

Dr Ioannis Kosmidis

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<http://www.ucl.ac.uk/~ucakiko> (subject to change)

CONTACT

Email ioannis.kosmidis@warwick.ac.uk

RESEARCH INTERESTS

Penalized and pseudo likelihood theory and methods; statistical computing and algorithms for complex regression models; methods for clustering; data-analytic settings, mainly in sports science, earthquake engineering and finance

EDUCATION

10/2004 – 09/2007 **PhD in Statistics, University of Warwick** viva 21/09/2007
01/2003 – 06/2003 Department of Probability and Statistics, **University of Sheffield (ERASMUS exchange)**
09/2000 – 06/2004 **BSc (Statistics), Athens University of Economics and Business**

EMPLOYMENT HISTORY AND AFFILIATIONS

01/2018 – present **Reader in Data Science**, Department of Statistics, **University of Warwick**
01/2018 – present **Honorary Reader in Statistics**, Department of Statistical Science, **University College London**
09/2016 – present **Turing Fellow, Alan Turing Institute**
10/2015 – 12/2017 **Senior Lecturer**, Department of Statistical Science, **University College London**
09/2010 – 09/2015 **Lecturer**, Department of Statistical Science, **University College London**
01/2012 – 07/2012 **Senior Research Fellow**, Department of Statistics, **University of Warwick**
09/2007 – 09/2010 **CRISM Research Fellow**, Department of Statistics, **University of Warwick**

RESEARCH GROUPS

05/2017 – present Founding member of the **Data science for sports, activity, and well-being** Turing Interest Group
05/2017 – present Member of the **Online machine learning** Turing Interest Group
05/2015 – 12/2017 Leader and founder of the **Statistics in Sports and Health Research Group**, Department of Statistical Science, University College London

PROFESSIONAL SERVICE

Editorial responsibilities and refereeing activity

02/2018 – present **Associate Editor** for **Biometrika**
10/2013 – present **Associate Editor** for **Statistics and Computing**
10/2011 – present **Associate Editor** for the **Journal of Statistical Software**
09/2007 – present **Referee** for **more than 20 journals**

Organisation of conferences & workshops

O: Organiser, CO: Co-Organiser, SPC: Scientific Programme Committee

03/2018 O BayesComp 2018 invited session
Deterministic approximation methods and pseudo-likelihoods (Barcelona, Spain)
12/2018 CO, SPC **Greek Stochastics κ'** (Athens, Greece)
07/2017 CO, SPC **Greek Stochastics ι'** (Milos, Greece)
06/2017 CO, SPC **3rd UCL Workshop on the theory of big data** (London, UK)
01/2016 CO, SPC **2nd UCL Workshop on the theory of big data** (London, UK)
07/2016 CO, SPC **Greek Stochastics θ'** (Tinos, Greece)
11/2015 CO, SPC Alan Turing Institute Scoping Workshop **Data Science for Data-rich Sports** (London, UK)
01/2015 CO, SPC **1st UCL Workshop on the theory of big data** (London, UK)
12/2014 O ERCIM 2014 invited session
Handling nuisance parameters (Pisa, Italy)
09/2012 CO **Imperial-UCL Joint Statistics Symposium** (London, UK)
09/2011 CO, SPC **useR! 2011 Conference** (Coventry, UK)
04/2008 CO **Workshop on Composite Likelihood Methods** (Coventry, UK)

Organisation of other academic and enabling activities

- 02/2016 – 06/2016 Reading group on "Statistical Learning with Sparsity"
11/2016 – 12/2016 Statistics in Sports and Health 2016 meet-up series
02/2011 – 06/2012 CSML book club on "Asymptotic Statistics"
11/2010 – 09/2011 Reading group on "Foundations of Statistics"

Academic administration

- 10/2013 – 12/2017 Member of the Bibliometrics working group, University College London
01/2011 – 12/2017 Chair of the Computing and Infrastructure Committee, Department of Statistical Science, University College London
09/2008 – 09/2010 Programme Manager of the Academy for PhD Training in Statistics (APTS)
01/2009 – 09/2010 Computing Committee Member, Department of Statistics, University of Warwick
01/2008 – 09/2010 Contract Research Staff Representative, Department of Statistics, University of Warwick
09/2005 – 09/2006 Chairman of the postgraduate Staff Student Liaison Committee, Department of Statistics, University of Warwick

PUBLICATIONS

Theory and methods

1. Median bias reduction in random-effects meta-analysis and meta-regression.
Kyriakou, S., Kosmidis, I. and Sartori, N. (2018).
Statistical Methods in Medical Research (to appear)
2. Improving the accuracy of likelihood-based inference in meta-analysis and meta-regression.
Kosmidis, I., Guolo, A. and Varin, C. (2017)
Biometrika, **104**, 489–496
3. Model-based clustering using copulas with applications.
Kosmidis, I. and Karlis, D. (2016).
Statistics & Computing, **26**, 1079–1099
4. Bias in parametric estimation: reduction and useful side-effects.
Kosmidis, I. (2014).
WIRE Computational Statistics, **6**, 185–196
5. Improved estimation in cumulative link models.
Kosmidis, I. (2014).
Journal of the Royal Statistical Society: Series B, **76**, 169–196
6. Multinomial logit bias reduction via the Poisson log-linear model.
Kosmidis, I. and Firth, D. (2011).
Biometrika, **98**, 755–759
7. Simulating events of unknown probabilities via reverse time martingales.
Latuszynski, K., Kosmidis, I., Papaspiliopoulos, O. and Roberts, G. O. (2011).
Random Structures and Algorithms, **38**, 441–452
8. A generic algorithm for reducing bias in parametric estimation.
Kosmidis, I. and Firth, D. (2010).
Electronic Journal of Statistics, **4**, 1097–1112
9. Bias reduction in exponential family non-linear models.
Kosmidis, I. and Firth, D. (2009).
Biometrika, **96**, 793–804

Applications

10. Modeling outcomes of soccer matches.
Tsokos, A., Narayanan, S., Kosmidis, I., Baio, G., Cucuringu, M., Whitaker, G. and Király, F. J. (2018).
To appear in **Machine Learning**.
11. Empirical seismic vulnerability assessment of Icelandic buildings affected by the 2000 sequence of earthquakes.
Ioannou, I., Bessason, B., Kosmidis, I., Bjarnason J. Ö., Rossetto T (2018).
To appear in **Bulletin of Earthquake Engineering**.
12. Seismic vulnerability functions for Australian buildings by using GEM empirical vulnerability assessment guidelines.
Maqsood, T., Edwards, M., Ioannou, I., Kosmidis, I., Rossetto, T., Corby, N. (2015).
Natural Hazards, **80**, 1625–1650
13. Liquidity commonality does not imply liquidity resilience commonality: A functional characterisation for ultra-high frequency cross-sectional LOB data.

Panayi, E., Peters, G. W. and Kosmidis, I. (2015).

Quantitative Finance, **15**, 1737–1758

14. Upside and downside risk exposures of currency carry trades via tail dependence.
Ames, M., Peters G., Bagnarosa G., and Kosmidis, I. (2015).
In: Glau, M. Scherer, and R. Zagst (Eds.), **Innovations in Quantitative Risk Management**, Volume 99 of Springer Proceedings in Mathematics & Statistics, 163–181

Papers on statistical software

15. trackeR: Infrastructure for running and cycling data from GPS-enabled tracking devices in R.
Frick, H. and Kosmidis, I.
Journal of Statistical Software, **82** (7)
Vignette: <https://cran.r-project.org/web/packages/tracker/vignettes/tracker.pdf>
16. Extended Beta Regression in R: Shaken, Stirred, Mixed, and Partitioned.
Grün, B., Kosmidis, I. and Zeileis, A. (2012).
Journal of Statistical Software, **48** (11)
17. The profileModel R package: Profiling objectives for models with linear predictors.
Kosmidis, I. (2008).
R News, **8/2**, 12–18, R Foundation for Statistical Computing

Working papers and unpublished reports (titles are subject to change and authors are listed alphabetically)

18. Jeffreys' prior, finiteness and shrinkage in binomial-response generalized linear models.
Kosmidis I., Firth D.
Preprint at ArXiv e-prints (1812.01938)
19. Modelling rankings in R: the PlackettLuce package.
Turner H. L., van Etten J., Firth D., Kosmidis I.
Preprint at ArXiv e-prints (1810.12068)
20. Mean and median bias reduction in generalized linear models.
Kosmidis, I., Kenne Pagui E. C. and Sartori, N.
Preprint at ArXiv e-prints (1804.04085)
21. Location-adjusted Wald statistic for scalar parameters.
Di Caterina, C., Kosmidis, I.
Preprint at ArXiv e-prints (1710.11217)
22. Modelling bounded-responses in the presence of boundary observations.
Kosmidis, I., Zeileis, A.
23. Fixed-effects estimation of two-parameter logistic models.
Bellio, R., Kosmidis, I. and Sartori, N.
24. Multi yield curve stress-testing framework incorporating temporal and cross tenor structural dependencies.
Karimalis, E., Kosmidis, I. and Peters, G. W.
Preprint at Bank of England Staff Working Paper Series (Working Paper 655)
25. Prepivoting in stratified settings. Bellio, R., Kosmidis, I., Salvan, A. and Sartori, N.
26. Scalable computation for generalized linear and nonlinear models in the presence of a large nuisance factor.
Firth, D. and Kosmidis, I.
27. The brglm2 R package: Reduced-bias inference for generalized linear models with dispersion parameters.
Kosmidis, I.
28. On iterative adjustment of responses for the reduction of bias in binary regression models
Kosmidis, I.
Preprint at CRISM Working Paper Series (Paper 09-36)
29. Linking the performance of endurance runners to training and physiology effects via multi-resolution elastic net.
Kosmidis, I. and Passfield, L.
Preprint at ArXiv e-prints (1506.01388)
30. Supervised sampling for clustering large data sets.
Kosmidis, I. and Karlis, D.
Preprint at CRISM Working Paper Series (Paper 10-10)

SOFTWARE

Stable

31. `betareg`: Beta regression (author)
32. `brglm`: Bias reduction for binomial-response generalized linear models (author, maintainer)
33. `brglm2`: Bias Reduction in Generalized Linear Models (author, maintainer)

34. `cranly`: Package directives and collaboration networks in CRAN (author, maintainer)
35. `enrichwith`: Methods to enrich various R objects with extra components (author, maintainer)
36. `PlackettLuce`: Plackett-Luce models (author)
37. `profileModel`: Tools for profiling inference functions for various model classes (author, maintainer)
38. `trackerR`: Infrastructure for running and cycling data from GPS-enabled tracking devices (author)

In early development phase

39. `brRasch`: Maximum likelihood and bias reduction for fixed-effects Rasch models (author, maintainer)
40. `trackerRapp`: Shiny interface for the analysis of running and cycling data (author)
41. `waldi`: Location-adjusted Wald statistics (author, maintainer)

Publication profiles

Google Scholar <https://scholar.google.co.uk/citations?user=CpZBF2wAAAAJ>
 ResearcherID <http://www.researcherid.com/rid/A-3012-2012>

RESEARCH VISITS & INVITED TALKS

IS: Invited Seminar/Talk, RV: longer Research Visit, ID: Invited Discussant

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| 11/2018 | IS | School of Mathematics, University of Edinburgh, UK |
| 10/2018 | IS | Oxford R Users Group, UK |
| 10/2018 | IS | Department of Economics, Quantitative Methods and Business Strategy, University of Milano-Bicocca, Milan, Italy |
| 10/2018 | IS | Workshop on Challenges for Categorical Data Analysis, Aachen, Germany |
| 06/2018 | IS | ISNPS 2018, Salerno, Italy |
| 06/2018 | IS | Workshop on Machine Learning and Econometrics, CEMMAP, London, UK |
| 05/2018 | IS | Institute of Statistics and Mathematics, WU Wien, Vienna, Austria |
| 12/2017 | IS | Department of Mathematics, King's College London, UK |
| 11/2017 | IS | 2nd AUEB Sports Analytics Workshop 2017, Athens, Greece |
| 08/2017 | IS | CEN ISBS Joint Conference on Biometrics & Biopharmaceutical Statistics, Vienna, Austria |
| 03/2017 | IS | S3RI, University of Southampton, UK |
| 02/2017 | IS | CeMSIIS, Medical University of Vienna, Austria |
| 02/2017 | IS | Department of Statistics, University of Warwick, UK |
| 02/2017 | IS | Department of Statistical Science, University College London, UK |
| 01/2017 | IS, RV | Empirical Economics and Econometrics Research Centre, University of Innsbruck, Austria |
| 11/2016 | IS | School of Mathematics and Statistics, University of Glasgow, UK |
| 11/2016 | IS | Department of Mathematics, University of York, UK |
| 05/2016 | IS | Royal Statistical Society East Midlands Local Group, University of Nottingham, UK |
| 02/2016 | IS | School of Mathematics, University of Edinburgh, UK |
| 11/2015 | IS, RV | Department of Economics, Universitat Pompeu Fabra, Spain |
| 11/2015 | IS | Meeting of the Statistical Computing and Sport Sections, Royal Statistical Society, London, UK |
| 05/2015 | IS | SuSTaln i-like workshop, "Intractable Likelihoods", Bristol, UK |
| 04/2015 | IS, RV | Faculty of Economics and Business, KU Leuven, Belgium |
| 04/2015 | IS | 51st Gregynog Statistical Conference, Powys, UK |
| 03/2015 | IS, RV | Department of Statistics, University of Padova, Italy |
| 03/2015 | IS, RV | Informatics and Statistics, Ca' Foscari University, Italy |
| 02/2015 | IS | School of Mathematics, University of Bristol, UK |
| 02/2015 | IS | School of Mathematical Sciences, Queen Mary University of London, UK |
| 10/2014 | IS | School of Mathematics, Statistics and Actuarial Science, University of Kent, UK |
| 06/2014 | IS, RV | Informatics and Statistics, Ca' Foscari University, Italy |
| 11/2013 | IS | Department of Statistics, LSE, UK |
| 10/2013 | IS | Department of Mathematics, Imperial College London, UK |
| 05/2013 | IS | Department of Statistics, University of Oxford, UK |
| 04/2013 | IS, RV | Department of Statistics, Athens University of Economics and Business, Greece |
| 01/2013 | IS, RV | School of Computing Sciences, University of East Anglia |
| 03/2013 | ID | International Workshop on Recent Advances in Statistical Inference, Italy |
| 11/2012 | IS | Department of Statistics, University of Vienna, Austria |
| 11/2012 | IS | School of Mathematics and Statistics, Newcastle University, UK |
| 05/2012 | IS, RV | Faculty of Economics and Statistics, Universität Innsbruck, Austria |
| 02/2012 | IS | London School of Hygiene and Tropical Medicine, UK |
| 08/2011 | RV | Department of Statistics, Harvard University, USA |
| 12/2010 | IS | School of Mathematics, University of Southampton, UK |

11/2010 IS, RV Department of Economics, **Universitat Pompeu Fabra**, Spain
 05/2010 IS School of Mathematical Sciences, **Queen Mary University of London**, UK
 05/2009 IS, RV Department of Statistics, **University of Padova**, Italy
 05/2006 IS, RV Department of Statistics, **Athens University of Economics and Business**, Greece

CONTRIBUTIONS TO CONFERENCES & WORKSHOPS

09/2018 Beyond Beta regression: modelling bounded-domain variables in the presence of boundary observations. *RSS Conference 2018, Cardiff, Wales*
 07/2016 Penalized likelihood inference in meta-regression. *31st IWSM, Rennes, France*
 06/2016 brglm2: Reduced-bias inference in generalized linear models. *useR! 2016 Conference, Stanford, US*
 12/2015 Beyond Beta regression: modelling percentages and fractions in the presence of boundary observations. *ERCIM 2013, London, UK*
 07/2015 Linking the performance of endurance runners to training and physiology effects via multi-resolution elastic net. *Greek Stochastics η' , Crete, Greece*
 07/2015 Beyond beta regression: modelling percentages and fractions in the presence of boundary observations. *30th IWSM, Linz, Austria*
 06/2015 Linking the performance of endurance runners to training and physiology effects via multi-resolution elastic net. *MathSport International 2015, Loughborough, UK*
 12/2014 Effects of bias on inference in the presence of nuisance parameters: case studies and questions. *ERCIM 2014, Pisa, Italy*
 12/2013 Beyond Beta regression: modelling percentages and fractions in the presence of boundary observations. *ERCIM 2013, London, UK*
 07/2013 Reduced-bias inference for multi-dimensional Rasch models. *28th IWSM, Palermo, Italy*
 07/2012 Bias reduction in the estimation of Rasch models. *8th World Congress in Probability and Statistics, Istanbul, Turkey*
 12/2011 Model-based clustering using copulas. *ERCIM 2011, London, UK*
 08/2011 brglm: Bias reduction in generalized linear models. *useR! 2011 Conference, Coventry, UK*
 08/2011 A generic algorithm for reducing bias in parametric estimation. *JSM, FL, US*
 05/2011 Multinomial logit bias reduction via the Poisson log-linear model. *Greek Stochastics γ' , Crete, Greece*
 09/2010 Supervised sampling for clustering large data sets. *RSS Conference 2010, Brighton, UK*
 08/2010 On iterative adjustment of responses for the reduction of bias in categorical response models. *Greek Stochastics β' , Lefkada, Greece*
 10/2009 Profiling the parameters of models with linear predictors. *ERCIM 2009, Limassol, Cyprus*
 08/2009 Bias reduction in generalized nonlinear models. *JSM 2009, DC, US*
 07/2009 On iterative adjustment of responses for the reduction of bias in binary regression. *24th IWSM, NY, US*
 08/2008 Profiling the parameters of models with linear predictors. *useR! 2008 Conference, Dortmund, Germany*
 07/2007 Penalized likelihood for a three-parameter Rasch model. *22nd IWSM, Barcelona, Spain*
 07/2006 Bias reduction and shrinkage in multinomial logit models. *21st IWSM, Galway, Ireland*
 07/2005 Bias reduction in ordinal response models. *25th EMS, Oslo, Norway*

CONTRACTS & GRANTS AWARDED

RC: Research Contract, RG: Research Grant, RS: Research Studentship, SE: Scientific Event, TVG: Travel and visitor grant
 PI: Principal Investigator, CI: Co-Investigator

University of Warwick

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|---|-----|----|---------------------|---------|
| Warwick Impact Fund Award | RG | PI | Mar 2018 – Mar 2019 | £11.0K |
| English Institute of Sport | RC | PI | Feb 2015 – Feb 2017 | £160.0K |
| English Institute of Sport and EPSRC | RS | PI | Sep 2015 – Jan 2019 | £69.5K |
| Alan Turing Institute | | | | |
| Research Scoping workshop "Data science for data-rich sport" | SE | CI | Nov 2015 | £14.0K |
| UCL Big Data Institute | | | | |
| Visitor Grant for Omiros Pappaspiopoulos | TVG | PI | Aug 2016 | £2.5K |

AWARDS & SCHOLARSHIPS

| | |
|-------------------|--|
| 06/2014 | UCL's Mathematical and Physical Sciences (MAPS) Faculty Teaching Award for 2014 |
| 07/2007 | Best student poster award in 22nd IWSM |
| 10/2004 – 09/2007 | EPSRC funding for tuition fees (PhD studies) |
| 10/2004 – 09/2007 | Warwick Postgraduate Research Fellowship (PhD studies) |
| 2003–2004 | |
| 2002–2003 | G. Chalkiopoulos Foundation annual scholarship award for exceptional student performance |
| 2001–2002 | |

TEACHING EXPERIENCE

U: Undergraduate level, G: Graduate level, P: PhD level

Generalized linear models with large data

U University of Warwick Coventry, UK Term 2 2017-2018; 2018-2019

Scalable regression: old tricks, new era

P The Alan Turing Institute London, UK 05/2018

Regression modelling with large data sets

P University of Padova Padova, Italy 05/2018

P University of Innsbruck Innsbruck, Austria 01/2017

G Barcelona GSE Data Science Barcelona, Spain 11/2015; 10/2016

Linear and Generalized Linear Models

G Athens University of Economics and Business Athens, Greece 06/2014; 03/2015

Further modelling with applications in health research: Proportional odds models

U, G University College London London, UK Term 2 2013–2015; 2014–2015

Linear models and the analysis of variance

U University College London London, UK Term 1 2010–2011; 2011–2012; 2012–2013; 2013–2014; 2014–2015; 2015–2016

Introduction to Significance tests

G University College London London, UK Term 1 2011–2012; 2012–2013; 2013–2014; 2015–2016

Introduction to Practical Statistics

U University College London London, UK Term 2 2010–2011

Advanced Topics in Statistics: Asymptotic Statistics

U, G University of Warwick Coventry, UK Term 1 2009–2010

COMPUTING SKILLS & LANGUAGES

| | |
|---|--|
| Programming languages (in order of usage) | R, C, Python |
| Other IDE's (in order of usage) | Mathematica, Matlab |
| Operating systems (in order of usage) | Mac OS X, Linux, Windows |
| Languages | Greek (mother tongue), English (fluent), German (fluent) |

ACADEMIC SUPERVISION

Supervision of Post-Docs

Dr Hannah Frick Feb 2015 – Feb 2017
Statistical methods for sport performance data

Current PhD students

| | | |
|-----------------------|-------------------|-----------------|
| Ms Zhenzheng Hu | joint supervisor | started 10/2017 |
| Mr Santhosh Narayanan | first supervisor | started 09/2016 |
| Ms Asma Saleh | first supervisor | started 09/2015 |
| Mr Alkeos Tsokos | first supervisor | started 09/2015 |
| Mr Zhongzhen Wang | joint supervisor | started 09/2016 |
| Mr Serhat Akhanli | second supervisor | started 09/2014 |

Completed PhD students

Dr Sophia Kyriakou external supervisor viva 05/2018
Reduced-bias estimation and inference for mixed-effects models

Dr Claudia Di Caterina external supervisor visited 09/2015 – 09/2016
Reducing the impact of bias in likelihood inference for prominent model settings

Dr Matthew Ames second supervisor viva 05/2017
Innovations in dependence modelling for financial applications

Dr Stylianos Kampakis joint supervisor viva 06/2016
Predictive modelling of football injuries

Dr Emmanouil Karimalis external supervisor visited 09/2013 – 12/2014
Essays in multivariate modelling in Finance

Dr Chien-Ju Lin second supervisor viva 09/2014
A pattern-clustering method for longitudinal data

Dr Gary Macindoe second supervisor viva 06/2013
Hybrid algorithms for efficient Cholesky decomposition and matrix inverse using multicore CPUs with GPU accelerators

MSc project supervision

2017 – 2018 (4): Ms Mingyu Chen, Ms Ruijun Hou, Ms Shuyang Wang,
Mr Dimitrios Papadimitriou (Tukey prize for best MSc dissertation in the dept of Statistics)

2016 – 2017 (1): Ms Zhenzheng Hu

2015 – 2016 (6): Mr Sidney Bixer, Ms Sarah Inman (visiting from GSE Data Science), Mr Alberto Martin Izquierdo,
Mr Santhosh Narayanan (visited from GSE Data Science), Ms Chenye Li, Mr Edward Terry

2014 – 2015 (2): Ms Xiaolin Shen, Mr Alkeos Tsokos

2013 – 2014 (2): Ms Kavya Jagan, Mr Halil Halil

2012 – 2013 (1): Mr Jiancheng Chen

2011 – 2012 (1): Ms Yi Feng

BSc project supervision

2018 – 2019 (1): Mr Declan Wardell

2017 – 2018 (1): Mr Robin Hornak (best final year project in the dept of Statistical Science)

2015 – 2016 (2): Mr Angus Chiu, Ms Alexia Calandras (visiting from ENSTA ParisTech)

2014 – 2015 (2): Mr Yijie Hu, Ms Tongjin Zhang

2013 – 2014 (3): Mr Ian Lim, Ms Yaqiao Zhang, Ms Yijia Zhang

2012 – 2013 (3): Ms Anyi Zou, Ms Rong Tu, Ms Assiya Iskaliyeva

2011 – 2012 (1): Mr Martin Huber (affiliate student)