

Xinhua Zhang

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I am currently a visiting scholar at Purdue University.

Research Interests

Statistical machine learning, data mining and pattern recognition. Specialization in graphical models, kernel methods, semi-supervised learning, exponential families, reinforcement learning, Gaussian processes, and Bregman divergence.

Applications: ad prediction, information analysis, image analogy and retrieval, traffic light control, named entity recognition, and text categorization.

Education

- Dec. 2009 **Ph.D.** in [Computer Science](#) (Machine Learning)
(expected) [Australian National University](#), Canberra, Australia
Affiliated with the [Statistical Machine Learning Program](#) of [NICTA](#)
Thesis: “Three Problems in Machine Learning”
Advisor: Prof. [S.V.N. Vishwanathan](#), [Alex Smola](#), [Wray Buntine](#)
- Jan. 2006 **M.Sc.** in [Computer Science](#)
[National University of Singapore \(NUS\)](#), Singapore
Thesis: “[Hyperparameter Learning for Graph Based Semi-supervised Learning Algorithms](#)”
Advisor: Prof. [Wee Sun Lee](#)
- July 2003 **B.E.** in [Computer Science and Engineering](#)
[Shanghai Jiao Tong University \(SJTU\)](#), Shanghai, China
Top student of the department and SJTU honor class of gifted students

Publications

Top Conferences

- [1] Xinhua Zhang, Le Song, Arthur Gretton, and Alex Smola. Kernel measures of independence for non-iid data. In Dale Schuurmans and Yoshua Bengio, editors, *Advances in Neural Information Processing Systems 21*, Cambridge MA, 2008. MIT Press. (123 out of 1022, 12.0% acceptance rate for oral presentation) [\[PDF\]](#).

- [2] Le Song, Xinhua Zhang, Alex Smola, Arthur Gretton, and Bernhard Schölkopf. Tailoring density estimation via reproducing kernel moment matching. In Andrew McCallum and Sam Roweis, editors, *Proc. Intl. Conf. Machine Learning*, Helsinki, Finland, July 2008. (155 out of 583, 26.5% acceptance rate) [\[PDF\]](#).
- [3] Li Cheng, S. V. N. Vishwanathan, and Xinhua Zhang. Consistent image analogies using semi-supervised learning. In *Proc. IEEE Conf. Computer Vision and Pattern Recognition*, Anchorage, Alaska (USA), June 2008. IEEE Computer Society. (508 out of 1593, 32% acceptance rate) [\[PDF\]](#).
- [4] Xinhua Zhang, Douglas Aberdeen, and S. V. N. Vishwanathan. Conditional random fields for multi-agent reinforcement learning. In *Proc. Intl. Conf. Machine Learning*, pages 1143–1150, June 2007. Best student paper award, (152 out of 522, 29% acceptance rate) [\[PDF\]](#).
- [5] Xinhua Zhang and Wee Sun Lee. Hyperparameter learning for graph based semi-supervised learning algorithms. In Bernhard Schölkopf, John Platt, and Thomas Hofmann, editors, *Advances in Neural Information Processing Systems 19*, Cambridge MA, 2006. MIT Press. (204 out of 833, 24.5% acceptance rate) [\[PDF\]](#).

Others

- [1] Wee Sun Lee, Xinhua Zhang, and Yee Whye Teh. Semi-supervised learning in reproducing kernel Hilbert spaces using local invariances. *NUS Technical Report TRB3/06*, 2006. [\[PDF\]](#).
- [2] Xinhua Zhang and Peter K K Loh. A fault-tolerant routing strategy for Fibonacci-class cubes. In *10th Asia-Pacific Computer Systems Architecture Conference*, Singapore, 2005. [\[PDF\]](#).
- [3] Peter K K Loh and Xinhua Zhang. A fault-tolerant routing strategy for Gaussian cube using Gaussian tree. In *International Conference on Parallel Processing Workshops*, Kaosiung, China, 2003. [\[PDF\]](#).
- [4] Xiang Yan, Xinhua Zhang, and Liang Huang. A light intensity model with connected set algorithm. *Journal of Engineering Mathematics*, 20(5), 2003.

Research Employment

- Sept. 2008 – Nov. 2008 Intern at [Microsoft Research Cambridge](#)
Topic: A Bayesian Online Multi-label Classification Framework for Text Categorization
Mentors: [Thore Graepel](#) and [Ralf Herbrich](#)
- June 2005 – Mar. 2006 Research Assistant
[Singapore-MIT Alliance](#)
Topic: Semi-supervised machine learning

Teaching

TA for Graduate Courses at ANU

- Fall 2007 COMP3620/6320 Artificial Intelligence
- Spring 2007 COMP8650 Advanced Topics in Statistical Machine Learning

TA for Undergraduate Courses at SJTU

- Fall 2002 Information Systems Management

Peer Review

- 2007, 2008 IEEE Transactions on Pattern Recognition and Machine Intelligence
- 2009 Neurocomputing
- 2008, 2009 International Conference on Machine Learning (ICML)
- 2009 Uncertainty in AI (UAI)
- 2006 European Conference on Machine Learning (ECML)
- 2005 International Conference on Parallel Processing (ICPP)

Awards and Honors

- 2007 Best student paper award at ICML 2007
- 2007 Microsoft Research Asia Fellowship
- 2009 ANU Vice Chancellor's Grant for visiting Purdue University (AUD 5,000)
- 2007, 2008 Travel grant to attend ICML 2007, 2008 awarded by ICML
- 2008 Travel grant to attend NIPS 2008 awarded by NIPS
- 2006 ~ 2010 ANU-NICTA Tuition Scholarship, ANU-RSISE Stipend Scholarship, ANU-NICTA Supplementary Scholarship and IP Assignment Scholarship
- 2002 Full scholarship for exchange student program to conduct Final Year Project at Nanyang Technological University, Singapore
- 2000, 2002 Honor of University-wide *Exceptional* Student awarded by SJTU to the top 1% student of the university
- 2001,2002 First Prize of Excellent Academic Scholarship awarded by SJTU to the top student of the department

Computer Skills

- Computer languages: C/C++ (with STL and uBlas library), Java, F#, Matlab, Python
- Platform: Unix/Linux, MPI, WinXP, Cygwin
- Database: DB2 UDB certified System Administrator, MySQL