Sergio A. Alvarez

Curriculum Vitae – September 2007

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Professional Experience

- Associate Professor, Department of Computer Science,
  Boston College, starting Sept. 2007
- Assistant Professor, Department of Computer Science,
  Boston College, 2001 – 2007
- Visiting Assistant Professor, Department of Computer Science,
  Wellesley College, 2000 – 2001
- Visiting Assistant Professor, Department of Computer Science,
  Worcester Polytechnic Institute, 1998 – 2000
- Assistant Professor, Department of Mathematics and Computer Science,
  Eastern Connecticut State University, 1997–1998 (resigned)
- Postdoctoral Research Associate and Visiting Faculty Member,
  Center for Nonlinear Analysis and Department of Mathematical Sciences,
  Carnegie Mellon University, 1996–1997 (declined offer for 1997–1998)
- Graduate Research Assistant, Department of Computer Science,
  University of Maryland at College Park, 1995–1996

Education

- Ph.D., University of Maryland, College Park, August 1996
  Analytical modeling of phase transitions; neural networks
- M.S. in Mathematics, Universidad de los Andes, March 1989
- B.S. in Electrical and Computer Engineering, Universidad Javeriana, December 1985

Research Interests

- Adaptive computation for data analysis/mining
- Knowledge discovery in medical data
- Analytical results on metrics for machine learning, data mining, and information retrieval

Professional Activities

Organizer of professional conferences and workshops

- Member, Program Committee, *Seventeenth International Conference on Applications of Declarative Programming & Knowledge Management (INAdP2007)*, Würzburg, Germany, Oct. 2007
- Member, Program Committee, *Seventh IEEE International Conference on Bioinformatics and Bioengineering (BIBE 2007)*, Boston, MA, USA, Oct. 2007
- Member, Program Committee, *Sixteenth International Conference on Applications of Declarative Programming and Knowledge Management (INAdP2005)*, Tokyo, Japan, Oct. 2005
- Co-Chair, Data Mining session, and Member, Program Committee, *Fifteenth International Conference on Applications of Declarative Programming and Knowledge Management (INAdP2004)*, Berlin, Germany, March 2004
- Co-Chair, *First International Workshop on Rule-Based Data Mining (RBDM2001)*, Tokyo, Japan, Oct. 2001
- Member, Program Committee, *Fourteenth International Conference on Applications of Prolog (INAP2001)*, Tokyo, Japan, Oct. 2001

Speaker at professional conferences and seminars

- *Eighteenth IEEE International Symposium on Computer-Based Medical Systems (IEEE CBMS 2005)*, Data Mining Track, Dublin, Ireland, June 2005
- *Ninth ACM SIGKDD Conference on Knowledge Discovery and Data Mining Workshop on Multimedia Data Mining (MDM/KDD2003)*, Washington, DC, August 2003
- *Sixth ACM SIGKDD Conference on Knowledge Discovery and Data Mining Workshop on Web Mining (WebKDD-2000)*, Boston, MA, August 2000
- *Seventeenth National Conference on Artificial Intelligence (AAAI-2000) Workshop on AI for Web Search*, Austin, TX, July 2000
- *Sixth International Symposium on Artificial Intelligence and Mathematics*, Ft. Lauderdale, FL, USA, January 2000
- *Workshop on Soft Computing*
  Marianska u Jachymova, Czech Republic, November 1999
- *Minisymposium on Phase Transitions in Materials Science, CAIMS-99*
  Université Laval, Québec City, Canada, June 1999
- *Special Session on Partial Differential Equations, AMS Eastern Section Meeting*
  University of Maryland at College Park, April 1997

Other professional invitations

- Visiting Scientist, Institute of Computer Science, Czech Academy of Sciences
  Prague, Czech Republic, Nov. 1999
- Visiting Scientist, University of Economics, Prague, Czech Republic, Nov. 1999
- *Advances in Partial Differential Equations, Calculus of Variations, and Applications in Materials Science (AMS SE Section Meeting)*, Georgia Institute of Technology, Oct. 1997
- Visiting Scientist, McMaster University, Ontario, Canada, Nov. 1996
- *AMS–SIAM Summer Seminar in Applied Mathematics:*
  Mathematics of Stochastic Manufacturing Systems
  College of William and Mary, Williamsburg, VA, June 1996
- *Institute for Advanced Study (Princeton) / Park City Mathematics Institute*
  Graduate Summer School on Nonlinear Wave Phenomena, Park City, Utah, July 1995
- *AMS–SIAM Summer Seminar in Applied Mathematics:*
  Dynamical Systems and Probabilistic Techniques for Nonlinear Waves
  Mathematical Sciences Research Institute (MSRI), Berkeley, July 1994

Participant in recent professional conferences

- *Eighteenth IEEE International Symposium on Computer-Based Medical Systems (IEEE CBMS 2005)*, Dublin, Ireland, June 2005
- *Tenth ACM SIGKDD Conference on Knowledge Discovery and Data Mining (KDD-2004)*
  Seattle, WA, USA, Aug. 2004
- *Ninth ACM SIGKDD Conference on Knowledge Discovery and Data Mining (KDD-2003)*
  Washington, DC, USA, Aug. 2003
- *Eighth ACM SIGKDD Conference on Knowledge Discovery and Data Mining (KDD-2002)*
  Edmonton, Alberta, Canada, Aug. 2002
- *Sixth ACM SIGKDD Conference on Knowledge Discovery and Data Mining (KDD-2000)*
  Boston, MA, USA, Aug. 2000
- *Seventeenth National Conference on Artificial Intelligence (AAAI-2000)*
  Austin, TX, Aug. 2000
- *Sixth International Symposium on Artificial Intelligence and Mathematics*
  Ft. Lauderdale, FL, USA, Jan. 2000

Selected presentations in university seminars and colloquia

- Babson College, February 2001
  Computer Science Colloquium
  "Data Mining in Business and Science"
- Wellesley College, March 2000
  Computer Science Colloquium
  "Computation in Adaptive Systems"

- Worcester Polytechnic Institute, November 1998
  Artificial Intelligence Seminar
  "Transformation-Based Theory of Combination Operators in Approximate Reasoning"
- Brown University, March 1997
  Lefschetz Center for Dynamical Systems Seminar
  "Interface Motion Driven by Curvature and Diffusion"
- University of Toronto, November 1996
  Analysis and Partial Differential Equations Seminar
  "Analytic Dependence on Initial Data for the Mullins-Sekerka Model"
- Carnegie Mellon University, September 1996
  Center for Nonlinear Analysis Seminar
  "A Function Analytic Framework for Two-Dimensional Interface Dynamics"

Membership in professional organizations

- Association for Computing Machinery (ACM)
- ACM Special Interest Group on Knowledge Discovery in Data and Data Mining (SIGKDD)

Grants, Honors, and Awards

- Provost's MQP Award for Computer Science (advisor, best Computer Science undergraduate thesis among 46 candidates), Worcester Polytechnic Institute, 2006
  This award is given to the thesis judged to be the best among CS undergraduate theses presented in a given academic year; it is very competitive, as there are generally several dozen theses being considered. I have won the Provost's MQP Award for Computer Science in 4 *out of the last* 8 *years (*$1999-2006$*).*
- Undergraduate Research Fellowship (Advisor), Boston College, Spring 2005
- Faculty Fellowship, Boston College, Fall 2003
- Provost's MQP Award for Computer Science (advisor, best Computer Science undergraduate thesis among 45 candidates), Worcester Polytechnic Institute, 2001
- "Computational Algorithms for Analysis of Genomic Data", $\$19,600$ (with J. Krushkal, C. Ruiz, E. Ryder, M. Stevens), Worcester Polytechnic Institute Research Development Council, Summer 2000
- Provost's MQP Award for Computer Science (advisor, best Computer Science undergraduate thesis among 34 candidates), Worcester Polytechnic Institute, 2000
- Provost's MQP Award for Computer Science (advisor, best Computer Science undergraduate thesis among 32 candidates), Worcester Polytechnic Institute, 1999
- Mathematics Department Fellowship (merit-based), U. of Maryland, College Park, 1989–1992
- Graduate School Fellowship (merit-based), U. of Maryland at College Park, 1989–1991
  This prestigious two–year Fellowship was awarded to the top $2\%-3\%$ *of students entering the Graduate School of Arts and Sciences*

Publications

In preparation[1]

- S. A. Alvarez. "Statistical Significance for Association Mining: Analytical Results and Computational Improvements"
- S. A. Alvarez. "Modularity and Universal Approximation"
- J. Hayward[g], S. A. Alvarez, C. Ruiz, J. Tseng, M. Sullivan, and G. Whalen. "Pancreatic Adenocarcinoma Survival Prediction using Machine Learning" (a preliminary version was accepted for presentation at the *Society of Surgical Oncology 60th Annual Cancer Symposium*, Washington DC, USA, March 2007)
- P. Mardziel[u], S. A. Alvarez, and C. Ruiz. "Faster Two–Dimensional Image Warping"

Book chapters

- S. A. Alvarez, C. Ruiz, and T. Kawato. "More Efficient Mining over Heterogeneous Data using Neural Expert Networks", in *Multimedia Data Mining and Knowledge Discovery* (V.A. Petrushin and L. Khan, eds.), Springer-Verlag, 2007; ISBN: 978-1-84628-436-6
- S. A. Alvarez, C. Ruiz, and V. Dignum. "Data Mining and Web Knowledge Management", in *Web Knowledge Management and Decision Support: Selected Papers from the Fourteenth International Conference on Applications of Prolog*, LNCS 2543, Springer-Verlag, 2003

Papers in refereed journals

a) Journal impact information is provided below whenever it is available, from:
ISI Journal Citation Reports: http://www.isiwebofknowledge.com (subscription required)
Citeseer Estimated Impact of Publication Venues in Computer Science: http://citeseer.ist.psu.edu/impact.html
b) Citation counts from Science Citation Index, Scopus, Citeseer, Google Scholar. Self-citations **not** *counted.*

1. S. A. Alvarez, C. Ruiz, T. Kawato[u], and W. Kogel[g]. "Neural Expert Networks for Combined Collaborative and Content–Based Recommendation", *Journal of Computational Methods in Sciences and Engineering*, Special Issue on Intelligent Systems, to appear
2. P. Laxminarayan[g], S. A. Alvarez, C. Ruiz, and M. Moonis. "Mining Statistically Significant Associations for Exploratory Analysis of Human Sleep Data", *IEEE Transactions on Information Technology in Biomedicine*, vol. 10, no. 3, July 2006, 440–450
   Citations: 1 *(no self-citations included)*;
   Journal impact: ISI rank 16/83 *(top* 19.3%*) in computer science / interdisciplinary applications;*
   ISI rank 4/18 *(top* 22.2%*) in medical informatics*
3. S. A. Alvarez. "A Theory of Frame Transformations for Belief Combination", *Annals of Mathematics and Artificial Intelligence*, vol. 40, no. 3/4, 187–213, March 2004

[1] superscripts denote student co-authors: u (undergraduate), g (graduate)

Journal impact: ISI rank 37/78 *(top* 47.4%*) in computer science / artificial intelligence;*
ISI rank 40/162 *(top* 24.7%*) in mathematics / applied;*
Citeseer rank: 392/1221 *(top* 32.1%*)*

4. W.-Y. Lin[g], S. A. Alvarez, and C. Ruiz. "Efficient Adaptive–Support Association Rule Mining for Recommender Systems", *Data Mining & Knowledge Discovery*, 6(1), 83-105, Jan. 2002
Citations: over 100 *(no self-citations included)*
Journal impact: Data Mining and Knowledge Discovery (DMKD) *is the top research journal in the field of knowledge discovery and data mining.*
ISI rank 6/78 *(top* 7.7%*) in computer science / information systems;*
Citeseer rank: 24/1221 *(top* 1.96%*)*

5. C. Shoemaker[u], M. Sao Pedro[u], M. Pungliya[g], C. Ruiz, S. A. Alvarez, M. Ward, E.F. Ryder, and J. Krushkal. "Computational Methods for Single Point and Multipoint Analysis of Genetic Variants Associated with Simulated Complex Disorder in a General Population", *Genetic Epidemiology*, vol. 21 (Suppl. 1): S738-S745, Nov. 2001
Journal impact: ISI rank 45/120 *(top* 37.5%*) in genetics and heredity*

6. T. Carter and S. A. Alvarez. "Quadratic Computation of Optimal Four-Impulse Rendezvous Near a Circular Orbit", *Journal of Guidance, Control, and Dynamics*, vol. 23, no. 1, Jan.–Feb. 2000, 109-117
Citations: 9 *(no self-citations included)*
Journal impact: ISI rank 5/25 *(top* 20%*) in engineering / aerospace*

7. S. A. Alvarez and C. Liu. "Motion of a Closed Curve by Minus the Surface Laplacian of Curvature", *Differential and Integral Equations*, vol. 13, no. 10-12, Oct-Dec 2000, 1583-1594
Citations: 4 *(no self-citations included)*

8. S. A. Alvarez, S. Levitan, and J.A. Reggia. "Metrics for Cortical Map Organization and Lateralization", *Bulletin of Mathematical Biology*, vol. 60 (1998), 27-47
Citations: 2 *(no self-citations included)*
Journal impact: ISI rank 15/52 *(top* 28.8%*) in mathematics / interdisciplinary applications;*
ISI rank 25/64 *(top* 39.1%*) in biology*

9. S. A. Alvarez. "Homothetic Invariance of the Space $L^0(\mu)$", *Journal of Mathematical Analysis and Applications*, Vol. 179, no. 1, Oct. 1993, 260-274
Journal impact: ISI rank 68/181 *(top* 37.6%*) in mathematics*

10. S. A. Alvarez. "L^p Arithmetic", *The Am. Math. Monthly*, 99(8), Aug.–Sept. 1992, 656-662
Citations: 1 *(no self-citations included)*
Journal impact: the Monthly is the top journal for mathematics papers that emphasize expository quality. Although papers often describe original research (as does my paper above), the Monthly is not a traditional research journal. ISI rank: 163/181 *(top* 90%*) in mathematics*

11. S. A. Alvarez. "Lattices Generated by Collections of L^p Spaces", *Revista Colombiana de Matemáticas*, vol. XXII, 1988

12. S. A. Alvarez, D. Noreña, and E. Ramos. "Automated Recognition of Handprinted Alphanumeric Characters", *Sistemas*, No. 23, Apr.–Jun. 1985

Refereed conference and workshop papers[2]

Acceptance rates are provided below whenever they are available

13. S. Floyd[g], S. A. Alvarez, C. Ruiz, J. Hayward[g], M. Sullivan, J. Tseng, and G. Whalen. "Improved Survival Prediction for Pancreatic Cancer using Machine Learning and Regression", *Society for the Surgery of the Alimentary Tract 48th Annual Meeting (SSAT 2007), in conjunction with Digestive Disease Week*, Washington DC, USA, May 19-23, 2007

14. J. Hayward[g], S. A. Alvarez, C. Ruiz, J. Tseng, M. Sullivan, and G. Whalen. "Survival of Pancreatic Cancer Patients Predicted using Machine Learning", *Society of Surgical Oncology 60th Annual Cancer Symposium*, Washington DC, USA, March 15-18, 2007

15. P. Laxminarayan[g], C. Ruiz, S. A. Alvarez, and M. Moonis. "Mining Associations over Human Sleep Time Series", *Proc. 18th IEEE International Symposium on Computer-Based Medical Systems (IEEE CBMS 2005)*, Dublin, Ireland, June 2005
Citations: 2 *(no self-citations included)*
Full paper acceptance rate: 36.4% (86/236). *This paper was one of the top* 6.36% (15/236) *of papers submitted to CBMS2005 that were invited for extension and submission to the* IEEE Transactions on Information Technology in Biomedicine (TITB)*; the extended TITB journal version was accepted after an additional full round of reviews*

16. S. A. Alvarez, T. Kawato[u], and C. Ruiz. "Mining over Loosely Coupled Data Sources using Neural Experts", *Fourth International Workshop on Multimedia Data Mining (MDM/KDD2003)*, in conjunction with the Ninth ACM SIGKDD International Conference on Knowledge Discovery and Data Mining (KDD2003), Washington, DC, Aug. 2003
Acceptance rate: 78.9% (15/19). *Citeseer impact ranking of KDD workshops: top* 12.77%

17. M. Streeter[u], M. Ward, and S. A. Alvarez. "N^{2}VIS – An Interactive Visualization Tool for Neural Networks", *Conference on Visual Data Exploration and Analysis VIII, Proc. SPIE Vol. 4302*, San Jose, CA, Jan. 2001
Citations: 9 *(no self-citations included)*

18. M. Sao Pedro[u], C. Shoemaker[u], M. Pungliya[g], C. Ruiz, S. A. Alvarez, M. Ward, M. Stevens, E.F. Ryder, and J. Krushkal. "Computational Population-Based Techniques in Identifying Genetic Variants Associated with Simulated Complex Disorder in a General Population", *GAW-12 (2000 Genetic Analysis Workshop)*, Southwest Foundation for Biomedical Research, San Antonio, TX, Oct 2000 (extended abstract)

19. C. Shoemaker[u], M. Sao Pedro[u], C. Ruiz, and S. A. Alvarez. "Prescription vs. Description: Two Data Mining Approaches to the Analysis of Genetic Data", *GAW-12 (2000 Genetic Analysis Workshop)*, Southwest Foundation for Biomedical Research, San Antonio, TX, Oct 2000 (extended abstract)

20. S. A. Alvarez. "Web Metasearch as Belief Aggregation", In *Artificial Intelligence for Web Search: Papers from the AAAI Workshop (K. Bollacker, Chair)*, Technical Report WS-00-01, AAAI Press, Menlo Park, CA, USA 2000; http://www.aaai.org/Library/Workshops/ws00-01.php

[2]superscripts denote student co-authors: u (undergraduate), g (graduate)

Citations: 3 *(no self-citations included)*
Acceptance rate: 33% *(approximate value, provided by workshop chair)*

21. W.-Y. Lin[g], S. A. Alvarez, and C. Ruiz. "Collaborative Recommendation via Adaptive Association Rule Mining", *Workshop on Web Mining (WebKDD-2000)*, in conjunction with the Sixth ACM SIGKDD International Conference on Knowledge Discovery and Data Mining (KDD2000), Boston, MA, Aug. 2000
Citations: 3 *(no self-citations included)*
Acceptance rate: 41.9% (13/31). *Citeseer impact ranking of KDD workshops: top* 12.77%
This paper was one of the top 12.9% (4/31) *of papers submitted to WebKDD-2000 that were invited for extension and submission to the* Data Mining and Knowledge Discovery (DMKD) *journal; the extended DMKD journal paper was accepted after an additional full round of reviews*

22. S. A. Alvarez. "Belief Combination by means of Frame Transformations", *Sixth International Symposium on Artificial Intelligence and Mathematics*, Ft. Lauderdale, FL, Jan. 2000
Acceptance rate: 50% *(approximate value, provided by conference chair)*
This paper was one of the top 9 *papers (approx.* $20\% - 25\%$ *of submitted papers) presented at the 2000 AI & Math Symposium that were invited for extension and submission to the* Annals of Mathematics and Artificial Intelligence (AMAI). *I extended the paper with significant new results; the extended AMAI journal version was accepted after an additional full round of reviews*

23. T. Carter and S. A. Alvarez. "Four-Impulse Rendezvous Near a Circular Orbit", *American Institute of Aeronautics and Astronautics (AIAA) Astrodynamics Meeting*, Boston, MA, Aug. 1998 (extended abstract)

24. S. A. Alvarez and C. Liu. "Motion of a Closed Curve by Minus the Surface Laplacian of Curvature", *American Mathematical Society (AMS) Southeastern Section Meeting*, Atlanta, GA, Oct. 1997 (extended abstract)

25. S. A. Alvarez and R.L. Pego. "A New Framework for Geometric Interface Evolution", *American Mathematical Society (AMS) Eastern Section Meeting*, College Park, MD, April 1997 (extended abstract)

Unrefereed conference and workshop papers

- S. A. Alvarez. "A Geometric Theory of Knowledge Aggregation" (invited paper), *Workshop on Soft Computing*, Marianska u Jachymova, Czech Republic, Nov. 1999

Theses

- S. A. Alvarez. "Interface motion driven by curvature and diffusion: analytic dependence on the initial data for the Mullins–Sekerka equation". Ph.D. Thesis (advisor: Robert L. Pego), Interdisciplinary Applied Mathematics Program, University of Maryland, College Park, 1996
Citations: 4 *(no self-citations included)*

Technical reports

- S. A. Alvarez. "Chi–Squared Computation for Association Rules: Preliminary Results", Technical Report BC-CS-03-01, Computer Science Department, Boston College, July 2003

- S. A. Alvarez. "An Exact Analytical Relation among Recall, Precision, and Classification Accuracy in Information Retrieval", Technical Report BC-CS-02-01, Computer Science Department, Boston College, July 2002
  Citations: 7 *(no self-citations included)*
- W.-Y. Lin[g], S. A. Alvarez, and C. Ruiz. "A New Adaptive–Support Algorithm for Asociation Rule Mining", Technical Report WPI-CS-TR-00-13, Department of Computer Science, Worcester Polytechnic Institute, May 2000
- M. Streeter[u], M. Ward, and S. A. Alvarez. "NNVIS – An Interactive Visualization Tool for Neural Networks", Technical Report WPI-CS-TR-00-11, Department of Computer Science, Worcester Polytechnic Institute, March 2000
- S. A. Alvarez. "Transformation-Based Combination for Approximate Reasoning", WPI-CS-TR-98-22, Department of Computer Science, Worcester Polytechnic Institute, Dec. 1998
- S. A. Alvarez. "Rational Comparison of Probabilities via a Blow-Up Conjugacy", Research Report 97-NA-010, Center for Nonlinear Analysis, Carnegie Mellon University, Aug. 1997
- S. A. Alvarez and C. Liu. "Motion of a Curve by Minus the Surface Laplacian of Curvature", Research Report 97-NA-009, Center for Nonlinear Analysis, Carnegie Mellon U., Aug. 1997
- S. A. Alvarez, S.L. Levitan, and J.A. Reggia. "Measuring Organization and Asymmetry in Bihemispheric Topographic Maps", Technical Report UMCP-CSD CS-TR-3668, Department of Computer Science, University of Maryland, College Park, September 1996
- S. A. Alvarez and J. H. Maddocks. "Time–Optimal Control of Wheeled Mobile Robots", Technical Report TR91–18, Dept. of Mathematics, U. of Maryland, College Park, May 1991

Graduate theses co–supervised

Please note that Boston College does not currently have a graduate program in Computer Science

1. Shivin Misra, M.S. Thesis, "Uncovering Structure in Human Sleep Data", Worcester Polytechnic Institute, starting Fall 2006
2. Stuart Floyd, M.S. Thesis, "Machine Learning Models in Cancer Treatment", Worcester Polytechnic Institute, 2006-2007
3. John Hayward, M.S. Thesis, "Mining Oncology Data: Knowledge Discovery in Clinical Performance of Cancer Patients", Worcester Polytechnic Institute, 2005-2006
4. Parameshvyas Laxminarayan, M.S. Thesis, "Exploratory Analysis of Human Sleep", Worcester Polytechnic Institute, 2002-2003
5. Wendy Kogel, M.S. Thesis, "Efficient Training of Neural Networks", Worcester Polytechnic Institute, 2001-2002
6. Weiyang Lin, M.S. Thesis, "Association Rule Mining for Collaborative Recommender Systems", Worcester Polytechnic Institute, 1999-2000

Other graduate projects supervised

- Jim Kilian, Ph.D. Independent Study Project, "Statistical Learning Theory and Support Vector Machines", Worcester Polytechnic Institute, 1999

Undergraduate theses supervised

1. Daniel Scali, Honors Thesis, Boston College, 2006
   "Computational Strategies for the Iterated Prisoner's Dilemma"

2. Robert Russo, Honors Thesis, Boston College, 2006
   "Bayesian and Neural Networks for Personalized Recommendation of Movies"

   I advised two of the three Computer Science Honors Theses written at Boston College during the 2005–2006 academic year

3. Piotr Mardziel, "Extensions to 2-D Dynamic Warping", Major Qualifying Project (undergraduate thesis), Worcester Polytechnic Institute (WPI), 2006 (co-advised with Carolina Ruiz), *Winner, Provost's MQP Award for Computer Science*, 2006
   Selected as the best thesis among 46 *Computer Science theses completed at WPI in 2005–2006*

   The Provost's MQP Award is a highly competitive honor given to the top MQP (undergraduate thesis) in Computer Science at Worcester Polytechnic Institute (WPI) in a given academic year. There are normally several dozen theses competing for this award. Four of my eight WPI thesis students/groups have won the Provost's MQP Award for Computer Science.

4. Michael Ahern, Honors Thesis, Boston College, 2005
   "Co-evolving Quidditch Players using Genetic Programming"

5. Michael S. McCowan and James I. Martineau, "Spam Filtering using Bayesian Networks", Major Qualifying Project (undergraduate thesis), WPI, 2005 (co-advised with Carolina Ruiz)

6. Takeshi Kawato, Major Qualifying Project (undergraduate thesis), "Multi–Expert Neural Networks for Recommendation", WPI, 2003 (co-advised with Carolina Ruiz)

7. Tara Halwes, Major Qualifying Project (undergraduate thesis), "Transform-Based Similarity Methods for Sequence Mining", WPI, 2001 (co-advised with Carolina Ruiz), *Winner, Provost's MQP Award for Computer Science*, 2001
   Selected as the best thesis among 45 *Computer Science theses completed at WPI in 2000–2001*

8. Matt Streeter, Major Qualifying Project (undergraduate thesis), "Visualization Techniques for Neural Network Learning", WPI, 2000 (co-advised with Matt Ward), *Winner, Provost's MQP Award for Computer Science*, 2000
   Selected as the best thesis among 34 *Computer Science theses completed at WPI in 1999–2000*

9. Matt Berube, Major Qualifying Project (undergraduate thesis), "AI and Data Mining", WPI, 1999 (co-advised with Carolina Ruiz), *Winner, Provost's MQP Award for Computer Science*, 1999
   Selected as the best thesis among 32 *Computer Science theses completed at WPI in 1998–1999*

10. Amy Kao, Dana Rock, Major Qualifying Project (undergraduate thesis), "Collaborative and Content-based Recommender Systems using Neural Networks", WPI, 1999 (co-advised with Carolina Ruiz)

11. Anna Novikov, Major Qualifying Project (undergraduate thesis), "Relevance Ranking Combination for Web Metasearch", WPI, 1998 (co-advised with Carolina Ruiz), *Nominated, Provost's MQP Award for Computer Science*, 1998

Teaching

Development of new courses at Boston College

- Graduate level Machine Learning course (under development, in conjunction with the Boston College Computer Science Department's proposal of a new Ph.D. program)
- Algorithms for Computational Scientists (first offered in Spring 2006)
- Machine Learning (undergraduate course, first offered in Spring 2004)
- Adaptive Computation and Data Mining (topics course taught in Spring 2002)

Courses taught at Boston College since 2001

1. CS327, Algorithms for Computational Scientists (new course)
2. CS345, Machine Learning (new course)
3. CS397, Senior Honors Thesis (three theses advised)
4. CS385, Theory of Computation
5. CS390, Adaptive Computation and Data Mining (advanced topics course)
6. CS127, Introduction to Scientific Computation
7. CS101, Computer Science I in Java
8. CS021, Computers for Management

Selected courses taught previously

- CS235, Languages and Automata (Wellesley College)
- CS231, Fundamental Algorithms (Wellesley College)
- CS111, Computer Programming and Problem Solving (Wellesley College)
- CS3133, Foundations of Computer Science (WPI)
- CS2223, Algorithms (WPI)
- CS2011, Introduction to Machine Organization and Assembly Language (WPI)
- CS2005, Data Structures (WPI)
- CS1005, Introduction to Programming in C++ (WPI)

Service

Referee for journal and conference articles

- *Knowledge Engineering Review*
- *Artificial Intelligence for Engineering Design, Analysis, and Manufacturing*
- *Latin American Theoretical Informatics Symposium (LATIN)*
- *IEEE International Conference on Bioinformatics and Bioengineering (BIBE)*
- *International Conference on Applications of Prolog*
- *IEEE Transactions on Systems, Man, and Cybernetics*
- *International Conference on Information and Knowledge Management (CIKM)*
- *Journal of Differential Equations*

Campus and departmental service

- Presentation for admitted students and their parents, Boston College, April 2006
- Member, Bioinformatics Faculty Search Committee, Boston College, Fall 2004 – Spring 2005
- Member, Carroll School of Management Education Policy Committee, Boston College, Spring 2004
- Actively involved in Computer Science Faculty Recruiting, Spring 2003 and Spring 2005
- Member, Bioinformatics Curriculum Committee, Boston College, starting 2003
- Faculty Advisor, Short Courses in Computer Science, Boston College, 2002–2003
- Organizer, Computer Science Colloquium, Wellesley College, 2000–2001
- Coordinator and Co–Founder, Information Filtering and Recommender Systems Research Seminar, Worcester Polytechnic Institute, 1999–2000

Student mentoring

- Procured an Undergraduate Research Fellowship for a Computer Science student, Boston College, Spring 2005
- Served as a Benjamin Elijah Mays Mentor, Boston College, 2005–2007

Service to the larger community

- Judge, Science Fair, Haynes Elementary School, Sudbury, MA, April 2006
- Volunteer, Jericho Road Ride (bicycle ride to benefit Lowell, MA non–profit organizations), Concord and Lowell, MA, yearly since 2004