

# Dr. Bo Yuan

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## Research Interests

Data Mining, Evolutionary Computation and GPU Computing

## Education

<b>Ph.D.</b> , Computer Science The University of Queensland, Brisbane, Australia	10/2002 – 04/2006
<b>M.Sc.</b> , Computer Science The University of Queensland, Brisbane, Australia	03/2001 – 07/2002
<b>B.E.</b> , Computer Science Nanjing University of Science and Technology, Nanjing, P.R. China	09/1994 – 07/1998

## Academic Experience

<b>Associate Professor</b> Division of Informatics, Graduate School at Shenzhen, Tsinghua University, Shenzhen, P.R. China	12/2009 –
<b>Lecturer</b> Division of Informatics, Graduate School at Shenzhen, Tsinghua University, Shenzhen, P.R. China	07/2007 – 12/2009
<b>Research Officer</b> School of Information Technology and Electrical Engineering, The University of Queensland, Brisbane, Australia	03/2006 – 04/2007
<b>Visiting Student</b> Multimedia Lab, Department of Computer Science, Tsinghua University, Beijing, P.R. China	08/1998 – 03/1999

## Awards & Highlights

- Top rank in the university-wide teaching assessment and evaluation (2011)
- Best Paper Award, BDM Workshop at PAKDD'11 (2011)
- Advisor, Award Nominee for Master's Thesis Excellence, Tsinghua University (2010)
- Instructor, The fifth place team in PAKDD'09 Data Mining Competition (2009)
- Australian Postgraduate Award (2003 – 2006)
- ACM SIGEVO Student Travel Grant (2005)
- IEEE Neural Networks Society Student Travel Grant (2002)
- Recipient of the B.E. degree at the age of 18 (1998)
- A thesis award in NUST Innovation Expo for work on Genetic Algorithms (1998)
- Three NUST Undergraduate Scholarships (1995 – 1997)

## Teaching

- Academic Writing in English (PG)
  - 2011 (Spring), 2012 (Spring)
- Data Mining: Theory and Algorithms (PG)
  - 2009 (Fall), 2010 (Spring), 2011 (Spring, Fall), 2012 (Spring)

## Membership

- Member of the IEEE (S'02 – M'07)
- Member of the IEEE Computational Intelligence Society

## Professional Activities

### Journal Reviewer

- Ad Hoc Networks
- Engineering Optimization
- Computational Intelligence
- Connection Science
- Evolutionary Intelligence
- IEEE Computational Intelligence Magazine
- IEEE Transactions on Evolutionary Computation
- IEEE Transactions on Parallel and Distributed Systems
- IEEE Wireless Communications
- International Journal of Information Analysis and Processing
- International Journal of Systems Science

### Conference Reviewer

- Genetic and Evolutionary Computation Conference (2006, 2007, 2008)
- IEEE Congress on Evolutionary Computation (2008, 2009, 2010, 2011)
- IEEE International Symposium on Circuits and Systems (2009)
- International Conference on Fuzzy Systems and Knowledge Discovery (2012)
- International Conference on Hybrid Intelligent Systems (2011)
- International Conference on Intelligent Data Engineering and Automated Learning (2005)
- International Conference on Natural Computation (2009)
- International Conference on Simulated Evolution and Learning (2006)
- International Conference on Soft Computing and Pattern Recognition (2009)
- International Workshop on Advanced Computational Intelligence (2010)

### Grant Reviewer

- National Natural Science Foundation of China
- Research Foundation for Returned Overseas Scholars, Ministry of Education, P.R. China

## Thesis Examiner

- Ph.D. Thesis, The University of Sydney, Australia (2009)

## Administration

- Program Coordinator, Master of Control Engineering (2010 – )
- Program Coordinator, Master of Computer Engineering (2009)

## Supervision

### • Master Students

- In Progress: Mr. Jianqiang Dong, Miss Yanmin Zhu, Mr. Zhibo Yang, Mr. Chunyang Wang (2011)  
Mr. Tianle Ma, Mr. Hequn Liu (2010)  
Mr. Cheng Li, Mr. Wei Chen, Mr. Ze Huang, Ms. Xiaoli Ma (2009)
- Awarded: Miss Xinzhu Yang, Miss Xiuyun Qu (2009)  
Mr. Tao Zhang, Mr. Jian Wang, Mr. Bohan Liu (2008)

## Research Funding

### Chief Investigator

- "Robust Dynamic Hand Gesture Recognition Algorithms", Industry Grant.
- "Ensemble Algorithms Based on Dynamic Model Credibility", Early Career Researcher Grant, National Natural Science Foundation of China, No. 60905030, RMB 180K+50K(top-up), 2010-2012.
- "Parameter Tuning Methods for Evolutionary Algorithms", Research Foundation for Returned Overseas Scholars, Ministry of Education, P.R. China, RMB 25K, 2009-2011.
- "Evolutionary Algorithms Based on Statistical Models", Research Seed Grants Program, Graduate School at Shenzhen, Tsinghua University, RMB 50K, 2008-2010.

## Publications

### Journal

1. **Yuan, B.** and Liu, W.H. (2012) "Measure Oriented Training: A Targeted Approach to Imbalanced Classification Problems". *Frontiers of Computer Science*, Springer.
2. Shang, S., **Yuan, B.**, Deng, K., Xie, K.X., Zheng, K. and Zhou, X.F. (2012) "PNN Query Processing on Compressed Trajectories". *GeoInformatica*, Springer.
3. Tu, Q., Lu, J.F., **Yuan, B.**, Tang, J.B. and Yang, J.Y. (2012) "Density-Based Hierarchical Clustering for Streaming Data". *Pattern Recognition Letters*, vol. 33(5), Elsevier, pp. 641-645.
4. Lin, F.Q., Chen, B.C., **Yuan, B.**, Liu, W.H., Li, X.Y., Mak, A. and Wang H.Y. (2010) "Composition and Implementation of RFID Lightweight Middleware". *Computer Engineering*, vol. 36(17), pp. 77-80.
5. **Yuan, B.**, Orlowska, M. and Sadiq, S. (2008) "Extending a Class of Continuous Estimation of Distribution Algorithms to Dynamic Problems". *Optimization Letters*, vol. 2(3), Springer, pp. 433-443.

6. **Yuan, B.**, Orlowska, M. and Sadiq, S. (2007) "On the Optimal Robot Routing Problem in Wireless Sensor Networks". *IEEE Transactions on Knowledge and Data Engineering*, vol. 19(9), pp. 1252-1261.
7. Gallagher, M. and **Yuan, B.** (2006) "A General-Purpose Tunable Landscape Generator". *IEEE Transactions on Evolutionary Computation*, vol. 10(5), pp. 590-603.
8. Lu, J.F., **Yuan, B.** and Yang, J.Y. (1999) "A Genetic Design for Feedforward Neural Network". *Journal of Nanjing University of Science and Technology*, vol. 23(6), pp. 486-489.

### Book Chapter

9. **Yuan, B.** and Gallagher, M. (2007) "Combining Meta-EAs and Racing for Difficult EA Parameter Tuning Tasks". In Lobo et al. eds. *Parameter Setting in Evolutionary Algorithms*, Series of Studies in Computational Intelligence, vol. 54, Springer, pp. 121-142.

### Conference

10. Shang, S., Ding, R.G., **Yuan, B.**, Xie, K.X., Zheng, K. and Kalnis, P. (2012) "User Oriented Trajectory Search for Trip Recommendation". In *Proceedings of the 15<sup>th</sup> International Conference on Extending Database Technology*, ACM, Berlin, Germany.
11. **Yuan, B.** and Liu, W.H. (2011) "A Measure Oriented Training Scheme for Imbalanced Classification Problems". In *Proceedings of the 15<sup>th</sup> Pacific-Asia Conference on Knowledge Discovery and Data Mining – Workshop Papers*, LNAI 7104, Springer, pp. 293-303, Shenzhen, P.R. China.
12. Shang, S., **Yuan, B.**, Deng, K., Xie, K.X. and Zhou, X.F. (2011) "Finding the Most Accessible Locations – Reverse Path Nearest Neighbor Query in Road Networks". In *Proceedings of the 19<sup>th</sup> ACM SIGSPATIAL International Conference on Advances in Geographic Information Systems*, ACM, pp. 181-190, Chicago, Illinois.
13. **Yuan, B.**, Li, C. and Chen, W. (2010) "Training a Pac-Man Player with Minimum Domain Knowledge and Basic Rationality". In *Proceedings of the 2010 International Conference on Intelligent Computing*, CCIS 93, Springer, pp. 169-177, Changsha, P.R. China.
14. **Yuan, B.** and Gallagher, M. (2009) "Convergence Analysis of UMDA<sub>C</sub> with Finite Populations: A Case Study on Flat Landscapes". In *Proceedings of the 2009 Genetic and Evolutionary Computation Conference*, ACM, pp. 477-482, Montreal, Canada.
15. **Yuan, B.** and Gallagher, M. (2009) "An Improved Small-Sample Statistical Test for Comparing the Success Rates of Evolutionary Algorithms". In *Proceedings of the 2009 Genetic and Evolutionary Computation Conference*, ACM, pp.1879-1880, Montreal, Canada.
16. Qu, X.Y., **Yuan, B.** and Liu, W.H. (2009) "A Novel Two-Phase Method for the Classification of Incomplete Data". In *Proceedings of the 2009 International Conference on Information Management, Innovation Management and Industrial Engineering*, IEEE, vol. 3, pp. 452-455, Xi'an, P.R. China.
17. Qu, X.Y., **Yuan, B.** and Liu, W.H. (2009) "A Predicative Model for Identifying Possible MCI to AD Conversions in the ADNI Database". In *Proceedings of the 2<sup>nd</sup> International Symposium on Knowledge Acquisition and Modeling*, IEEE, vol. 3, pp. 102-105, Wuhan, P.R. China.
18. Han, S.L., **Yuan, B.** and Liu, W.H. (2009) "Rare Class Mining: Progress and Prospect". In *Proceedings of the 2009 Chinese Conference on Pattern Recognition*, IEEE, pp. 137-141, Nanjing, P.R. China.

19. Yang, X.Z., **Yuan, B.** and Liu, W.H. (2009) "Dynamic Weighting Ensembles for Incremental Learning". In *Proceedings of the 2009 Chinese Conference on Pattern Recognition*, IEEE, pp. 98-102, Nanjing, P.R. China.
20. Yang, X.Z., **Yuan, B.** and Liu, W.H. (2009) "An Empirical Study of the Convergence of RegionBoost". In *Proceedings of the 2009 International Conference on Intelligent Computing*, LNAI 5755, Springer, pp. 527-535, Ulsan, South Korea.
21. Yang, X.Z., **Yuan, B.** and Liu, W.H. (2009) "The Effect of Distance Metrics on Boosting with Dynamic Weighting Schemes". In *Proceedings of the 6<sup>th</sup> International Conference on Fuzzy Systems and Knowledge Discovery*, vol. 1, pp. 320-324, IEEE, Tianjin, P.R. China.
22. Wang, J., **Yuan, B.** and Liu, W.H. (2008) "Application of Decision Trees in Mining High-Value Credit Card Customers". In *Proceedings of the 11<sup>th</sup> Joint Conference on Information Sciences, AISR 7*, Atlantis Press, Shenzhen, P.R. China.
23. Zhang, T., **Yuan, B.** and Liu, W.H. (2008) "Predicting Credit Card Customer Loyalty Using Artificial Neural Networks". In *Proceedings of the 11<sup>th</sup> Joint Conference on Information Sciences, AISR 7*, Atlantis Press, Shenzhen, P.R. China.
24. Liu, B.H., **Yuan, B.** and Liu, W.H. (2008) "Classification and Dimension Reduction in Bank Credit Scoring System". In *Proceedings of the Fifth International Symposium on Neural Networks*, LNCS 5263, Springer, pp. 531-538, Beijing, P.R. China.
25. **Yuan, B.**, Orłowska, M. and Sadiq, S. (2007) "Finding the Optimal Path in 3D Spaces Using EDAs – The Wireless Sensor Networks Scenario". In *Proceedings of the 8<sup>th</sup> International Conference on Adaptive and Natural Computing Algorithms*, LNCS 4431, Springer, pp. 536-545, Warsaw, Poland.
26. **Yuan, B.** and Gallagher, M. (2006) "A Mathematical Modelling Technique for the Analysis of the Dynamics of a Simple Continuous EDA". In *Proceedings of the 2006 Congress on Evolutionary Computation*, IEEE, pp. 1585-1591, Vancouver, Canada. Also in *Dagstuhl Seminar Proceedings: Theory of Evolutionary Algorithms 2006*.
27. **Yuan, B.**, Orłowska, M. and Sadiq, S. (2006) "Real-Time Acquisition of Buyer Behaviour Data – The Smart Shop Floor Scenario". In *Proceedings of the First International Workshop on Business Intelligence for the Real Time Enterprise (with VLDB'06)*, LNCS 4365, Springer, pp. 106-117, Seoul, South Korea.
28. **Yuan, B.** and Gallagher, M. (2005) "A Hybrid Approach to Parameter Tuning in Genetic Algorithms". In *Proceedings of the 2005 Congress on Evolutionary Computation*, IEEE, pp. 1096-1103, Edinburgh, UK.
29. **Yuan, B.** and Gallagher, M. (2005) "Experimental Results for the Special Session on Real-Parameter Optimization at CEC 2005: A Simple, Continuous EDA". In *Proceedings of the 2005 Congress on Evolutionary Computation*, IEEE, pp. 1792-1799, Edinburgh, UK.
30. **Yuan, B.** and Gallagher, M. (2005) "On the Importance of Diversity Maintenance in Estimation of Distribution Algorithms". In *Proceedings of the 2005 Genetic and Evolutionary Computation Conference*, ACM, pp. 719-726, Washington D.C.
31. **Yuan, B.**, Gallagher, M. and Crozier, S. (2005) "MRI Magnet Design: Search Space Analysis, EDAs and a Real-World Problem with Significant Dependences". In *Proceedings of the 2005 Genetic and Evolutionary Computation Conference*, ACM, pp. 2141-2148, Washington D.C.

32. **Yuan, B.** and Gallagher, M. (2004) "Statistical Racing Techniques for Improved Empirical Evaluation of Evolutionary Algorithms". In *Proceedings of the 8<sup>th</sup> International Conference on Parallel Problem Solving from Nature*, LNCS 3242, Springer, pp. 172-181, Birmingham, UK.
33. **Yuan, B.** and Gallagher, M. (2003) "On Building a Principled Framework for Evaluating and Testing Evolutionary Algorithms: A Continuous Landscape Generator". In *Proceedings of the 2003 Congress on Evolutionary Computation*, IEEE, pp. 451-458, Canberra, Australia.
34. **Yuan, B.** and Gallagher, M. (2003) "Playing in Continuous Spaces: Some Analysis and Extension of Population-Based Incremental Learning". In *Proceedings of the 2003 Congress on Evolutionary Computation*, IEEE, pp. 443-450, Canberra, Australia.
35. **Yuan, B.** (2002) "Deterministic Crowding, Recombination and Self-Similarity". In *Proceedings of the 2002 Congress on Evolutionary Computation*, IEEE, pp. 1516-1521, Honolulu, Hawaii.
36. Jiang, G.R., Zhong, Y.Z., Yang, S.Q. and **Yuan, B.** (1999) "Fast Fractal Image Compression Based on HV Partition". In *Proceedings of Multimedia Storage and Archiving Systems IV*, SPIE, vol. 3846, pp. 473-481.

### Thesis

37. **Yuan, B.** (2006) "Towards Improved Experimental Evaluation and Comparison of Evolutionary Algorithms". Ph.D. Thesis, The University of Queensland, Australia.
38. **Yuan, B.** (2002) "Training a Neural Network to Count: A Genetic Approach". Master Research Report, The University of Queensland, Australia.