

# CURRICULUM VITÆ

## BASICS

### Le Song

Assistant Professor

CSE, College of Computing  
Georgia Institute of Technology

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## EDUCATION

- 2003.1 – 2008.1 *Ph.D. in Computer Science*  
University of Sydney and National ICT Australia, Australia  
Thesis Advisor: Alex Smola  
Thesis Committee: Bob Williamson, Carlos Guestrin and Lawrence Saul
- M.Sc. in Computer Science*  
University of Sydney, Australia  
Thesis Advisor: Masahiro Takatsuka and Peter Eades
- 1998.9 – 2002.9 *B.S. in Computer Science*  
South China University of Technology, China

## AWARDS

- 2010 – 2015 NIH 1R01GM093156 (Ad hoc Co-PI): Time/Space-Varying Networks of Molecular Interactions: A New Paradigm for Studying Dynamic Biological Regulation and Pathways, \$2,237,288.
- 2008 – 2011 Lane Fellowship from Carnegie Mellon University
- 2010 **Best Paper** at International Conference on Machine Learning
- 2007 & 2009 Travel Fellowship from International Society for Computational Biology
- 2004 – 2008 National ICT Australia Graduate Scholarship
- 2005 & 2007 Travel Fellowship from Neural Information Processing Systems
- 2007 Travel Fellowship from International Conference on Machine Learning
- 2004 First Student Prize in IEEE information visualization contest
- 2001 Meritorious in Internatinoal Mathematical Contest in Modeling
- 2001 First Prize in National Mathematical Contest in Modeling
- 2000 – 2002 Undergraduate Scholarship at South China University of Technology

## POSITIONS HELD

- 2011.9 – Present *Assistant Professor*, CSE, Georgia Institute of Technology  
Department Chair: Richard Fujimoto  
Developing machine learning methods and tackling interdisciplinary problems

- 2011.3 – 2011.9 *Research Scientist*, Google Research  
 Manager: Fernando Pereira  
 Working on large scale learning package for internet data
- 2008.7 – 2011.3 *Postdoc Research Fellow*, School of Computer Science, Carnegie Mellon University  
 Advisors: Eric Xing, Carlos Guestrin, Geoff Gordon, and Jeff Schneider  
 Developing nonparametric probabilistic graphical models, modeling and analyzing complex social and biological data
- 2008 *Visiting Researcher*, Statistical Machine Learning, National ICT Australia, Australia  
 Supervisor: Alex Smola  
 Analyzing sensor time series recorded from Australian national sports team, segmenting time series and detecting change points
- 2005 – 2008 *Machine Learning Consultant* (Part-Time), Brain Resource Company, Australia  
 Supervisor: Evian Gordon  
 Analyzing electroencephalogram (EEG) time series, and developing EEG source localization and visualization toolkit
- 2004 *Research Programmer* (Part-Time), School of Physics, University of Sydney, Australia  
 Supervisor: Dixon Kwok  
 Developing parallel simulator for plasma physics problems

## TEACHING

- Fall 2011 – present *Graduate Student Supervision*
1. Fall 2011 – present, Nan Du
  2. Fall 2011 – present, Marat Dukhan
- Fall 2008 – Spring 2011 *Graduate Student Co-supervision* (with Eric Xing at CMU)
1. Fall 2008 – Spring 2009, Wenjie Fu (now at Facebook)
  2. Fall 2008 – Fall 2009, Mladen Kolar
  3. Fall 2009 – Fall 2010, Qirong Ho
  4. Spring 2010 – present, Ankur Parikh
- Spring 2010 *Guest Lecturer* (with Bob Murphy at CMU) for Computational Genomics  
 This course focuses on modern machine learning methodologies for computational problems in molecular biology and genetics.
- Fall 2009 *Guest Lecturer* (with Eric Xing at CMU) for Probabilistic Graphical Models  
 This is an advanced machine learning course covering probabilistic graphical models for efficient inference, decision-making and learning.
- Spring 2004 *Teaching Assistant* for Object-Oriented Analysis and Design at University of Sydney

## JOURNAL PUBLICATIONS

1. E. Xing, W. Fu, and L. Song (2010). A state-space mixed membership blockmodel for dynamic network tomography. *Annals of Applied Statistics*, 4(2), pp. 535–566.
2. M. Kolar, L. Song, A. Ahmed, and E. Xing (2010). Estimating time-varying networks. *Annals of Applied Statistics*, 4(1), pp. 94–123.
3. N. Quadrianto, A. Smola, L. Song and T. Tuytelaars (2010). Kernelized sorting. *IEEE Trans. on Pattern Analysis and Machine Intelligence*, 32(10), pp. 1809–1821.
4. L. Song, M. Kolar, E. Xing. (2009). KELLER: estimating time-varying interactions between genes. *Bioinformatics (ISMB)*, 25(12), pp. i128–i136.

5. L. Williams, J. Gatt, S. Kuan, C. Dobson-Stone, D. Palmer, R. Paul, L. Song, P. Costa, P. Schofield and E. Gordon (2009). A polymorphism of the maoa gene is associated with emotional brain markers and personality traits on an antisocial index. *Nature Neuropsychopharmacology*, vol 34, pp. 1797–1809.
6. L. Song, A. Smola, A. Getton, J. Bedo and K. Borgwardt. (2008). Feature selection via dependence maximization. *Journal of Machine Learning Researches*.
7. L. Song, J. Bedo, K. Borgwardt, A. Getton and A. Smola. (2007). Gene selection via the BAHSIC family of algorithms. *Bioinformatics (ISMB)* 23(13), i490–i498.
8. L. Williams, D. Palmer, B. Liddell, L. Song and E. Gordon. (2006). The ‘when’ and ‘where’ of perceiving signals of threat versus non-threat. *NeuroImage*, vol 31, pp. 458–467.
9. S.Q. Liu, and L. Song. (2005). Curvature relation of wave front and wave changing in external field. *Applied Mathematics and Mechanics*, 26(7), pp. 929–937.
10. S.Q. Liu, and L. Song. (2004). Numerical analysis of Lobster stomatogastric nervous system. *Acta Biophysica Sinica*, 20(3), pp. 217–224.

## ALL PUBLICATIONS

### ★ *Kernel Methods and Nonparametric Graphical Models*

1. K. Fukumizu, L. Song and A. Gretton (2011). Kernel Bayes rules. *Advances in Neural Information Processing Systems 21 (NIPS 2011)*.
2. L. Song, A. Parikh and E. Xing (2011). Hilbert Space Embedding of Latent Tree Graphical Models. *Advances in Neural Information Processing Systems 21 (NIPS 2011)*.
3. A. Anandkumar, K. Chaudhuri, D. Hsu, S. Kakade, L. Song and T. Zhang (2011). Spectral Methods for Learning Multivariate Latent Tree Structure. *Advances in Neural Information Processing Systems 21 (NIPS 2011)*.
4. L. Song, A. Parikh and E. Xing (2011). Hilbert Space Embedding of Latent Tree Graphical Models *Advances in Neural Information Processing Systems 21 (NIPS 2011)*.
5. A. Parikh, L. Song and E. Xing (2011). A spectral algorithm for latent tree graphical models. *28th International Conference on Machine Learning (ICML 2011)*.
6. L. Song, A. Gretton, D. Bickson, Y. Low and C. Guestrin (2011). Kernel belief propagation. *Artificial Intelligence and Statistics (AISTATS 2011)*.
7. L. Song, B. Boots, S. Siddiqi, G. Gordon and A. Smola (2010). Hilbert space embedding of hidden Markov model. *27th International Conference on Machine Learning (ICML 2010) (Best Paper)*.
8. L. Song, A. Gretton and C. Guestrin (2010). Nonparametric tree graphical models. *Artificial Intelligence and Statistics (AISTATS 2010)*.
9. T. Huang, L. Song and J. Schneider (2010). Learning nonlinear dynamic models from non-sequenced Data. *Artificial Intelligence and Statistics (AISTATS 2010)*.
10. N. Quadrianto, A. Smola, L. Song and T. Tuytelaars (2010). Kernelized sorting. *IEEE Trans. on Pattern Analysis and Machine Intelligence*, 32(10), pp. 1809–1821.
11. L. Song, J. Huang, A. Smola and K. Fukumizu (2009). Hilbert space embedding of conditional distribution with applications to dynamical systems. *26th International Conference on Machine Learning (ICML 2009)*.
12. X. Zhang, L. Song, A. Gretton and A. Smola. (2008). Kernel measures of independence for non-iid data. *Advances in Neural Information Processing Systems 21 (NIPS 2008)*.

13. N. Quadrianto, L. Song and A. Smola. (2008). Kernelized sorting. *Advances in Neural Information Processing Systems 21 (NIPS 2008)*.
14. L. Song, X. Zhang, A. Smola, A. Gretton and B. Schölkopf. Tailoring density estimation via reproducing kernel moment matching. (2008). *25th International Conference on Machine Learning (ICML 2008)*.
15. L. Song, A. Smola, A. Getton, J. Bedo and K. Borgwardt. (2008). Feature selection via dependence maximization. *Journal of Machine Learning Researches*.
16. L. Song, A. Smola, K. Borgwardt and A. Getton. (2007). Colored maximum variance unfolding. *Advances in Neural Information Processing Systems 20 (NIPS 2007)*.
17. A. Gretton, K. Fukumizu, C.H. Teo, L. Song, B. Schölkopf and A. Smola. (2007). A kernel statistical test of independence. *Advances in Neural Information Processing Systems 20 (NIPS 2007)*.
18. A. Smola, A. Gretton, L. Song and B. Schölkopf. (2007). A Hilbert space embedding for distributions. *18th International Conference on Algorithmic Learning Theory (Invited paper at ALT 2007)*.
19. L. Song, A. Smola, Arthur Gretton, K. Borgwardt and J. Bedo. (2007). Supervised feature selection via dependence estimation. *24th International Conference on Machine Learning (ICML 2007)*.
20. L. Song, A. Smola, Arthur Gretton and K. Borgwardt. (2007). A dependence maximization view of clustering. *24th International Conference on Machine Learning (ICML 2007)*.

★ *Learning and Analysis of Time-Varying Networks*

1. Q. Ho, L. Song and E. Xing (2011). Evolving cluster mixed-membership block-model for time-varying networks. *Artificial Intelligence and Statistics (AISTATS 2011)*.
2. Q. Ho, A. Parikh, L. Song and E. Xing (2011). Multiscale community blockmodel for network exploration. *Artificial Intelligence and Statistics (AISTATS 2011)*.
3. E. Xing, W. Fu, and L. Song (2010). A state-space mixed membership blockmodel for dynamic network tomography. *Annals of Applied Statistics*, 4(2), pp. 535–566.
4. M. Kolar, L. Song, A. Ahmed, and E. Xing (2010). Estimating time-varying networks. *Annals of Applied Statistics*, 4(1), pp. 94–123.
5. L. Song, M. Kolar and E. Xing (2009). Time-varying dynamic Bayesian networks. *Advances in Neural Information Processing Systems 22 (NIPS 2009)*.
6. M. Kolar, L. Song and E. Xing (2009). Sparsistent learning of varying-coefficient models with structural changes. *Advances in Neural Information Processing Systems 22 (NIPS 2009)*.
7. W. Fu, L. Song and E. Xing (2009). Dynamic mixed membership blockmodel for evolving networks. *26th International Conference on Machine Learning (ICML 2009)*.

★ *Computational Biology and Computational Neuroscience*

1. R. Curtis, A. Yuen, L. Song, A. Goyal and E. Xing (2011). TVNViewer: An interactive visualization tool for exploring networks that change over time or space. *Bioinformatics*, 27(13), pp.1880-1.
2. L. Song, M. Kolar, E. Xing. (2009). KELLER: estimating time-varying interactions between genes. *Bioinformatics (ISMB)*, 25(12), pp. i128–i136.
3. L. Williams, J. Gatt, S. Kuan, C. Dobson-Stone, D. Palmer, R. Paul, L. Song, P. Costa, P. Schofield and E. Gordon (2009). A polymorphism of the maoa gene is associated with emotional brain markers and personality traits on an antisocial index. *Nature Neuropsychopharmacology*, vol 34, pp. 1797–1809.

4. L. Song, J. Bedo, K. Borgwardt, A. Getton and A. Smola. (2007). Gene selection via the BAHASIC family of algorithms. *Bioinformatics (ISMB)* 23(13), i490–i498.
5. L. Williams, D. Palmer, B. Liddell, L. Song and E. Gordon. (2006). The ‘when’ and ‘where’ of perceiving signals of threat versus non-threat. *NeuroImage*, vol 31, pp. 458–467.
6. L. Song, and J. Epps. (2006). Classifying EEG for brain-computer interfaces: learning optimal filters for dynamical system features. *23rd International Conference on Machine Learning (ICML 2006)*.
7. L. Song, and J. Epps. (2006). Improving the separability of EEG signals during motor imagery with an efficient circular Laplacian. *31st IEEE International Conference on Acoustics, Speech, and Signal Processing (ICASSP 2006)*.
8. L. Song, E. Gordon, and E. Gysels. (2005). Phase synchrony rate for the recognition of motor imagery in brain-computer interface. *Advances in Neural Information Processing Systems 18 (NIPS 2005)*.
9. L. Song. (2005). Desynchronization network analysis for the recognition of imagined movement. *27th IEEE International Conference of the Engineering in Medicine and Biology Society (EMBC 2005)*.

★ *Information Visualization for Large and Complex Networks*

1. W. Huang, C. Murray, X. Shen, L. Song, Y.X. Wu, and L. Zheng. (2005). Visualization and analysis of network motifs. *9th International Conference on Information Visualization (IV 2005)*.
2. A. Ahmed, T. Dywer, S.H. Hong, C. Murray, L. Song, and Y.X. Wu. (2005). Visualization and analysis of large and complex scale-free networks. *7th IEEE VGTC Symposium on Visualization (EUROGRAPHICS 2005)*.
3. L. Zheng, L. Song and P. Eades. (2005). Crossing minimization problems of drawing bipartite graphs in two clusters. *4th Asian-Pacific Symposium on Information Visualization (APVIS 2005)*.
4. A. Ahmed, T. Dywer, S.H. Hong, C. Murray, L. Song, and Y.X. Wu. (2004). Wilmascope graph visualization. *10th IEEE Symposium on Information Visualization (IEEE INFOVIS 2004)*.
5. L. Song, and M. Takatsuka. (2005). Real-time 3D finger pointing for an augmented desk. *6th Australasian User Interface Conference (AUIC 2005)*.

★ *Numerical Simulation of Nonlinear Dynamical Systems*

1. S.Q. Liu, and L. Song. (2005). Curvature relation of wave front and wave changing in external field. *Applied Mathematics and Mechanics*, 26(7), pp. 929–937.
2. S.Q. Liu, and L. Song. (2004). Numerical analysis of Lobster stomatogastric nervous system. *Acta Biophysica Sinica*, 20(3), pp. 217–224.

★ *Others*

1. A. Smola, L. Song and C. Teo. (2009). Relative novelty detection. *Artificial Intelligence and Statistics (AISTATS 2009)*.
2. M. Thoma, H. Cheng, A. Gretton, J. Han, H. Kriegel, A. Smola, L. Song, P. Yu, X. Yan and K. Borgwardt. (2009). Near-optimal supervised feature selection among frequent subgraphs. *SIAM International Conference on Data Mining (SDM 2009)*.

**PROFESSIONAL SERVICE**

★ *Workshop Organizer*

NIPS 2009 Workshop on Transfer Learning for Structured Data

★ *Journal Reviewer*

IEEE Transactions on Pattern Analysis and Machine Intelligence (TPAMI), IEEE Transactions on Neural Networks (TNN), IEEE Transactions on Knowledge and Data Engineering (TKDE), Transactions on Computational Biology and Bioinformatics (TCBB), Journal of Machine Learning Researches (JMLR), Machine Learning, Pattern Recognition, Bioinformatics

★ *Conference Program Committee*

International Conference in Machine Learning (ICML), Neural Information Processing Systems (NIPS), Uncertainty in Artificial Intelligence (UAI), ACM Conference on Knowledge Discovery and Data Mining (KDD), Research on Computational Biology (RECOMB), International Conference on Intelligent Systems for Molecular Biology (ISMB)

January 3, 2012