

Richard Bean

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Education

[Ph.D. Mathematics](#) 1998 - 2001. University of Queensland,
Department of Mathematics.
B.Sc. (Honours I) Computer Science and Mathematics. 1994 - 1997.
University of Queensland.
University Medal - Grade Point Average 6.55 out of 7.

Employment

Industry

Mathematical Modeller, [ROAM Consulting](#), April 2007 - current.

Duties include:

- Mathematical modelling of the Australian NEM (National Electricity Market) and New Zealand Electricity Market (NZEM).
- Developing bidding models of the NEM and models of the Renewable Energy Target (RET) and Carbon Pollution Reduction Scheme (CPRS) with the WASP (Wien Automatic System Planning) program implemented using dynamic programming as an Integrated Resource Planning (IRP) package.
- Minimum Reserve Level recalculation project, developing statistical models for expected unserved energy in the NEM.
- Programming in Microsoft VBA, C++, writing spreadsheets in Excel and maintaining databases in Access, including SQL work.

Research

Research Officer, [Institute for Molecular Bioscience](#), University of Queensland, December 2003 - March 2007.
Postdoctoral Associate, [Institute for Studies in Theoretical Physics and Mathematics](#), Tehran, Iran, April 2002 - October 2003.

Research Assistant and Officer (Statistics), [Department of Mathematics](#), University of Queensland April 2001 - March 2002.

Duties included:

- Interpreting and co-authoring statistical and mathematical papers.
- Developing and optimizing algorithms related to graph theory, combinatorics, operations research, and statistics; analyzing microarray data.
- Programming in C, Fortran, Matlab, R, Python, and UNIX shell
- Proof-reading and technical issues for a [Wiley microarray book](#).

Teaching

Tutor, [University of Queensland](#), Mathematics and Computer Science Departments, February 1996 - June 2000.

Subjects tutored include:

Modelling and Simulation, Systems Programming, Graph Theory, Geometries and Designs, Calculus and Vectors I, Predicate Calculus and Recursive Functions

Private Tutor, University Mathematics, 1999 - 2001.

Duties included:

- Explaining a wide range of mathematical concepts in group environments and individually; interacting with university students of all ages and backgrounds.

Lecturer, [Sharif University of Technology](#), Tehran, Department of Mathematics, Second Semester 2002.

English Teacher, [Kish Air Institute](#), Tehran, August - December 2002.

Private English Teacher, Tehran, 2003.

Programming

Software Engineer, [CiTR Pty Ltd](#), December 1996 - February 1997.

Programmer, University of Queensland, Mathematics Department, March - May 2000. Designed web pages for mathematics subject; performed programming for thesis supervisor.

Duties included:

- Programming in C and C++ in Windows and UNIX environments; working as part of a team to interpret software specifications.

Publications

- R. Bean and D. Donovan (2000). ``Closing a gap in the spectrum of critical sets''. Australasian Journal of Combinatorics 22, 191--200.
- P. Adams, R. Bean, and A. Khodkar (2001). ``Disjoint critical sets in Latin squares''. In Proceedings of the Thirty-second Southeastern International Conference on Combinatorics, Graph Theory and Computing (Baton Rouge, LA, 2001). Congressus Numerantium 153, 33--48.
- R. Bean, D. Donovan, A. Khodkar, and A. Street (2002). ``Steiner trades that give rise to completely decomposable Latin interchanges''. In 11th Australasian Workshop on Combinatorial Algorithms (Hunter Valley, 2000, International Journal of Computer Mathematics 79:12, 1273--1284.
- G. J. McLachlan, D. Peel, and R. Bean (2002). ``A mixture model-based approach to the clustering of microarray data''. Bioinformatics 18:3, 413--422.
- R. Bean and E. S. Mahmoodian (2003). ``A new bound on the size of the largest critical set in a Latin square''. Discrete Mathematics 267, 13--21.
- P. Adams, R. Bean, and A. Khodkar (2003). ``A census of critical sets in Latin squares of order at most six''. Ars Combinatoria 68, 203--223.
- G. J. McLachlan, D. Peel and R. Bean (2003). ``Modelling high-dimensional data by mixtures of factor analyzers''. Computational Statistics and Data Analysis 41, 379--388.
- G. J. McLachlan and R. Bean (2004) ``Contribution to the discussion of paper by J. Friedman and J. Meulman''. Journal of the Royal Statistical Society B 66, 846.
- G. J. McLachlan, S. K. Ng, and R.W. Bean (2004). ``Robust mixture modeling.'' Proceedings of the American Statistical Association, and Engineering Sciences Section [CD-ROM], Toronto, August 2004. Alexandria, Virginia: American Statistical Association.
- R. Bean (2005). ``The size of the smallest uniquely completable set in order 8 Latin squares''. Journal of Combinatorial Mathematics and Combinatorial Computing 52, 159--168.
- R. Bean (2005). ``Critical sets in the elementary abelian 2- and 3- groups''. Utilitas Mathematica 68, 53--61.
- R. Bean and G. J. McLachlan (2005). ``Cluster analysis of high-dimensional data: a case study''. Lecture Notes in Computer Science 3578, 302--310.
- G. McLachlan, L. Ben-Tovim Jones, R. Bean, and J. Zhu (2005). ``Application of mixture models to detect differentially expressed genes''. Lecture

Notes in Computer Science 3578, 422--431.

- G. J. McLachlan, R. W. Bean, L. Ben-Tovim Jones, and J. Zhu (2005). ``Using mixture models to detect differentially expressed genes''. Australian Journal of Experimental Agriculture 45, 859--866.
- L. Ben-Tovim Jones, R. W. Bean, G. J. McLachlan, and J. X. Zhu (2005). ``Mixture models for detecting differentially expressed genes in microarrays''. International Journal of Neural Systems 16, 353--362.
- R. Bean, H. Bidkhori, M. Khosravi, E. S. Mahmoodian (2005). ``k-homogeneous latin trades''. In ALCOMA'05: Proceedings of the Conference on Algebraic Combinatorics and Applications, Designs and Codes (April 3-10, 2005, Thurnau), A. Kerber, A. Kohnert (Eds.), Bayreuther Mathemat. Schr. 74, 7--18.
- G. J. McLachlan, R. W. Bean, and L. Ben-Tovim Jones (2005). ``Extension of the mixture of factor analyzers model to incorporate the multivariate t-distribution''. Computation Statistics and Data Analysis 51, 5327--5338.
- G. J. McLachlan, S.K. Ng, and R. Bean (2006). ``Robust cluster analysis via mixture models''. Austrian Journal of Statistics 35, 157--174.
- G. J. McLachlan, R. W. Bean, and L. Ben-Tovim Jones (2006). ``A simple implementation of a normal mixture approach to differential gene expression in multiclass microarrays''. Bioinformatics 22, 1608--1615.
- K. E. Basford, G. J. McLachlan, and R. W. Bean (2006). ``Issues of robustness and high dimensionality in cluster analysis''. Proceedings of COMPSTAT 2006, Rizzi and M. Vichi (Eds.), New York: Springer, pp. 3--15.
- K-A. Do, G. J. McLachlan, R. Bean, and S. Wen. (2006). ``Application of gene shaving and mixture models to cluster microarray gene expression data''. Cancer Informatics 2, 1--19.
- R. Bean (2006), ``Latin trades on three or four rows''. Proceedings of for the International Workshop on Combinatorics, Algebra, and Graph Coloring, Tehran, August 9-14, 2003. Discrete Mathematics 306, 3028--3041.
- G. J. McLachlan, R. Bean, and S. K. Ng (2007). ``Clustering of microarray data via mixture models''. In Statistical Advances in Biomedical Sciences, A. Biswas, S. Datta, J. Fine, M.R. Segal (Eds.). Hoboken, New Jersey: Wiley. To appear.
- C. E. McLaren, V. R. Gordeuk, W.-P. Chen, E.L. Harris, B.M. Snively, P.C. Adams, J.C. Barton, R.T. Acton, D.M. Reboussin, M. Speechley, O. Castro, G.J. McLachlan, R.W. Bean, and G.D. McLaren (2008). ``The distribution of transferrin saturation and serum ferritin concentration in multiple race/ethnicities: the hemochromatosis and iron

overload screening (HEIRS) study.' ' Translational Research.
To appear.

- G. J. McLachlan, R. Bean, and S.K. Ng, (2008).
``Clustering.'' In Bioinformatics, J. Keith (Ed.). Totowa,
New Jersey: Humana Press. To appear.
- S.K. Ng, G.J. McLachlan, R.W. Bean, and S.W. Ng (2006).
``Clustering replicated microarray data via mixtures of
random effects models for various covariance structures''.
In Conferences in Research and Practice in Information
Technology, Vol. 73, M. Boden and T.L. Bailey (Eds.).
Sydney: The Australian Computer Society, pp. 29-33.

Achievements, awards and memberships

- Associate Fellow of the [Institute of Combinatorics and Its Applications](#)
- Life Member of the [Combinatorial Mathematical Society of Australasia](#)
- Graduate Member of the [Australian Mathematical Society](#)
- Australian Postgraduate Award 1998 - 2001
- Michael P. O'Donnell Memorial Prize for Pure Mathematics, 1996
- Algebra and Combinatorics Seminar organiser, Department of Mathematics, University of Queensland, 1998 - 2001

Other interests

Chess, fitness, travel