CONTACT   Department of Statistics   *e-mail:*   scutari@stats.ox.ac.uk
INFORMATION   University of Oxford   marco.scutari@gmail.com
                 24–29 St. Giles
                 Oxford, OX1 3LB

FELLOWSHIPS   **Departmental Lecturer in Statistics**   **2014 − present**
& POSITIONS   Department of Statistics, University of Oxford.
                 Fellow and Tutor in Probability and Statistics at Somerville College.

                 Research Associate in Statistical Genetics   **2011 − 2014**
                 UCL Genetics Institute, University College London.

                 Doctoral Research Fellow in Statistics   **2008 − 2011**
                 Department of Statistical Sciences, Università degli Studi di Padova.

EDUCATION   **Università degli Studi di Padova**, Italy   **2008 − 2011**
                 Ph.D. in Statistical Sciences, Ph.D. School in Statistical Sciences.
                 European Doctorate (Doctor Europeus) Mention

                 Thesis: "*Measures of Variability for Graphical Models*"
                 Supervisors: Prof. Adriana Brogini, Department of Statistical Sciences, Università
                 degli Studi di Padova and Prof. Korbinian Strimmer, Institut für Medizinische
                 Informatik, Statistik und Epidemiologie (IMISE), Universität Leipzig.

                 Università degli Studi di Padova, Italy   **2004 − 2007**
                 M.Sc. in Statistics and Computer Science, Faculty of Statistical Sciences.
                 Mark: 107/110

                 Thesis: "*Network Bayesiani: un approccio non parametrico basato sull'entropia per la
                 selezione del modello*" (*Bayesian Networks: an entropy-based nonparametric approach
                 to model selection*)
                 Supervisors: Prof. Adriana Brogini and Prof. Fortunato Pesarin, Department of
                 Statistical Sciences, Università degli Studi di Padova.

                 Università degli Studi di Padova, Italy   **2001 − 2004**
                 B.Sc. in Statistics and Information Technologies, Faculty of Statistical Sciences.
                 Mark: 110/110

                 Thesis: "*Miglioramenti della carta di controllo AEWMA*"
                 (*Improvements of the AEWMA Quality Control Chart*)
                 Supervisor: Prof. Guido Masarotto, Department of Statistical Sciences, Università
                 degli Studi di Padova.

                 University of Cambridge International Examinations   **June 2000**
                 Preliminary English Test (PET).

Advanced Courses	**Università degli Studi di Padova**, Italy	**June 2010**

Università degli Studi di Padova, Italy   **June 2010**
Advanced Course in "*Monte Carlo Statistical Methods*"
Ph.D. School in Statistical Sciences.
Instructor: George Casella, Department of Statistics, University of Florida.

Donau-Universität Krems, Austria   **September 2009**
Short Course in "*Statistical Learning and Data Mining*"
Zentrum für Bioinformatik und Biostatistik.
Instructors: Trevor Hastie and Robert Tibshirani, Department of Statistics, Stanford University.

Università degli Studi di Padova, Italy   **May 2009**
Short Course in "*Analysis of Clustered Categorical Data*"
Ph.D. School in Statistical Sciences.
Instructor: Alan Agresti, Department of Statistics, University of Florida.

Università degli Studi di Padova, Italy   **November – December 2008**
Advanced Course in "*Statistical Methods*"
Ph.D. School in Information Engineering.
Instructor: Lorenzo Finesso, Institute for Biomedical Engineering (ISIB), National Research Council (CNR).

Visiting Periods

Universität Leipzig, Germany   **October – November 2009**
       September – October 2010
Institut für Medizinische Informatik, Statistik und Epidemiologie (IMISE).
Host: Prof. Korbinian Strimmer.

Università degli Studi di Milano-Bicocca, Italy   **January 2017**
Department of Informatics, Systems and Communication.
Host: Prof. Fabio Stella.

Università Cattolica del Sacro Cuore, Italy   **January 2017**
Department of Statistical Sciences.
Host: Prof. Guido Consonni.

Grants Awarded

International Centre for Mathematical Sciences (ICMS)   **2016**
£22k grant covering all the expenses for organising and hosting a 4-day workshop by the title "Learning Graphical Models in High Dimensional Settings". Principal Organiser: Marco Scutari. Co-Organisers: Sofia Massa, Robin Evans, Department of Statstics, University of Oxford.

Journals & Conferences

Editor
Frontiers in Systems Biology, Frontiers in Genetics (Frontiers)

Reviewer
Annals of Applied Statistics
Bioinformatics
Journal of American Statistical Association
Journal of Royal Statistical Society (A, B, C)
Journal of Machine Learning Research
Journal of Statistical Software
Statistics and Computing
PLoS ONE, PLoS Genetics
Theoretical and Applied Genetics
Genetics

Programme/Scientific Committee
Advanced Methodologies for Bayesian Networks (AMBN, 2017)
Learning Graphical Models in High Dimensional Settings (Principal Organiser, 2017)
European Conference on Machine Learning and Principles and Practice of Knowledge Discovery in Databases (ECML PKDD 2015)
European Workshop on Probabilistic Graphical Models (PGM 2014, PGM 2016)
11th International Meeting on Computational Intelligence Methods for Bioinformatics and Biostatistics (CIBB 2014)
Workshop on Probabilistic Problem Solving in Biomedicine, 13th Conference on Artificial Intelligence in Medicine (AIME 2011)

SERVICE

Coordinator of the M.Sc. in Applied Statistics   **2014 − present**
Internal Examiner, M.Sc. in Applied Statistics   **2015 − present**
Department of Statistics, University of Oxford.

PROFESSIONAL QUALIFICATIONS

Fellow of the Higher Education Academy   **2015 − present**
(UK Professional Standards Body for teaching and support in higher education).

PROFESSIONAL ORGANISATIONS

International Society for Bayesian Analysis (ISBA)   **2014 − present**

WORKS & PUBLICATIONS

Software

bnlearn R package (CRAN)   **2007 − present**
Author and maintainer of bnlearn, an R package implementing several algorithms for learning Bayesian networks and some common inference procedures. Home page: http://www.bnlearn.com.

packdep R package (CRAN)   **2009 − 2016**
Co-author (with Radhakrishnan Nagarajan) and maintainer of packdep, an R package to explore dependencies between user-contributed R packages and identify key packages according to social network analysis metrics.

Books

Denis JB and Scutari M (2014). *Réseaux Bayésiens avec R : Élaboration, Manipulation et Utilisation en Modélisation Appliquée.* Pratique R. EDP. This is a French translation of "Bayesian Networks with Examples in R".

Scutari M and Denis JB (2014). *Bayesian Networks with Examples in R.* Chapman & Hall.

Nagarajan R, Scutari M, and Lèbre S (2013). *Bayesian Networks in R with Applications in Systems Biology.* Use R! series. Springer.

Book Chapters

Scutari M (2015a). Graphical Modelling in Genetics and Systems Biology. In Lucas P, editor, *Foundations of Biomedical Knowledge Representation*, Lecture Notes in Artificial Intelligence. Springer.

Scutari M (2015b). Personalised Medicine: Taking a New Look at the Patient. In Lucas P, editor, *Foundations of Biomedical Knowledge Representation*, Lecture Notes in Artificial Intelligence. Springer.

Scutari M and Strimmer K (2011). Introduction to Graphical Modelling. In Balding DJ, Stumpf M, and Girolami M, editors, *Handbook of Statistical Systems Biology.* Wiley.

Journal Articles

Chao YS, Wu HT, Scutari M, Chen TS, Wu CJ, Durand M, and Boivin A (2017a). A Network Perspective on Patient Experiences and Health Status: the Medical Expenditure Panel Survey 2004 to 2011. *BMC Health Services Research.* In print.

Chao YS, Wu HT, Scutari M, Chen TS, Wu CJ, Durand M, and Boivin A (2017b). A Network Perspective of Engaging Patients in Specialist and Chronic Illness Care: the 2014 International Health Policy Survey". *PLoS ONE.* Submitted.

Scutari M (2017a). Bayesian Dirichlet Bayesian Network Scores and the Maximum Entropy Principle. *Journal of Machine Learning Research (Proceedings Track, AMBN 2017).* In print.

Scutari M (2017b). Beyond Uniform Priors in Bayesian Network Structure Learning. *Journal of Machine Learning Research.* Submitted.

Scutari M (2017c). Bayesian Network Constraint-Based Structure Learning Algorithms: Parallel and Optimised Implementations in the bnlearn R Package. *Journal of Statistical Software*, 77(2):1–20.

Scutari M, Auconi P, Caldarelli G, and Franchi L (2017). Bayesian Networks Analysis of Malocclusion Data. *Scientific Reports.* In print.

Vitolo C, Scutari M, Tucker A, and Russell A (2017). Modelling Air Pollution, Climate and Health Data Using Bayesian Networks: a Case Study of the English Regions. *Earth and Space Science.* In preparation.

Scutari M (2016). An Empirical-Bayes Score for Discrete Bayesian Networks. *Journal of Machine Learning Research (Proceedings Track, PGM 2016)*, 52:438–448.

Scutari M, Mackay I, and Balding DJ (2016). Using Genetic Distance to Infer the Accuracy of Genomic Prediction. *PLoS Genetics*, 12(9):e1006288, 1–19.

Bentley AR, Scutari M, Gosman N, Faure S, Bedford F, Howell P, Cockram J, Rose GA, Barber T, Horsnell R, Pumfrey C, Winnie E, Shacht J, Beauchêne K, Praud S, Greenland A, Balding DJ, and Mackay I (2014). Applying Association Mapping and Genomic Selection to the Dissection of Key Traits in Elite European Wheat. *Theoretical and Applied Genetics*, 127(12):2619–2633.

Scutari M, Howell P, Balding DJ, and Mackay I (2014). Multiple Quantitative Trait Analysis Using Bayesian Networks. *Genetics*, 198(1):129–137.

Tian S, Scutari M, and Denis JB (2014). Crossed Linear Gaussian Bayesian Networks, Parsimonious Models. *Journal de la Société Française de Statistique*, 155(3):1–21.

Nagarajan R and Scutari M (2013). Impact of Noise on Molecular Network Inference. *PLoS ONE*, (12):e80735, 1–12.

Scutari M (2013). On the Prior and Posterior Distributions Used in Graphical Modelling (with discussion). *Bayesian Analysis*, 8(3):505–532.

Scutari M, Mackay I, and Balding DJ (2013). Improving the Efficiency of Genomic Selection. *Statistical Applications in Genetics and Molecular Biology*, 12(4):517–527.

Scutari M and Nagarajan R (2013). On Identifying Significant Edges in Graphical Models of Molecular Networks. *Artificial Intelligence in Medicine*, 57(3):207–217.

Scutari M and Brogini A (2012). Bayesian Network Structure Learning with Permutation Tests. *Communications in Statistics – Theory and Methods*, 41(16–17):3233–3243.

Nagarajan R, Datta S, Scutari M, Beggs ML, Nolen GT, and Peterson CA (2010). Functional Relationships Between Genes Associated with Differentiation Potential of Aged Myogenic Progenitors. *Frontiers in Physiology*, 1(21):1–8.

Scutari M (2010). Learning Bayesian Networks with the bnlearn R Package. *Journal of Statistical Software*, 35(3):1–22.

Chavan SS, Bauer MA, Scutari M, and Nagarajan R (2009). NATbox: a Network Analysis Toolbox in R. *BMC Bioinformatics*, 10(Suppl 11):S14.

Conference Presentations

Scutari M (2017a). Bayesian Networks, MAGIC Populations and Mutliple Trait Prediction. Invited Talk at the "Learning Graphical Models in High Dimensions" Workshop, ICMS, Edinburgh, September 12–14.

Scutari M (2017b). Beyond Uniform Priors in Bayesian Network Structure Learning. Invited Talk at the "Learning Graphical Models in High Dimensions" Workshop, ICMS, Edinburgh, September 12–14.

Scutari M (2016a). Bayesian Networks, MAGIC Populations and Mutliple Trait Prediction. Invited Talk at the 5th International Conference on Quantitative Genetics (ICQG), Madison, June 14.

Scutari M (2016b). An Empirical-Bayes Score for Discrete Bayesian Networks. Presented at the International Conference on Probabilistic Graphical Models (PGM), Lugano, September 8.

Scutari M (2016c). Bayesian Networks, MAGIC Populations and Mutliple Trait Prediction. Poster at the "Probabilistic Modeling in Genomics", Oxford, September 12–14.

Scutari M (2015). Modelling Survey Data with Bayesian Networks. Invited Talk at the "Bayesian Networks at Work" Workshop, Data Methods and Systems Statistical Laboratory, University of Brescia, May 18.

Ruiz-Ruano García AM, Puga JL, and Scutari M (2014). Learning a Bayesian Structure to Model Attitudes Towards Business Creation at University. In *Proceedings of the 8th International Technology, Education and Development Conference (INTED), Valencia, Marc 10–12*. pages 5242–5249.

Scutari M (2014a). Multiple Quantitative Trait Analysis in Statistical Genetics with Bayesian Networks. Presented at the "Integrating the Genome with the Phenome", Bloomsbury Centre for Genetic Epidemiology and Statistics (BCGES) and South of England Genetic Epidemiology Group (SEGEG) Annual Meeting, London, July 8.

Scutari M (2014b). Multiple Quantitative Trait Analysis in Statistical Genetics with Bayesian Networks. Invited Talk at the 11th International Meeting on Computational Intelligence Methods for Bioinformatics and Biostatistics, Cambridge, June 26–28.

Scutari M (2014c). On the Prior and Posterior Distributions Used in Graphical Modelling. Invited Talk at the Joint Statistical Meetings (JSM), Boston, August 2–7.

Scutari M (2014d). Multiple Quantitative Trait Analysis in Statistical Genetics with Bayesian Networks. Invited Plenary Talk at "Graphical Causality Models: Tree, Bayesian Networks and Big Data", European Network for Business and Industrial Statistics (ENBIS)–Société Française de Statistique (SFdS) Spring Meeting, Paris, April 9–11.

Scutari M, Bentley A, and Mackay I (2014a). Genotype-Environment Effects Analysis using Bayesian Networks. Invited Talk at the 7th International Conference of the ERCIM Working Group on Computational and Methodological Statistics (ERCIM 2014), Pisa, December 7.

Scutari M, Bochard AM, Mackay I, and Balding DJ (2014b). Predictive Accuracy: a Function of Genetic Distance. Poster at the "Statistical and Computational Methods for Relatedness and Relationship Inference from Genetic Marker Data" Workshop,

International Centre for Mathematical Sciences (ICMS), Edinburgh, September 22–26.

Scutari M (2013). Bayesian Networks for Gene Network Discovery: Parallel and Optimised Learning. Poster at the "Mathematical and Statistical Aspects of Molecular Biology" Conference (MASAMB), Imperial College, London, April 11–12.

Scutari M and Howell P (2013). Graphical Models for Genomic Selection. Presented at the MAGIC Workshop, National Institute for Agricultural Botany (NIAB), Cambridge, June 12–13.

Scutari M, Mackay I, and Balding DJ (2012). Efficient Use of Marker Profiles in Genomic Selection. Presented at the 15th Meeting of the EUCARPIA Section "Biometrics in Plant Breeding", Hohenheim, September 5–7.

Scutari M and Nagarajan R (2011). On Identifying Significant Edges in Graphical Models. Presented at the Workshop "Probabilistic Problem Solving in Biomedicine" of the 13th Artificial Intelligence in Medicine (AIME) Conference, Bled (Slovenia), July 2.

Scutari M and Brogini A (2010). Constraint-based Bayesian Network Learning with Permutation Tests. Presented at the Conference "Statistics for Complex Problems: the Multivariate Permutation Approach and Related Topics", Padova, June 14–15.

Chavan SS, Bauer MA, Scutari M, and Nagarajan R (2009). A Parallel Version of the Network Analysis Toolbox (NATbox). Presented at the 6th Annual Conference of the MidSouth Computational Biology and Bioinformatics Society (MCBIOS), Starkville, Mississippi, February 20–21.

Seminars

Scutari M (2017). An Empirical-Bayes Score for Discrete Bayesian Networks. Department of Informatics, Systems and Communication, University of Milano Bicocca. January 17.

Scutari M (2016a). Bayesian Network Modelling with Examples. IBM Analytics, London Data Science Studio, November 28.

Scutari M (2016b). Bayesian Network Modelling: with Examples in Genetics and Systems Biology. Bayesian Networks Meetup, Alan Turing Institute, September 29.

Scutari M (2016c). Bayesian Networks, MAGIC Populations and Mutliple Trait Prediction. School of Agriculture, Food, and Rural Development, Newcastle University, November 16.

Scutari M (2015). Using Genetic Distance to Infer the Accuracy of Genomic Prediction. Statistical Omics Meeting Series, Imperial College, London. September 7.

Scutari M (2013a). Bayesian Network Modelling in Genetics and Systems Biology. Biomathematics Seminar, Imperial College. October 15.

Scutari M (2013b). Applications of Bayesian Networks in Genetics and Systems Biology. Computational Biology Seminar, University of Liverpool. September 13.

Scutari M (2013c). On the Prior and Posterior Distributions Used in Graphical Modelling. Graphical Modelling Reading Club, Department of Statistics, University of Oxford. October 25.

Scutari M and Howell P (2013). Graphical Models for Genomic Selection. Unité Mathématiques et Informatique Appliquées, INRA, Jouy-en-Josas. November 7.

Scutari M (2012). Graphical Models and Protein Signalling Networks. Astellas, Leiden. November 5.

Scutari M (2011). Measures of Variability for Graphical Models. Genetics Institute, University College London (UCL). March 14.

Scutari M (2010). Bayesian Network Resampling for the Analysis of Functional Relationships. Institut für Medizinische Informatik, Statistik und Epidemiologie (IMISE), Universität Leipzig. October 12.

Scutari M (2009a). Structure Variability in Graphical Models. Machine Learning / Intelligent Data Analysis Group, Institut für Softwaretechnik und Theoretische Informatik, Technische Universität Berlin. November 5.

Scutari M (2009b). Comparing Bayesian Networks and Structure Learning Algorithms. Institut für Medizinische Informatik, Statistik und Epidemiologie (IMISE), Universität Leipzig. October 20.

Scutari M (2008). Network Bayesiani: Selezione del Modello (*Bayesian Networks: Structure Learning Algorithms*). Department of Information Engineering, Università degli Studi di Padova. November 4.

TEACHING

Understanding Bayesian Networks   **2017**
Instructor, Ph.D. course organised by Università Cattolica del Sacro Cuore and the Italian Statistical Society (SIS).

Probability and Statistics (1st and 2nd year)   **2014/15-present**
Graph Theory (2nd year)   **2016/17**
Tutorial Fellow, Somerville College, University of Oxford. B.S.c and M.Math. in Mathematics, Mathematics & Statistics and Mathematics & Computer Science.

R Programming, Statistical Programming   **2015/16 − present**
Instructor, M.Sc. in Applied Statistics, Department of Statistics, University of Oxford.

Linear Models   **2014/15 − 2015/16**
Log-Linear Models and Contingency Tables   **2014/15**
Instructor, M.Sc. in Applied Statistics, Department of Statistics, University of Oxford.

Learning Bayesian Networks in R: an Example in Systems Biology   **2013**
Instructor, Tutorial at the "Use R!" Conference, Albacete.

Feature Selection and Model Averaging in Quantitative Genetics   **2012**
Instructor, Limagrain, Clermont-Ferrand.

Introduction to Genetic Epidemiology in the GWAS Era 2011/12 − 2012/13
Teaching Assistant, Bloomsbury Centre for Genetic Epidemiology and Statistics.

Graphical Models: Model Estimation and Validation   **2011/2012**
Instructor, Ph.D. School in Statistical Sciences, Department of Statistical Sciences, Università degli Studi di Padova.

Database Management Systems II   **2007/08**
Instructor, M.Sc. in Statistics and Computer Science, Department of Statistical Sciences, Università degli Studi di Padova.