Zenglin Xu

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Research Interest I have wide interest in the *Machine Learning*, *Convex Optimization*, *Data Mining*, *Information Retrieval*, *Web Search*, and *bioinformatics*. I seek to create and employ new techniques of the above fields to real applications.

In general, I put much focus on semi-supervised learning and kernel learning. I have interest in how to build efficient and effective semi-supervised learning models, which often involves non-convex optimization problems. I also have strong interest in multiple kernel learning and group lasso, which often involves sophisticated convex optimization problems. I devote myself to design effective and efficient optimization methods to solve these machine learning problems. Furthermore, I also have interest on online learning and learning with a budget.

Current Employment

- **08.2009-present** Postdoctoral Researcher
  Cluster of Excellence: MMCI, Saarland University
  and Max Planck Institute for Informatics, Germany
  Adviser: Dr. Matthias Seeger

Education

- **08.2005 – 07.2009**, Ph.D.
  Adviser: Irwin King, Michael R. Lyu
  Program: Computer science and engineering
  The Chinese University of Hong Kong, Hong Kong
- **2007,2008 Summers**, Academic Visiting
  Adviser: Rong Jin
  Program: Computer science and engineering
  Michigan State University, U.S.
- **09.2002 – 07.2005**, M.S.
  Major: Computer software and theory
  Gradate School Entrance Score (2002): top 2 (of 500)
  Adviser: Junyi Shen
  Xi'an Jiaotong University, China
- **09.1998 – 07.2002**, B.S.
  Major: Computer science and technology
  Xi'an Polytechnic University, China
- **09.1995 – 07.1998**,
  Jiaonan Second Middle School, Shandong province, China
  University Entrance Score (1998): top 0.2% (of 160,000) in Shandong Province

Thesis Committee Irwin King (Adviser), The Chinese University of Hong Kong
Michael R. Lyu (Adviser), The Chinese University of Hong Kong
Jimmy Lee, The Chinese University of Hong Kong
Jun Wang, The Chinese University of Hong Kong
James Kwok, Hong Kong University of Science and Technology

Main Collaborators
Rong Jin, Michigan State University, U.S.
Matthias Seeger, Max Planck Institute for Informatics, Germany
Jieping Ye, Arizona State University, U.S.
Shenghuo Zhu, NEC Research Lab, Cupertino, CA, U.S.
Kaizhu Huang, Bristol University, U.K.
Jianke Zhu, ETH Zurich, Switzerland
Steven Hoi, Nanyang Technological University, Singapore

Skills

- Languages: Fluent on Java, Matlab; Good at C/C++, Delphi
- Database: Fluent on MySQL, SQL Server (including OLAP)
- Statistical Tools: Fluent on SAS, SPSS

Awards

- **2009**, NIPS 2009 travel award
- **2009**, IJCAI 2009 travel award
- **2007**, IJCNN 2007 travel award
- **2005**, Outstanding Student of Xi'an Jiaotong University, China
- **2002**, Outstanding Graduate of Shaanxi Province, China
- **2001**, Honorable Mention, in Mathematical Contest of Modeling (MCM), U.S.
- **2000**, Second Prize of Shannxi Province, in China University Modeling Contest of Mathematics (CUMCM), China
- **1999**, First Prize, Advanced Mathematical Contest of Shaanxi Province, China

Internship and Experiences

Software Institute, Xi'an Jiaotong University *Software Developer*
Xi'an, China **Summer 2004**
Responsible for developing an On Line Analytical Processing (OLAP) system for Office of Social Security of Xi'an Government

Xi'an Talent Tech Limited *Assistant Software Engineer*
Xi'an, Shaanxi, China. **July 2003 – October 2003**
Responsible for designing and developing modules of a B/S based security information system using J2EE.

Xi'an GoldenSword Software Corp. *Assistant Software Engineer*
Xi'an, Shaanxi, China. **August 2002 – October 2002**
Responsible for testing in an audit software and writing interface programs for the audit software and different kinds of financial databases

Courses Tutoring

- 2008 Spring, CSC2720, **Building Web Applications**
- 2007 Autumn, CSC5180, **Techniques for Data Mining**
- 2007 Spring, CSC2120, **Introduction to Software Engineering**

Memberships and Activities

- ACM Member, IEEE Member, INNS Member
- Journal Reviewer: Journal of Machine Learning Research, IEEE Transaction on Neural Network, NeuroComputing, Neural Computing and Applications, Pattern Recognition
- Conference reviewer: ICPR 2010, IJCAI 2009, ISSRE 09,07
- Program Committee: Web Intelligence 2010, ICONIP 2009, BJ-HK International Doctoral Forum 2007
- Volunteer of NIPS 2007, Session chair of ICONIP 2006

Phd Thesis Xu, Z. (2009). Learning with unlabeled data. *The Chinese University of Hong Kong.*

Selected Talks

- An extended level method for Multiple Kernel Learning, October 2008, NEC Labs of America, Cupertino, CA, US
- Efficient Multiple Kernel Learning, November 2009, Max-Planck Institute for Biological Cybernetics, Tuebingen, Germany
- Basics and Advances in Semi-supervised Learning, Tutorial of IJCNN2010 (to be given), Barcelona, Spain

Publications

a) books

1. **Xu, Z.** and King, I. (2010). *Introduction to Semi-supervised Learning (In preparation).* Chapman & Hall/CRC.

b) articles in journals/contributions to books

1. **Xu, Z.**, King, I., Lyu, M. R. and R. Jin (2010). Semi-supervised Feature Selection based on Manifold Regularization. *IEEE Transaction on Neural Networks*, Accepted.
2. **Xu, Z.**, Huang, K., Zhu, J., King, I., and Lyu, M. R. (2009). A novel kernel-based maximum a posteriori classification method. *Neural Networks*, 22(7):977-987.
3. **Xu, Z.**, King, I., and Lyu, M. R. (2007). Feature selection based on minimum error minimax probability machine. *International Journal of Pattern Recognition and Artificial Intelligence*, 21(8):1–14.
4. Huang, K., **Xu, Z.**, King, I., Lyu, M. R., and Zhou, Z. (2007). A novel discriminative naive bayesian network for classification. In Mittal, A. and Kassim, A., editors, *Bayesian Network Technologies: Applications and Graphical Models*, pages 1–12. IDEA Group Inc., New York.

c) published contributions to academic conferences

1. **Xu, Z.**, Jin, R., Zhu, S., King, I. and Lyu, M. (2010). Smooth Optimization for Effective Multiple Kernel Learning," in In *Proceedings of the Twenty-Fourth AAAI Conference on Artificial Intelligence (AAAI2010)*, Atlanta, USA, 2010.
2. **Xu, Z.**, Jin, R., Zhu, J., King, I., Lyu, M., and Yang, Z. (2009). Adaptive regularization for transductive support vector machine. In Bengio, Y., Bottou, L., Lafferty, J., and Williams, C., editors, *Advances in Neural Information Processing Systems 22 (NIPS)*, pages 2125–2133.
3. Yang, Z., Oja, E., King, I., and **Xu, Z.** (2009). Heavy-tailed symmetric stochastic neighbor embedding. In Bengio, Y., Bottou, L., Lafferty, J., and Williams, C., editors, *Advances in Neural Information Processing Systems 22 (NIPS)*, pages 2169–2177.
4. **Xu, Z.**, Jin, R., Lyu, M. R., and King, I. (2009). Discriminative semi-supervised feature selection via manifold regularization. In *IJCAI '09: Proceedings of the 21th International Joint Conference on Artificial Intelligence*, pages 1303–1308.
5. **Xu, Z.**, Jin, R., Ye, J., Lyu, M. R., and King, I. (2009). Non-monotonic feature selection. In *ICML '09: Proceedings of the 26th Annual International Conference on Machine Learning*, pages 1145–1152, New York, NY, USA. ACM.
6. **Xu, Z.**, Jin, R., King, I., and Lyu, M. (2009). An extended level method for efficient multiple kernel learning. In Koller, D., Schuurmans, D., Bengio, Y., and Bottou, L., editors, *Advances in Neural Information Processing Systems 21 (NIPS)*, pages 1825–1832.
7. Huang, K., **Xu, Z.**, King, I., and Lyu, M. R. (2009). Supervised self-taught learning: Actively transferring knowledge from unlabeled data. In *IJCNN'09: Proceedings of 22th International Joint Conference on Neural Network.*
8. Huang, K., **Xu, Z.**, King, I., and Lyu, M. R. (2008). Semi-supervised learning from general unlabeled data. *Data Mining, IEEE International Conference on*, 0:273–282.
9. **Xu, Z.**, Jin, R., Huang, K., King, I., and Lyu, M. R. (2008). Semi-supervised text categorization by active search. In *CIKM '08: Proceedings of the thirteenth ACM international conference on Information and knowledge management*, pages 1517–1518, New York, NY, USA. ACM Press.
10. Zhu, J., Hoi, S. C., **Xu, Z.**, and Lyu, M. R. (2008). An effective approach to 3d deformable surface tracking. In *ECCV '08: Proceedings of the 10th European Conference on Computer Vision*, pages 766–779, Berlin, Heidelberg. Springer-Verlag.

11. **Xu, Z.**, Jin, R., Zhu, J., King, I., and Lyu, M. R. (2008). Efficient convex relaxation for transductive support vector machine. In Platt, J., Koller, D., Singer, Y., and Roweis, S., editors, *Advances in Neural Information Processing Systems 20*, pages 1641–1648. MIT Press, Cambridge, MA.

12. **Xu, Z.**, King, I., and Lyu, M. R. (2007). Web page classification with heterogeneous data fusion. In *WWW '07: Proceedings of the 16th international conference on World Wide Web*, pages 1171–1172, New York, NY, USA. ACM Press.

13. **Xu, Z.**, Huang, K., Zhu, J., King, I., and Lyu, M. (2007). Kernel maximum a posteriori classification with error bound analysis. In *Proceedings of the International Conference on Neural Information Processing (ICONIP2007)*, pages 841–850.

14. **Xu, Z.**, Zhu, J., Lyu, M. R., and King, I. (2007). Maximum margin based semi-supervised spectral kernel learning. In *IJCNN'07: Proceedings of 20th International Joint Conference on Neural Network*, pages 418–423.

15. Liu, Y., Qin, Z., **Xu, Z.**, and He, X. (2004). Using relaxation velocity update strategy to improve particle swarm optimization. In *Proceedings of the third international conference on Machine Learning and Cybernetics*, pages 2469–2472.

16. Liu, Y., Qin, Z., **Xu, Z.**, and He, X. (2004). Feature selection with particle swarms. In *Computational and Information Science, LNCS*, volume 3314, pages 425–430.