Brieuc Lehmann

ACADEMIC BACKGROUND

Big Data Institute & Department of Statisics, University of Oxford, UK

Postdoctoral Research Assistant in Statistical Machine Learning *Feb 2019 - Present*

Supervisors: Professor Chris Holmes & Professor Gilean McVean

Project goals: Develop robust and scalable statistical methods for analysing large scale healthcare datasets such as UK Biobank ($n = 500,000$). By using ideas from the robust Bayes literature, these methods will have solid theoretical underpinnings while leveraging the computational power of machine learning algorithms. This methodology will be translated into freely available software enabling researchers in the health sciences to use our findings to extract insights from their own datasets.

MRC Biostatistics Unit, University of Cambridge, UK

PhD Candidate - Biostatistics *Sep 2015 - Jun 2019 (Expected)*

Supervisors: Dr Simon White, Professor Richard Henson & Dr Linda Geerligs

Project: Developed methodology for the statistical comparison of brain connectivity networks using tools from network science. In particular, I extended the Bayesian exponential random graph model (ERGM) by constructing a computationally efficient procedure to fit an ERGM to several networks simultaneously in a hierarchical setting. In the first part of my PhD, I created a simulation framework in Matlab for the generation of functional MRI data with a dynamic connectivity structure. I used this framework to demonstrate that variability in physiology or noise levels may account for observed group differences in the dynamic network structure of the brain.

Publications: *Assessing dynamic functional connectivity in heterogeneous samples*
B.C.L. Lehmann, S.R. White, R.N. Henson, Cam-CAN, L. Geerligs (2017)

Characterising group-level brain connectivity: a framework using Bayesian exponential random graph models
B.C.L. Lehmann, R.N. Henson, L. Geerligs, Cam-CAN, S.R. White (*under review*)

Inferring differences between networks via Bayesian exponential random graph models
B.C.L. Lehmann, L.Geerligs, R.N. Henson, S.R. White (*in preparation*)

Conferences: Presented posters at ISBA 2018, Bayes Comp 2018, Networking Biostatistics 2018, Organisation of Human Brain Mapping 2017 and COSTNET 2017 conferences

Presentations: Delivered talks at COSTNET 2018, the Cambridge Connectome Consortium, the IMMB (King's College, London), and the Research Students' Conference 2016

Programming: Proficient in R, Matlab and SQL; competent in Python and C++

Trinity College, University of Cambridge, UK

MMath Mathematics (Part III) - Distinction *Oct 2014 - Jul 2015*

Master's project: - Completed essay paper on statistical neuroimaging supervised by Prof. John Aston.
- Employed CUR matrix decomposition and a gradient boosting machine to perform automatic ADHD diagnosis based on functional MRI data

BA (Hons) Mathematics - First *Oct 2011 - Jul 2014*

AWARDS & SCHOLARSHIPS

Cambridge Philosophical Society Research Studentship *2018*

International Society for Bayesian Analysis (ISBA) Conference Travel Award *2018*

Bayes Comp Conference Travel Award *2018*

Trinity College Rouse Ball and Eddington Research Travel Grant *2017*
- Application made for travel to Organisation of Human Brain Mapping 2017 Conference

Trinity College Senior Scholarship *2014*
- Awarded for outstanding academic performance in final year undergraduate exams

Trinity College Heilbronn Prize *2014*
- Awarded for outstanding progress over course of undergraduate studies

ROLES & RESPONSIBILITIES

Trinity Forum - **Co-founder** *Feb 2017 - Jun 2018*
- Founded initiative to establish a community between graduate students and post-doctoral researchers
- Organised and chaired symposia with 10-20 speakers and over 70 attendees

MRC Biostatistics Unit - **PhD Student Representative** *Oct 2016 - Oct 2017*
- Organised symposium on spatio-temporal statistics attended by over 50 scientists
- Initiated bimonthly meetings to provide opportunities for students to practise delivery of presentations

Trinity College Field Club - **Secretary** *Jun 2015 - Jun 2017*
- Redesigned the website and organised social events for Trinity College's main sports society

Trinity College BA Society - **Sports Officer** *May 2016 - May 2017*
- Organised numerous events for Trinity College's graduate community of over 400 students

Trinity College Association Football Club - **Captain** *Jun 2012 - Jun 2013*

TEACHING EXPERIENCE

University Teaching - **University of Cambridge, UK** *Oct 2015 - Present*
- Supervisor for three statistics courses for over 40 second- and third-year undergraduates
- Undertook year-long Teaching Associate's Programme to critically evaluate own approach to teaching, resulting in accreditation as **Associate Fellow of the Higher Education Academy**

Summer Camp English Tutor - **Sanxiang Middle School, China** *Jul 2013 - Aug 2013*

STEP Study School Mentor, University of Cambridge *May 2013 - Jul 2013*
- Oversaw the preparation of 12 prospective students for Mathematics entrance exam

REFEREES

Prof. Chris Holmes   Department of Statistics, University of Oxford
Postdoctoral supervisor   chris.holmes@stats.ox.ac.uk

Dr Simon White   MRC Biostatistics Unit, University of Cambridge
PhD supervisor   simon.white@mrc-bsu.cam.ac.uk

Prof. Richard Henson   MRC Cognition and Brain Sciences Unit, University of Cambridge
2nd PhD supervisor   rik.henson@mrc-cbu.cam.ac.uk