

Yongxin Taylor Xi

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ACADEMIC EXPERIENCE

2006-Present **Ph.D. Candidate, Department of Electrical Engineering, Princeton University**
Adviser: Prof. Peter J. Ramadge

Course work Machine Learning Theory, Random Processes, Probability Theory, Linear Systems Theory, Theory of Detection and Estimation, Image Processing, Graphical Models, Computer Vision, Advanced Topics in Boosting, Differential Geometry, Real Analysis, Optimization of Communication Systems, Digital Neuro-computing, and Introduction to Cognitive Neuroscience.

Major GPA: 3.85 / 4.00

Research interests

- Algorithmic development in supervised, unsupervised and semi-supervised learning.
- Manifold learning and dimensionality reduction.
- Sparse model learning, online learning, active learning.
- Applications include computer vision problems such as face recognition as well as biological data analysis such as fMRI (classifying cognitive states).

2002-2006 **Bachelor of Science, Electrical Engineering, Fudan University, Shanghai, China**
GPA: 3.85 / 4.00 Major GPA: 3.93 / 4.00 Rank: 1 / 203
Y. Xi, “3D mesh construction and its application in 3D face recognition,”
Undergraduate Thesis, Fudan University, 2006 Advisor: Prof. Liming Zhang
Minor, Computer Science, Fudan University, Rank: 1 / 31

AWARDS AND HONORS

- Outstanding Teaching Assistant Award, Electrical Engineering, Princeton University, 2009
- First Year Engineering Fellowship, Princeton University, 2006
- Collegiate Scholarship, Microchip China, 2005 (awarded to 50 students in China)
- Hitachi High-Tech Scholarship, 2005 (awarded to 5 students in Fudan University)
- Samsung Endowed Fellowship, 2003, 2005
- Shanghai Model Student, 2004 (awarded to 198 students in Shanghai)
- Fudan University Top Grade Scholarship, 2004
- Top Ten Student Award, Engineering School, Fudan University, 2004

RESEARCH EXPERIENCE

Fast Online SVM for Real Time Pattern Recognition of Interactive Human Brain fMRI, Sep 2009 – present, project in collaboration with Psychology Dept. at Princeton University.

Low Rank Probabilistic Clustering (LoRaC), May 2009 - Present

I developed a new clustering framework (LoRaC) and proposed an iterative algorithm to solve it. LoRaC has many desirable properties, such as guaranteed convergence, almost parameter free, effective learning of constraints, fast for data with large dimension, performing competitively across various datasets and robust to label noise.

Speed and Sparsity of Regularized Boosting, Mar 2008 - Apr 2009, collaborative project with Computer Science Dept. at Princeton University. Boosting algorithms with L1-regularization leads to sparser composite classifiers and results in a margin maximizing classifier in the limit. I extended these results by proving an explicit convergence bound for the classifier margin, and introduced a new hybrid margin-maximizing algorithm “AdaBoost+L1”.

Separable Principle Component Analysis, Sep 2008 - Mar 2009

Various matrix-based dimensionality reduction methods are unified through a new proposed concept: Separable Principle Component Analysis (SPCA), which in turn provides a useful theoretical framework.

Using LARS for learning effective projections in face recognition, Oct 2007 - Feb 2008

I designed a sparse regression algorithm for face recognition. The algorithm accomplishes feature selection and supervised learning concurrently, and shows strong performance on face databases.

PUBLICATIONS

Y. T. Xi, P. Ramadge, “Low Rank Probabilistic Clustering (LoRaC),” Submitted to *Thirteenth International Conference on Artificial Intelligence and Statistics (AISTATS 2010)*

B. Conroy, **Y. T. Xi**, P. Ramadge, “A Supervisory Approach to Semi-supervised Clustering,” Submitted to *IEEE International Conference on Acoustics, Speech and Signal Processing (ICASSP 2010)*

Z. J. Xiang, **Y. T. Xi**, P. Ramadge, “Boosting with Spatial Regularization,” *Advances in Neural Information Processing Systems (NIPS 2009)*, Vancouver, B.C. Canada

Y. T. Xi, P. Ramadge, Using Sparse Regression to Learn Effective Projections for Face Recognition *IEEE International Conference on Image Processing (ICIP 2009)*, Cairo, Egypt

Y. T. Xi, Z. J. Xiang, P. Ramadge, R. Schapire, “Speed and Sparsity of Regularized Boosting,” *Twelfth International Conference on Artificial Intelligence and Statistics (AISTATS 2009)*, Florida, USA

Y. T. Xi, P. Ramadge, “Separable Principle Component Analysis,” *IEEE International Conference on Acoustics, Speech and Signal Processing (ICASSP 2009)*, Taipei, China

Y. T. Xi, P. Ramadge, “Poster: Using LARS for learning effective projections in face recognition,” *Computer Research Association Workshop (CRA-W)*, Washington, USA

Y. T. Xi, Z. J. Xiang, P. Ramadge, R. Schapire, “Abstract: Speed and Sparsity of Regularized Boosting,” *Woman in Machine Learning Workshop (WIML 2008)*, Vancouver B.C., Canada

SKILLS

Language	English Fluent, Mandarin Native
Programming	MATLAB, C++, C, VB, CCS (DSP), AutoCAD, SQL Server

TEACHING EXPERIENCE

Fall 2009	ELE 301: Digital Signal Processing (Instructor: Bede Liu), Princeton University
Fall 2007, 2008	ELE 488: Image Processing (Instructor: Bede Liu), Princeton University

SOCIAL SERVICES

Vice President of Graduate Engineering Ambassadors at Princeton University, Social Chair and Special Events Chair in Graduate College House Committee, Student President for Academic Affairs at Fudan University, etc.