

## Mark Girolami

### **Employment History**

2014 - Date, Chair of Statistics, Department of Statistics, University of Warwick  
2010 - 2014, Chair of Statistics, Department of Statistical Science, UCL.  
2006 - 2010, Chair of Computing Science, Dept of Comp Science, University of Glasgow.  
2005 - 2006, Reader, Dept of Computing Science, University of Glasgow.  
2004 - 2005, Lecturer, Dept of Computing Science, University of Glasgow.

2003 - 2004, Associate Head of School, University of Paisley.  
1999 - 2004, Professor of Computing Science, University of Paisley.  
1997 - 1999, Lecturer, Department of Computing, University of Paisley.

1995 - 1997, Senior Lecturer, School of Engineering, Falkirk College.  
1986 - 1995, Engineer, IBM.

### **Academic History**

1995 - 1998, University of Paisley, PhD.  
1981 - 1985, University of Glasgow, BSc Hons, Mechanical Engineering

### **Track Record of Research Funding**

2015 - 2018, DARPA, with UT@Austin, and MIT, Co-I.  
2014 - 2018, EPSRC, £1.50M, Raman Spectroscopy Diagnostics, Co-I.  
2014 - 2018, EPSRC, £2.00M, Enabling Uncertainty Quantification, Co-I.  
2013 - 2016, EPSRC, £675K, Interactive Machine Learning, PI.  
2013 - 2016, EPSRC, £104K, Network on Comp Stats and Machine Learning, PI.  
2013 - 2018, Royal Society, £75K, Wolfson Research Merit Award, PI.  
2012 - 2017, EPSRC, £663K, Established Career Fellowship, Geometry of Comp Stats, PI.  
2011 - 2016, EPSRC, £3.25M, A Population Approach to Ubicomp, Programme Grant, Co-I.  
2010 - 2011, EPSRC, £197K, Computational Statistics and Neuroscience, PI.  
2008 - 2011, EPSRC, £210K, Advancing Machine Learning Methodology, PI.  
2007 - 2012, EPSRC, £810K, Advanced Research Fellowship, PI.  
2007 - 2012, EPSRC, £5.5M, The Molecular Nose, Basic Technology Grant, Co-I.  
2005 - 2008, EPSRC, £217K, Stochastic Models & Statistical Inference of Gene Paths, PI.  
2001 - 2005, EPSRC, £500K, Statistical Fraud Detection, PI.

2010 - 2013, BBSRC, €2.2M, The Silicotryp, SysMo2, Co-I.  
2009 - 2012, BBSRC, £802K, Inference Based Modeling, Standard Grant, Co-I.  
2010 - 2015, CRUK, £500K, Survival Pathways in CML, Programme Grant, Co-I.  
2007 - , Royal Academy of Engineering, Senior Research Fellowship, Declined.  
2007 - 2010, Microsoft Research, £66K, European PhD Scholarship, PI.  
2007 - 2008, Microsoft Research, £100K, Bayesian System Identification in Biology, PI.  
2005 - 2006, MRC, £20K, Discipline Hopping Award, PI.  
2011 - 2016, EU FP7, €10M, ASSETT, Modeling Embryonal Tumours, Co-I.  
2011 - 2013, EU FP7, €2M, ICARUS, Predicting Weld Inspection Quality, Co-I.  
2011 - 2012, EU FP7, €1.5M, ITFoM, FET Flagship Proposal Coordination Action, Co-I.

**Grants from Industrial Partners** - (NCR, Peerindex, Xerox Research, DeepmInd, Microsoft Research)

## Mark Girolami

### **Leadership and Service Activities**

2016 - 2017, Chair, Bayesian Computation Section, International Society Bayesian Analysis  
2015 - 2016, Chair Elect, Bayesian Computation Section, Int Society Bayesian Analysis  
2014 - 2016, Director of Centre for Research in Statistical methodology, EPSRC  
2011 - 2014, Director of Centre for Comp Statistics and Machine Learning (CSML), UCL.  
2011 - 2014, Management Board, Centre for Maths and Physics in the Life Science, UCL  
2011 - 2014, Management Board Member, UCL Genetics Institute.

2015 - date, Member of Executive Board, Alan Turing Institute for Data Science  
2015 - date, Member Scientific Advisory Board Smith Institute for Mathematics  
2013 - date, Member of EPSRC Mathematical Sciences Strategic Advisory Team (SAT)  
2011 - date, Member of Research Section Committee, Royal Statistical Society  
2007 - date, Member of EPSRC Peer Review College.  
2006 - 2010, Member of MRC Bioinformatics Career Development Panel.

2012 - date, Editor in Chief, Statistics and Computing  
2011 - date, Associate Editor, Journal of Computational and Graphical Statistics.  
2011 - 2012, Associate Editor, Statistics and Computing.  
2010 - date, Associate Editor, Journal of the Royal Statistical Society - Series C.  
2006 - date, Associate and Area Editor, Pattern Recognition Letters.  
2012 - 2015, Member of Research Section Committee, Royal Statistical Society.  
2014 - date, Vice Chair Statistical Computing Section, Royal Statistical Society.

2013 - date, External Examiner, MSc Computational Biology, Queens University Belfast  
2013 - date, External Examiner, MMath, Imperial College London  
2010 - 2013, External, MPhil, Dept of Appl Math & Theo.Physics, Cambridge University  
2011 - date, Member of Math, Statistics and Informatics, Roy.Soc. of Edinburgh.  
2010 - 2013, External Examiner, MRes Computational Biology, University of Cambridge.  
2010 - date, Member of Scientific Advisory Board for Systems Biology Ireland.

### **Awards**

2011 - Elected to Fellowship of Royal Society of Edinburgh. FRSE  
2009 - Awarded Society of Optics and Photonics (SPIE) Pioneer Award.  
2007 - Fellow of the Institute of Engineering and Technology. FIET

2017 - Medallion Lecture - Institute of Mathematical Statistics  
2014 - Plenary Talk - International Conference Pattern Recognition  
2012 - Program Chair of 15th Annual Conference on AI and Statistics.  
2012 - Joint Chair of ICMS funded Workshop on Advances Markov chain Monte Carlo.  
2012 - Named Lecture, 24th Nordic Conference in Mathematical Statistics.  
2011 - Distinguished Lecture in Electrical, Electronic Engineering, QMU, London

Invited speaker and keynote speaker at numerous meetings, conferences, summer schools including seminar talks at the main Statistics and Mathematics Departments in the UK and North America, e.g. Cambridge, Oxford, Imperial, Bristol, Durham, Southampton, Newcastle, Nottingham, Lancaster, KCL, Harvard, MIT, U.of Toronto, Fields Institute.

Graduated 16 PhD students since 2001.

External examiner of PhD students at Oxford (2x), Cambridge, Imperial, UCL, Kings College London, Southampton, Manchester, Sheffield, Sussex (2x), Exeter, Edinburgh (2x), Abertay, MIT, Technical University of Denmark, Helsinki University, University of Trento.

H-Index = 46 (via Google Scholar)

Full Papers in Refereed Journals

**2016**

C.Oates, M.Girolami, and N. Chopin. Control Functionals for Monte Carlo Integration, *in press Journal of the Royal Statistical Society – Series B*.

M. Betancourt, S. Byrne, S. Livingstone, and **M. Girolami**. The Geometric Foundations of Hamiltonian Monte Carlo, *in press Bernoulli*.

C.Oates, T. Papamarkou, and **M. Girolami**. The Controlled Thermodynamic Integral, *in press. Journal of American Statistical Association*.

Banushi. B., ..., 27 Authors... **Girolami, M.**, Bozec, L., Mills, K., Gissen, P., Regulation of Post-Golgi LH3 Trafficking is Essential for Collagen Homeostasis, *in press Nature Communications*.

P. Conrad, **M. Girolami**., S.Sarkka, A.M.Stuart, K.Zygalkis. (May 2016) Probability Measures for Numerical Solutions of Differential Equations, *in press Statistics and Computing*

S. Lan, T. Bui-Thanh, M. Christie, and **M. Girolami**. Emulation of Higher-Order Tensors in Manifold Monte Carlo Methods for Bayesian Inverse Problems, *Journal of Computational Physics* Vol. 308, 81 - 101.

S. Virtanen, M. Rost, A. Morrison, M. Chalmers, and **M. Girolami**. Uncovering smartphone usage patterns with multi-view mixed membership models. *Stat* DOI: 10.1002/sta4.103.

K. Grieves, Moores.M, Smith, W; Harding, K; **M. Girolami**; Graham, D; Faulds, K. Preferential Attachment of Specific Fluorescent Dyes and Dye Labelled DNA Sequences in a SERS Multiplex. *In press Analytical Chemistry*

**2015**

A-M. Lynne, **M. Girolami**, H. Strathmann, D. Simpson and Y. Atchade. On Russian Roulette Estimates for Bayesian Inference with Doubly-Intractable Likelihoods. *Statistical Science*, Vol.30, No.4, 443-467, 2015.

Hennig, P., Osborne, M. A., & **Girolami, M.** Probabilistic Numerics and Uncertainty in Computations. *Proceedings of the Royal Society A, Proc. R. Soc. A*, 471 20150142; DOI: 10.1098/rspa.2015.0142.

R. Schwentner, TP, MK, VS, FY, SB, PM, **M.Girolami**, **HK**. EWS-FLI1 Employs an E2F Switch to Drive Target Gene Expression. *Nucleic Acids Research*, 43 (5): 2780-2789.

T. Bui, and **M. Girolami**. Solving Large-Scale PDE-constrained Bayesian Inverse problems with Riemann Manifold Hamiltonian Monte Carlo, *Inverse Problems*, 30, 114014, doi:10.1088/0266-5611/30/11/114014.

## Mark Girolami

S.Virtanen, M Rost, M Higgs, A Morrison, M Chalmers, **M.Girolami** Non-Parametric bayes to Infer Playing Strategies Adopted in a Population of Mobile Gamers. **Stat**, DOI: 10.1002/sta4.75, 46-58.

### **2014**

M.Filipponne and **M Girolami**. Pseudo-marginal Bayesian inference for Gaussian processes. **IEEE Transactions on Pattern Analysis and Machine Intelligence**, 36(11):2214-2226.

T Xifara, C Sherlock, S Livingstone, S Byrne, **M Girolami**. Langevin diffusions and the Metropolis-adjusted Langevin algorithm. **Statistics & Probability Letters** 91, 14-19.

S Livingstone, **M Girolami**. Information-Geometric Markov Chain Monte Carlo Methods Using Diffusions. **Entropy** 16 (6), 3074-3102.

S Lan, V Stathopoulos, B Shahbaba, **M Girolami**. Markov Chain Monte Carlo from Lagrangian Dynamics. **Journal of Computational and Graphical Statistics**, DOI:10.1080/10618600.2014.902764

T Papamarkou, A Mira, **M Girolami**. Zero Variance Differential Geometric Markov Chain Monte Carlo Algorithms. **Bayesian Analysis** 9 (1), 97-128.

M Jiwaji, ME Sandison, J Reboud, R Stevenson, R Daly, G Barkess et al. Quantification of Functionalised Gold Nanoparticle-Targeted Knockdown of Gene Expression in HeLa Cells **PloS one** 9 (6), e99458

K. Kramer, V. Stathopoulos, **M. Girolami**, N. Radde. MCMC\_CLIB—an advanced MCMC sampling package for ODE models, **Bioinformatics**, 30 (20): 2991-2992.

F. Achcar, A. Fadda, J. Haanstra, E. Kerkhoven, D. Kim, A. Leroux, T. Papamarkou, F. Rojas, B. Bakker, M. Barrett, C. Clayton, **M. Girolami**, L. Krauth-Siegel, K. Matthews, R. Breitling. The Silicon Trypanosome: A Test Case of Iterative Model Extension in Systems Biology. **Advances in Microbial Systems Biology**, 2014;64:115-43.

### **2013**

S Byrne, **M Girolami**. Geodesic Monte Carlo on Embedded Manifolds. **Scandinavian Journal of Statistics**, (with discussion) 40, 825 – 845.

V Stathopoulos, **M. Girolami**. Markov chain Monte Carlo Inference for Markov Jump Processes via the Linear Noise Approximation. **Philosophical Transactions of the Royal Society A**: 371 20110541; doi:10.1098/rsta.2011.0541

M Filippone, M Zhong, **M Girolami**. A Comparative Evaluation of Stochastic-Based Inference Methods for Gaussian Process Models. **Machine Learning** 93 (1), 93-114.

T Diethe, **M Girolami**. Online Learning with (Multiple) Kernels: A Review. **Neural Computation** 25 (3), 567-625.

AF Marquand, M Filippone, J Ashburner, **M Girolami**, J Mourao-Miranda. Automated, High Accuracy Classification of Parkinsonian Disorders: A Pattern Recognition Approach. **PloS one** 8 (7), e69237.

## Mark Girolami

B Calderhead, M Epstein, L Sivilotti, **M Girolami**. Bayesian Approaches for Mechanistic Ion Channel Modeling. *In Silico Systems Biology*, (1021), 247-272.

### 2012

Filippone, M.; Marquand, Andre; Blain, C. R. V.; Williams, S. C. R.; Mourao-Miranda, J.; **Girolami, M.** Probabilistic Prediction of Neurological Disorders with a Statistical Assessment of Neuroimaging Data Modalities. *Annals of Applied Statistics*, Vol. 6, No. 4, 12.2012, p. 1883-1905.

L Mohamed, B Calderhead, M Filippone, M Christie, **M Girolami**. Population MCMC methods for history matching and uncertainty quantification. *Computational Geosciences* 16 (2), 423-436.

Yuan, K, **Girolami, M.** and Niranjana, M. (2012). Markov chain Monte Carlo methods for state-space models with point process observations. *Neural Computation*, 24(6): 1462--1486.

### 2011

\* **Girolami, M.**, Calderhead, B., *Riemann Manifold Langevin and Hamiltonian Monte Carlo Methods (with discussion)*, *Journal of the Royal Statistical Society – Series B*, 73(2), 123 - 214.

Zhong, M., **Girolami, M.**, Faulds, K., Graham, D. Bayesian Methods to Detect Dye Labelled DNA Oligonucleotides in Multiplexed Raman Spectra. *Journal of the Royal Statistical Society – Series C*, 60(2), 187 - 206.

B Calderhead, **M Girolami**. Statistical Analysis of Nonlinear Dynamical Systems using Differential Geometric Sampling Methods. *Interface Focus* 1 (6), 821-835

### 2010

\* Xu, T.R, Vyshemirsky, V., Gormand, A., **Girolami, M.**, Baillie, G.S., Ketley, D., Milligan, G., Dunlop, A.J., Houslay, M.D., and Kolch. W., *Inferring Signalling Pathway Topologies from Single Species Multiple Perturbation Measurements*, *Science Signaling*, Vol.3, Issue 113, p. ra20.

Rogers, S. **Girolami, M.**, Polajnar, T. Semi-Parametric Analysis of Multi-Rater Data. *Statistics and Computing*, 20(3), 317 - 334.

Hopcroft, L., McBride, M., Harris, K., McClure, J., Dominiczak, A., **Girolami, M.** Predictive Response-Relevant Clustering Provides Insights into Disease Processes, *Nucleic Acids Research*, 38(20), 6831 - 6840.

Infinite Factorization of Multiple Non-parametric Views Rogers, S.D.; Klami, A.; Sinkkonen, J.; **Girolami, M.**, Kaski, S. - *Machine Learning*, 79(1), 201 - 226.

### 2009

Calderhead, B., & **Girolami, M.** *Estimating Bayes Factors via Thermodynamic Integration and Population MCMC*, *Comp. Statistics & Data Analysis*, 53, 4028-4045, 2009.

## Mark Girolami

Rogers, S., Scheltema, R., **Girolami, M.**, Breitling, R. Probabilistic Assignment of Formulas to Mass Peaks in Metabolomic Experiments, *Bioinformatics*, 25(4), 512-518, Oxford University Press.

Damoulas, T.; **Girolami, M.A.** Combining Feature Spaces for Classification, *Pattern Recognition*, Volume 42(11), 2671-2683.

### **2008**

Rogers, S.D.; **Girolami, M.A.**; Kolch, W.; Waters, K.M.; Liu, T.; Thrall, B.; Wiley, H.S Investigating the correspondence between transcriptomic and proteomic expression profiles using coupled cluster models *Bioinformatics*, Oxford University Press, 24(24), 2894–2900.

Damoulas,T. & **Girolami,M.** Probabilistic multi-class multi-kernel learning: On protein fold recognition and remote homology detection. *Bioinformatics*, Oxford University Press.24(10) – 1264-70.

Lama,N. & **Girolami, M.** vbmp: Variational Bayesian Multinomial Probit Regression for multi-class classification in R. *Bioinformatics*, Oxford University Press, 24, (1), 135-136.

Vyshemirsky.V. & **Girolami, M.** Bayesian Ranking of Biochemical System Models. *Bioinformatics*, Oxford University Press, 24(6), 833-839.

Overton,I. Padovani,G. **Girolami,M.** Barton,G. ParCrys: A Parzen Window Density Estimation Approach to Protein Crystallisation Propensity Prediction. *Bioinformatics*, Oxford University Press, 24(7) – 901 – 907.

Vyshemirsky.V. & **Girolami, M.** BioBayes: A Software Package for Bayesian Inference in Systems Biology. *Bioinformatics*, Oxford University Press, 24(17), 1933-1934.

**Girolami, M.** Bayesian Inference for Differential Equations, *Theoretical Computer Science*, 408(1), 4 – 16.

Waddell, N., Haaf, A., Marsh, A., Johnson, J., Walker, L., Gongora, M., Brown, M., Grover, P., **Girolami, M.**, Grimmond, S., Chenevix-Trench, G.. BRCA1 and BRCA2 Missense Variants of High and Low Clinical Significance Influence Lymphoblastoid Cell Line Post-Irradiation Gene Expression and Amanda B. Spurdle1, *PLoS Genetics*, 4(5): e1000080.

Zhong, M., Lotte,F., **Girolami, M.**, and Lécuyer, A. Classifying EEG for Brain Computer Interfaces using Gaussian Processes. *Pattern Recognition Letters*, 29,(3), 354 – 359.

Damoulas,T. & **Girolami,M.** Pattern Recognition with a Bayesian Kernel Combination Machine. *Pattern Recognition Letters* 30(1) – 46-54.

### **2007**

Xing, D & **Girolami, M.**, Employing Latent Dirichlet Allocation for fraud detection in telecommunications, *Pattern Recognition Letters*, 28(13),pp 1818-1824.

Manocha, S & **Girolami, M.**, An Empirical Analysis of the Probabilistic K-Nearest Neighbour Classifier, *Pattern Recognition Letters*, 28(13),pp 1818-1824.

## Mark Girolami

Rogers, S., **Girolami, M.**, Multi-class Semi-supervised Learning with the  $\epsilon$ -truncated Multinomial Probit Gaussian Process. *JMLR Workshop and Conference Proceedings Volume 1: Gaussian Processes in Practice*, 1:17-32.

Danilo Fliser, Jan Novak, Visith Thongboonkerd, Àngel Argilés, Vera Jankowski, **Mark A. Girolami**, Joachim Jankowski and Harald Mischak., Advances in Urinary Proteome Analysis: from Biomarker Discovery to Clinical Application in Nephrology., *Journal of the American Society of Nephrology*

Rogers,S. Khanin,R, **Girolami, M.**, Bayesian model-based inference of transcription factor activity. *BMC Bioinformatics* pp 8 Suppl 2:S2

### **2006**

**Girolami, M.**, Rogers, S., Variational Bayesian Multinomial Probit Regression with Gaussian Process Priors. *Neural Computation*, Vol. 18, Nos. 8, pp 1790-1817.

Carrivick, L., Rogers, S., Clark, J., Campbell, C., **Girolami, M.**, Cooper, C. Identification of Prognostic Signatures in Breast Cancer Microarray Data using Bayesian Techniques. *The Journal of the Royal Society Interface*. Vol.3, No.8, pp 367-381.

Szymkowiak-Have, A. **Girolami,M.** Larsen,J. Clustering via Kernel Decomposition, *IEEE Transactions on Neural Networks* Vol. 17, No. 1, pp. 256-264.

Kote-Jarai,Z. Matthews,L. Osorio,A. Shanley,S. Giddings,I. Moseews,F. Locke,I. Evans,G. **Girolami,M.** Williams,R. Campbell,C. Accurate Prediction of BRCA1 and BRCA2 heterozygous genotype using expression profiling after induced DNA damage. *Clinical Cancer Research*, 12(13), pp. 3896-3901.

### **2005**

**Girolami, M.** and Kaban, A. Sequential Activity Profiling: Latent Dirichlet Allocation of Markov Chains. *Data Mining and Knowledge Discovery*, Vol.10, pp 175-196.

Rogers, S. **Girolami, M.** A Bayesian Regression Approach to the Inference of Regulatory Networks from Gene Expression Data. *Bioinformatics*, Vol.21, No.14, pp 3131-3137.

Rogers, S. **Girolami, M.** Campbell, C. Breitling, R. The Latent Process Decomposition of cDNA Microarray Datasets. *IEEE / ACM Transactions on Computational Biology and Bioinformatics* , Vol 2, Nos 2, pp 143 – 156.

### **2004**

**Girolami, M.** and Breitling, R. Biologically Valid Linear Factor Models of Gene Expression, *Bioinformatics*, Vol 20, Nos 17, pp 3021-3033.

He,C. and **Girolami, M.** Novelty Detection Employing an L2 Optimal Nonparametric Density Estimator. *Pattern Recognition Letters*, 25(12), pp 1389-1397.

He, C., **Girolami, M.**, and Ross G. Employing Optimised Combinations of One-Class Classifiers for Automated Currency Validation. *Pattern Recognition*, 37(6), pp 1085-1096.

**Girolami, M.** and He, C. Probability Density Estimation from Optimally Condensed Data Samples. *IEEE Transactions Pattern Analysis and Machine Intelligence*, 25(10):1253-1264.

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### **2003**

Bingham, E and Kaban, A, and **Girolami, M.** Topic Identification in Chat line Discussions by Extracting Independent Minimum Complexity Time Components. *Neural Processing Letters* , 17(1), pp 69-83.

### **2002**

**Girolami, M.** *Orthogonal Series Density Estimation and the Kernel Eigenvalue Problem.* *Neural Computation (MIT Press)*, 14(3), pp 669-688.

**Girolami, M.** *Mercer Kernel Based Clustering in Feature Space.* *IEEE Transactions on Neural Networks*, 13(4), pp 780 – 784.

Kabán, A. and **Girolami, M.**, A Dynamic Probabilistic Model to Visualise Topic Evolution in Text Streams, *Journal of Intelligent Information Systems*, 18(2&3), pp 107-125.

Vinokourov, A and **Girolami, M.** A Probabilistic Framework for the Hierarchic Organisation & Classification of Document Collections. *Journal of Intelligent Information Systems*, 18(2&3), pp 153 – 172, 2002.

Kaban, A and **Girolami, M.** Fast extraction of Semantic features from a Latent Semantic Indexed Text Corpus. *Neural Processing Letters*, 15(1), pp, 31-43.

### **2001**

**Girolami, M.** *A Variational Method for Learning Sparse and Overcomplete Representations.* *Neural Computation (MIT Press)* 13(11), pp 2517 - 2532. **114 Citations**

**Girolami, M.** The Topographic Organisation and Visualisation of Binary Data using Multivariate-Bernoulli Latent Variable Models. *IEEE Transactions on Neural Networks*, 12(6), pp 1367 – 1374.

**Girolami, M.** Latent Variable Models for the Topographic Organisation of Discrete and Strictly Positive Data. *Neurocomputing*, 48(1-4), pp. 185 – 198.

Rosipal, R. and **Girolami, M.** An Expectation Maximisation Approach to Nonlinear Component Analysis. *Neural Computation (MIT Press)*, 13(3), pp 500-505. **45 Citations**

Rosipal, R., **Girolami, M.** and Trejo, L., Kernel PCA for Feature Extraction and De-Noising in Non-Linear Regression. *Neural Computing and Applications*, 10 (3), 231-243.

Kaban, A and **Girolami, M.** A Combined Latent Class and Trait Model for the Analysis and Visualisation of Discrete Data. *IEEE Transactions on Pattern Analysis and Machine Intelligence*, 23(8), pp 859 -872.

### **2000**

[b] Lee, T, W., **Girolami, M.**, Bell, A, J. and Sejnowski, T. A Unifying Information Theoretic Framework for Independent Component Analysis. *International Journal on Computers & Mathematics*, 39, pp 1-21.



## Mark Girolami

### 1999

**Girolami, M.**, and Fyfe, C. Stochastic ICA Contrast Maximisation Using Oja's Nonlinear PCA Algorithm. *International Journal of Neural Systems*, 8(5), pp 661 - 678.

Lee, T. W., **Girolami, M.**, and Sejnowski, T. *Independent Component Analysis using an Extended Infomax Algorithm for Mixed Sub-Gaussian and Super-Gaussian Sources. Neural Computation (MIT Press)*, 11(2), pp 606-633. **851 Citations**

Lee, T. W., Lewicki, M. S., **Girolami, M.**, Sejnowski, T. Blind Source Separation of More Sources Using Overcomplete Representations. *IEEE Sig.Proc.Letts*, 6(4), pp 87 - 90.

### 1998

**Girolami, M.**, Cichocki. A., and Amari, S. I. A Common Neural Network Model for Exploratory Data Analysis and Independent Component Analysis. *IEEE Transactions on Neural Networks*, 9(6), pp 1495 - 1501.

**Girolami, M.** An Alternative Perspective on Adaptive Independent Component Analysis Algorithms. *Neural Computation (MIT Press)*, 10(8), pp 2103 - 2114.

**Girolami, M.** The Latent Variable Data Model for Exploratory Data Analysis and Visualisation: A Generalisation of the Nonlinear Infomax Algorithm. *Neural Processing Letters*, 8(1), pp 27-39.

**Girolami, M.** A Nonlinear Model of the Binaural Cocktail Party Effect. *Neurocomputing*, 22(1-3), pp 201 - 205.

**Girolami, M.** Symmetric Adaptive Maximum Likelihood Estimation for Noise Cancellation and Signal Separation. *Electronics Letters*, 33(17), pp 1437 - 1438.

### Papers in Refereed Conferences

Oates CJ, **Girolami M.** (2016) *Control Functionals for Quasi-Monte Carlo Integration. Nineteenth International Conference on Artificial Intelligence and Statistics (AISTATS), Selected for Oral Presentation.*

Briol, F-X., Oates, C. J., **Girolami, M.**, & Osborne, M. A. (2015). Frank-Wolfe Bayesian Quadrature: Probabilistic Integration with Theoretical Guarantees. ***Advances In Neural Information Processing Systems (NIPS) 2015.***

S. Virtainen and **Girolami.M.** Ordinal Mixed Membership Models ***Proceedings of the 32nd International Conference on Machine Learning (ICML), 2015.***

M. Zhong and **M. Girolami.** A Bayesian approach to approximate joint diagonalization of square matrices. ***Proceedings of the 29th International Conference on Machine Learning (ICML), pp. 647-654, 2012.***

Ying, Y.; Campbell, C.; **Girolami, M.** Analysis of SVM with Indefinite Kernels, ***Twenty-third Annual Conference on Neural Information Processing Systems, NIPS 22, (MIT Press), 2205 – 2213, 2010***

## Mark Girolami

Calderhead, B., **Girolami, M.**, Lawrence, N. Accelerating Bayesian Inference over Nonlinear Differential Equations with Gaussian Processes, *Twenty-Second Annual Conference on Neural Information Processing Systems, NIPS 21, (MIT Press)*, 217 – 224, 2009

**Girolami, M.** and Zhong, M. Data Integration for Classification Problems Employing Gaussian Process Priors. *Twentieth Annual Conference on Neural Information Processing Systems, NIPS 19, (MIT Press)*, 465 – 472, 2007.

Jensen, R. Eltoft, T. **Girolami, M.** Erdogmus, D Kernel Maximum Entropy Data Transformation and an Enhanced Spectral Clustering Algorithm. *Twentieth Annual Conference on Neural Information Processing Systems, NIPS 19, (MIT Press)*, 633 - 340, 2007.

Cawley, G. Talbot, N. **Girolami, M.** Sparse Multinomial Logistic Regression via Bayesian Regularisation using a Laplace Prior. *Twentieth Annual Conference on Neural Information Processing Systems, NIPS 19, (MIT Press)*, 209 - 216, 2007.

**Girolami, M** and Rogers, S. Hierarchic Bayesian Models for Kernel Learning. *In Proceedings of the 22nd International Conference on Machine Learning*, eds Luc de Raedt & Stefan Wrobel, pp 241-248, 2005.

Rogers, S., **Girolami, M.**, Krebs, R., Mischak, H. Disease diagnosis from Capillary Electrophoresis: Mass Spectrometry. *Proceedings of the International Conference on Advances in Pattern Recognition*, Springer-Verlag, pp 183 – 191, 2005.

**Girolami, M** and Kaban, A. Simplicial Mixtures of Markov Chains: Distributed Modelling of Dynamic User Profiles. *Advances in Neural Information Processing Systems 16*, eds Sebastian Thrun and Lawrence Saul and Bernhard Scholkopf, MIT Press, pp 9 – 16, 2004.

Azzopardi, L., **Girolami, M** and van Rijsbergen, C.J. User Biased Document Language Modelling, In proceedings 27th ACM Conference on Research and Development in Information Retrieval, SIGIR, pp 542 – 543, 2004.

**Girolami, M** and Kabán, A. On an Equivalence between PLSI and LDA. In proceedings 26th ACM Conference on Research and Development in Information Retrieval, SIGIR, pp 433 - 434, 2003.

Azzopardi, L., **Girolami, M** and van Rijsbergen, C.J. Investigating the Relationship between Language Model Perplexity and IR Precision-Recall Measures. In proceedings 26th ACM Conference on Research and Development in Information Retrieval, SIGIR, pp 369 - 370, 2003.

Kabán, A, Tino, P and **Girolami, M.** A General Framework for a Principled Hierarchical Visualisation of Multivariate Data, the Third International Conference on Intelligent Data Engineering and Automated Learning, pp 518 – 523, 2002.

Vinokourov, A and **Girolami, M.** Document classification employing the Fisher kernel derived from probabilistic hierarchic corpus representations. 23rd European Colloquium on IR Research, 24 – 40, 2001.

## Mark Girolami

Bingham, E., Kabán, A. and **Girolami, M.** Finding topics in dynamical text: application to chat line discussions. 10th International World Wide Web Conference, pp. 198-199, 2001.

**Girolami, M.**, Vinokourov, A., and Kaban, A. The Organisation and Visualisation of Document Corpora : A Probabilistic Approach. 11'th International Conference and Workshop on Database and Expert Systems Applications, pp 558 – 564, 2000.

Pajunen, P and **Girolami, M.** Implementing Decisions in Binary Decision Trees Using Independent Component Analysis. 2'nd International Workshop on Independent Component Analysis and Blind Source Separation, pp 483 – 488, 2000.

Kaban, A and **Girolami, M.** Clustering of Text Documents by Skewness Maximisation. 2'nd International Workshop on Independent Component Analysis and Blind Source Separation, pp 435 – 440, 2000.

Rosipal, R., **Girolami, M.**, and Trejo, L. Kernel PCA Feature Extraction of Event-Related Potentials for Human Signal Detection Performance. International Conference on Artificial Neural Networks in Medicine and Biology, pp 321- 326, 2000.

Barros, A. Rosipal, R., **Girolami, M.**, Doerfner, G. Ohnishi. Extraction of Sleep-Spindles from the Electroencephalogram. International Conference on Artificial Neural Networks in Medicine and Biology, pp 125- 130, 2000.

**Girolami, M.** A Generative Model for Sparse Discrete Binary Data with Non-Uniform Categorical Priors. European Symposium on Artificial Neural Networks, pp 1 - 6, 2000.

**Girolami, M.** Document Representations Based on Generative Multivariate Bernoulli Latent Topic Models. 22'nd Annual Colloquium on Information Retrieval Research, pp 194 - 201, 2000.

Kaban, A. and **Girolami, M.** Initialised and Guided EM-Clustering of Sparse Binary Data with Applications to Text Based Documents. 15th International Conference on Pattern Recognition, IEEE Press, pp 748 - 751, 2000.

Vinokourov, A. and **Girolami, M.** A Probabilistic Hierarchical Clustering Method for Organising Collections of Text Documents. 15th International Conference on Pattern Recognition, IEEE Press, pp 182 - 185, 2000.

Rosipal, R. and **Girolami, M.** An Adaptive Support Vector Regression Filter: A Signal Detection Application. International Conference on Artificial Neural Networks, Vol 2, pp 603-607, 1999.

**Girolami, M.** Hierarchic Dichotomising of Polychotomous Data - An ICA Based Data Mining Tool. 1'st International Workshop on Independent Component Analysis and Blind Source Separation, pp 197 - 201, 1999.

**Girolami, M.** The Pearson Mixture Model for Cluster Analysis and Data Visualisation. International Conference on Artificial Neural Networks ,Vol. 1. pp 153 - 158, 1998.

**Girolami, M.** & Findlay, J. An Unsupervised Neural Network Approach to Adaptive Noise Cancellation Applied to Tool Condition Monitoring. Mechatronics, pp 769 - 773, 1998.

## Mark Girolami

**Girolami, M.** Noise Reduction and Speech Enhancement via Temporal Anti-Hebbian Learning. IEEE International Conference on Acoustics, Speech and Signal Processing, Vol 2, pp 1233-1236, 1998.

**Girolami, M** and Fyfe, C. Fahlman Type Activation Functions Applied to Nonlinear PCA Networks Provide a Generalised Independent Component Analysis. International Conference on Artificial Neural Networks and Genetic Algorithms, pp 112-115, 1998.

**Girolami, M.** Principal Components Identify MLP Hidden Layer Size for Optimal Generalisation Performance. International Conference on Artificial Neural Networks and Genetic Algorithms, pp 40 - 43, 1998.

**Girolami, M** and Fyfe, C. Multivariate Density Factorisation for Independent Component Analysis : An Unsupervised Artificial Neural Network Approach. 3<sup>rd</sup> International Workshop on Artificial Intelligence and Statistics, pp 223 - 230, 1997.

**Girolami, M** and Fyfe, C. Kurtosis Extrema and Identification of Independent Components : A Neural Network Approach. IEEE Conference on Acoustics, Speech and Signal Processing, Vol. 4, pp 3329 - 3333, 1997.

**Girolami, M** and Fyfe, C. Generalised Independent Component Analysis Through Unsupervised Learning With Emergent Bussgang Properties. International Conference on Neural Networks, Vol 3, pp 1788 – 1791, 1997.

**Girolami, M** and Fyfe, C. Independence is Far from Normal. European Symposium on Artificial Neural Networks, pp 297 - 302, 1997.

**Girolami, M** and Fyfe, C. Blind Separation Of Sources Using Exploratory Projection Pursuit Networks. International Conference on the Engineering Applications of Neural Networks, pp 249 - 252, 1996.

**Girolami, M** and Fyfe, C. Higher Order Cumulant Maximisation Using Nonlinear Hebbian and Anti-Hebbian Learning for Adaptive Blind Separation of Source Signals. IEEE International Workshop on Signal and Image Processing, pp 141 - 144, 1996.

## Books

Rogers, S and **Girolami, M.** A First Course in Machine Learning.. Chapman and Hall, 2011 – second edition 2016, Chinese translation 2015.

Stumpf, M, Balding, D., **Girolami, M.** (eds) Handbook of Statistical Systems Biology, Wiley, 2011.

Lawrence, N. D. **Girolami, M.**, Rattray, M., and Sanguinetti, G. (eds) (2010) "Learning and inference in computational systems biology", MIT Press, Cambridge, MA.

Crestani, F., **Girolami, M.**, van Rijsbergen, C, J. (Eds), Advances in Information Retrieval, pp362, Germany, Springer-Verlag, 2002, ISSN 0302-9743.

## Mark Girolami

**Girolami, M.** (editor). Advances in Independent Component Analysis, pp 279, UK, Springer-Verlag, 2000, ISSN 1431-6854.

**Girolami, M.** Self-Organising Neural Networks: Independent Component Analysis and Blind Signal Separation, pp 271, UK, Springer-Verlag, 1999, ISBN 1-85233-066-X.

### Chapters in Books

Stathopoulos. V. and **Girolami. M.** Manifold MCMC for Mixtures, Editors C.P.Robert, K.Mengersen, D.M.Titterington, Mixture Estimation and Applications, Wiley, 2011.

Campbell, D, R., Fyfe, C & **Girolami M.** Artificial Intelligence Systems Techniques and Applications in Speech Processing, Editor, C T Leondes, Intelligence Systems Technology and Applications, Vol. III Signal, Image and Speech processing, pp 1-48, Boca Raton, Florida, USA, CRC Press, 2002, ISBN 0-849-31121-7.

**Girolami, M.** Latent Class and Trait Models for Data Classification and Visualisation, Editors Roberts, S & Everson, R, ICA: Principles and Practice, pp 254-279, UK, Cambridge University Press, 2001, ISBN 0-521-79298-3.

Shields, P., **Girolami, M.**, Campbell, D., Fyfe, C. Adaptive Processing Schemes Inspired by Binaural Unmasking for Enhancement of Speech Corrupted with Noise and Reverberation, Editors: L. S. Smith and A. Hamilton, Neuromorphic Systems: Engineering Silicon from Neurobiology, pp 61 – 74, UK, World Scientific, 1998, ISBN 981-02-3377-9.

### Patents

Process for Automated Currency Validation - M. Girolami, Chao He, Gary Ross (NCR, Financial Systems). EP1484719 (can be viewed at <http://gb.espacenet.com/>) & US2004247169.

A Self-Service Terminal (SST) and a Statistical Model for use Therewith – Theodoros Damoulas, Mark Girolami, Chao He. (filed 06/09/07)

Anomalous Behaviour Detection System – M. Girolami, Ian Drummond & Ian Hall (Memex Technologies). EP 0520789.9 (filed 13/10/05)