

William Nick Street

Management Sciences Department
S232 Pappajohn Business Building
The University of Iowa
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Degrees

Ph.D., University of Wisconsin-Madison, August 1994, Computer Sciences

M.S., DePaul University, 1990, Computer Science. Graduated with distinction.

B.A., Drake University, 1985, Mathematics and Computer Science. Named Outstanding Computer Science Student. Graduated with honors.

Professional experience

- 2002–present Associate Professor, Management Sciences Department, The University of Iowa
- 2003–present Secondary appointment, Department of Computer Science, The University of Iowa
- 2003–present Secondary appointment, College of Nursing, The University of Iowa
- 1998–2002 Assistant Professor, Management Sciences Department, The University of Iowa
- 1996–1998 Assistant Professor, Computer Science Department, Oklahoma State University
- 1994–1996 Postdoctoral Fellow, Departments of Surgery and Computer Sciences, University of Wisconsin-Madison
- 1990–1994 Research Assistant, O.L. Mangasarian, Computer Sciences Department, University of Wisconsin-Madison
- 1989–1990 Senior Software Engineer, Motorola Cellular, Arlington Heights, IL
- 1988–1989 Development Engineer, Rich, Inc., Franklin Park, IL
- 1985–1988 Senior Software Engineer, Northrop Corp., Defense Systems Division, Rolling Meadows, IL

Honors and awards

Henry B. Tippie Research Fellow, University of Iowa College of Business, 2002-2009.

Teaching Excellence in Management Sciences recognition, Fall 2008 (two courses), Spring 2008, Fall 2007 (two courses), Spring 2007, Fall 2006 (two courses), Spring 2006 (two courses), Spring 2005 (two courses), Fall 2004, Spring 2004, Fall 2003, Spring 2003 (two courses), Spring 2002, Spring 2000.

Winner, *CoIL Challenge 2000: The Insurance Company Case*, description task.

Publications

Technical Journal Papers

1. C.-L. Chi, W. N. Street and D. A. Katz. A decision support system for cost-effective diagnosis. *Artificial Intelligence in Medicine*, conditionally accepted.
2. Y. Zhang and W. N. Street. Bagging with adaptive costs. *IEEE Transactions on Knowledge and Data Engineering* 20(5):577–588, May 2008.
3. C.-L. Chi, W. N. Street and M. M. Ward. Building a hospital referral expert system with a prediction and optimization-based decision support system. *Journal of Biomedical Informatics* 41:371–386, April 2008.
4. Y. Zhang, S. Burer and W. N. Street. Ensemble pruning via semi-definite programming. *Journal of Machine Learning Research* 7:1315–1338, July 2006.
5. Y. Kim, W. N. Street and F. Menczer. Optimal ensemble construction via meta-evolutionary ensembles. *Expert Systems with Applications* 30(4):705–714, May 2006.
6. Y. Kim, W. N. Street, G. J. Russell and F. Menczer. Customer targeting: A neural network approach guided by genetic algorithms. *Management Science* 51(2):264–276, February 2005.
7. W. N. Street. Oblique multicategory decision trees using nonlinear programming. *INFORMS Journal on Computing* 17(1):25–31, Winter 2005.
8. K. Lee and W. N. Street. Cluster-driven refinement for content-based digital image retrieval. *IEEE Transactions on Multimedia* 6(6):817–827, December 2004.
9. Y. Kim and W. N. Street. An intelligent system for customer targeting: A data mining approach. *Decision Support Systems* 37(2):215–228, 2004.
10. K. Lee and W. N. Street. A time- and memory-efficient algorithm for automated segmentation of breast cancer nuclei. *Journal of Korea Information Science Society* 30(9–10):973–982, October 2003 (in Korean).
11. K. Lee and W. N. Street. An adaptive resource-allocating network for automated detection, segmentation, and classification of breast cancer nuclei. *IEEE Transactions on Neural Networks* 14(3):680–687, May 2003.
12. K. Lee and W. N. Street. Model-based detection, segmentation and classification for image analysis using on-line shape learning. *Machine Vision and Applications* 13(4):222–233, 2003.
13. F. Menczer, A. E. Monge and W. N. Street. Adaptive assistants for customized e-shopping. *IEEE Intelligent Systems* 17(6):12–19, November/December 2002.
14. Y. Kim, W. N. Street and F. Menczer. Evolutionary model selection in unsupervised learning. *Intelligent Data Analysis* 6:531–556, 2002.
15. K. Lee and W. N. Street. Incremental feature weight learning and its application to a shape-based query system. *Pattern Recognition Letters* 23(7):865–874, May 2002.

16. F. Menczer, M. Degeratu, and W. N. Street. Efficient and scalable Pareto optimization by evolutionary local selection algorithms. *Evolutionary Computation* 8(2):223–247, Summer 2000.
17. W. N. Street and O. L. Mangasarian. Improved generalization via tolerant training. *Journal of Optimization Theory and Applications* 96(2):259–270, February 1998.
18. P. S. Bradley, O. L. Mangasarian, and W. N. Street. Feature selection via mathematical programming. *INFORMS Journal on Computing* 10(2):209–217, 1998.
19. O. L. Mangasarian, W. N. Street and W. H. Wolberg. Breast cancer diagnosis and prognosis via linear programming. *Operations Research* 43(4):570–577, July-August 1995.

Health Care Journal Papers

20. D.-F. Lu, W. N. Street, F. Currim, R. Hylock and C. Delaney. A data modeling process for decomposing healthcare patient data sets. *Online Journal of Nursing Informatics* 13(1), February 2009.
21. W. H. Wolberg and W. N. Street. Computer-generated nuclear features compared to axillary lymph node status and tumor size as indicators of breast cancer survival. *Human Pathology* 33(11):1086–1091, November 2002.
22. W. H. Wolberg, W. N. Street and O. L. Mangasarian. Importance of nuclear morphology in breast cancer prognosis. *Clinical Cancer Research* 5:3542–3548, November 1999.
23. W. H. Wolberg, W. N. Street, and O. L. Mangasarian. Computer-derived nuclear features compared with axillary lymph node status for breast carcinoma prognosis. *Cancer Cytopathology* 81(3):172–179, 1997.
24. W. H. Wolberg, W. N. Street, and O. L. Mangasarian. Computerized diagnosis of breast fine needle aspirates. *The Breast Journal* 3(2):77–80, March/April 1997.
25. M. W. Teague, W. H. Wolberg, W. N. Street, O. L. Mangasarian, S. Labremont, and D. L. Page. Indeterminate fine needle aspiration of the breast: Image analysis aided diagnosis. *Cancer Cytopathology* 81:129–135, 1997.
26. W. H. Wolberg, W. N. Street, D. M. Heisey, and O. L. Mangasarian. Computer-derived nuclear features distinguish malignant from benign breast cytology. *Human Pathology*, 26:792–796, 1995.
27. W. H. Wolberg, W. N. Street, D. M. Heisey, and O. L. Mangasarian. Computerized breast cancer diagnosis and prognosis from fine needle aspirates. *Archives of Surgery* 130:511–516, 1995.
28. W. H. Wolberg, W. N. Street, D. M. Heisey, and O. L. Mangasarian. Computer-derived nuclear “grade” and breast cancer prognosis. *Analytical and Quantitative Cytology and Histology* 17(4):257–264, August 1995.
29. W. H. Wolberg, W. N. Street, and O. L. Mangasarian. Image analysis and machine learning applied to breast cancer diagnosis and prognosis. *Analytical and Quantitative Cytology and Histology* 17(2):77–87, April 1995.

30. W. H. Wolberg, W. N. Street, and O. L. Mangasarian. Machine learning techniques to diagnose breast cancer from fine-needle aspirates. *Cancer Letters* 77:163–171, 1994.
31. J. S. Oghalai, W. N. Street, and W. S. Rhode. A neural network based spike discriminator. *Journal of Neuroscience Methods* 54(1):9–22, September 1994.
32. W. H. Wolberg, W. N. Street, and O. L. Mangasarian. Breast cytology diagnosis via digital image analysis. *Analytical and Quantitative Cytology and Histology* 15(6):396–404, December 1993.

Peer Reviewed Conference Papers

33. L. Duan and W. N. Street. Finding maximal fully-correlated itemsets in large databases. *IEEE International Conference on Data Mining (ICDM 2009)*, accepted.
34. C.-L. Chi and W. N. Street. The optimal diagnostic decision sequence. *American Medical Informatics Association Annual Symposium (AMIA 2008)* (poster paper), page 902, Washington, D.C., November 2008.
35. C.-L. Chi, W. N. Street and W. H. Wolberg. Application of artificial neural network-based survival analysis on two breast cancer datasets. *American Medical Informatics Association Annual Symposium (AMIA 2007)*, pages 130-134, Chicago, IL, November 2007.
36. C.-L. Chi and W. N. Street. A data mining technique for risk-stratification diagnosis. *American Medical Informatics Association Annual Symposium (AMIA 2007)* (poster paper), page 909, Chicago, IL, November 2007.
37. D. Yuan and W. N. Street. HACS: A heuristic algorithm for clustering of subsets. *SIAM International Conference on Data Mining (SDM 2007)*, Minneapolis, MN, April 2007. (25% acceptance rate)
38. X. Y. Qiu, P. Srinivasan and W. N. Street. Exploring the forecasting potential of company annual reports. *American Society for Information Science and Technology (ASIS&T 2006)*, Austin, TX, November 2006.
39. K. Ataman, W. N. Street and Y. Zhang. Learning to rank by maximizing AUC with linear programming. *IEEE International Joint Conference on Neural Networks (IJCNN 2006)*, pages 123–129, Vancouver, BC, July 2006.
40. D-F. Lu, W. N. Street and C. Delaney. Knowledge discovery: Detecting elderly patients with impaired mobility. *Ninth International Congress on Nursing Informatics (NI2006)*, pages 121–123, Seoul, Korea, June 2006.
41. Y. Zhang, W. N. Street and S. Burer. Sharing classifiers among ensembles from related problem domains. *Fifth IEEE International Conference on Data Mining (ICDM 2005)*, pages 522–529, Houston, TX, December 2005. (22% acceptance rate)
42. Y. Zhang and W. N. Street. Bagging with adaptive costs. *Fifth IEEE International Conference on Data Mining (ICDM 2005)*, pages 825–828, Houston, TX, December 2005. (22% acceptance rate)
43. K. T. Phillips and W. N. Street. Predicting outcomes of hospitalization for heart failure using logistic regression and knowledge discovery methods. *American Medical Informatics*

- Association Annual Symposium (AMIA 2005)* (poster paper), page 1080, Washington, D.C., October 2005.
44. E. Catona, P. Srinivasan, W. N. Street. Protein annotation with GO codes. *11th World Congress on Medical Informatics (Medinfo 2004)* (poster paper), page 1543, September 2004.
 45. Y. Kim, W. N. Street and F. Menczer. Meta-evolutionary ensembles. *IEEE International Joint Conference on Neural Networks (IJCNN 2002)*, pages 2791–2796, May 2002.
 46. F. Menczer, W. N. Street, N. Vishwakarma, A. Monge and M. Jakobsson. IntelliShopper: A proactive, personal, private shopping assistant. *First ACM International Joint Conference on Autonomous Agents and Multiagent Systems (AAMAS 2002)*, pages 1001–1008, July 2002. (26% acceptance rate)
 47. K. Lee and W. N. Street. Intelligent image analysis using adaptive resource-allocating networks. *IEEE International Workshop on Neural Networks for Signal Processing (NNSP 2001)*, pages 363–372, Falmouth, MA, September 2001. (74% acceptance rate)
 48. K. Lee and W. N. Street. Intelligent object-based image retrieval using cluster-driven personal preference learning. *24th ACM International Conference on Research and Development in Information Retrieval (SIGIR 2001)*, pages 436–437, New Orleans, LA, September 2001. (30% acceptance rate)
 49. W. N. Street and Y. Kim. A streaming ensemble algorithm (SEA) for large-scale classification. *Seventh ACM SIGKDD International Conference on Knowledge Discovery & Data Mining (KDD-01)*, pages 377–382, San Francisco, CA, August 2001. (25% acceptance rate)
 50. Y. Kim, W. N. Street and F. Menczer. An evolutionary multi-objective local selection algorithm for customer targeting. *Congress on Evolutionary Computing (CEC2001)*, pages 759–766, Seoul, Korea, May 2001. (65% acceptance rate)
 51. K. Lee and W. N. Street. Automatic image segmentation and classification using on-line shape learning. In *Proceedings of the Fifth IEEE Workshop on the Applications of Computer Vision (WACV 2000)*, pages 64–70, Palm Springs, CA, December 2000. (42% acceptance rate)
 52. Y. Kim, W. N. Street, and F. Menczer. Feature selection in unsupervised learning via evolutionary search. In *Proceedings of the Sixth ACM SIGKDD International Conference on Knowledge Discovery and Data Mining (KDD-00)*, pages 365–369, 2000. (20% acceptance rate)
 53. K. Lee and W. N. Street. Generalized Hough transforms with flexible templates. In *Proceedings of the 2000 International Conference on Artificial Intelligence (IC-AI 2000)*, pages 1133–1139, Las Vegas, NV, June 2000.
 54. K. Lee and W. N. Street. A fast and robust approach for automated segmentation of breast cancer nuclei. In *Proceedings of the Second IASTED International Conference on Computer Graphics and Imaging*, pages 42–47, Palm Springs, CA, October 1999.
 55. W. N. Street. A neural network model for prognostic prediction. In J. Shavlik, ed., *Proceedings of the Fifteenth International Conference on Machine Learning (ICML-98)*, pages 540–546, Morgan Kaufmann Publishers, San Francisco 1998. (35% acceptance rate)

56. P. S. Bradley, O. L. Mangasarian, and W. N. Street. Clustering via concave minimization. In M. C. Mozer, M. I. Jordan and T. Petsche, eds., *Advances in Neural Information Processing Systems 9*, pages 368–374, MIT Press, Cambridge, MA, 1997. (30% acceptance rate)
57. W. N. Street, O. L. Mangasarian, and W. H. Wolberg. An inductive learning approach to prognostic prediction. In A. Prieditis & S. Russell, eds., *Proceedings of the Twelfth International Conference on Machine Learning*, pages 522–530, Morgan Kaufmann Publishers, San Francisco 1995.
58. W. N. Street, W. H. Wolberg, and O. L. Mangasarian. Nuclear feature extraction for breast tumor diagnosis. In *IS&T/SPIE 1993 International Symposium on Electronic Imaging: Science and Technology*, volume 1905, pages 861–870, San Jose, California, 1993.

Book Chapters

59. Y. Kim, W. N. Street, and F. Menczer. Feature selection in data mining. In J. Wang, editor, *Data Mining: Opportunities and Challenges*, Idea Group Publishing, 2003, pages 80–105.
60. F. Menczer, W.N. Street, M. Degeratu. Evolving heterogeneous neural agents by local selection. In V. Honavar, M. Patel and K. Balakrishnan, editors, *Advances in the Evolutionary Synthesis of Intelligent Agents*, MIT Press, 2001, pages 337–366.
61. W. N. Street. Xcyt: A system for remote cytological diagnosis and prognosis of breast cancer. In L.C. Jain, editor, *Artificial Intelligence Techniques in Breast Cancer Diagnosis and Prognosis*, World Scientific Publishing, Singapore, 2000, pages 297–322.

Theses

62. W. N. Street. Cancer Diagnosis and Prognosis via Linear-programming-based Machine Learning. Ph.D. Thesis, Computer Sciences Department, University of Wisconsin-Madison, Madison, WI 1994.

Workshop and Other Conference Papers

63. S. Yasar Saglam and W. N. Street. Dynamic ensemble construction via heuristic optimization. *Fourth INFORMS Workshop on Data Mining and System Informatics*, San Diego, CA, October 2009.
64. J. Wang and W. N. Street. Estimating missing attribute values using dynamically-ordered attribute trees. *Fourth INFORMS Workshop on Data Mining and System Informatics*, San Diego, CA, October 2009.
65. R. Hylock, W. N. Street, D.-F. Lu and F. Currim. NursingCareWare: Warehousing for nursing care research and knowledge discovery. *Third INFORMS Workshop on Data Mining and Health Informatics*, Washington, D.C., October 2008.
66. L. Duan, W. N. Street and D.-F. Lu. A nursing care plan recommender system using a data mining approach. *Third INFORMS Workshop on Data Mining and Health Informatics*, Washington, D.C., October 2008.
67. K. Ataman and W. N. Street. Hierarchical local clustering for constraint reduction in rank-optimizing linear programs. *First INFORMS Workshop on Artificial Intelligence and Data Mining*, Pittsburgh, PA, November 2006.

68. K. Lee and W. N. Street. Automatic feature mining for personalized digital image retrieval. *International Workshop on Multimedia Data Mining (MDM/KDD 2001)*, pages 38–43, San Francisco, CA, August 2001.
69. Y. Kim, W. N. Street and F. Menczer. Unsupervised model selection via evolutionary local search. *International Joint Conference on Artificial Intelligence (IJCAI-01) Workshop on Wrappers for Performance Enhancement in Knowledge Discovery in Databases (KDD)*, pages 9–14, Seattle, WA, August 2001.
70. Y. Kim and W. N. Street. CoIL Challenge 2000: Choosing and explaining likely caravan insurance customers. In P. van der Putten and M. van Someren (eds), *CoIL Challenge 2000: The Insurance Company Case*. Sentient Machine Research, Amsterdam, June 2000.
71. K. Lee and W. N. Street. Dynamic learning of shape for automatic object recognition. In *Proceedings of ICML-2000 Workshop on Machine Learning of Spatial Knowledge*, pages 44–49, Stanford, CA, June–July 2000.
72. K. Lee and W. N. Street. Learning shapes for automatic image segmentation. In *Proceedings of the INFORMS-KORMS Conference*, pages 1461–1468, Seoul, Korea, June 2000.
73. D. Eichmann, M. E. Ruiz, P. Srinivasan, W. N. Street, C. Culy, and F. Menczer. A cluster-based approach to tracking, detection and segmentation of broadcast news. *DARPA Broadcast News Workshop*, Herndon, VA, Feb. 28 - Mar 3 1999.
74. O. L. Mangasarian, W. N. Street and W. H. Wolberg. Breast cancer diagnosis and prognosis via linear programming. AAAI Spring Symposium on Artificial Intelligence in Medicine, Stanford, CA, March 1994.

Technical Reports

75. W. N. Street, O. L. Mangasarian, and W. H. Wolberg. Individual and collective prognostic prediction. Technical Report 96–01, Computer Sciences Department, University of Wisconsin, Madison, WI, January 1996.
76. W. N. Street. Toward automated cancer diagnosis: An interactive system for cell feature extraction. Technical Report 1052, Computer Sciences Department, University of Wisconsin, Madison, WI, October 1991.

Working Papers

77. D. Yuan and W. N. Street. Inducing consideration sets with HACS: Heuristic Algorithm for Clustering Subsets. Journal submission, under review.
78. K. Ataman, W. N. Street, A. M. McCarthy, C. Kleiber, K. Hanrahan, M. B. Zimmerman and A. L. Ersig. Using data mining to build a predictive model of child distress with a medical procedure. Journal submission, under review.
79. M. Khoshneshin and W. N. Street. Incremental collaborative filtering via evolutionary co-clustering. Conference submission, under review.
80. S.-C. Chin, P. Srinivasan, W. N. Street and D. Eichmann. Detecting Wikipedia vandalism with active learning and statistical language models. Conference submission, under review.
81. M. Khoshneshin and W. N. Street. Collaborative filtering via multidimensional scaling. Conference submission, under review.

82. K. Ataman and W. N. Street. Approximation methods for LP-based rank optimization. Journal submission, in preparation.
83. K. Ataman and W. N. Street. Linear programming-based rank optimization for survival analysis. Journal submission, in preparation.
84. S.-C. Chin, R. DeCook, W. N. Street and D. Eichmann. Text normalization selection models for enhanced retrieval accuracy. Conference submission, in preparation.
85. K. T. Phillips and W. N. Street. A knowledge-base system for predicting heart failure mortality. Conference submission, in preparation.

Students

PhD Students

- Mohammad Khoshneshin, Management Sciences Department, University of Iowa, in progress.
- Jing Wang, Computer Science Department, University of Iowa, in progress.
- Lian Duan, Management Sciences Department, University of Iowa, in progress.
- Senay Yasar Saglam, Management Sciences Department, University of Iowa, in progress.
- Chih-Lin Chi, *Medical Decision Support Systems based on Machine Learning Methods*, Health Informatics Program, University of Iowa, July 2009.
- Ding Yuan, *Heuristic Subset Clustering for Consideration Set Analysis*, Management Sciences Department, University of Iowa, December 2007.
- Kaan Ataman, *Learning to Rank by Maximizing the AUC with Linear Programming for Problems with Binary Output*, Management Sciences Department, University of Iowa, July 2007.
- Yi Zhang, *Constructive and Destructive Optimization Methods for Predictive Ensemble Learning*, Management Sciences Department, University of Iowa, July 2006.
- Kyoung-Mi Lee, *On-line Shape Learning for Adaptive Image Segmentation, Classification and Retrieval*, Computer Science Department, University of Iowa, December 2001.
- YongSeog Kim, *Feature Selection in Supervised and Unsupervised Learning via Evolutionary Search*, Management Sciences Department, University of Iowa, December 2001.

PhD Committees

- Brian Almquist, Management Sciences Department, University of Iowa, in progress.
- Robert Arens, Computer Science Department, University of Iowa, in progress.
- Kellie Bach, Statistics Department, University of Iowa, in progress.
- Jieqiu Chen, Management Sciences Department, University of Iowa, in progress.
- Si-Chi Chin, Information Science Program, University of Iowa, in progress.
- Chris Harris, Information Science Program, University of Iowa, in progress.

Viet Ha-Thuc, Computer Science Department, University of Iowa, in progress.

Mingyang Li, Department of Mechanical and Industrial Engineering, University of Iowa, in progress.

Ling-Hua Lin, College of Nursing, University of Iowa, in progress.

Dong-Jun Park, Computer Science Department, University of Iowa, in progress.

Yulan Liang, *Detecting Driver Distraction*, Department of Mechanical and Industrial Engineering, University of Iowa, May 2009.

Zhe Song, *Meta-control of Combustion Performance with a Data-mining Approach*, Department of Mechanical and Industrial Engineering, University of Iowa, August 2008.

Brynja Örlygisdóttir, *Using Knowledge Discovery to Identify Potentially Useful Patterns of Health Promotion Behavior of 10-12 Year Old Icelandic Children*, College of Nursing, University of Iowa, July 2008.

Ye Xu, *Computer-aided 3-D Texture Analysis for Lung Characterization using MDCT Images*, Computer Science Department, University of Iowa, December 2007.

Xin Ying Qiu, *On Building Predictive Models with Company Annual Reports*, Management Sciences Department, University of Iowa, July 2007.

Kirk Phillips, *Design and Testing of a Knowledge-based System for the Treatment of Heart Failure Patients in a Hospital Setting*, Interdisciplinary Program in Health Informatics, University of Iowa, 2005.

Gautam Pant, *Learning to Crawl: Classifier Guided Topical Crawlers*, Management Sciences Department, University of Iowa, 2004.

Dan Hanson, *Artificial Neural Network Based Survival Analysis for Hydro-Mechanical Systems*, Department of Mechanical and Industrial Engineering, University of Iowa, 2004.

Sarapee Hirankarn, *Analysis of Clinical Pharmacokinetic Data: NONMEM, WinBUGS, and Artificial Neural Networks*, Department of Pharmacy, University of Iowa, 2000.

Masters of Science with Thesis Students

Haobo Liu, *A Bayesian Network for Medical Diagnosis*, Oklahoma State University Computer Science Department, December 1998.

Kean Giap Lim, *Reinforcement Learning in Game Playing*, Oklahoma State University Computer Science Department, December 1998.

Mohammad T. Uliniansyah, *An English-to-Indonesian Machine Translation System*, Oklahoma State University Computer Science Department, July 1998.

Syed M. M. Manzoor, *BridgeVIEW for Hybrid Control System: An Applied Case Study of Automating an Industrial Assembly Line*, Oklahoma State University Computer Science Department, July 1998.

Sree R. K. R. Mallina, *Remote Cancer Diagnosis*, Oklahoma State University Computer Science Department, July 1998.

Hyuk-Joon Oh, *Generalized Hough Transform for Cytological Image Segmentation*, Oklahoma State University Computer Science Department, December 1997.

Senior Honors Project Students

Chuck Mersch, *The Predictability Power of College Football Polls*, University of Iowa, 2007.

Research funding

Federal

Co-investigator, NINR R01. Title: Predicting Children's Responses to Distraction from Pain: Tailored Interventions. Total award: \$20,234. Period: 8/1/2007 – 5/31/2011.

Co-investigator, NIH Subcontract. Title: Phase II Clinical Trial of Modulation of Intermediate Endpoint Biomarkers by 1α Hydroxy Vitamin D_2 in Patients with Clinically Localized Prostate Cancer and High Grade PIN. Total award: \$118,723. Period: 9/30/99 – 3/31/07.

Consultant, NINR R01. Title: Predicting Children's Responses to Distraction from Pain. Total award: \$9,579. Period: 5/15/2006 – 8/15/2006.

Co-investigator, NHLBI subcontract. Title: Data Mining Analysis of ACCESS Data. Total award: \$10,806. Period: 5/15/00 – 8/15/00.

Principal Investigator, NSF CAREER Award. Title: Mathematical Optimization for Inductive Machine Learning. Total award: \$206,531. Period: 6/1/97 – 5/31/01.

Principal Investigator, NIH R01 Subcontract. Title: Adjuvant Hormonal Therapy in Vietnamese Breast Cancer. Total award: \$34,106. Period: 11/1/98 – 1/31/00.

Postdoctoral Fellow, NIH National Research Service Award. Title: Machine Learning for Prognostic Prediction. Total award: \$52,300. Period: 12/1/95 – 7/31/97.

Private

Principal Investigator, McLeod USA. Title: Predictive Customer Churn Models. Total award: \$6,870. Period: 1/15/05 – 5/15/05.

Principal Investigator, John Deere Corporation. Title: Machine Health: Data Mining. Total award: \$31,000. Period: 1/1/02 – 9/30/02.

Principal Investigator, Phillips Petroleum Company. Title: Prediction of Catalytic Cracking Yields. Total award: \$23,664. Period: 11/1/97 – 10/31/98.

University

Co-Principal Investigator, University of Iowa Social Science Funding Program. Title: Mining Clinical Data Sets for Nursing Dx, Outcomes and Intervention Links and EBP Validation. Total award: \$28,370. Period: 5/1/08 – 6/30/09.

Co-Director, Obermann Center for Advanced Studies Spelman Rockefeller (CASSPR) Grant, University of Iowa. Title: Operationalizing and Pilot Testing the Computerized Predictive Model for Distraction: Interventions for Needle Sticks in Children. Total award: \$8,836. Period: 5/15/07 – 8/24/07.

Co-Investigator, University of Iowa Informatics Initiative. Title: Discovering Subpopulations of Human Responses to Health Care States in High-Dimensional Datasets. Total award: \$29,233. Period: 1/1/04 – 12/31/04.

Co-Principal Investigator, University of Iowa Biosciences Initiative Pilot Grant. Title: Selection of Neoplastic Glial Cells for Molecular Analysis Using Computer-Assisted Image Analysis and Laser Capture Microdissection. Total award: \$12,000. Period: 2/1/00 – 6/31/00.

Recipient, Old Gold Summer Fellowship, University of Iowa. Title: Ensemble Techniques for Data Mining. Total award: \$8,100. Period: 5/15/99 – 8/15/99.

Recipient, College of Business Summer Research Award, University of Iowa. Title: Ensemble Techniques for Data Mining. Total award: \$4,319. Period: 5/15/99 – 8/15/99.

Recipient, Dean's Incentive Grant, Oklahoma State University. Title: Remote Cytological Cancer Diagnosis. Total award: \$3,000. Period: 7/1/97 – 7/30/97.

Recipient, Arts and Sciences Summer Research award, Oklahoma State University. Title: A Software Platform for Medical Image Segmentation Research. Total award: \$5,400. Period: 8/1/97 – 8/30/97.

Co-investigator, College of Veterinary Medicine, Oklahoma State University. Title: Sonographic Determination of Hepatic Echogenicity in Normal Cats using Computer Aided Image Analysis. Total award: \$7,413. Period: 1/1/97 – 5/15/97.

Recipient, University Surgical Associates grant, University of Wisconsin-Madison. Title: Breast Cancer Diagnosis and Prognosis via Machine Learning. Total award: \$10,000. Period: 8/15/94 – 12/31/95.

Invited seminars

An Ensemble Approach to the Netflix Prize, INFORMS Annual Meeting, Seattle, WA, November 2007.

Choice Prediction with Consideration Set Clustering, INFORMS Annual Meeting, Seattle, WA, November 2007.

Learning to Rank, INFORMS Annual Meeting, Denver, CO, October 2004.

A Streaming Ensemble Method for Large-Scale Classification, Statistics Department, University of Iowa, April 2003.

Data Mining & Digital Imaging, University of Iowa Interdisciplinary Health Informatics Organization (IHIO), March 2003.

An Ensemble Method for Streaming Classification, Decision Sciences Institute meeting, San Diego, CA, November 2002.

Data Mining Applications in Breast Cancer, College of Nursing, University of Iowa, October 2002.

New Methods for Ensemble Classification, Computer Science Department, University of Iowa, April 2002.

- Breast Cancer Prognosis via Linear Programming: Redux*, INFORMS Annual Meeting, Miami, FL, November 2001.
- Meta-Evolutionary Ensembles*, INFORMS Annual Meeting, Miami, FL, November 2001.
- Feature Selection in Supervised and Unsupervised Machine Learning*, Industrial Engineering Graduate Student Seminar, University of Iowa, Iowa City, IA, November 2000.
- Feature Selection in Unsupervised Learning via Multi-Objective Evolutionary Search*, University of Texas Computer Science Department Data Mining Colloquium, Austin, TX, November 2000.
- Feature Selection in Unsupervised Learning via Multi-Objective Evolutionary Search*, INFORMS Annual Meeting, San Antonio, TX, November 2000.
- Machine Learning for Object Detection and Segmentation*, INFORMS Annual Meeting, San Antonio, TX, November 2000.
- Ensembles for Large-scale Classification*, INFORMS Annual Meeting, San Antonio, TX, November 2000.
- Feature Selection in Unsupervised Learning via Multi-Objective Evolutionary Search*, Iowa State / University of Iowa Joint Bioinformatics Workshop, Iowa City, IA, November 2000.
- Feature Selection in Unsupervised Learning via Multi-Objective Evolutionary Search*, International Symposium on Mathematical Programming, Atlanta, GA, August 2000.
- Optimization-based Approaches to Feature Selection in Supervised and Unsupervised Machine Learning*, Department of Industrial and Manufacturing Systems Engineering Research Colloquium, Iowa State University, Ames, IA, December 1999.
- Feature Selection in Supervised Learning*, INFORMS National Meeting, Philadelphia, PA, November 1999.
- Feature Selection in Unsupervised Learning*, INFORMS National Meeting, Philadelphia, PA, November 1999.
- Feature Selection in Data Mining*, Complex Adaptive Systems and their Business Applications seminar series, Management Sciences Department, University of Iowa, October 1999.
- Nuclei Location in Cytological Images*, College of Engineering Imaging Group, University of Iowa, Iowa City, IA, April 1999.
- Computerized Diagnosis and Prognosis of Breast Cancer*, Management Sciences Department Research Colloquium, University of Iowa, Iowa City, IA, February 1999.
- Applications of Mathematical Optimization in Machine Learning*, Computer Science Department, University of Iowa, Iowa City, IA, September 1998.
- Oblique Multicategory Decision Trees*, INFORMS National Meeting, Seattle, WA, November 1998.
- Remote Cytological Cancer Diagnosis*, INFORMS National Meeting, Seattle, WA, November 1998.
- Mathematical Programming in Machine Learning*, Management Science Department, University of Iowa, Iowa City, IA, March 1998.

- Decision Trees: An Overview and a New Approach*, INFORMS Computer Science Technical Section Conference, Monterey, CA, January 1998.
- Prognostic Prediction Using Artificial Neural Networks*, INFORMS National Meeting, Dallas, TX, October 1997.
- Machine Learning and Data Mining*, Phillips Petroleum Company, Bartlesville, OK, July 1997.
- Machine Learning in Medical Diagnosis and Prognosis*, Computer Science Department, Oklahoma State University, Stillwater, OK, February 1997.
- Medical Prognosis via Mathematical Programming*, INFORMS National Meeting, Atlanta, GA, November 1996.
- Breast Cancer Diagnosis and Prognosis via Machine Learning*, Computer Science Department, Oklahoma State University, Stillwater, OK, May 1996.
- Breast Cancer Diagnosis and Prognosis via Machine Learning*, Management Sciences Department, University of Mississippi, Oxford, MS, February 1996.
- Breast Cancer Diagnosis and Prognosis via Linear Programming*, INFORMS National Meeting, New Orleans, LA, October 1995.
- Improved Generalization for Machine Learning*, INFORMS National Meeting, New Orleans, LA, October 1995.
- Mathematical Programming in Machine Learning*, Youngstown State University, Youngstown, OH, April 1995.
- Breast Cancer Diagnosis and Prognosis via Linear Programming*, Youngstown State University, Youngstown, OH, April, 1995.
- Overfitting Avoidance by Tolerant Training*, University of Wisconsin-Madison, Madison, WI, December 1994.
- Cancer Diagnosis and Prognosis via Machine Learning*, Drake University, Des Moines, IA, April 1994.
- Machine Learning for Cancer Prognosis*, University of Wisconsin-Madison, Madison, WI, October, 1993.
- Toward Automated Cancer Diagnosis: An Interactive System for Cell Feature Extraction*, TIMS/ORSA Joint National Meeting, Orlando, FL, April 1992.
- Mathematical Association of America, Iowa Chapter, May 1985, Des Moines, IA. Chosen as Outstanding Student Paper.

Professional activities

Referee

- *Decision Support Systems*, 2009, 2000.
- *Journal of Optimization Theory and Applications*, 2008, 2000.
- *Machine Learning*, 2008, 2007, 2002 (2), 1996.
- *Data Mining and Knowledge Discovery*, 2008, 2005, 2004 (2).
- *Journal of Machine Learning Research*, 2007, 2005, 2003.
- *Artificial Intelligence in Medicine*, 2007.
- *IEEE Transactions on Systems, Man and Cybernetics*, 2007, 2005, 2002, 2000.
- *Computational Management Science*, 2007.
- *Annals of Operations Research*, 2007.
- *The International Journal on Very Large Data Bases*, 2006.
- *Neurocomputing*, 2006.
- *INFORMS Journal on Computing*, 2005, 2004, 2000.
- *European Journal on Operations Research*, 2005.
- *Computational Management Science*, 2005.
- *Information Systems Research*, 2004.
- *Discrete Applied Mathematics*, 2004.
- *Management Science*, 2003, 2001, 1998.
- *Optimization Methods and Software*, 2003, 2002.
- *Journal of Statistical Computation and Simulation*, 2002.
- Idea Group Publishing (one book chapter), 2001.
- *IEEE Transactions on Pattern Analysis and Machine Intelligence*, 2001.
- *Fuzzy Sets and Systems*, 2000.
- ACM SIGKDD International Conference on Knowledge Discovery and Data Mining, 2000.
- MIT Press (one book chapter), 1999.
- CRC Press (five book chapters), 1999.
- *Evolutionary Computation Journal*, 1999.
- *Computational Optimization and Applications*, 1998.
- *Health Care Management Science*, 1998 (2).
- International Conference on Neural Networks, 1996.

Funding proposal reviewer

- NSF Applied Mathematics, 2005.
- NSF Knowledge and Cognitive Systems, 1999.
- NSF Decision Risk & Management Science, 1998.
- NSF Knowledge Models and Cognitive Systems, 1997.

Program Committee

- IEEE International Conference on Data Mining (ICDM), 2009, 2005, 2004, 2003.
- ACM SIGKDD International Conference on Knowledge Discovery and Data Mining, 2007, 2006, 2001.

- James F. Jakobsen Graduate Conference, University of Iowa, 2006.
- SIAM Workshop on Clustering High-Dimensional Data and its Applications, 2005, 2003, 2002.
- Midwest Artificial Intelligence and Cognitive Science Conference, 2002, 2001, 2000, 1999.
- AAAI Student Poster Program, AAAI National Conference, 2002, 2000.

Cluster Chair

- *Data Mining*, INFORMS Annual Meeting, Miami, FL, November 2001.

Session Chair

- *Recommender Systems*, INFORMS Annual Meeting, San Diego, CA, October 2009.
- *INFORMS Data Mining Contest*, INFORMS Annual Meeting, Washington, D.C., October 2008.
- *Data Mining Techniques for Business Applications*, INFORMS Annual Meeting, Seattle, WA, November 2007.
- *New Data Mining Techniques for Business Applications*, INFORMS Annual Meeting, Pittsburgh, PA, November 2006.
- *Learning to Rank: ROC Optimization in Data Mining*, INFORMS Annual Meeting, San Francisco, CA, November 2005.
- *Unsupervised Learning Methods for Knowledge Discovery*, INFORMS Annual Meeting, San Francisco, CA, November 2005.
- *Modeling and Simulation*, Information and Health at Iowa: Breaking Boundaries & Building Bridges, Iowa City, IA, October 2004.
- *Recent Advances in Mining Business Data*, INFORMS Annual Meeting, Denver, CO, October 2004.
- *Ensemble Methods for Data Mining*, INFORMS Annual Meeting, Miami, FL, November 2001.
- *Ensemble Methods for Data Mining*, INFORMS Annual Meeting, San Antonio, TX, November 2000.
- *Multicategory Learning with Mathematical Programming*, INFORMS Annual Meeting, Seattle, WA, November 1998.

Workshop Co-organizer

- *Workshop on Wrappers for Performance Enhancement in Knowledge Discovery in Databases (KDD)*, International Joint Conference on Artificial Intelligence (IJCAI), August 2001.

Member

- Association for the Advancement of Artificial Intelligence (AAAI)
- Institute For Operations Research and the Management Sciences (INFORMS) - Data Mining Section
 - Council Member, INFORMS Data Mining Section, 2007-2009.
 - Organizer, First INFORMS Data Mining Contest, 2008.
- Association for Computing Machinery (ACM) - Special Interest Group in Knowledge Discovery in Databases
- Institute of Electrical and Electronics Engineers (IEEE) - Computer Society

University activities*University Level*

Director, Graduate Program in Health Informatics, University of Iowa, 2009.

Member, Faculty Senate, University of Iowa, 2007-2009.

Member, Health Informatics Advisory Board, University of Iowa, 2007-2009.

Member, Executive Committee, Information Science Program, University of Iowa, 2007-2008.

Member, Health Informatics Core Steering Committee, University of Iowa, 2003-2006.

Member, Iowa Informatics Initiative Steering Committee, University of Iowa, 2003-2005.

College Level

Member, Graduate Committee, Tippie College of Business, University of Iowa, 2003-2009.

Chair, Elected Faculty Council, Tippie College of Business, University of Iowa, 2005-2006.

Member, Elected Faculty Council, Tippie College of Business, University of Iowa, 2004-2005.

Member, Undergraduate Programs Committee, Tippie College of Business, University of Iowa, 2002-2003.

Member, Computing Services Committee, Tippie College of Business, University of Iowa, 1998-2002.

Department Level

Director of Graduate Studies and Chair, Ph.D. Committee, Management Sciences Department, University of Iowa, 2003-2009.

Chair, Outcomes Assessment Committee, Management Sciences Department, University of Iowa, 2006-2008.

Member, Internal Promotions and Tenure Review Subcommittee, Management Sciences Department, University of Iowa, 2006.

Chair, Faculty Recruiting Committee, Management Sciences Department, University of Iowa, 2003-2004.

Member, Faculty Recruiting Committee, Management Sciences Department, University of Iowa, 1999-2000, 2002-2003.

Member, Ph.D. Committee, Management Sciences Department, University of Iowa, 1999-2003.

Member, Information Systems Curriculum Review Committee, Management Sciences Department, University of Iowa, 1998-99, 2002-2003.

Member, Graduate Admissions Committee, Management Sciences Department, University of Iowa, 1998-2002.

Organizer, Management Sciences Department Colloquium Series, 2000-2001.

Chair, Computing Facilities Committee, Computer Science Department, Oklahoma State University, 1997-98.

Member, Personnel Committee, Computer Science Department, Oklahoma State University, 1997-98.

Member, Ph.D. Qualifying Examination Committee, Computer Science Department, Oklahoma State University, 1996-98.

Member, Public Relations Committee, Computer Science Department, Oklahoma State University, 1996-97.

Member, Computing Facilities Committee, Computer Science Department, Oklahoma State University, 1996-97.

Faculty Advising

Advisor, Management Information Systems Association, Management Sciences Department, University of Iowa, 1999-2002.

Advisor, Stillwater Chapter of the Association for Computing Machinery, Stillwater, OK, 1997-98.

Courses taught

Graduate Courses, Management Sciences Department, University of Iowa

Knowledge Discovery, fall 2008, fall 2007, spring 2006, spring 2004.

Intelligent Systems, fall 2006.

Data Mining in Marketing (co-taught with Gary Russell), spring 2005, spring 2003, spring 2002 (new course).

Advanced Database Analysis, fall 2003 (new course).

Machine Learning, spring 2003 (new course).

Health Informatics I (contributed one lecture), fall 2006, fall 2005, fall 2004, fall 2003, fall 2002.

Health Informatics II (contributed one lecture), spring 2005, spring 2003.

Intelligent Systems for Decision Support, spring 2001, fall 1999 (co-taught with Filippo Menczer; redesigned course).

Adaptive Systems with Applications, spring 2000.

Object-Oriented Analysis and Design, spring 1999.

Software Engineering, fall 1998.

Graduate Courses, Computer Science Department, University of Iowa

Data Mining and Machine Learning, spring 2008 (redesigned course).

Graduate Courses, Computer Science Department, Oklahoma State University

Artificial Intelligence, fall 1998, spring 1997 (overload; redesigned course).

Data Structures and Algorithm Analysis, fall 1997, fall 1996.

MBA Courses, School of Management, University of Iowa

Data & Decisions, fall 2003.

Undergraduate Courses, Management Sciences Department, University of Iowa

Visual Basic Programming, spring 2009, fall 2008, spring 2008, fall 2007, spring 2007, fall 2006, spring 2006, fall 2005, spring 2005, fall 2004.

Computer Analysis, spring 2002, fall 2001, spring 2001, fall 2000, spring 2000, fall 1999 (redesigned course).

Data Mining Lab, spring 1999, fall 1998 (new course).

Systems Analysis and Design, spring 1999.

Undergraduate Courses, Computer Science Department, Oklahoma State University

Computer Science I, spring 1998 (redesigned course).

Computer Science III, fall 1997, spring 1997 (redesigned course).