference, Budapest, July 2006
- “Assessment of stability in cluster analysis”, German Open Conference on Probability and Statistics, Frankfurt, March 2006

## 5 Supervision of PhD students

### 5.1 Primary supervisor (all at UCL)

**Pietro Coretto** “The noise component in model-based clustering”, PhD 2008

**Elisabet Lund** “Evidence-based Crime Investigation A Bayesian Approach”, PhD 2012 (co-supervised with Phil Dawid)

**ChienJu Lin** “A pattern-clustering method for longitudinal data - heroin users receiving methadone”, PhD 2014

**Daniel Meddings** “Statistical inference in mixture models with random effects”, PhD 2014

**Serhat Akhanli** “Distance construction and clustering of football player performance data”, PhD 2018

**Iqbal Shamsudheen** on the effects of model misspecification testing on inference (started 2015)

**Fatima Batool** on Optimum Average Silhouette Width clustering (submitted 2019)

**Javier Espinosa** on multivariate analysis and regression with ordinal data (started 2016)

### 5.2 External supervisor

**Laura Anderlucci** “Comparing Different Approaches for Clustering Categorical Data”, PhD 2012 (University of Bologna, internal supervisor Angela Montanari).

**Lorenzo Mancini** “Quantile-based and other classifiers for ordinal data”, PhD 2018 (University of Bologna; internal supervisor Cinzia Viroli).