

AYHAN DEMIRIZ

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Education

- **Rensselaer Polytechnic Institute**—Troy, NY
Ph.D. in Department of Decision Sciences & Engineering Systems,
 - Thesis Title: "Learning with Capacity Control: A Semi-supervised Approach"
 - Advisor: Prof. Kristin P. Bennett
 - GPA: 3.70/4.00, Graduated in June, 2000
- **Rensselaer Polytechnic Institute**—Troy, NY
M.Sc. in Industrial and Management Engineering, Department of Decision Sciences & Engineering Systems,
 - Concentration: Information Systems
 - GPA: 3.67/4.00, Graduated in May, 1996
- **Istanbul Technical University**—Istanbul, Turkey
B.Sc., Department of Industrial Engineering
 - GPA: 3.15/4.00, Graduated in June, 1993
 - Senior Thesis: "A Management Game for Production Companies"

Course Work During Graduate Study

- Knowledge Discovery & Data Mining, Statistical Computing, Applied Regression Analysis, Data Integration & Mediation, Database Systems, Data Structures, Information & Decision Systems
- Stochastic Processes, Advanced Probability
- Non-linear Programming, Numerical Optimization, Introduction to Mathematical Models of Operations Research I-II, Real Analysis
- Simulation Modeling & Analysis, Information Management in Manufacturing Systems, Inventory & Production Control Models, Manufacturing Systems Management, High Performance Organizational Behavior

Work Experience

- **Department of Industrial Engineering, Sakarya University**—Turkey
Associate Professor: November, 2008 – Present
 - Teaching Undergraduate and Graduate Courses
 - Supervising M.Sc. and Ph.D. students
- **Department of Industrial Engineering, Sakarya University**—Turkey
Assistant Professor: August, 2005 – November, 2008
 - Teaching Introduction to Data Mining,
 - Introduction to Artificial Intelligence and Expert Systems,
 - Algorithms and Programming,
 - Principles of Manufacturing Systems Engineering (Graduate Course).

- **Department of Industrial Engineering, Sakarya University—Turkey**
Principal Investigator: November, 2007 – November, 2010
 - Research Project "A Data-Mining Driven Markdown Management System Prototype for Turkish Apparel Industry"
 - Funded by Turkish Scientific & Technological Research Council (TUBITAK)
 - For the duration of 36 months with a budget of approximately 175K NTL (around \$145K)

- **Department of Computer Science, University College of London—United Kingdom**
Visiting Researcher: Summer, 2007
 - Funded by EU PASCAL Network of Excellence.

- **Department of Industrial Engineering, Işık University—Turkey**
Part-time Instructor: March, 2006 – January, 2007
 - Taught Operations Research I,
 - Operations Research III (Stochastic Models in OR),
 - Probability.

- **Department of Industrial Engineering, Sakarya University—Turkey**
Instructor: November, 2004 – August, 2005
 - Taught Introduction to Data Mining,

- **Verizon Inc. Information Technology Department—Irving, TX, USA**
Senior Software Engineer: January, 2001– September, 2004
 - Code development using C++ and SQL for the following projects
 - Customer Relationship Management (CRM)
 - Product Recommendation
 - Association Mining
 - Click Stream Analysis
 - Web Mining
 - Bundling Analysis

- **Department of Mathematical Sciences, Rensselaer Polytechnic Institute—Troy, NY**
Post-Doctoral Research: September, 2000 – December, 2000
 - Funded by NSF project "The Automated Design and Discovery of Novel Pharmaceuticals using Semi-Supervised Learning in Large Molecular Databases".

- **Rensselaer Polytechnic Institute—Troy, NY**
Graduate Research Assistantship: September, 1998 – June, 2000
 - Funded by Prof. Kristin P. Bennett.

- **GE Corporate R&D—Niskayuna, NY**
Graduate Research Assistantship: September, 1997 – September, 1998
 - Worked with Data Mining Group for various GE companies
 - Time Series Analysis
 - Soft Computing Applications
 - Data preparation for analysis / SAS programming
 - Statistical data analysis (regression, clustering etc.)

- Decision tree analysis (Knowledge Seeker)
- SAS macro programming for Web applications
- **Chase Manhattan Mortgage Corporation—Metro Park, NJ**
Summer Intern: Summer, 1997
 - SAS programming for data analysis
 - Creating database used for predicting prepayments

Publications

• Refereed Journal Papers

- Demiriz, A., Kula, U., and Akbilek, N.. *A Framework for Balanced Service and Cross-Selling by Using Queuing Science*. Journal of Intelligent Manufacturing Systems, Volume 20 Number 2: 249-257, April 2009. .
- Demiriz, A.. *Enhancing Product Recommender Systems on Sparse Binary Data*. Journal of Data Mining and Knowledge Discovery, Volume 9, Issue 2, September 2004, Pages 147 - 170
- Rätsch, G., Demiriz, A., Bennett, K.P.. *Sparse Regression Ensembles in Infinite and Finite Hypothesis Spaces*. Special Issue of Journal of Machine Learning on "New Methods for Model Selection and Model Combination", Y. Bengio and D. Schuurmans Eds. Volume 48:193-221, 2002. Kluwer Academic Publishers.
- Demiriz, A., Bennett, K.P., Shawe-Taylor, J.. *Linear Programming Boosting via Column Generation*. Special Issue of Journal of Machine Learning on "Support Vector Machines and Kernel Methods", N. Cristianini, C. Campbell and C. Burges Eds. Volume 46:225-254, 2002. Kluwer Academic Publishers.
- Demiriz, A., Bennett, K.P., Embrechts, M.J.. *A Genetic Algorithm Approach for Semi-supervised Clustering*. Journal of Smart Engineering System Design, 4:35-44, 2002. Taylor & Francis.

• Refereed Conference Papers

- Demiriz, A., Ekizoglu, B., Kula, U.. Clustering Products under Pairwise Positive and Negative Association Constraints in Retailing. To be published in Proceedings of ANNIE 2010 in St. Louis, Mo., Nov. 1-3, 2010.
- Demiriz, A., Ertek, G., Atan, T., Kula, U.. Re-Mining Positive and Negative Association Mining Results. In Proceedings of 10th Industrial Conference on Data Mining ICDM'2010 Berlin, Germany. July, 2010. Pp. 101-114.
- Demiriz, A., Cihan, A. Kula, U.. Analyzing Price Data to Determine Positive and Negative Product Associations. In Proceedings of 16th International Conference on Neural Information Processing Bangkok, Thailand. December, 2009. Pp. 846-855.
- Demiriz, A.. Solving Traveling Salesman Problem by Ranking. In Proceedings of The 18th Annual Belgian-Dutch Conference on Machine Learning (Benelearn 09), Tilburg, The Netherlands. May 2009.
- Demiriz, A.. *Ranking Data with Graph Laplacian*. In Proceedings of International Conference on Multivariate Statistical Modelling & High Dimensional Data Mining. Kayseri, TURKEY. 2008.
- Ertek, G., Demiriz, A.. *A Framework for Visualizing Association Mining Results*. In the Proceedings of International Symposium on Computer and Information Sciences (Springer LNCS Series Vol. 4263), Istanbul, 2006.

- Demiriz, A.. *ASIPATH: A Simple Path Mining Algorithm*. In Proceedings of the 16th IASTED International Conference on Parallel and Distributed Computing and Systems (PDCS 2004), pages 638-644 November 9-11, 2004 Cambridge, MA, USA.
- Demiriz, A. *webSPADE: A parallel sequence mining algorithm to analyze web log data*. In Proceedings of Second IEEE International Conference on Data Mining, pages 755-758. Maebashi City, Japan (2002).
- Bennett, K. P., Demiriz, A., Maclin, R.. *Exploiting Unlabeled Data in Ensemble Methods*. In Proceedings of the Eighth ACM SIGKDD International Conference on Knowledge Discovery and Data Mining, David Hand, Daniel Keim, and Raymond Ng, Editors, pp. 289-296, ACM Press, Edmonton, CANADA, July, 2002.
- Demiriz, A., Bennett, K. P., Breneman, C. M., Embrechts, M. J.. *Support Vector Machine Regression in Chemometrics*. In Computing Science and Statistics: Proceedings of Interface, volume 33, 2001.
- Bennett, K.P., Demiriz, A., Shawe-Taylor, J.. *A Column Generation Algorithm for Boosting*. In the Proceedings of Seventeenth International Conference on Machine Learning (ICML'2000), Pat Langley Editor, Morgan Kaufmann, San Francisco, 2000, pp. 65-72.
- Demiriz, A., Bennett, K.P., Embrechts, M.J.. *Semi-supervised Clustering using Genetic Algorithms*. In Smart Engineering System Design: Neural networks, fuzzy logic, evolutionary programming, data mining and complex systems: Proceedings of the Artificial Neural Networks in Engineering Conference (ANNIE '99), November, 1999, editors, C. H. Dagli [et al.]. New York, ASME Press, 1999.
- Bennett, K.P., Demiriz, A.. *Semi-supervised Support Vector Machines*. In Advances in Neural Information Processing Systems (NIPS), M. S. Kearns, S. A. Solla, and D. A. Cohn Eds. 11 Cambridge, 1999. MIT Press. Pages 368-374.

• Book Chapters

- Demiriz, A., Bennett, K. P., Bradley, P. S.. *Using Assignment Constraints To Avoid Empty Clusters in K-Means Clustering*. In "Constrained Clustering: Advances in Algorithms, Theory, and Applications" (Chapman & Hall/CRC Data Mining and Knowledge Discovery Series) by Sugato Basu, Ian Davidson, Kiri Wagstaff (Editors). 2008.
- Demiriz, A.. *On Analyzing Web Log Data: A Parallel Sequence Mining Algorithm*. In "New Generation of Data Mining Applications", Jozef Zurada and Mehmed Kantardzic. Pages 469-494. Wiley-IEEE Press (February, 2005).
- Demiriz, A., Bennett, K.P.. *Optimization Approaches to Semi-supervised Learning*. In Complementarity: Applications, Algorithms and Extensions. M. C. Ferris, O. L. Mangasarian and J.-S. Pang, editors. Pages 121-141. Kluwer Academic Publishers. Boston 2001.

• Work in Progress and Technical Reports

- Demiriz, A., Ertek, G., Atan, T., and Kula, U.. *Re-Mining Item Associations: Methodology and a Case Study in Apparel Retailing*. Under journal review. April, 2010.
- Demiriz, A. *Analyzing Service Order Data using Association Mining*. Technical Report. 2003.
- Bradley, P.S., Bennett, K.P., Demiriz, A.. *Constrained K-Means Clustering*. Microsoft Research Technical Report 2000-65, May 2000.

- **Presentations**

- Snowbird' 98, Spring'98, Snowbird, UT.
- Institute for Operations Research and the Management Sciences (INFORMS) Montreal. Spring'98, Montreal, CANADA.
- Institute for Operations Research and the Management Sciences (INFORMS) Seattle. Fall'98, Seattle, WA.
- Neural Information Processing Systems' 98 (NIPS' 98). Fall'98, Denver, CO.
- International Conference on Complementarity Problem'99 (ICCP'99). Summer'99, University of Wisconsin, Madison, WI
- AT&T Research Day. Fall'99, Florham Park, NJ.
- Snowbird' 99, Spring'99, Snowbird, UT.
- Artificial Neural Networks in Engineering' 99 (ANNIE' 99). University of Missouri - Rolla, St. Louis, MO.
- Institute for Operations Research and the Management Sciences (INFORMS) Philadelphia. Fall'99, Philadelphia, PA.
- Neural Information Processing Systems' 99 (NIPS' 99). Fall'99, Denver, CO.
- CRM/ MITACS/ IRIS Workshop on Selecting and Combining Models with Machine Learning Algorithms Montreal, Quebec, Canada. April, 2000.
- International Conference on Machine Learning' 2000. July 2000. Stanford, CA.
- Computing Science and Statistics: Interface'01. June, 2001. Orange County, CA.
- Institute for Operations Research and the Management Sciences (INFORMS) Miami Beach. Fall 2001. Miami, FL.
- Eighth ACM SIGKDD International Conference on Knowledge Discovery and Data Mining, Edmonton, CANADA, July, 2002.
- The 2002 IEEE International Conference on Data Mining, Maebashi City, Japan. December, 2002.
- The 16th IASTED International Conference on Parallel And Distributed Computing And Systems (PDCS 2004) November 9-11, 2004 Cambridge, MA
- The Fifth International Symposium on Intelligent Manufacturing Systems, Sakarya, Turkey. 2006.

Skills

- **Computer Languages:**

- Proficient in C++, C, SQL, COBOL
- Familiar with Java, C#

- **Tools and Systems:**

- Proficient in SAS, SQL Server 2005 (especially Analysis Services), MATLAB, Splus, AMPL (including CPLEX, MINOS), MOSEK, SPSS Clementine, Knowledge Studio, CART, C4.5
- Familiar with SIMAN, Arena, ProModel, Lindo.

Membership Affiliation

- ACM (Current)
- SIAM (Current)

- Alpha Pi Mu Industrial Engineering Honor Society
- INFORMS
- American Association for Artificial Intelligence (AAAI)
- SIAM Mathematical Programming Society

Honors and Awards

- Ranked third in Eastern Region in a nationwide chemistry exam given by Turkish Scientific & Technological Research Council. 1989.
- Anadolu Group (Isuzu) Scholarship. 1991-1993.
- Higher Education Council Scholarship for Graduate Study Abroad. 1995.

Professional Activities

- Program Committee Member of The Third IEEE International Conference on Data Mining
- Program Committee Member of The European Conference on Machine Learning and Principles and Practice of Knowledge Discovery in Databases, 2010
- **Reviewed papers for various well-known journals including**
 - Journal of Data Mining and Knowledge Discovery
 - Journal of Machine Learning Research
 - Journal of Machine Learning
 - Pattern Recognition Letters
 - ACM Transactions on Knowledge Discovery from Data
 - IEEE Transactions on Knowledge and Data Engineering
 - IEEE Transactions on Signal Processing
 - Neural Computing