

Curriculum Vitæ

Liang Sun

School of Computing, Informatics and Decision Systems Engineering
The Center for Evolutionary Medicine and Informatics, The Biodesign Institute
Arizona State University, Tempe, AZ 85287
Phone: (480)406-2469
Fax: (480)727-6947
E-mail: sun.liang@asu.edu
<http://www.public.asu.edu/~lsun27>

Education

Ph.D. in Computer Science Arizona State University, Tempe, AZ	2011
M.S. in Computer Science Institute of Software, Chinese Academy of Sciences, Beijing, China	2006
B.S. in Computer Science Nanjing University, Nanjing, China	2003

Research Interests

Machine Learning: Theory and algorithms on multi-label learning, dimensionality reduction, and sparse learning.

Compressed Sensing: Theory and numerical optimization algorithms in compressed sensing and their applications.

Honors & Awards

2010	KDD Best Research Paper Award Honorable Mention , The 16th ACM SIGKDD International Conference on Knowledge Discovery and Data Mining (KDD 2010)
2010	Student Travel Award , The 16th ACM SIGKDD International Conference on Knowledge Discovery and Data Mining (KDD 2010)
2009	Student Travel Award , The 22nd Annual Conference on Neural Information Processing Systems (NIPS 2009)
2009	Student Scholarship , The 26th International Conference on Machine Learning (ICML 2009)

- 2009 **Conference Travel Grant Award**, Graduate and Professional Student Association (**GPSA**), Arizona State University
- 2008 **Student Travel Award**, The 14th ACM SIGKDD International Conference on Knowledge Discovery and Data Mining (**KDD 2008**)

Research Experiences

- 2007-2010 **Graduate Research Associate, Arizona State University**
Supervisor: Prof. Jieping Ye
(1) Developed an effective dimensionality reduction algorithm called Hypergraph Spectral Learning (HSL) for multi-label learning;
(2) Developed sparse Canonical Correlations Analysis (CCA) and investigated the effects of regularization on CCA;
(3) Developed efficient algorithms based on the least squares for a class of dimensionality reduction algorithms, including canonical correlation analysis, linear discriminant analysis, orthonormalized partial least squares and hypergraph spectral learning;
(4) Developed algorithms for sparse learning problems, including sparse inverse covariance estimation and the reconstruction of jointly sparse vectors.
- Summer 2009 **Research Intern, Applied Research & Technology Center, Motorola**
Mentor: Dr. Keshu Zhang
Developed an online signature verification system based on the pressure-sensitive touchscreen called “TRUE Touch” developed by Motorola.

Journal Publications

1. **Liang Sun**, Betul Ceran, and Jieping Ye. Least Squares Dimensionality Reduction. *ACM Transactions on Knowledge Discovery from Data*. **Invited Paper**. Full Text
2. **Liang Sun**, Shuiwang Ji, and Jieping Ye. Canonical Correlation Analysis for Multilabel Classification: A Least-Squares Formulation, Extensions, and Analysis. *IEEE Transactions on Pattern Analysis and Machine Intelligence*, 33(1), 194-200, 2011. Full Text
3. Shuai Huang, Jing Li, **Liang Sun**, Jieping Ye, Adam Fleisher, Teresa Wu, Kewei Chen, and Eric Reiman. Learning Brain Connectivity of Alzheimer’s Disease by Sparse Inverse Covariance Estimation. *NeuroImage*, 50, 935-949, 2010. Full Text
4. **Liang Sun**, Shuiwang Ji, and Jieping Ye. Adaptive Diffusion Kernel Learning from Biological Networks for Protein Function Prediction. *BMC Bioinformatics*, 9:162, 2008. Full Text
5. Shuiwang Ji, **Liang Sun**, Rong Jin, Sudhir Kumar, and Jieping Ye. Automated Annotation of Drosophila Gene Expression Patterns using a Controlled Vocabulary. *Bioinformatics*, 24(17):1881-1888, 2008. Full Text

Refereed Conference Publications

1. **Liang Sun**, Betul Ceran, Jieping Ye. A Scalable Two-Stage Approach for a Class of Dimensionality Reduction Techniques. In *Proceedings of the 16th ACM SIGKDD International Conference on Knowledge Discovery and Data Mining (KDD 2010)*, 313-322. (Full presentation, 13% acceptance rate) Full Text
KDD Best Research Paper Award Honorable Mention
2. **Liang Sun**, Jun Liu, Jianhui Chen, and Jieping Ye. Efficient Recovery of Jointly Sparse Vectors. In *Advances in Neural Information Processing Systems 22 (NIPS 2009)*, 1812-1820. (24% acceptance rate) Full Text
3. Shui Huang, Jing Li, **Liang Sun**, Jun Liu, Teresa Wu, Kewei Chen, Adam Fleisher, Eric Reiman, and Jieping Ye. Learning Brain Connectivity of Alzheimer's Disease from Neuroimaging Data. In *Advances in Neural Information Processing Systems 22 (NIPS 2009)*, 808-816. (8% acceptance rate) Full Text
4. **Liang Sun**, Shuiwang Ji, and Jieping Ye. A Least Squares Formulation for a Class of Generalized Eigenvalue Problems in Machine Learning. In *Proceedings of the 26th International Conference on Machine Learning (ICML 2009)*, 977-984. (27% acceptance rate) Full Text
5. **Liang Sun**, Rinkal Patel, Jun Liu, Kewei Chen, Teresa Wu, Jing Li, Eric Reiman, and Jieping Ye. Mining Brain Region Connectivity for Alzheimer's Disease Study via Sparse Inverse Covariance Estimation. In *Proceedings of the 15th ACM SIGKDD International Conference on Knowledge Discovery and Data Mining (KDD 2009)*, 1335-1344. (Full presentation, 9.8% acceptance rate) Full Text
6. **Liang Sun**, Shuiwang Ji, Shipeng Yu, and Jieping Ye. On the Equivalence Between Canonical Correlation Analysis and Orthonormalized Partial Least Squares. In *Proceedings of the 21st International Joint Conference on Artificial Intelligence (IJCAI 2009)*, 1230-1235. (25.7% acceptance rate) Full Text
7. Zheng Zhao, **Liang Sun**, Shipeng Yu, Huan Liu, and Jieping Ye. Multiclass Probabilistic Kernel Discriminant Analysis. In *Proceedings of the 21st International Joint Conference on Artificial Intelligence (IJCAI 2009)*, 1363-1368. (25.7% acceptance rate) Full Text
8. **Liang Sun**, Shuiwang Ji, and Jieping Ye. A Least Squares Formulation for Canonical Correlation Analysis. In *Proceedings of the 25th International Conference on Machine Learning (ICML 2008)*, 1024-1031. (27% acceptance rate) Full Text
9. **Liang Sun**, Shuiwang Ji, and Jieping Ye. Hypergraph Spectral Learning for Multi-Label Classification. In *Proceedings of the 14th ACM SIGKDD International Conference on Knowledge Discovery and Data Mining (KDD 2008)*, 668-676. (Full presentation, 10% acceptance rate) Full Text
10. Shuiwang Ji, **Liang Sun**, Rong Jin, and Jieping Ye. Multi-Label Multiple Kernel Learning. In *Advances in Neural Information Processing Systems 21 (NIPS 2008)*, 777-784. (12% acceptance rate) Full Text

Book

1. **Liang Sun**, Jieping Ye and Shuiwang Ji. *Multi-Label Dimensionality Reduction*. CRC Press, 2011.

Manuscripts in Submission

1. **Liang Sun** and Jieping Ye. On the Exact Recovery Condition for Block-Sparse Signals. *Submitted to IEEE Transactions on Signal Processing*, 2010.

Teaching Experiences

- | | |
|-------------|---|
| Fall 2009 | Invited instructor at Mayo Clinic in Scottsdale, AZ, five lectures on data mining algorithms and their applications in medical image processing |
| Fall 2010 | Teaching Assistant, “CSE 494/598: Numerical Linear Algebra for Data Exploration”, Arizona State University |
| Spring 2009 | Teaching Assistant, “CSE 591: Machine Learning and Applications”, Arizona State University |
| Spring 2008 | Teaching Assistant, “CSE/CBS 572: Data Mining”, Arizona State University |
| Fall 2006 | Teaching Assistant, “CSE 205: Concept of Computer Science and Data Structure”, Arizona State University |
| Spring 2007 | Guest Instructor, one lecture on <i>Nonlinear Least Squares Problems</i> to the class “MAT 523: Numerical Optimization” at Arizona State University |
| Spring 2009 | Volunteer Speaker, four lectures on <i>Compressed Sensing</i> , Machine Learning Seminar, Arizona State University |
| Fall 2008 | Volunteer Speaker, four lectures on <i>Nonsmooth Convex Programming</i> , Machine Learning Seminar, Arizona State University |
| Fall 2007 | Volunteer Speaker, two lectures on <i>Mixture Models and the EM algorithm</i> , Machine Learning Seminar, Arizona State University |
| Summer 2007 | Volunteer Speaker, three lectures on <i>Linear Models for Classification</i> , Machine Learning Seminar, Arizona State University |

Industry Experiences

- | | |
|-------------|--|
| Summer 2009 | Research Intern, Applied Research & Technology Center, Motorola, Tempe, AZ |
|-------------|--|

Talks

- 2010 A Scalable Two-Stage Approach for a Class of Dimensionality Reduction Techniques, *The 16th ACM SIGKDD International Conference on Knowledge Discovery and Data Mining (KDD 2010)*, Washington DC, July 26th, 2010.
- 2009 Signature Verification System with Force-Sensitive Touch Panel, *Applied Research & Technology Center, Motorola*, Tempe, AZ, August 19th, 2009.
- 2009 A Least Squares Formulation for a Class of Generalized Eigenvalue Problems in Machine Learning. *The 26th International Conference on Machine Learning (ICML 2009)*, Montréal, Canada, June 17th, 2009.
- 2008 Hypergraph Spectral Learning for Multi-Label Classification. *The 14th ACM SIGKDD International Conference on Knowledge Discovery and Data Mining (KDD 2008)*. Las Vegas, August 27th, 2008.

Professional Activities

Professional Membership:

- Student Member, IEEE

Program Committee Member:

- The 9th International Conference on Machine Learning and Applications (ICMLA 2010)
- The 8th International Conference on Machine Learning and Applications (ICMLA 2009)
- The 7th International Conference on Machine Learning and Applications (ICMLA 2008)
- The 6th International Conference on Machine Learning and Applications (ICMLA 2007)

Student Volunteer:

- The 16th ACM SIGKDD Conference on Knowledge Discovery and Data Mining (KDD 2010)
- The 14th ACM SIGKDD Conference on Knowledge Discovery and Data Mining (KDD 2008)

Journal Review:

- Data Mining and Knowledge Discovery
- Statistical Analysis and Data Mining
- Computational Statistics and Data Analysis
- Wireless Personal Communications
- Neurocomputing

- Journal of Computer Science and Technology

Conference External Review:

- NIPS 2010, KDD 2010, ICML 2010, ICDM 2010, SDM 2010, ECCV 2010, CVPR 2010, ICASSP 2010, ICDM 2009, KDD 2009, ICML 2008, CVPR 2008, PAKDD 2008, ICMLC 2008, IJCV 2008, KDD 2007, ICDM 2007.

References

Jieping Ye, Ph.D.

Core Faculty Member, Center for Evolutionary Medicine and Informatics, The Biodesign Institute
Associate Professor, School of Computing, Informatics and Decision Systems Engineering

Arizona State University, Tempe, AZ 85287

Phone: 480-727-7451, Fax: 480-965-2751

E-mail: jieping.ye@asu.edu

<http://www.public.asu.edu/~jye02/>

<http://cemi.asu.edu>

Guoliang Xue, Ph.D.

Professor, School of Computing, Informatics and Decision Systems Engineering

Arizona State University, Tempe, AZ 85287

Phone: 480-965-6218, Fax: 480-965-2751

E-mail: xue@asu.edu

<http://optimization.asu.edu/~xue/>

William Pavlicek, Ph.D.

Associate Professor of Radiologic Physics, Department of Radiology

Mayo Clinic, Scottsdale, AZ 85259

Phone: 480-301-8098

E-mail: pavlicek.william@mayo.edu

<http://www.mayoclinic.org/bio/11141565.html>

Hans D. Mittelmann, Ph.D.

Professor, School of Mathematical and Statistical Sciences

Arizona State University, Tempe, AZ 85287

Phone: 480-965-6595, Fax: 480-965-0461

E-mail: mittelmann@asu.edu

<http://http://plato.asu.edu/>

Huan Liu, Ph.D.

Professor, School of Computing, Informatics and Decision Systems Engineering

Arizona State University, Tempe, AZ 85287

Phone: 480-727-7349, Fax: 480-965-2751

E-mail: huan.liu@asu.edu

<http://www.public.asu.edu/~huanliu/>