Xiaojin (Jerry) Zhu

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Department of Computer Sciences
University of Wisconsin-Madison
1210 West Dayton Street, Madison, WI 53706

Research Interests

Machine learning, cognitive modeling, natural language processing

Education

PhD in Language Technologies — May, 2005
Carnegie Mellon University, Pittsburgh, PA
Dissertation: Semi-Supervised Learning with Graphs
Advisors: John Lafferty, Ronald Rosenfeld

MS in Knowledge Discovery and Data Mining — December, 2002
Carnegie Mellon University, Pittsburgh, PA

MS in Language and Information Technologies — May, 2000
Carnegie Mellon University, Pittsburgh, PA

MS in Computer Science — March, 1996
Shanghai Jiao Tong University, Shanghai, China

BS in Computer Science — July, 1993
Shanghai Jiao Tong University, Shanghai, China

Professional Positions

Associate Professor — 2011–present
Department of Computer Sciences
Department of Electrical & Computer Engineering (Affiliated Faculty)
Department of Psychology (Affiliated Faculty)
University of Wisconsin–Madison. Madison, WI, USA

Assistant Professor — 2005–2011
Department of Computer Sciences
University of Wisconsin–Madison. Madison, WI, USA

Research Scientist — 1996–1998
IBM China Research Laboratory. Beijing, China

Publications

Co-Authors noted as (s) for student under my direction, (p) for post-doctoral associate under my direction, (o) for students or post-docs under the direction of others, and (a) for my thesis Advisors.

Book and Book Chapters

Xiaojin Zhu and Andrew B. Goldberg$^{(s)}$. *Introduction to Semi-Supervised Learning*. Synthesis Lectures on Artificial Intelligence and Machine Learning. Morgan & Claypool Publishers, San Rafael, CA, 2009.

Xiaojin Zhu. Semi-supervised learning. In Claude Sammut and Geoffrey Webb, editors, *Encyclopedia of Machine Learning*. Springer, first edition, 2010.

Xiaojin Zhu, Jaz Kandola, John Lafferty[(a)], and Zoubin Ghahramani. Graph kernels by spectral transforms. In O. Chapelle, B. Schölkopf, and A. Zien, editors, *Semi-Supervised Learning*. MIT Press, 2006.

Journal Papers

Jun-Ming Xu[(s)], Xiaojin Zhu, and Timothy T. Rogers. Metric learning for estimating psychological similarities. *ACM Transactions on Intelligent Systems and Technology (ACM TIST)*, 2011.

Charles W. Kalish, Timothy T. Rogers, Jonathan Lang, and Xiaojin Zhu. Can semi-supervised learning explain incorrect beliefs about categories? *Cognition*, 2011.

Arthur Glenberg, Jonathan Willford[(o)], Bryan Gibson[(s)], Andrew Goldberg[(s)], and Xiaojin Zhu. Improving reading to improve math. *Scientific Studies in Reading*, 2011.

Arthur Glenberg, Andrew Goldberg[(s)], and Xiaojin Zhu. Improving early reading comprehension using embodied CAI. *Instructional Science*, 39:27–39, 2011.

Ronald Rosenfeld[(a)], Stanley Chen, and Xiaojin Zhu. Whole-sentence exponential language models: a vehicle for linguistic-statistical integration. *Computers Speech and Language*, 15(1):55–73, 2001.

Refereed Conference Papers

Faisal Khan[(o)], Xiaojin Zhu, and Bilge Mutlu. How do humans teach: On curriculum learning and teaching dimension. In *Advances in Neural Information Processing Systems (NIPS) 25*. 2011. (acceptance rate 305/1400=22%).

Shilin Ding[(o)], Grace Wahba, and Xiaojin Zhu. Learning higher-order graph structure with features by structure penalty. In *Advances in Neural Information Processing Systems (NIPS) 25*. 2011. (acceptance rate 305/1400=22%).

Nathan Rosenblum[(o)], Xiaojin Zhu, and Barton P. Miller. Who wrote this code? identifying the authors of program binaries. In *The European Symposium on Research in Computer Security (ESORICS)*, 2011. (acceptance rate 36/155=23%).

Xiaojin Zhu, Bryan Gibson[(s)], and Timothy Rogers. Co-training as a human collaboration policy. In *The Twenty-Fifth Conference on Artificial Intelligence (AAAI-11)*, 2011. (acceptance rate 242/975=25%).

Andrew Goldberg[(s)], Xiaojin Zhu, Alex Furger[(s)], and Jun-Ming Xu[(s)]. OASIS: Online active semi-supervised learning. In *The Twenty-Fifth Conference on Artificial Intelligence (AAAI-11)*, 2011. (acceptance rate 242/975=25%, selected for additional poster highlight).

Nathan Rosenblum[(o)], Barton P. Miller, and Xiaojin Zhu. Recovering the toolchain provenance of binary code. In *International Symposium on Software Testing and Analysis (ISSTA)*, 2011. (acceptance rate 35/121=29%) **ACM SIGSOFT Distinguished Paper Award**.

Chen Yu, Jun-Ming Xu[(s)], and Xiaojin Zhu. Word learning through sensorimotor child-parent interaction: A feature selection approach. In *The 33rd Annual Conference of the Cognitive Science Society (CogSci 2011)*, 2011. (oral, acceptance rate 32%).

David Andrzejewski[(s)], Xiaojin Zhu, Mark Craven, and Ben Recht. A framework for incorporating general domain knowledge into Latent Dirichlet Allocation using First-Order Logic. In *The Twenty-Second International Joint Conference on Artificial Intelligence (IJCAI-11)*, 2011. (acceptance rate 227/1325=17%).

Mariyam Mirza(o), Paul Barford, Xiaojin Zhu, Suman Banerjee, and Michael Blodgett(o). Fingerprinting 802.11 rate adaptation algorithms. In *The 30th IEEE International Conference on Computer Communications (INFOCOM)*, Shanghai, China, 2011. (acceptance rate 291/1823=16%).

Bryan Gibson(s), Xiaojin Zhu, Tim Rogers, Chuck Kalish, and Joseph Harrison(o). Humans learn using manifolds, reluctantly. In *Advances in Neural Information Processing Systems (NIPS) 24*. 2010. (**Plenary oral presentation: 20/1219=2%**).

Andrew Goldberg(s), Xiaojin Zhu, Benjamin Recht, Junming Sui(s), and Robert Nowak. Transduction with matrix completion: Three birds with one stone. In *Advances in Neural Information Processing Systems (NIPS) 24*. 2010. (acceptance rate 293/1219=24%).

Xiaojin Zhu, Bryan R. Gibson(s), Kwang-Sung Jun(s), Timothy T. Rogers, Joseph Harrison(o), and Chuck Kalish. Cognitive models of test-item effects in human category learning. In *The 27th International Conference on Machine Learning (ICML)*, 2010. (acceptance rate 152/594=25.6%).

Timothy Rogers, Charles Kalish, Bryan Gibson(s), Joseph Harrison(o), and Xiaojin Zhu. Semi-supervised learning is observed in a speeded but not an unspeeded 2D categorization task. In *Proceedings of the 32nd Annual Conference of the Cognitive Science Society (CogSci)*, 2010. (poster; acceptance rate 74% out of 810 submissions).

Xiaojin Zhu, Timothy T. Rogers, and Bryan Gibson(s). Human Rademacher complexity. In *Advances in Neural Information Processing Systems (NIPS) 23*. 2009. (Acceptance rate 263/1105=23.8%).

David Andrzejewski(s), Xiaojin Zhu, and Mark Craven. Incorporating domain knowledge into topic modeling via Dirichlet forest priors. In *The 26th International Conference on Machine Learning (ICML)*, 2009. (acceptance rate 160/595=26.9%).

Andrew Goldberg(s), Nathanael Fillmore(s), David Andrzejewski(s), Zhiting Xu(s), Bryan Gibson(s), and Xiaojin Zhu. May all your wishes come true: A study of wishes and how to recognize them. In *North American Chapter of the Association for Computational Linguistics - Human Language Technologies (NAACL HLT)*, 2009. (acceptance rate 75/260=28.8%).

Andrew Goldberg(s), Xiaojin Zhu, Aarti Singh, Zhiting Xu(s), and Robert Nowak. Multi-manifold semi-supervised learning. In *Twelfth International Conference on Artificial Intelligence and Statistics (AISTATS)*, 2009. (acceptance rate 84/210=40%).

Rui Castro(o), Charles Kalish, Robert Nowak, Ruichen Qian(s), Timothy Rogers, and Xiaojin Zhu. Human active learning. In *Advances in Neural Information Processing Systems (NIPS) 22*. 2008. (Acceptance rate 250/1022=24.5%).

Aarti Singh(o), Robert Nowak, and Xiaojin Zhu. Unlabeled data: Now it helps, now it doesn't. In *Advances in Neural Information Processing Systems (NIPS) 22*. 2008. (**Plenary oral presentation: 28/1022=3%**).

Mariyam Mirza(o), Kevin Springborn, Suman Banerjee, Paul Barford, Mike Blodgett(o), and Xiaojin Zhu. On the accuracy of TCP throughput prediction for opportunistic wireless networks. In *Proceedings of IEEE Conference on Sensor, Mesh and Ad Hoc Communications and Networks (SECON '09)*, 2009.

Andrew B. Goldberg(s), Ming Li(s), and Xiaojin Zhu. Online manifold regularization: A new learning setting and empirical study. In *The European Conference on Machine Learning and Principles and Practice of Knowledge Discovery in Databases (ECML PKDD)*, 2008. (acceptance rate 98/521=18.8%).

Andrew B. Goldberg(s), Xiaojin Zhu, Charles R. Dyer, Mohamed Eldawy(o), and Lijie Heng(s). Easy as ABC? Facilitating pictorial communication via semantically enhanced layout. In *Twelfth Conference on Computational Natural Language Learning (CoNLL)*, 2008. (acceptance rate 20/85=23.5%).

Xiaojin Zhu, Michael Coen, Shelley Prudom, Ricki Colman, and Joseph Kemnitz. Online learning in monkeys. In *Twenty-Third AAAI Conference on Artificial Intelligence (AAAI-08)*, 2008. (short paper, overall acceptance rate (23+227)/958=26%).

Nathan Rosenblum(o), Xiaojin Zhu, Barton Miller, and Karen Hunt. Learning to analyze binary computer code. In *Twenty-Third AAAI Conference on Artificial Intelligence (AAAI-08)*, 2008. (full paper, acceptance rate 227/937=24%; **selected for additional poster highlight, 5%**).

Xiaojin Zhu, Andrew B. Goldberg(s), Michael Rabbat, and Robert Nowak. Learning bigrams from unigrams. In *The 46th Annual Meeting of the Association for Computational Linguistics: Human Language Technologies (ACL)*, 2008. (acceptance rate 25%).

Pedro DeRose(o), Xiaoyong Chai(o), Byron Gao(o), Warren Shen(o), AnHai Doan, Philip Bohannon(o), and Xiaojin Zhu. Building community Wikipedias: A machine-human partnership approach. In *IEEE International Conference on Data Engineering (ICDE)*, 2008. (acceptance rate 12.1%).

David Andrzejewski(s), Anne Mulhern(o), Ben Liblit, and Xiaojin Zhu. Statistical debugging using latent topic models. In *Proceedings of the 18th European Conference on Machine Learning (ECML)*, 2007. (acceptance rate 11.6%).

Gregory Druck(o), Chris Pal(o), Xiaojin Zhu, and Andrew McCallum. Semi-supervised classification with hybrid generative/discriminative methods. In *The Thirteenth ACM SIGKDD International Conference on Knowledge Discovery and Data Mining (KDD)*, 2007. (acceptance rate 20%).

Jordan Boyd-Graber(o), David Blei, and Xiaojin Zhu. A topic model for word sense disambiguation. In *Conference on Empirical Methods in Natural Language Processing (EMNLP-CoNLL)*, 2007. (acceptance rate 27%).

Xiaojin Zhu, Timothy Rogers, Ruichen Qian(s), and Chuck Kalish. Humans perform semi-supervised classification too. In *Twenty-Second AAAI Conference on Artificial Intelligence (AAAI-07)*, 2007. (full paper, acceptance rate 27%; **selected for additional poster highlight, 5%**).

Xiaojin Zhu, Andrew Goldberg(s), Mohamed Eldawy(o), Charles Dyer, and Bradley Strock(s). A Text-to-Picture synthesis system for augmenting communication. In *Twenty-Second AAAI Conference on Artificial Intelligence (AAAI-07)*, pages 1590–1595, 2007. (acceptance rate 27%).

Xiaojin Zhu and Andrew Goldberg(s). Kernel regression with order preferences. In *Twenty-Second AAAI Conference on Artificial Intelligence (AAAI-07)*, 2007. (acceptance rate 27%).

Mariyam Mirza(o), Joel Sommers(o), Paul Barford, and Xiaojin Zhu. A machine learning approach to TCP throughput prediction. In *The International Conference on Measurement and Modeling of Computer Systems (ACM SIGMETRICS)*, 2007. (acceptance rate 17%).

Xiaojin Zhu, Andrew Goldberg(s), Jurgen Van Gael(s), and David Andrzejewski(s). Improving diversity in ranking using absorbing random walks. In *Human Language Technologies: The Annual Conference of the North American Chapter of the Association for Computational Linguistics (NAACL-HLT)*, 2007. (acceptance rate 24%).

Andrew Goldberg(s), Xiaojin Zhu, and Stephen Wright. Dissimilarity in graph-based semi-supervised classification. In *Eleventh International Conference on Artificial Intelligence and Statistics (AISTATS)*, 2007. (acceptance rate 50%).

Jurgen Van Gael(s) and Xiaojin Zhu. Correlation clustering for crosslingual link detection. In *International Joint Conference on Artificial Intelligence (IJCAI)*, 2007. (acceptance rate 34%).

Xiaojin Zhu and John Lafferty[(a)]. Harmonic mixtures: combining mixture models and graph-based methods for inductive and scalable semi-supervised learning. In *The 22nd International Conference on Machine Learning (ICML)*. ACM Press, 2005. (acceptance rate 27%).

Xiaojin Zhu, Jaz Kandola, Zoubin Ghahramani, and John Lafferty[(a)]. Nonparametric transforms of graph kernels for semi-supervised learning. In Lawrence K. Saul, Yair Weiss, and Léon Bottou, editors, *Advances in Neural Information Processing Systems (NIPS) 17*. MIT Press, Cambridge, MA, 2005. (acceptance rate 25%).

John Lafferty[(a)], Xiaojin Zhu, and Yan Liu. Kernel conditional random fields: Representation and clique selection. In *The 21st International Conference on Machine Learning (ICML)*, 2004. (acceptance rate 32%).

Xiaojin Zhu, Zoubin Ghahramani, and John Lafferty[(a)]. Semi-supervised learning using Gaussian fields and harmonic functions. In *The 20th International Conference on Machine Learning (ICML)*, 2003. (acceptance rate 32%).

Stefanie Shriver, Arthur Toth, Xiaojin Zhu, Alex Rudnicky, and Roni Rosenfeld[(a)]. A unified design for human-machine voice interaction. In *Human Factors in Computing Systems (CHI)*. ACM Press, 2001. (acceptance rate 20%).

Xiaojin Zhu and Ronald Rosenfeld[(a)]. Improving trigram language modeling with the World Wide Web. In *Proceedings of the International Conference on Acoustics, Speech and Signal Processing (ICASSP)*, 2001. (acceptance rate 51%).

Ronald Rosenfeld[(a)], Xiaojin Zhu, Stefanie Shriver, Arthur Toth, Kevin Lenzo, and Alan Black. Towards a universal speech interface. In *International Conference on Spoken Language Processing (ICSLP)*, 2000. (acceptance rate 78%).

Xiaojin Zhu, Jie Yang, and Alex Waibel. Segmenting hands of arbitrary color. In *Fourth IEEE International Conference on Automatic Face and Gesture Recognition*, 2000. (acceptance rate 52%).

Jie Yang, Xiaojin Zhu, Ralph Gross, John Kominek, Yue Pan, and Alex Waibel. Multimodal people ID for a multimedia meeting browser. In *The Seventh ACM International Multimedia Conference*, 1999. (acceptance rate 21%).

Xiaojin Zhu, Stanley F. Chen, and Ronald Rosenfeld[(a)]. Linguistic features for whole sentence maximum entropy language models. In *Proceedings of the 5th European Conference on Speech Communication and Technology (Eurospeech)*, 1999. (acceptance rate 66%).

Refereed Workshop Papers

Xiaojin Zhu, Jun-Ming Xu[(s)], Christine M. Marsh, Megan K. Hines, and F. Joshua Dein. Machine learning for zoonotic emerging disease detection. In *ICML 2011 Workshop on Machine Learning for Global Challenges*, 2011.

Bryan R Gibson[(s)], Kwang-Sung Jun[(s)], and Xiaojin Zhu. With a little help from the computer: Hybrid human-machine systems on bandit problems. In *NIPS 2010 Workshop on Computational Social Science and the Wisdom of Crowds*, 2010.

Faisal Khan[(o)], Bilge Mutlu, and Xiaojin Zhu. Modeling social cues: Effective features for predicting listener nods. In *NIPS 2010 Workshop on Human Communication Dynamics*, 2010.

Nathan Rosenblum[(o)], Barton Miller, and Xiaojin Zhu. Extracting compiler provenance from program binaries. In *Proceedings of the 9th ACM SIGPLAN-SIGSOFT workshop on Program Analysis for Software Tools and Engineering (PASTE)*, 2010. (acceptance rate 41%).

David Andrzejewski(s), David G. Stork, Xiaojin Zhu, and Ron Spronk. Inferring compositional style in the neo-plastic paintings of Piet Mondrian by machine learning. In *Electronic Imaging: Computer Image Analysis in the Study of Art (SPIE 2010)*, 2010.

Andrew B. Goldberg(s), Jake Rosin, Xiaojin Zhu, and Charles R. Dyer. Toward text-to-picture synthesis. In *NIPS 2009 Symposium on Assistive Machine Learning for People with Disabilities*, 2009.

Xiaojin Zhu, Zhiting Xu(s), and Tushar Khot(s). How creative is your writing? a linguistic creativity measure from computer science and cognitive psychology perspectives. In *NAACL 2009 Workshop on Computational Approaches to Linguistic Creativity*, 2009. (acceptance rate 8/19=42%).

Andrew B. Goldberg(s) and Xiaojin Zhu. Keepin' it real: Semi-supervised learning with realistic tuning. In *NAACL 2009 Workshop on Semi-supervised Learning for NLP*, 2009. (acceptance rate 10/17=59%).

David Andrzejewski(s) and Xiaojin Zhu. Latent Dirichlet allocation with topic-in-set knowledge. In *NAACL 2009 Workshop on Semi-supervised Learning for NLP*, 2009.

Xiaojin Zhu, Andrew B. Goldberg(s), and Tushar Khot(s). Some new directions in graph-based semi-supervised learning (invited paper). In *IEEE International Conference on Multimedia and Expo (ICME), Special Session on Semi-Supervised Learning for Multimedia Analysis*, 2009.

Nathan Rosenblum(o), Xiaojin Zhu, Barton Miller, and Karen Hunt. Machine learning-assisted binary code analysis. In *NIPS 2007 workshop on Machine Learning in Adversarial Environments for Computer Security*, 2007.

SaiSuresh Krishnakumaran(s) and Xiaojin Zhu. Hunting elusive metaphors using lexical resources. In *NAACL 2007 Workshop on Computational Approaches to Figurative Language*, 2007.

Andrew Goldberg(s), Dave Andrzejewski(s), Jurgen Van Gael(s), Burr Settles(o), Xiaojin Zhu, and Mark Craven. Ranking biomedical passages for relevance and diversity: University of Wisconsin, Madison at TREC genomics 2006. In *Proceedings of the Fifteenth Text Retrieval Conference (TREC)*, 2006.

Andrew Goldberg(s) and Xiaojin Zhu. Seeing stars when there aren't many stars: Graph-based semi-supervised learning for sentiment categorization. In *HLT-NAACL 2006 Workshop on Textgraphs: Graph-based Algorithms for Natural Language Processing*, New York, NY, 2006.

Maria-Florina Balcan, Avrim Blum, Patrick Pakyan Choi, John Lafferty(a), Brian Pantano, Mugizi Robert Rwebangira, and Xiaojin Zhu. Person identification in webcam images: An application of semi-supervised learning. In *ICML 2005 Workshop on Learning with Partially Classified Training Data*, 2005.

Xiaojin Zhu, John Lafferty(a), and Zoubin Ghahramani. Combining active learning and semi-supervised learning using Gaussian fields and harmonic functions. In *ICML 2003 workshop on The Continuum from Labeled to Unlabeled Data in Machine Learning and Data Mining*, 2003.

Unrefereed Technical Reports

Jake Rosin(s), Andrew B. Goldberg(s), Xiaojin Zhu, and Charles Dyer. A Bayesian model for image sense ambiguity in pictorial communication systems. Technical Report Computer Science TR1692, University of Wisconsin-Madison, 2011.

Nathanael Fillmore(s), Andrew B. Goldberg(s), and Xiaojin Zhu. Document recovery from bag-of-word indices. Technical Report Computer Science TR1645, University of Wisconsin-Madison, 2008.

Xiaojin Zhu and Andrew Goldberg(s). Semi-supervised regression with order preferences. Technical Report 1578, Department of Computer Sciences, University of Wisconsin-Madison, 2006.

Xiaojin Zhu, David Blei, and John Lafferty[(a)]. TagLDA: Bringing document structure knowledge into topic models. Technical Report 1553, Department of Computer Sciences, University of Wisconsin-Madison, 2006.

Xiaojin Zhu. Semi-supervised learning literature survey. Technical Report 1530, Department of Computer Sciences, University of Wisconsin, Madison, 2005.

Xiaojin Zhu, Zoubin Ghahramani, and John Lafferty[(a)]. Time-sensitive Dirichlet process mixture models. Technical Report CMU-CALD-05-104, Carnegie Mellon University, 2005.

Xiaojin Zhu. *Semi-Supervised Learning with Graphs*. PhD thesis, Carnegie Mellon University, 2005. CMU-LTI-05-192.

Xiaojin Zhu, John Lafferty[(a)], and Zoubin Ghahramani. Semi-supervised learning: From Gaussian fields to Gaussian processes. Technical Report CMU-CS-03-175, Carnegie Mellon University, 2003.

Xiaojin Zhu and Zoubin Ghahramani. Learning from labeled and unlabeled data with label propagation. Technical Report CMU-CALD-02-107, Carnegie Mellon University, 2002.

Xiaojin Zhu and Zoubin Ghahramani. Towards semi-supervised classification with Markov random fields. Technical Report CMU-CALD-02-106, Carnegie Mellon University, 2002.

Xiaojin Zhu and Ronald Rosenfeld[(a)]. Improving trigram language modeling with the World Wide Web. Technical Report CMU-CALD-00-171, Carnegie Mellon University, 2000.

Awards and Honors

ACM SIGSOFT Distinguished Paper Award, 2011

National Science Foundation Faculty Early Career Development (CAREER) award, 2010

Microsoft Research Graduate Fellowship, 2000.

IBM Research Division Award, 1998.

IBM First Patent Application Invention Achievement Award, 1997.

IBM Greater China Group Team Award, 1997.

Research Grants

Federal Grants

2011-2013. National Science Foundation, IIS-1148012. C. Dyer PI, X. Zhu CoPI. $152K, "III: EAGER: Discovering Spontaneous Social Events"

2010-2015. National Science Foundation, IIS-0953219. X. Zhu PI. $466K, "CAREER: Using Machine Learning to Understand and Enhance Human Learning Capacity"

2009-2012. National Science Foundation, IIS-0916038. X. Zhu PI. $414K, "RI:Small:Semi-Supervised Learning for Non-Experts"
Supplemental funding: Research Experiences for Undergraduates (REU). $12K

2009-2011. Air Force Office of Scientific Research, FA9550-09-1-0313. X. Zhu PI, T. Rogers Co-PI. $437K, "A Cognitive Study of Learning with Labeled and Unlabeled Data"

2007-2010. National Science Foundation, IIS-0711887. X. Zhu PI, C. Dyer Co-PI. $400K, "RI: Text-to-Picture Synthesis"
Supplemental funding: Research Experiences for Undergraduates (REU). $12K

Intramural Grants

2011-2013. University of Wisconsin-Madison, Global Health Institute Award. L. Gilbert PI, J. Dein & B. Shaw & X. Zhu Co-PIs, $40K, "Evaluation of Alternative Strategies for Emerging Disease Detection"

2010-2011. University of Wisconsin Graduate School Research Award. X. Zhu PI, J. Murray-Branch Co-PI. $35K, "Situation-Aware Communication Board for People with Disabilities"

2008-2009. University of Wisconsin Graduate School Research Award. X. Zhu PI, T. Rogers Co-PI. $35K, "Semi-Supervised Learning in Humans and Machines"

2008. University of Wisconsin Cognitive Science Cluster Research Fellowship. R. Qian, X. Zhu (Project Sponsor). $3K, "Learning: Between Humans and Machines"

2007-2008. University of Wisconsin Graduate School Research Award. X. Zhu PI, E. Churchwell, Co-PI. $31K, "Application of artificial intelligence and human computing methods to panoramic astrophysical surveys"

2006-2007. University of Wisconsin Graduate School Research Award. M. Craven PI, X. Zhu Co-PI. $30K, "Extracting background knowledge from the scientific literature to improve the accuracy of gene regulatory network inference"

Professional Service

Journal Action Editor

- Machine Learning Journal, 2011-2014.

Journal Editorial Board

- Machine Learning Journal, 2008-2011.

Journal Reviewer

- Journal of Machine Learning Research (JMLR),
- Machine Learning Journal,
- Journal of the American Statistical Association (JASA),
- IEEE Transactions on Pattern Analysis and Machine Intelligence (PAMI),
- IEEE Transactions on Information Theory,
- Journal of Artificial Intelligence Research (JAIR),
- IEEE Intelligent Systems,
- IEEE Transactions on Neural Networks,
- ACM Transactions on Knowledge Discovery from Data,
- Pattern Recognition Letters,
- Optimization Method and Software,
- Journal of Computational and Graphical Statistics,
- Neurocomputing,
- Neural Computation,
- Journal of Software (China),
- Springer book reviewer

Conference Chair

- Workshop Co-Chair, International Conference on Machine Learning (ICML). Bellevue, Washington, USA. 2011.

Conference Area Chair or Senior Program Committee

- Area Chair, International Conference on Machine Learning (ICML). Edinburgh, Scotland. 2012.
- Area Chair, The North American Chapter of the Association for Computational Linguistics - Human Language Technologies (NAACL-HLT). Montreal, Canada. 2012.
- Area Chair, Neural Information Processing Systems (NIPS). Granada, Spain. 2011.
- Area Chair and the Best Paper Awards Committee, International Conference on Machine Learning (ICML). Bellevue, Washington, USA. 2011.
- Senior Program Committee, The 3rd Asian Conference on Machine Learning (ACML). Taoyuan, Taiwan. 2011.
- Area Chair, Neural Information Processing Systems (NIPS). Vancouver, BC, Canada. 2010.
- Area Chair, International Conference on Machine Learning (ICML). Haifa, Israel. 2010.
- Senior Program Committee, International Conference on Machine Learning (ICML). Corvallis, Oregon, USA. 2007.

Conference Program Committee

- Conference on Empirical Methods in Natural Language Processing (EMNLP), 2011.
- Workshop on Robust Unsupervised and Semisupervised Methods in Natural Language Processing, 2011.
- The North American Computational Linguistics Olympiad (NACLO). 2011.
- AAAI Conference on Artificial Intelligence (AAAI), 2010.
- The North American Computational Linguistics Olympiad (NACLO). 2010.
- The 23rd International Conference on Computational Linguistics (COLING), 2010.
- The 9th IEEE International Conference on Development and Learning (ICDL), 2010.
- TextGraphs-5: Graph-based Methods for Natural Language Processing, 2010.
- International Conference on Machine Learning (ICML), 2009.
- International Conference on Artificial Intelligence and Statistics (AISTATS), 2009.
- Annual Meeting of the Association for Computational Linguistics (ACL-IJCNLP), 2009.
- North American Chapter of the Association for Computational Linguistics - Human Language Technologies (NAACL-HLT), 2009.
- Uncertainty in Artificial Intelligence (UAI), 2009.
- NIPS 2009 Workshop on Applications for Topic Models: Text and Beyond, 2009.
- The first International CIKM Workshop on Topic-Sentiment Analysis for Mass Opinion Measurement, 2009.
- IJCAI 2009 Workshop on Intelligence and Interaction, 2009.
- The North American Computational Linguistics Olympiad (NACLO). Sponsored in part by NSF, the contest reaches out to high school students with challenging computational linguistic problems. 2009.
- NAACL 2009 Workshop on Semi-supervised Learning for Natural Language Processing, 2009.
- International Conference on Machine Learning (ICML), 2008.

- AAAI Conference on Artificial Intelligence (AAAI), 2008.
- Annual Meeting of the Association for Computational Linguistics (ACL), 2008.
- Conference on Empirical Methods in Natural Language Processing (EMNLP-CoNLL), 2008.
- European Conference on Computer Vision (ECCV), 2008.
- The Fifth Midwest Computational Linguistics Colloquium (MCLC-5), 2008.
- The 6th International Workshop on Mining and Learning with Graphs (MLG), 2008.
- The Pacific Rim International Conference on Artificial Intelligence (PRICAI), 2008.
- AAAI Conference on Artificial Intelligence (AAAI), 2007.
- International Conference on Artificial Intelligence and Statistics (AISTATS), 2007.
- Conference on Empirical Methods in Natural Language Processing (EMNLP-CoNLL), 2007.
- European Conference on Machine Learning and European Conference on Principles and Practice of Knowledge Discovery in Databases (ECML/PKDD), 2007.
- Pacific-Asia Conference on Knowledge Discovery and Data Mining (PAKDD), 2007.
- International Workshop on Mining and Learning on Graphs (MLG), 2007.
- HLT-NAACL workshop on Textgraphs: Graph-based Algorithms for Natural Language Processing, 2007.
- International Conference on Machine Learning (ICML), 2006.
- AAAI Conference on Artificial Intelligence (AAAI), 2006.
- Uncertainty in Artificial Intelligence (UAI), 2006.
- International Conference on Knowledge Discovery and Data Mining (KDD), 2006.
- European Conference on Machine Learning and European Conference on Principles and Practice of Knowledge Discovery in Databases (ECML/PKDD), 2006.
- ICML workshop on Learning with Nonparametric Bayesian Method, 2006.
- ECML/PKDD workshop on Mining and Learning with Graphs, 2006.
- HLT-NAACL workshop on Textgraphs: Graph-based Algorithms for Natural Language Processing, 2006.
- Uncertainty in Artificial Intelligence (UAI), 2005.
- International Conference on Artificial Intelligence and Statistics (AISTATS), 2005.
- ICML Workshop on Learning with Partially Classified Training Data, 2005.
- International Conference on Machine Learning (ICML), 2004.

Conference Reviewer

- ACL 2012
- AISTATS 2010, 2012
- CVPR 2009
- NIPS 2007–2009

Workshop Organizer

- ICML Workshop on Combining Strategies for Reducing the Cost of Learning, Seattle, WA, 2011.
- AAAI Fall Symposium on manifold learning, 2009.
- NIPS Workshop on Machine Learning Meets Human Learning, Whistler, Canada, 2008.

- HAMLET (Human, Animal, and Machine Learning: Experiment and Theory) lecture series, Departments of Computer Sciences and Psychology, University of Wisconsin-Madison, 2008-present.

Grant Panelist and Reviewer

- NSF (CISE and SBE), 2008, 2009, 2010, 2011.
- AFOSR, 2009.
- Israel Science Foundation
- The Institute for Clinical and Translational Research (ICTR), University of Wisconsin-Madison, 2010

Tutorials

All of Graphical Models. The tenth International Conference on Machine Learning and Applications (ICMLA'11), Honolulu, Hawaii. 2011.

Semi-Supervised Learning. Summer School on Theory and Practice of Computational Learning, University of Chicago, 2009.

Semi-Supervised Learning for Natural Language Processing (delivered by J. Blitzer). The 46th Association for Computational Linguistics meeting (ACL), Columbus, OH, 2008.

Semi-Supervised Learning. International Conference on Machine Learning (ICML), Corvallis, OR, 2007.

Semi-Supervised Classification: learning from labeled and unlabeled data. AERFAI Summer School on Action and Object Classification Techniques in Digital Images, University of Granada, Spain, 2006.

Invited Talks

Invited Talk, Purdue University, IN 2011.

Talk at Wisconsin Institute for Discovery, University of Wisconsin-Madison, 2011.

Invited Talk, Duke University, NC 2011.

Invited Talk, University of Massachusetts Amherst, MA 2011.

Invited Talk, Microsoft Research, Redmond, WA 2011.

Invited Talk, Center for Information and Systems Engineering, Boston University, Boston, MA, 2010.

Invited Talk, Cognitive Science, Indiana University, Bloomington, IN, 2010.

Talk at NIPS 2009 workshop on Analysis and Design of Algorithms for Interactive Machine Learning. Whistler, BC, Canada, 2009.

Talk at NIPS 2009 workshop on Bounded-rational analyses of human cognition: Bayesian models, approximate inference, and the brain. Whistler, BC, Canada, 2009.

Invited Talk, Computer Science Seminars, Department of Computer & Information Science, Indiana University-Purdue University Indianapolis, Indianapolis, IN, 2009.

Invited Talk, Merck & Co. Rahway, NJ, 2009.

Invited Talk, "Math, Algorithms, Learning, Brains, Engineering, Computing" (MALBEC) seminar series, University of Wisconsin Department of Mathematics, 2009.

Invited Talk, IBM Thomas J. Watson Research Center. Yorktown Heights, NY, 2009.

Invited Talk, "Computation and Informatics in Biology and Medicine" (CIBM) seminar series, University of Wisconsin-Madison, 2009.

Talk at NIPS 2008 workshop on Machine Learning Meets Human Learning. Whistler, BC, Canada, 2008.

Invited talk, Hot Topics Workshop: Multi-Manifold Data Modeling and Applications. The Institute for Mathematics and its Applications (IMA), University of Minnesota, MN, 2008.

Invited talk, Language Technologies Institute Seminar. Carnegie Mellon University, Pittsburgh, PA, 2008.

Invited talk, Workshop on natural language processing. University of Washington and the Information Sciences Institute at the University of Southern California, Seattle, WA, 2008.

Invited talk, The 40th Interface Symposium (annual conference on the interface of computing science and statistics), Durham, NC, 2008.

Presentation and demo, University of Wisconsin Cognitive Science Conference Hertz Foundation poster session, Madison, WI, 2008.

Invited talk, Computer Science and Engineering Department Colloquium, Michigan State University, Lansing, MI, 2007.

Invited talk, Department of Statistics, University of Michigan, Ann Arbor, MI, 2007.

Invited alumnus talk, Language Technology Institute Retreat, Carnegie Mellon University, Pittsburgh, PA, 2007.

Invited talk, Psychology Department, University of Wisconsin, Madison, WI, 2007.

Invited participant, BIRS workshop of mathematical programming in machine learning and data mining, Banff, Canada, 2007.

Invited talk, Joint Statistical Meetings (JSM), Seattle, WA, 2006.

Invited talk, Electrical and Computer Engineering Department, University of Wisconsin, Madison, WI, 2006.

Invited talk, Computer Science and Engineering Department, Washington University in St. Louis, MO, 2006.

Invited talk, Statistics Department, University of Wisconsin, Madison, WI , 2006.

Invited talk, University of Cambridge, UK, 2004.

Invited talk, Gatsby Computational Neuroscience Unit, University College London, UK, 2004.

Invited talk, Microsoft Research Cambridge, UK, 2004.

Invited talk, NSF Aladdin Workshop on Graph Partitioning in Vision and Machine Learning, Pittsburgh, PA, 2003.

Media

Alumni Snapshots, The Link magazine, Carnegie Mellon University School of Computer Science, p.26, Spring 2011.

“Picture This”, NewScientist, August 18-24, p.22, 2007.

Teaching

Computer Sciences Department, University of Wisconsin, Madison, WI 2005–present
Associate Professor
CS 731 – Advanced Artificial Intelligence. Spring 2011
CS 769 – Advanced Natural Language Processing. Spring 2008, 2009, 2010
CS 838 – Topics in Advanced Natural Language Processing. Spring 2006, 2007
CS 540 – Introduction to Artificial Intelligence. Fall 2005, 2006, 2008, 2009, 2010, 2011

The Symposium on Educational Advances in AI (EAAI-11), San Francisco, CA — August 10, 2011
Panelist, "Teaching Challenges in the Classroom"

Center of Automatic Learning and Discovery, Carnegie Mellon University — June 16, 2004
Instructor, Learning from Labeled and Unlabeled Data, CALD Summer School.

School of Computer Science, Carnegie Mellon University, Pittsburgh, PA — Fall 2000
Teaching Assistant, 15-681 – Machine Learning

Student Advising

Current Graduate Students

Bryan Gibson, 2008–present, University of Wisconsin Computer Sciences Department

Kwang-Sung Jun, 2009–present, University of Wisconsin Computer Sciences Department

Jake Rosin (co-advised with Prof. Dyer), 2007–present, University of Wisconsin Computer Sciences Department

Yimin Tan, 2010–present, University of Wisconsin Computer Sciences Department

Junming Xu, 2009–present, University of Wisconsin Computer Sciences Department

Current Undergraduate Students

Michael Maynord, 2011–present, University of Wisconsin Computer Sciences Department

Jitrapon Tiachunpun, 2011–present, University of Wisconsin Computer Sciences Department

Graduated Students (Degree Year, First Employment)

Ph.D.

David Andrzejewski (co-advised with Mark Craven), PhD 2010, Postdoc, Lawrence Livermore National Laboratory

Andrew Goldberg, PhD 2010, Senior Scientist, Arcode

M.S. and Visitors

Lijie Heng, MS 2008, Software Engineer, Oracle

Jurgen Van Gael, MS 2007, Graduate student, University of Cambridge

Ming Li, Visiting Student 2008, Assistant Professor, Nanjing University

B.S.

Alex Furger (Math, Wisconsin). NSF REU, winner of $2000 Computer Sciences Departmental Summer Fellowship under my supervision in 2010, and recipient of $2000 College of Letters & Science David Durra Scholarship in 2011. 2009-2011. Graduate study at Princeton ORFE after graduation.

Valerie Lo (CS, Wisconsin), 2007

Molly Maloney (Art, Wisconsin), NSF REU, 2009

Rachael McCormick (CS and Psychology, Wisconsin). Winner of Maverick Software Scholarship in 2010, and winner of $3000 Summer Senior Honors Thesis Grant under my supervision in 2010. 2010-present.

Mia Mueller (Fine Art, Wisconsin). NSF REU. 2009-2010.

Ruichen Qian (Economics, Wisconsin), Undergraduate Research Scholars Program, 2007-2010. Morgan Stanley after graduation.

Bradley R. Strock (CS, Wisconsin), 2007

Steve Yazicioglu (ECE and CS, Wisconsin). Senior honors thesis advisee. 2009-2010. Microsoft after graduation.

Thesis Examination Committee Member

Soumya Ray, PhD.'05, *Learning from data with Complex Interactions and Ambiguous Labels*, University of Wisconsin Computer Sciences Dept.

Mankyu Sung, PhD.'05, *Scalable, Controllable, Efficient and Convincing Crowd Simulation*, University of Wisconsin Computer Sciences Dept.

Guodong Guo, PhD.'06, *Face, Expression, and Iris Recognition Using Learning-based Approaches*, University of Wisconsin Computer Sciences Dept.

Shaohua Fan, PhD.'06, *Sequential Monte Carlo Methods for Physically Based Rendering*, University of Wisconsin Computer Sciences Dept.

Pedro Bizarro, PhD.'06, *Adaptive Query Processing: Dealing with Incomplete and Uncertain Statistics*, University of Wisconsin Computer Sciences Dept.

Ye Chen, PhD.'07, *A Bayesian Network Model of Knowledge-Based Authentication*, University of Wisconsin Operations and Information Management Dept.

Michael Wallick, PhD.'07, *Automatic Organization of Large Collections of Photographs*, University of Wisconsin Computer Sciences Dept.

Jesse Davis, PhD.'07, *View Learning: A Statistical Relational Approach to Mining Biomedical Databases*, University of Wisconsin Computer Sciences Dept.

Edward W. Wild, PhD.'08, *Optimization-Based Machine Learning and Data Mining*, University of Wisconsin Computer Sciences Dept.

Aarti Singh, PhD.'08. *Nonparametric Set Estimation Problems in Statistical Inference and Learning*, University of Wisconsin Department of Electrical and Computer Engineering

Hector Corrada Bravo, PhD.'08. *Graph-Based Data Analysis*, University of Wisconsin Computer Sciences Dept.

Yong Lu, PhD.'08. *A Computational Framework for the Analysis of Multi-Species Microarray Data*, Carnegie Mellon University, Computer Science Dept.

Mugizi Robert Rwebangira, PhD.'08. *Techniques for Exploiting Unlabeled Data*, Carnegie Mellon University, Computer Science Dept.

Burr Settles, PhD. '08. *Curious Machines: Active Learning with Structured Instances*, University of Wisconsin Computer Sciences Dept.

Lisa Torrey, PhD. '09. *Relational Transfer in Reinforcement Learning*, University of Wisconsin Computer Sciences Dept.

Louis Oliphant, PhD. '09. *Adaptively Finding and Combining First-Order Rules for Large, Skewed Data Sets*, University of Wisconsin Computer Sciences Dept.

Yu-Chi Lai, PhD.'10. *Photorealistic Animation Rendering with Population Monte Carlo Energy Redistribution*, University of Wisconsin Computer Sciences Dept.

Andrew Goldberg, PhD.'10. *New Directions in Semi-Supervised Learning*, University of Wisconsin Computer Sciences Dept., Advisor.

Gregory Cipriano, PhD. '10. *Molecular Surface Abstraction*, University of Wisconsin Computer Sciences Dept.

David Andrzejewski, PhD. '10. *Incorporating Domain Knowledge In Latent Topic Models*, University of Wisconsin Computer Sciences Dept., Advisor (co-advised with Mark Craven).

Arup Dutta, PhD. '11. *Artificial Neural Network Approach to Crash Modeling and Prediction*, University of Wisconsin Department of Civil and Environmental Engineering

Mark Wayne Liu, MS. '11. *Developing Methods to Merge Information from Multiple Sensors for Improved Crop Identification*, Environmental Studies, University of Wisconsin.

SangKyun Lee, PhD. '11. *Optimization Methods for Regularized Convex Formulations in Machine Learning*, University of Wisconsin Computer Sciences Dept.

Gregory Druck, PhD. '11. *Generalized Expectation Criteria for Lightly Supervised Learning*, University of Massachusetts at Amherst

Nathan Rosenblum, PhD. '11. *The Provenance Hierarchy of Computer Programs*, University of Wisconsin Computer Sciences Dept.

Thesis Proposal (Preliminary Examination) Committee Member

Su Zhang, PhD. ABD'05. *Network Traffic Characterization*, University of Wisconsin Computer Sciences Dept.

Trevor Walker, PhD. ABD'07. *Relational Methods Incorporating Domain Knowledge for Transfer in Reinforcement Learning*, University of Wisconsin Computer Sciences Dept.

Jian Liu, PhD. ABD'08. *Mapping Soil Variation with Satellite-based Observations of Surface Dynamics*, University of Wisconsin Department of Geography

Feng Liu, PhD. ABD'08. *Synthesizing Novel Multimedia from Images and Videos*, University of Wisconsin Computer Sciences Dept.

Piramanayagam Arumuga Nainar, PhD. ABD'09. *Applications of Static Analysis and Program Structure in Statistical Debugging*, University of Wisconsin Computer Sciences Dept.

Mariyam Mirza, PhD. ABD'09. *On the Utility of Single Vantage Point Wireless Network Performance Monitoring*, University of Wisconsin Computer Sciences Dept.

Frank Lin, PhD. ABD'10. *Scalable Methods for Graph-Based Unsupervised and Semi-Supervised Learning*, Carnegie Mellon University, Language Technology Institute, School of Computer Science.

Yi Zhang, PhD. ABD'11. *Supervision Reduction by Encoding Extra Information about Models, Features and Labels*, Carnegie Mellon University, Machine Learning Department, School of Computer Science.

Jie Liu, PhD. ABD'11. *Large-Scale Dependent Multiple Testing via Graphical Models with Applications to Genome-Wide Association Studies*, University of Wisconsin Computer Sciences Dept.

Shilin Ding, PhD. ABD'11. *Learning Higher-Order Graph Structure with Features by Structure Penalty*, University of Wisconsin Statistics Dept.

Departmental and University Service

Co-Chair, Computer Sciences Department Distinguished Lecture Series, University of Wisconsin-Madison, 2010-2011

Curriculum Committee, Computer Sciences Department, University of Wisconsin-Madison, 2009-2012

University of Wisconsin Eye Research Institute Member, 2009-2012

Graduate Advising Committee, Computer Sciences Department, University of Wisconsin-Madison, 2008

University of Wisconsin Cognitive Science Cluster Faculty Search Committee, 2008

Advisor, Undergraduate Research Scholars Program, University of Wisconsin-Madison, 2007

Graduate Student Admissions Committee, Computer Sciences Department, University of Wisconsin-Madison, 2005-2007

PhD Student Speaking Requirement Committee, Center for Automated Learning and Discovery, Carnegie Mellon University, 2003-2004

December 18, 2011