

Kai Yu

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Education

Ph.D. Computer Science, University of Munich¹, Germany, January 2001 – July 2004
Advisor: Prof. Hans-Peter Kriegel, Co-advisor: Dr. Volker Tresp

M.S. Electrical Engineering, Nanjing University, China, September 1998 – July 2000
with honor, ranked top 1 in a class of 32 students

B.S. Electrical Engineering, Nanjing University, China, September 1994 – June 1998
with honor, ranked top 2 in a class of 47 students

Research Interests

Areas: machine learning, data mining, information retrieval, computer vision

Professional Experience

Research Staff Member
NEC Laboratories America, Inc. Sep. 2006–Present
Cupertino, CA, U.S.A.
*Local coordinate coding for large-scale semantic image categorization;
Recommendation systems based on large-scale stochastic relational learning;
Fast real-time visual recognition systems using deep neural networks and transfer learning;
Information retrieval based on large-scale link and content analysis.*

Guest Lecturer
University of California, Santa Cruz March 2009–Present
Santa Cruz, CA, U.S.A.
*Teaching a graduate-level class “Data Mining”;
22 students, with 2 TAs;*

Senior Research Scientist
Siemens Corporate Technology Jan. 2004–Sep. 2006
Munich, Germany
*Spam detection system for IP telephony using machine learning techniques;
Text-mining system for patent document screening, retrieval, and analysis;
Machine learning for intrusion detection in computer networks;
Clinical order set analysis using probabilistic clustering of binary data.*

Research Consultant
Siemens Corporate Technology Jan. 2001–Dec. 2003
Munich, Germany
Hierarchical Bayesian models for text mining and clinical data analysis.

Summer Intern
Microsoft Research Asia Summer 2002
Beijing, China
Algorithms and prototypes for large-scale interactive image retrieval.

Research Assistant
Nanjing University, E&E Dept. Aug. 1998–Jul. 2000
Nanjing, China
Speech separation using adaptive Wiener filtering

¹Ludwig Maximilian University of Munich.

Selected Honors, Awards, and Achievements

- 2009, First Positions, in 18 of totally 20 categories, 5th PASCAL Visual Object Classes Challenge
- 2008, First Position, in all the 3 participated tasks, TRECVID video surveillance evaluation by NIST
- 2007, 2009, SEEDS Awards, NEC Laboratories America
- 2006, Invention Award, Innovation Fair, Siemens AG
- 2005, Best Paper Runner-up Award, European PKDD-05 conference
- 2001-2003, Siemens Graduate Research Fellowship, University of Munich & Siemens AG
- 1999, Best Paper Runner-up Award, Annual Conf. of China Signal Processing Society
- 1999, Outstanding Graduate Student, Ministry of Education, China
- 1998, First Prize, Mathematic Modeling Contest, Nanjing University
- 1997, First Prize, Student Invention Contest, Nanjing University
- 1996, C. S. Wu Scholarship, among 6 students in Nanjing Univ. for excellence in Phy. and Math.²
- 1995, First Prize, the 2nd Debate Tournament at Nanjing University
- 1994, 1998, Waivers of National Exams for admissions to undergraduate and graduate programs

Professional Activities

Reviewer

- Journal of Machine Learning Research (JMLR),
- Machine Learning Journal (MLJ),
- IEEE Transactions on Pattern Analysis and Machine Intelligence (PAMI),
- IEEE Transactions on Neural Networks (TNN),
- IEEE Transactions on Knowledge and Data Engineering (TKDE),
- ACM Transactions on Information Systems (TOIS),
- ACM Transactions on Internet Technology,
- ACM Transactions on Knowledge Discovery from Data,
- Pattern Recognition Letters (PRL),
- Pattern Recognition Journal,
- Advances in Neural Information Processing Systems (NIPS 2006, 2007, 2008, 2009),

Program Committee Member or Chair

- ICML Workshop on Learning Feature Hierarchies (2009), Co-chair,
- International Joint Conf. on Artificial Intelligence (IJCAI 2009),
- International Conf. on Artificial Intelligence and Statistics (AISTAT 2009),
- International Conf. on Machine Learning (ICML 2007, 2008), Session Chair (2009)
- International ACM SIGIR Conf. on Information Retrieval (SIGIR 2005, 2006, 2007, 2008, 2009),
- International ACM CIKM Conf. (CIKM 2008, 2009),
- International ACM SIGKDD Conf. (KDD 2008, 2009),
- European Conf. on Machine Learning (ECML 2006),
- European Conf. on Principles and Practice of Knowledge Discovery in DBs (PKDD 2006),
- NIPS Workshop on Transfer Learning (2005),
- NIPS Workshop on Cost Sensitive Learning (2008),
- ICML Workshop on Nonparametric Bayesian Methods (2006),
- SIGIR Workshop on Learning to Rank (2007, 2008).

²Funded by Dr. Chien-Shiung Wu, the first woman elected president of American Physical Society. She received her B.sc. at Nanjing University in 1934.

Selected Publications in Peer-Reviewed Proceedings

1. Nonlinear Learning Using Local Coordinate Coding,
Kai Yu and Tong Zhang
*Advances in Neural Information Processing Systems 22 - NIPS*09*, to appear.
2. Large-scale Collaborative Prediction Using a Nonparametric Random Effects Model,
Kai Yu, John Lafferty, Shenghuo Zhu, and Yihong Gong
26th International Conference on Machine Learning - ICML 2009.
3. Fast Nonparametric Matrix Factorization for Large-scale Collaborative Filtering,
Kai Yu, Shenghuo Zhu, and John Lafferty,
32nd ACM International SIGIR Conference - SIGIR 2009.
4. Linear Spatial Pyramid Matching Using Sparse Coding for Image Classification,
Jianchao Yang, Kai Yu, Yihong Gong, and Thomas Huang,
IEEE Conference on Computer Vision and Pattern Recognition - CVPR 2009.
5. Deep Learning with Kernel Regularization for Visual Recognition,
Kai Yu, Wei Xu, and Yihong Gong,
*Advances in Neural Information Processing Systems 21 - NIPS*08*.
6. Stochastic Relational Models for Large-scale Dyadic Data using MCMC,
Shenghuo Zhu, Kai Yu and Yihong Gong,
*Advances in Neural Information Processing Systems 21 - NIPS*08*.
7. Training Hier. Feed-forward Visual Recog. Models Using Transfer Learning from Pseudo Tasks,
Amr Ahmed, Kai Yu, Wei Xu, Yihong Gong, and Eric Xing,
10th European Conference on Computer Vision - ECCV 2008.
8. Non-greedy Active Learning for Text Categorization,
Kai Yu, Shenghuo Zhu, Wei Xu, and Yihong Gong,
31st ACM International SIGIR Conference - SIGIR 2008.
9. Learning Multiple Graphs for Document Recommendations,
Ding Zhou, Shenghuo Zhu, Kai Yu, Xiaodan Song, Belle Tseng, Hongyuan Zha, and C.Lee Giles,
17th International World Wide Web Conference - WWW 2008.
10. Robust Multi-Task Learning with t-Processes,
Shipeng Yu, Volker Tresp, Kai Yu, and Bharat Rao,
24th International Conference on Machine Learning - ICML 2007.
11. Local Learning Projection,
Mingrui Wu, Kai Yu, Shipeng Yu, and Bernhard Schölkopf,
24th International Conference on Machine Learning - ICML 2007.
12. Gaussian Process Models for Link Analysis and Transfer Learning,
Kai Yu and Wei Chu,
*Advances in Neural Information Processing Systems 20 - NIPS*07*.
13. Predictive Matrix-Variate t Models,
Shenghuo Zhu, Kai Yu and Yihong Gong,
*Advances in Neural Information Processing Systems 20 - NIPS*07*.
14. Combining Contents and Links for Classification using Matrix Factorization,
Shenghuo Zhu, Kai Yu, Yun Chi, and Yihong Gong,
30th ACM International SIGIR Conference - SIGIR 2007.
15. Variational Bayesian Dirichlet-Multinomial Allocation for Exponential Family Mixtures,
Shipeng Yu, Kai Yu, and Volker Tresp,
17th European Conference on Machine Learning - ECML 2006.
16. Supervised Probabilistic Principal Component Analysis,
Shipeng Yu, Kai Yu, Volker Tresp, Hans-Peter Kriegel, and Mingrui Wu,
12th ACM International Conference on Knowledge Discovery and Data Mining - KDD 2006.

17. Infinite Hidden Relational Models,
Zhao Xu, Volker Tresp, Kai Yu, and Hans-Peter Kriegel,
22nd International Conference on Uncertainty in Artificial Intelligence - UAI 2006.
18. Stochastic Relational Models for Discriminative Link Prediction,
Kai Yu, Wei Chu, Shipeng Yu, Volker Tresp, and Zhao Xu,
*Advances in Neural Information Processing Systems 19 - NIPS*06.*
19. Active Learning via Transductive Experiment Design,
Kai Yu, Jinbo Bi, and Volker Tresp,
23rd International Conference on Machine Learning - ICML 2006.
20. Collaborative Ordinary Regression,
Shipeng Yu, Kai Yu, Volker Tresp, and Hans-Peter Kriegel,
23rd International Conference on Machine Learning - ICML 2006.
21. Multi-Label Informed Latent Semantic Indexing,
Kai Yu, Shipeng Yu, and Volker Tresp,
28th Annual ACM International SIGIR Conference - SIGIR 2005.
22. Soft Clustering on Graphs,
Kai Yu, Shipeng Yu, and Volker Tresp,
*Advances in Neural Information Processing Systems 18 - NIPS*05.*
23. Learning Gaussian Processes from Multiple Tasks,
Kai Yu, Volker Tresp, and Anton Schwaighofer,
22nd International Conference on Machine Learning - ICML 2005.
24. Dirichlet Enhanced Probabilistic Relational Model,
Zhao Xu, Volker Tresp, Kai Yu, Shipeng Yu, and Hans-Peter Kriegel,
22nd International Conference on Machine Learning - ICML 2005.
25. A Probabilistic Clustering-Projection Model for Discrete Data,
Shipeng Yu, Kai Yu, Volker Tresp, and Hans-Peter Kriegel,
9th European PKDD Conference - PKDD 2005,
26. Multi-Output Regularized Projection,
Kai Yu, Shipeng Yu, and Volker Tresp,
International IEEE Conference on Computer Vision and Pattern Recognition - CVPR 2005.
27. Dirichlet Enhanced Latent Semantic Analysis,
Kai Yu, Shipeng Yu, and Volker Tresp,
10th International Conference on Artificial Intelligence and Statistics - AISTATS 2005.
28. Hierarchy-Regularized Latent Semantic Indexing,
Yi Huang, Kai Yu, Matthias Schubert, Shipeng Yu, and Hans-Peter Kriegel,
IEEE International Conference on Data Mining - ICDM 2005.
29. Learning Gaussian Process Kernels via Hierarchical Bayes,
Anton Schwaighofer, Volker Tresp, and Kai Yu,
*Advances in Neural Information Processing Systems 17 - NIPS*04.*
30. A Nonparametric Hierarchical Bayesian Framework for Information Filtering,
Kai Yu, Volker Tresp, and Shipeng Yu,
27th ACM International SIGIR Conference - SIGIR 2004.
31. Collaborative Ensemble Learning: Combining Collaborative and Content-Based Information Filtering via Hierarchical Bayes,
Kai Yu, A. Schwaighofer, Volker Tresp, Wei-Ying Ma, HongJiang Zhang,
19th International Conference on Uncertainty in Artificial Intelligence - UAI 2003.
32. Knowing a Tree from the Forest: Art Image Retrieval using a Society of Profiles,
Kai Yu, Wei-Ying Ma, Volker Tresp, Zhao Xu, X. He, H.J. Zhang and Hans-Peter Kriegel,
11th ACM International Conference on Multimedia - ACM Multimedia 2003.

33. Instance Selection Techniques for Memory-Based Collaborative Filtering, Kai Yu, Xiaowei Xu, Jianhua Tao, Martin Ester, and Hans-Peter Kriegel, *2nd SIAM International Conference on Data Mining - SDM 2002*.

Journal Publications

34. Feature Selection for Gene Expression using Model-based Entropy, Shenghuo Zhu, Dingding Wang, Kai Yu, Tao Li, and Yihong Gong, *IEEE/ACM Transactions on Computational Biology and Bioinformatics*, 2008.
35. Multi-Output Regularized Feature Projection, Shipeng Yu, Kai Yu, Volker Tresp, and Hans-Peter Kriegel, *IEEE Transactions on Knowledge and Data Engineering - TKDE* 2006.
36. Probabilistic Memory-Based Collaborative Filtering, Kai Yu, Anton Schwaighofer, Volker Tresp, Xiaowei Xu, Hans-Peter Kriegel, *IEEE Transactions on Knowledge and Data Engineering - TKDE* 2004.
37. Feature Weighting and Instance Selection for Collaborative Filtering: An Info.-Theoretic Approach, Kai Yu, Xiaowei Xu, Martin Ester, Hans-Peter Kriegel, *Knowledge and Information Systems - KAIS*, Springer, 2005.

Book Chapters

38. An Introduction to Nonparametric Hier. Bayesian Modeling with a Focus on Multi-agent Learning, Volker Tresp and Kai Yu, *Switching and Learning in Feedback Systems*, Springer, 2005.

Technical Demos

39. A Realtime Gender and Age Recognition System, Wei Xu, Kai Yu, Douglas Gray, **NIPS*07**

Conference Tutorials

40. Learning with dependencies between several response variables: From hierarchical Bayes and multitask learning to structured prediction and relational learning, Volker Tresp and Kai Yu, **ICML 2009**

Miscellaneous

U.S. permanent resident
Computer skills: C/C++, Matlab, Python, Fortran, and Assembly language
Designed loudspeaker systems, third place in a national contest, 1997.
20 filed or pending patents in Europe and the U.S, 2004 – present.
Other hobbies: painting, traveling, swimming, hiking.

References