

# Oswaldo Anacleto

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## Education

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### **Sep 2009 - Oct 2012: PhD in Statistics - Open University, UK**

Thesis: *Bayesian Dynamic Graphical Models for High-Dimensional Flow Forecasting in Road Traffic Networks*

Supervisors: Dr Catriona Queen and Professor Paul Garthwaite

### **2003-2005: MSc in Statistics - Federal University of São Carlos, Brazil**

Dissertation: *Bootstrap Methods for Recurrent Event Data*

Supervisor: Professor Francisco Louzada

Postgraduate courses taken (60 lecture hours each): Probability Theory, Frequentist Inference, Bayesian Inference, Statistical Asymptotics, Advanced Statistics I and II, Regression Models and Survival Analysis

### **1999-2002: BSc in Statistics - Federal University of São Carlos, Brazil**

## Academic Employment

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### **The Roslin Institute, University of Edinburgh**

**Jan/2013 - present**

**Position:** Research Fellow. Main responsibilities:

- Undertake research on Bayesian statistical methodology to estimate social genetic effects that contributes to the spread of infectious diseases and also to analyse time series data from gene expression networks
- Design and analysis of finished and ongoing large-scale disease transmission experiments in collaboration with laboratories in the following research institutes: Nofima (Norway), CETGA (Spain) and the ARS (United States Department of Agriculture)
- Active involvement in writing proposals for the BBSRC Responsive mode research grant and for the National Institute of Food and Agriculture (US)
- Preparation and delivery of mathematical modelling and statistical inference lectures
- Provision of statistical support within Andrea Doeschl-Wilson's genetic epidemiology research group

### **Department of Statistics, Federal University of São Carlos, Brazil Feb/2004 - Dec/2004**

**Position:** Lecturer in Statistics. Duties included provision of statistical consulting services to PhD students and research staff.

## Industry Employment

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### **Itaú Holding S/A, São Paulo, Brazil**

**Feb/2005 - Sep/2009**

**Last position:** Research and Development Specialist. Duties included developing and applying statistical models to learn behaviour patterns from very large data sets of bank customers. Also responsible for supervising statisticians from the Research and Development group.

### **Constat/Data Analysis Consulting, Brazil**

**Mar/2003 - Dec/2004**

**Position:** Statistical Consultant. Responsible for the development and application of statistical models in consulting projects from a variety of companies. Duties included preparing and delivering advanced statistical courses for on-site training.

## Academic Teaching and Supervision Experience

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### Roslin Institute, University of Edinburgh

- Responsible for preparing and delivering a 4-day summer course on infectious disease modelling with Dr Andrea Doeschl-Wilson. This course was first given at Iowa State University (USA) in May 2016 and it is planned to be delivered at Uppsala University (Sweden) in May 2017 and University of New South Wales (Australia) in January 2018. I will also deliver a 2,5-day version of this course at the University of São Paulo (Brazil) in July 2017, focusing on statistical methods for epidemic data.
- 2013 - present: Lecturer of the Mathematical Modelling module of the MSc in Animal Bioscience programme (responsible for preparing and delivering statistical inference lectures)
- 2013 - 2014: Co-supervisor of PhD student: Debby Lipschutz-Powell, supervised jointly with Dr Andrea Doeschl-Wilson
- 2015 - present: Co-supervisor of post-doctoral research fellow: Smaragda Tsairidou, supervised jointly with Dr Andrea Doeschl-Wilson

### Department of Mathematics and Statistics, Open University

- 2010 - 2012: Final examination marking for the Analysing Data online course

### Department of Statistics, Federal University of São Carlos, Brazil

- Responsible for preparing and delivering the following undergraduate courses:
  - Statistical Inference for approximately 25 statistics students (90 lecture hours)
  - Probability and Statistics for approximately 40 engineering students (60 lecture hours)
  - Biostatistics for approximately 40 physical education students (60 lecture hours)

## Awards

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- **The Savage Award**, Honourable Mention (Second Place). Awarded by the International Society for Bayesian Analysis (ISBA) to outstanding doctoral dissertations in Bayesian econometrics and statistics, 2013
- **Best application poster award** at the UseR! 2011 conference, University of Warwick, UK

## Publications

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First author papers under preparation:

**Anacleto, O.**, Costa, L. Queen, C.M, Smith, J.. Dynamic hierarchical modelling of inter-individual variation in biological time series network data.

**Anacleto, O.**, Queen, C.M, Michoel, T.. Exact inference of gene regulatory networks from time-course gene expression data.

**Anacleto, O.**, Cabaleiro, S., Saura, M., Villanueva, B., Doeschl-Wilson, A.B.. An infectious disease transmission experiment reveals genetic differences in host infectivity and its effects on tolerance and infection outcome.

Published:

**Anacleto, O.**, Queen, C.M. (2017). Dynamic chain graph models for time series network data. *Bayesian Analysis* (Accepted).

**Anacleto, O.**, Garcia-Cortez, L., Lipschutz-Powell, D., Woolliams, J.A., Doeschl-Wilson, A.B. (2015).

A novel statistical model to estimate host genetic effects affecting disease transmission. *Genetics*, **201(3)**, 871-884 (highlighted article by the journal editors).

**Anacleto, O.**, Queen, C.M., Albers, C.J. (2013). Multivariate forecasting of road traffic flows in the presence of heteroscedasticity and measurement errors. *Journal of the Royal Statistical Society C: Applied Statistics*, **62(2)**, 251-270.

**Anacleto, O.**, Queen, C.M., Albers, C.J. (2013). Forecasting multivariate road traffic flows using Bayesian dynamic graphical models, splines and other traffic variables. *Australian & New Zealand Journal of Statistics*, **55(2)**, 69-86

**Anacleto, O.**, Louzada F. (2012). Bootstrap confidence intervals for industrial recurrent event data. *Pesquisa Operacional* **32**, 103-119.

Louzada F., **Anacleto, O.**, Candolo C., Mazucheli, J. (2011). Poly-bagging predictors for classification modelling in credit scoring. *Expert Systems with Applications* **38**, 12717-12720.

Louzada, F., Diniz, C.A.R., Rocha, R.F, **Anacleto, O.** (2011). Reject inference: using combined models to boost predictive power. *Credit Technology (A Serasa Experian publication)* **77**, 7-17.

## Funding

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- Funded visit to deliver a course on statistical methods for epidemic data at the Institute of Mathematical Sciences, University of São Paulo, 3-7 July 2017
- 1 year Serasa Experian Applied Research Program (£7200). Project: Bayesian spatial models for insurance data. (Principal Investigator)
- 3 year PhD scholarship awarded by the Department of Mathematics and Statistics, The Open University
- 2 year MSc scholarship awarded by the National Council for Scientific and Technological Development CNPq (declined after taking up a lectureship post at the Federal University of São Carlos)
- 1 year Scientific Initiation Undergraduate Scholarship by the National Council for Graduate Studies (Brazil)

Funded participations in conferences and workshops:

- Invited participation on the III Workshop on Mathematical Solutions to Industrial Problems, to be held at the University of São Paulo, 10-14 July 2017
- ISBA 2014 conference in Mexico
- Structure and Uncertainty: Modelling, Inference and Computation in Complex Stochastic Systems, University of Bristol (UK), 2012
- ISBA 2012 conference in Japan (ISBA travel award)
- Workshop on Statistical Modelling and Inference for Networks, University of Bristol (UK), 2010

## Service and Professional Activities

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- Journal Reviewer: Journal of the American Statistical Association (2), Statistical Modeling, Journal of Applied Statistics, Statistical Papers, British Poultry Science and Genetics, Selection, Evolution
- Event Organiser: Statistics group research lunches, The Open University (2012)

## Conference Presentations and Seminars

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### Invited talks:

- (seminar) Institute of Education and Research - Insper (Brazil), 2017: *A novel Bayesian dynamic model for time series network data*
- (seminar) School of Mathematics, University of Edinburgh (UK), 2017: *Bayesian hierarchical modelling of social genetic effects in livestock disease transmission*
- 13<sup>th</sup> Workshop on Stochastic Models, Statistics and Their Applications, Berlin (Germany), 2017:

*Dynamic graphical models for samples of network time series*

- (seminar) Department of Decision Sciences, Bocconi University (Italy), 2016: *A novel Bayesian dynamic model for time series network data*
- XIII Brazilian Meeting on Bayesian Statistics, Belo Horizonte (Brazil), 2016: *Bayesian hierarchical modelling of host genetic effects in disease transmission.*
- 12<sup>th</sup> World Meeting of the International Society for Bayesian Analysis, Cancun (Mexico), 2014: *Bayesian dynamic graphical models for high-dimensional time series.*
- Brazilian Symposium on Probability and Statistics, Natal (Brazil), 2014: *Using dynamic chain graphs to model high-dimensional time series.*
- (seminar) Department of Statistics, Technische Universität Dortmund (Germany), 2013: *Using dynamic chain graphs to model high-dimensional time series*
- 8<sup>th</sup> Bayesian Inference in Stochastic Processes Workshop, Milan (Italy), 2013: *Dynamic chain graph models for multivariate time series forecasting*
- (seminar) Department of Statistics, Federal University of São Carlos (Brazil), 2012: *Statistical models for road traffic flow forecasting*
- (seminar) Department of Statistics, University of São Paulo (Brazil), 2012: *Dynamic graphical models for multivariate time series*
- (seminar) University of Leeds (UK), 2011: *Dynamic graphical models for road traffic networks*
- IV Applied Statistics Workshop, Federal University of São Carlos (Brazil), 2008: *Statistics in the banking industry and essential characteristics of an applied statistician.*
- Brazilian Symposium on Probability and Statistics, Águas de São Pedro (Brazil), 2008: *Poly-bagging predictors for credit risk modelling.*
- 16<sup>th</sup> SAS User Group Meeting, São Paulo (Brazil), 2007: *Estimating the customer value using survival analysis techniques*
- 1<sup>st</sup> Risk Modeling Workshop, Federal University of São Carlos (Brazil), 2005: *A risk modelling approach to estimating customer lifetime value*

**Selected contributed talks (10/16):**

- European Mathematical Genetics Meeting, Newcastle University (UK), 2016: *Looking for the superspreading gene: a stochastic social effects model for bivariate GWAS of epidemiological traits*
- Edinburgh Alliance for Complex Trait Genetics 7<sup>th</sup> meeting, Royal Society of Edinburgh, 2015: *Identifying genetic superspreaders of infection*
- Network Data Analysis Workshop, Herrsching am Ammersee (Germany), 2015: *Applying dynamic chain graph models to infer networks underlying time series gene expression data*
- Statistical Systems Biology Workshop, Warwick, 2014: *Incorporating contemporaneous relationships among gene expression time series into the model selection of gene networks*
- 10<sup>th</sup> World Congress on Genetics Applied to Livestock Production, Vancouver, (Canada), 2014: *Simultaneous Inference of Genetic Parameters Underlying Susceptibility and Infectivity of Livestock from Epidemiological Data*
- 8<sup>th</sup> World Congress in Probability and Statistics, Istanbul (Turkey), 2012: *Dynamic chain graph models for multivariate time series forecasting*
- Stochastik-Tage, Mainz (Germany), 2012: *Graphical model representations of multivariate time series for road traffic flow forecasting*
- 34<sup>rd</sup> Research Students' Conference in Probability and Statistics, Cambridge (UK), 2011: *Dynamic graphical models for road traffic networks*

- 33<sup>rd</sup> Research Students' Conference in Probability and Statistics, Warwick (UK), 2010: *Bayesian forecasting models for traffic management systems*
- Brazilian Symposium on Probability and Statistics, Águas de São Pedro (Brazil), 2008: *A continuous non parametric lifetime value estimator*

### Selected posters (5/15)

- 2<sup>nd</sup> Probabilistic Modeling in Genomics Conference, Department of Statistics, University of Oxford (UK) *Identifying genetic superspreaders of infection*
- 11<sup>th</sup> World Meeting of the International Society for Bayesian Analysis, Kyoto (Japan), June 2012: *Dynamic graphical models for real-time multivariate road traffic flow forecasting*
- The R User Conference (UseR! 2011), Coventry (UK), 2011. *Forecasting multivariate time series of flows using the DLM package.* (best application poster award-winning)
- Statistical Modelling and Inference for Networks (Statworks), University of Bristol (UK), 2010. *Dynamic graphical models for road traffic networks*
- 9<sup>th</sup> Valencia International Meetings on Bayesian Statistics 9/ISBA 2010, Benidorm (Spain), 2010. *Bayesian forecasting models for traffic management systems*

### Additional Academic Training

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**Statistical Analysis of Network Data.** European Course in Advanced Statistics, 20 Sept to 2 Oct 2015, Herrsching am Ammersee, Germany.

**Statistical Models for Genomic Prediction in Animals and Plants** 15-19 June 2015, Aarhus University, Denmark.

**Quantitative Traits: Advanced Topics in Plant and Animal Breeding.** Synbreed Summer School, 30 June to 12 July 2013, Herrsching am Ammersee, Germany.

**Academy for PhD Training in Statistics (throughout 2010).** Courses: Statistical Computing, Statistical Inference, Statistical Modelling, Statistical Asymptotics, Applied Stochastic Processes, Computer Intensive Statistics, Spatial and Longitudinal Data Analysis and Nonparametric Smoothing.

### Professional Memberships

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Royal Statistical Society (RSS), International Society for Bayesian Analysis (ISBA) and the Genetics Society

### Language Skills

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- English: Fluent
- Portuguese: Native speaker
- German: Intermediate

### Computer Skills

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- Statistical programming: R, SAS, Fortran
- Applications: L<sup>A</sup>T<sub>E</sub>X, MS/Open Office
- Operating Systems: Unix/Linux, Windows