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EDUCATION

Ph.D. Computer Science, University of California, Los Angeles, 1987

M.S. Computer Engineering, University of Connecticut, 1980

B.S. Computer Engineering, University of Connecticut, 1980

PROFESSIONAL EXPERIENCE

2005-Present: Rutgers Vice President of Research and Graduate and Professional Education

2005-Present Professor II, Computer Science, Rutgers University.

June 2006: Internet Search Advisory Board: Microsoft Corporation.

2003-2007: Expert Witness: Patent Infringement and Invalidity: Personalization and Data Mining: Bartlit Beck Herman Palenchar & Scott and Jones Day

2002-2005: National Science Foundation - Director, Information and Intelligent Systems Division of Computer and Information Science and Engineering

- Manage budget of approximately \$180,000,000 to support basic research in Information and Intelligent Systems.
- Supervise team of 15 Ph.D. level program officers and 12 professional administrative staff.
- Coordinate NSF relationships with US intelligence agencies.
- Coordinate research program with Library of Congress on Long Term Archiving and Preservation and with National Institute of Health on Computational Neuroscience.

2002-2005: National Library of Medicine, Board of Regents (ex-Officio)

2000-2001: CEO, AdaptiveInfo, Inc., a private company producing personalization software for the wireless and publishing industries.

1994-2000: Chair, Department of Information and Computer Science, University of California, Irvine

- Managed department with \$6-15M budget, 24-36 faculty, 25-35 full time staff during period of rapid growth with declining state support. Responsibilities include budgeting, hiring, building consensus and raising funds.
- Increased corporate support from \$600,000 to \$6,000,000 and government support from \$2M to \$6M.
- Increased undergraduate program from 600 to 1100 students, while increasing SAT scores 150 points.
- Created Master of Science in Information and Computer Science Degree.
- Increased graduate program from 75 to 175 students.
- Created CEO Advisory Board.

1987-2005: Faculty Member, University of California, Irvine
1987-1992: Assistant Professor of Information & Computer Science and Cognitive Science
1992-1996: Associate Professor of Information & Computer Science and Cognitive Science
1996-2005: Full Professor of Information & Computer Science and Cognitive Science. Currently on leave to NSF
2001-2002: Member, Scientific Advisory Board, Pharsight Inc., a publicly traded company based in Palo Alto, CA.
1998-1999: Member, Board of Directors, CombiChem, a publicly-traded company based in San Diego, CA involved in computational drug design, purchased by Dupont.
1984-1988: Aerospace Corporation, El Segundo, CA Member of the Technical Staff: Developed expert system for diagnosis of satellite anomalies.
1980-1984: Mitre Corporation, Bedford, MA
1980-1983: Member of the technical staff
1983-1984: Group Leader Artificial Intelligence Technology: Supervised team of 5 developers on expert systems for mission planning.

CITIZENSHIP: US

HONORS: Fellow of the American Association of Artificial Intelligence

PUBLICATIONS

Books

1. Pazzani, M. (1990). *Creating a memory of causal relationships: An integration of empirical and explanation-based learning methods*. Hillsdale, NJ: Lawrence Erlbaum Associates.

Edited Books

1. Fisher, D., Pazzani, M. & Langley, P. (1991). *Concept formation: Knowledge and experience in unsupervised learning*. San Mateo, CA: Morgan Kaufmann.

Book Chapters

1. Pazzani, M. (1988). Explanation-based learning for knowledge-based systems. In B. Gaines & J. Boose (Eds.), *Knowledge acquisition for knowledge-based systems*. (pp. 215-238). London: Academic Press.
2. Pazzani, M. (1989). Creating high-level knowledge structures from simple elements. In K. Morik (Ed.), *Knowledge representation and organization in machine learning*. Lecture notes in Artificial Intelligence, No 347. New York: Springer-Verlag.
3. Pazzani, M. & Flowers, M. (1990). Scientific discovery in the layperson. In J. Shragar & P. Langley (Eds.), *Computational models of scientific discovery and theory formation*. San Mateo, CA: Morgan Kaufmann.

4. Fisher, D. & Pazzani, M. (1991). Computational models of concept learning. In D. Fisher, M. Pazzani & P. Langley (Eds.), *Concept formation: Knowledge and experience in unsupervised learning*. San Mateo, CA: Morgan Kaufmann.
5. Fisher, D. & Pazzani, M. (1991). Theory-guided concept formation. In D. Fisher, M. Pazzani & P. Langley (Eds.), *Concept formation: Knowledge and experience in unsupervised learning*. San Mateo, CA: Morgan Kaufmann.
6. Fisher, D. & Pazzani, M. (1991). Concept formation in context. In D. Fisher, M. Pazzani & P. Langley (Eds.), *Concept formation: Knowledge and experience in unsupervised learning*. San Mateo, CA: Morgan Kaufmann.
7. Pazzani, M. (1989). Learning fault diagnosis heuristics from device descriptions. In Y. Kodratoff & R. Michalski (Eds.), *Machine Learning: An artificial intelligence approach* (Vol. III). San Mateo, CA: Morgan Kaufmann
8. Pazzani, M., Brunk, C. & Silverstein, G. (1992). A information-based approach to combining empirical and explanation-based learning. In S. Muggleton (Ed.), *Inductive Logic Programming* (pp 373-394), London: Academic Press.
9. Pazzani, M. (1994). Learning causal patterns: Making a transition from data-driven to theory-driven learning. In Ryszard Michalski & Georghe Tecuci (Eds.) *Machine Learning* (Vol. IV): A Multi-Strategy Approach. San Mateo, CA: Morgan Kaufmann. (Extended version of Journal paper 4.12).
10. Hirschberg, D., Pazzani, M. & Ali, K. (1995). Average case analysis of k -CNF and k -DNF learning algorithms. In S. Hanson, M. Kearns, T. Petsche and R. Rivest *Computational Learning Theory and Natural Learning Systems: Constraints Prospects*. Cambridge, MA: MIT Press.
11. Yamazaki, T., Pazzani, M. & Merz, C. (1996). Acquiring and updating hierarchical knowledge for machine translation based on a clustering technique. In Wermter, Riloff & Scheler (Eds.) *Connectionist, Statistical, and Symbolic Approaches to Learning for Natural Language Processing*.
12. Pazzani, M. (1997). Searching for dependencies in Bayesian classifiers. *Artificial Intelligence and Statistics IV, Lecture Notes in Statistics*, Springer-Verlag: New York.
13. W. R. Shankle, Subramani Mani, Michael J. Pazzani & Padhraic Smyth. (1997). *Detecting very early stages of dementia from normal aging with machine learning methods*. In Keravnou, E., Garbay, C., Baud, R. & Wyatt, editors, *Lecture Notes in Artificial Intelligence: Artificial Intelligence in Medicine, AIME97, volume 1211, pages 73-85, Springer*.

14. Subramani Mani, Malcolm B. Dick, Michael J. Pazzani, Evelyn L. Teng, Daniel Kempler, I. Maribell Taussig: (1999). Refinement of neuro-psychological tests for dementia screening in a cross cultural population using machine learning. *Lecture Notes in Artificial Intelligence: Artificial Intelligence in Medicine, AIMDM'99*, Vol. 1620, p326-335.
15. Daniel Billsus, and Michael J. Pazzani (2007). Adaptive News Access , In "The Adaptive Web: Methods and Strategies of Web Personalization" (Springer, LNCS #4321), February 1, 2007
16. Michael J. Pazzani and Daniel Billsus, (2007).Content-based Recommendation Systems. In "The Adaptive Web: Methods and Strategies of Web Personalization" (Springer, LNCS #4321), February 1, 2007

REFEREED JOURNAL ARTICLES

1. Cullingford, R. & Pazzani, M. (1984). Word-meaning selection in multiprocess language understanding programs. *IEEE Transactions on Pattern Analysis and Machine Intelligence*, 6,4, 493-509.
2. Pazzani, M. (1987). Explanation-based learning for knowledge-based systems. *International Journal of Man-Machine Studies*, 26, 413-433.
3. Pazzani, M. (1987). Failure-driven learning of fault diagnosis heuristics. *IEEE Transactions on Systems, Man and Cybernetics: Special issue on Causal and Strategic Aspects of Diagnostic Reasoning*, 17, 3, 380-394.
4. Pazzani, M. (1990). Learning in order to avoid search in logic programming. *Computers and Mathematics with Applications*, 2, 10, 101-110.
5. Pazzani M. & Dyer, M. (1990). Memory organization and explanation-based learning. *International Journal of Expert Systems*, 2, 3, 331-358.
6. Pazzani, M. (1991). A computational theory of learning causal relationships. *Cognitive Science*, 15, 401-424.
7. Pazzani, M. (1991). Learning to predict and explain: An integration of similarity-based, theory-driven and explanation-based learning. *Journal of the Learning Sciences*, 1, 2, 153-199.
8. Pazzani, M. (1991). The influence of prior knowledge on concept acquisition: Experimental and computational results. *Journal of Experimental Psychology: Learning, Memory & Cognition*, 17, 3, 416-432.
9. Pazzani, M. & Brunk, C. (1991). Detecting and correcting errors in rule-based expert

- systems: an integration of empirical and explanation-based learning. *Knowledge Acquisition*, 3, 157-173.
10. Pazzani, M. & Kibler, D. (1992). The role of prior knowledge in inductive learning. *Machine Learning*, 9, 54-97.
 11. Pazzani, M. & Sarrett, W. (1992). A framework for average case analysis of conjunctive learning algorithms. *Machine Learning*, 9, 349-372.
 12. Pazzani, M. (1993). Learning causal patterns: Making a transition from data-driven to theory-driven learning. *Machine Learning*, 11, 173-194.
 13. Murphy, P. & Pazzani, M. (1994). Exploring the decision forest: An empirical investigation of OCCAM's razor in decision tree induction. *Journal of Artificial Intelligence*, 1, 257-275.
 14. Ali K. & Pazzani M. (1995). HYDRA-MM: *Learning Multiple Descriptions to Improve Classification Accuracy*. International Journal on Artificial Intelligence Tools, 4.
 15. Ali K. & Pazzani M. (1996). *Error Reduction through Learning Multiple Descriptions* Machine Learning, 24:3.
 16. Merz, C. Pazzani, M & Danyluk, A. (1996). *Tuning Numeric Parameters to troubleshoot a telephone network*. IEEE Expert, Feb 1996, pg. 44-49.
 17. Shankle, W.R., Datta, P., Dillencourt, M. & Pazzani, M. (1996). Improving Dementia Screening Tests with Machine Learning Methods. *Alzheimer's Research*.
 18. Pazzani, M., See, D., Shroeder, E. & Tilles, J. (1997). Application of an Expert System in the Management of HIV-infected patients. *Journal of AIDS and Human Retrovirology*. 15:356-362.
 19. Pazzani M. & Billsus, D. (1997). Learning and Revising User Profiles: The identification of interesting web sites. *Machine Learning* 27, 313-331.
 20. Domingos, P. & Pazzani, M. (1997). Beyond Independence: Conditions for the Optimality of the Simple Bayesian Classifier. *Machine Learning*. 29, 103-130.
 21. Mani, S., Shankle, R., Dick, M & Pazzani, M. (1999). Two-Stage Machine Learning Model for Guideline Development. *Artificial Intelligence in Medicine*. 16, 51-80.
 22. Merz, C. & Pazzani, M. (1999). A Principal Components Approach to Combining Regression Estimates *Machine Learning*. 36, 9-32.
 23. Lathrop, R. & Pazzani, M. (1999). Combinatorial Optimization in Rapidly Mutating Drug-Resistant Viruses. *Journal of Combinatorial Optimization*. 3, 301-320.

24. Keogh, E., Chakrabarti, K., Pazzani, M. & Mehrotra, S (2000) Dimensionality Reduction for Fast Similarity Search in Large Time Series Databases. *Knowledge and Information Systems* 3(3): 263-286.
25. Pazzani, M. (1999). A Framework for Collaborative, Content-Based and Demographic Filtering. *Artificial Intelligence Review*. 13(5-6): 393-408

26. Pazzani, M. (2000). Learning with Globally Predictive Tests. *New Generation Computing* 18(1): 28-38
27. Pazzani, M. (2000). Knowledge discovery from data? *IEEE Intelligent Systems* 15(2): 10-13 (2000)
28. Billsus, D. & Pazzani, M. (2000). User Modeling for Adaptive News Access. *User Modeling and User-Adapted Interaction*. 10:2/3. 147-180
29. M. J. Pazzani, S. Mani, W. R. Shankle (2001). Acceptance of Rules Generated by Machine Learning among Medical Experts. *Methods of Information in Medicine*; 40: 380-385.
30. G. Webb, Michael J. Pazzani, Daniel Billsus, (2001). Machine learning for user modeling. *User Modeling and User-Adapted Interaction 11*: 19-20, 2001
31. Bay, S. D. & Pazzani, M. J. (2001). Detecting Group Differences: Mining Contrast Sets. *Data Mining and Knowledge Discovery*.
32. Daniel Billsus, Clifford A. Brunk, Craig Evans, Brian Gladish & Michael Pazzani (2002) Adaptive Interfaces for Ubiquitous Web Access, *CACM* p 34-38.
33. Pazzani, M. & Billsus, D. (2002). Adaptive Web Site Agents. *Journal of Agents and Multiagent systems*,5(2) 205-218
34. Keogh, E., Chakrabarti, K., Mehrotra S. & Pazzani, M (2002). Locally adaptive dimensionality reduction for indexing large time series databases. *ACM Transactions on Database Systems*, June 2002
35. Keogh, E. & Pazzani, M. (2002). Learning the Structure of Augmented Bayesian Classifiers. Vol. 11, No. 4 (2002) 587-601
36. Miyahara, K. & Pazzani, M. J. (2002). Improvement of Collaborative Filtering with the Simple Bayesian Classifier. *IPSJ Journal*, Vol.43, No.11, Information Processing Society of Japan, November, 2002

JOURNAL EDITORIALS

1. Pazzani, M. (1993). Reply to Review of "Creating a memory of causal relationships". *Machine Learning*, 11.
2. Pazzani, M. (1994). Guest Editorial "Computational models of human learning". *Machine Learning*, 12.
3. Pazzani, M. (1996). Review of "Inductive Logic Programming". *Machine Learning*, 23, 103-108.

4. Ian Soboroff, Charles K. Nicholas, Michael J. Pazzani: Workshop on Recommender Systems: Algorithms and Evaluation. *SIGIR Forum* 33(1): 36-43 (1999)

REFEREED CONFERENCE PAPERS

1. Pazzani, M. (1983). Interactive script instantiation. *Proceedings of the National Conference on Artificial Intelligence* (pp. 320-326). Washington DC: Morgan Kaufmann.
2. Pazzani, M. (1984). Conceptual analysis of garden-path sentences. *Proceedings of the Tenth International Conference on Computational Linguistics* (pp. 486-490). Stanford, CA.
3. Pazzani, M. (1985). Explanation and generalization-based memory. *Proceedings of the Seventh Annual Conference of the Cognitive Society Conference* (pp. 323-328). Irvine, CA: Lawrence Erlbaum.
4. Pazzani, M. & Brindle, A. (1986). Automated diagnosis of attitude control anomalies. *Proceedings of the Annual AAS Guidance and Control Conference*. Keystone, CO: American Astronautical Society.
5. Pazzani, M. (1986). Refining the knowledge base of a diagnostic expert system: An application of failure-driven learning. *Proceedings of the Fifth National Conference on Artificial Intelligence* (pp. 1029-1035). Philadelphia, PA: Morgan Kaufmann.
6. Pazzani, M., Dyer, M. & Flowers, M. (1986). The role of prior causal theories in generalization. *Proceedings of the Fifth National Conference on Artificial Intelligence* (pp. 545-550). Philadelphia, PA: Morgan Kaufmann.
7. Pazzani, M., Dyer, M. & Flowers, M. (1987). Using prior learning to facilitate the learning of new causal theories. *Proceedings of the Tenth International Joint Conference on Artificial Intelligence* (pp. 277-279). Milan, Italy: Morgan Kaufmann.
8. Pazzani, M. & Dyer, M. (1987). A comparison of concept identification in human learning and network learning with the generalized delta rule. *Proceedings of the Tenth International Joint Conference on Artificial Intelligence* (pp. 147-151). Milan, Italy: Morgan Kaufmann.
9. Pazzani, M. (1988). Integrated learning with incorrect and incomplete theories. *Proceedings of the Fifth International Conference on Machine Learning* (pp. 291-298). Ann Arbor, MI: Morgan Kaufmann.
10. Pazzani, M. (1988). Integrating empirical and explanation-based learning methods in OCCAM. *Proceedings of the Third European Working Session on Learning* (pp. 147-166). Glasgow, Scotland: Pitman.

11. Pazzani, M. (1989). Learning from historical precedent. *Artificial Intelligence Systems in Government Conference* (pp. 150-156). Washington, DC.
12. Pazzani, M. (1989). Explanation-based learning of diagnostic heuristics: A comparison of learning from success and failure. *Artificial Intelligence Systems in Government Conference* (pp. 164-169). Washington DC.
13. Pazzani, M. & Schulenburg, D. (1989). The influence of prior theories on the ease of concept acquisition. *Proceedings of the Eleventh Annual Conference of the Cognitive Science Society* (pp. 812-819). Ann Arbor, MI: Lawrence Erlbaum.
14. Pazzani, M. (1989). Detecting and correcting errors of omission after explanation-based learning. *Proceedings of the Eleventh International Joint Conference on Artificial Intelligence* (pp. 713-718). Detroit, MI: Morgan Kaufmann.
15. Pazzani, M. & Sarrett, W. (1989). Average case analysis of conjunctive learning algorithms. *Proceedings of the Seventh International Conference on Machine Learning* (pp. 339-347). Austin, TX: Morgan Kaufmann.
16. Pazzani, M. & Silverstein, G. (1990). Feature selection and hypothesis selection: Models of induction. *Proceedings of the Twelfth Annual Conference of the Cognitive Science Society* (pp. 221-228). Cambridge, MA: Lawrence Erlbaum.
17. Billman, D., Fisher, D., Gluck, M., Langley, P., Pazzani, M. (1990). Computational models of category learning. *Proceedings of the Twelfth Annual Conference of the Cognitive Science Society* (pp. 989-996). Cambridge, MA: Lawrence Erlbaum.
18. Hirschberg, D. & Pazzani, M. (1992). Average case analysis of k -CNF learning algorithms. *Proceedings of the Tenth International Conference on Machine Learning* (pp. 206-211). Aberdeen, Scotland: Morgan Kaufmann
19. Pazzani, M. & Brunk, C. (1993). Finding Accurate Frontiers: A Knowledge-Intensive Approach to Relational Learning. *The National Conference on Artificial Intelligence* (pp. 328-334). Washington, D.C: AAAI Press
20. Ali, K. & Pazzani, M. (1993). HYDRA: A noise-tolerant relational concept learning algorithm. *The International Joint Conference on Artificial Intelligence*, Chambéry, France.
21. Wogulis, J. & Pazzani, M. (1993). A methodology for evaluating theory revision systems: Results with AUDREY II. *The International Joint Conference on Artificial Intelligence*, Chambéry, France.
22. Murphy, P. & Pazzani, M. (1994). Revision of production system rule-bases. *Proceedings of the 11th International Conference of Machine Learning*, New Brunswick. Morgan Kaufmann, 199-200.

23. Pazzani, M., Merz, C., Murphy, P., Ali, K., Hume, T. & Brunk, C. (1994). Reducing Misclassification Costs. Proceedings of the 11th International Conference of Machine Learning, New Brunswick. Morgan Kaufmann, 217-225.
24. Ali K., Brunk C. & Pazzani M. (1994). On Learning Multiple Descriptions of a Concept. In Proceedings of the Sixth International Conference on Tools with Artificial Intelligence. New Orleans, LA: IEEE Press.
25. Merz, C. & Pazzani M. (1994). *Parameter Tuning for the MAX Expert System*, In *Proceedings of the Sixth International Conference on Tools with Artificial Intelligence*. New Orleans, LA: IEEE Press. pp. 632-639.
26. Yamazaki, T., Pazzani, M & Merz, C. (1995). Learning Hierarchies from Ambiguous Natural Language Data, Proceedings of the 12th International Conference of Machine Learning.
27. Brunk, C. & Pazzani, M. (1995). A Linguistically-Based Semantic Bias for Theory Revision Proceedings of the 12th International Conference of Machine Learning.
28. Hume, T. & Pazzani, M. (1995). Learning Sets of Related Concepts: A Shared Task Model. *Proceedings of the Sixteen Annual Conference of the Cognitive Science Society*. Pittsburgh, PA: Lawrence Erlbaum.
29. Pazzani, M. (1995). An iterative-improvement approach for the discretization of numeric attributes in Bayesian classifiers. *Proceedings of the First International Conference on Knowledge Discovery and Data Mining*. Montreal: AAAI Press
30. Pazzani, M., Nguyen, L. & Mantik, S. (1995). *Learning from hotlists and coldlists: Towards a WWW information filtering and seeking agent*. In *Proceedings of the Seventh International Conference on Tools with Artificial Intelligence*
31. Domingos, P. & Pazzani, M. (1996). Beyond Independence: Conditions for the Optimality of the Simple Bayesian Classifier. *Proceedings of the International Conference on Machine Learning*.
32. Pazzani, M., Muramatsu J. & Billsus, D. (1996). Syskill & Webert: Identifying interesting web sites. *Proceedings of the National Conference on Artificial Intelligence*, Portland, OR.
33. Billsus, D. & Pazzani, M (1996). Revising user profiles: The search for interesting Web sites. International Multi-Strategy Learning Conference. Harpers Ferry, Va.
34. Pazzani, M. (1996). Constructive Induction of Cartesian Product Attributes. Information, Statistics and Induction in Science. Melbourne, Australia.

35. Starr, B., Ackerman, M. & Pazzani, M. (1996). *Do-I-Care: A Collaborative Web Agent*. Proceedings of the ACM Conference on Human Factors in Computing Systems (CHI'96), April, 1996, pp 273-274.
36. Merz, C. & Pazzani, M. (1996). Combining neural network regression estimates with regularized linear weights. Advances in Neural Information Processing Systems 9, Proceedings of the 1996 Conference. MIT Press, 564-570.
37. Pazzani, M., Mani, S. & Shankle, W. R. (1997). Beyond concise and colorful: learning intelligible rules. Proceedings of the Third International Conference on Knowledge Discovery and Data Mining, Newport Beach, CA. AAAI Press, 235-238.
38. Pazzani, M., Mani, S. & Shankle, W. R. (1997). Comprehensive knowledge-discovery in databases. In M. G. Shafto & P. Langley (Ed.), Proceedings of the Nineteenth Annual Conference of the Cognitive Science Society, pp. 596-601. Mahwah, NJ:Lawrence Erlbaum.
39. Pazzani, M., Iyer, R., See, D., Shroeder, E. & Tilles, J. (1997). CTSHIV: A Knowledge-based System in the Management of HIV-infected patients. *Proceedings of the International Conference on Intelligent Information Systems*.
40. Shankle, W.R., Mani, S., Pazzani, M. J. & Smyth, P. (1997). Use of a Computerized Patient Record Database of Normal Aging and Very Mildly Demented Subjects to Compare Classification Accuracies Obtained with Machine Learning Methods and Logistic Regression. *Computing Science and Statistics, 29*: 201-209.
41. Billsus, D. & Pazzani, M. (1998). Learning Collaborative Information Filters. *Proceedings of the International Conference on Machine Learning*. Morgan Kaufmann Publishers. Madison, Wisc.
42. Webb, G. & Pazzani, M. (1998). Adjusted Probability Naive Bayesian Induction. *11th Australian Joint Conference on Artificial Intelligence*. Brisbane, QLD. Australia.
43. Pazzani, M. (1998). Learning with Globally Predictive Tests. *The First International Conference on Discovery Science* Fukuoka, Japan.
44. Mani, S. & Pazzani, M. (1998). *Guideline Generation from Data by Induction of Decision Tables Using a Bayesian Network Framework* JAMIA supplement p. 518-522.
45. Shankle, R., Mani, S., Dick, M & Pazzani, M. (1998). *Simple Models for Estimating Dementia Severity Using Machine Learning* MedInfo'98: 9th World Congress on Medical Informatics, Seoul, Korea, 1998.

46. Lathrop, R., Steffen, N., Raphael, M., Deeds-Rubin, S., Pazzani, M., Cimoch, P., See, D., Tilles, J. (1998). *Knowledge-based Avoidance of Drug-Resistant HIV Mutants* Proceedings of the 10th Conference on Innovative Applications of Artificial Intelligence, Madison, Wisc.
47. Keogh, E. & Pazzani, M. (1998). An enhanced representation of time series which allows fast and accurate classification, clustering and relevance feedback. *Proceedings of the Fourth International Conference of Knowledge Discovery and Data Mining*. pp 239-241, AAAI Press.
48. Cimoch, P.J., See, D.M., Pazzani, M.J., Reiter, W.M., Lathrop, R.H., Fasone, W.A, Tilles, J.G.; (1998). *Application of a genotypic driven rule-based expert artificial intelligence computer system in treatment experienced HIV-infected patients. Immunologic and virologic response.* Proc. of the 12th World AIDS Conf., Geneva, Switzerland, extended abstract #32297
49. Keogh, E. & Pazzani, M. (1999). Learning augmented Bayesian classifiers: A comparison of distribution-based and classification-based approaches. *Uncertainty 99 AI and Statistics*, Ft. Lauderdale, Florida, 225-230.
50. Billsus, D. & Pazzani, M. (1999). A Hybrid User Model for News Story Classification, *Proceedings of the Seventh International Conference on User Modeling (UM '99)*, Banff, Canada.
51. Billsus, D. & Pazzani, M. (1999). A Personal News Agent that Talks, Learns and Explains, *Proceedings of the Third International Conference on Autonomous Agents (Agents '99)*, Seattle, Washington.
52. Bay, S. D. & Pazzani, M. J. (1999). Detecting Change in Categorical Data: Mining Contrast Sets. In *Proceedings of the Fifth International Conference on Knowledge Discovery and Data Mining*.
53. Pazzani, M. J. & Bay, S. D. (1999). The Independent Sign Bias: Gaining Insight from Multiple Linear Regression. In *Proceedings of the Twenty-First Annual Meeting of the Cognitive Science Society*.
54. Pazzani, M. & Billsus, D. (1999). Adaptive Web Site Agents. *Proceedings of the Third International Conference on Autonomous Agents (Agents '99)*, Seattle, Washington.
55. Keogh, E. & Pazzani, M. (1999). Relevance Feedback Retrieval of Time Series Data *The Twenty-Second Annual International ACM-SIGIR Conference on Research and Development in Information Retrieval*.

56. Eamonn J. Keogh, Michael J. Pazzani: (1999). Scaling up Dynamic Time Warping to Massive Datasets. Principles and Practice of Knowledge Discovery in Databases, Prague, Czech Republic.
57. Eamonn J. Keogh, Michael J. Pazzani: (1999). An indexing scheme for similarity search in large time series databases. *The 11th International Conference on Scientific and Statistical Database Management*. Cleveland, Ohio.
58. S. Mani, M.B. Dick, M.J. Pazzani, E.L. Teng, D. Kempler, I.M. Taussig (1999). *Refinement of Neuro-Psychological Tests for Dementia Screening in a Cross Cultural Population Using Machine Learning*. Joint European Conference on Artificial Intelligence in Medicine and Medical Decision Making Aalborg, Denmark.
59. Bay, S. D. & Pazzani, M. J. (2000). Discovering and Describing Category Differences: What makes a discovered difference insightful?. In *Proceedings of the Twenty Second Annual Meeting of the Cognitive Science Society*..
60. Bay, S. D. & Pazzani, M. J. (2000). Characterizing Model Errors and Differences. In *Proceedings of the Seventeenth International Conference on Machine Learning*..
61. Keogh, E. & Pazzani, M. (2000) Scaling up Dynamic Time Warping for Data Mining Applications. In *6th ACM SIGKDD International Conference on Knowledge Discovery and Data Mining*, Boston, 2000.
62. Keogh, E. & Pazzani, M. (2000) A simple dimensionality reduction technique for fast similarity search in large time series databases. In *the Fourth Pacific- Asia Conference on Knowledge Discovery and Data Mining*. Kyoto, Japan..
63. Michael J. Pazzani: (2000) Representation of electronic mail filtering profiles: a user study. *Intelligent User Interfaces 2000*: 202-206
64. Daniel Billsus, Michael J. Pazzani, James Chen: (2000) A learning agent for wireless news access. *Intelligent User Interfaces 2000*: 33-36
65. Koji Miyahara, Michael J. Pazzani: (2000) Collaborative Filtering with the Simple Bayesian Classifier. *PRICAI 2000*: 679-689
66. Keogh, E., Chu, S., Hart, D. & Pazzani, M. (2001). An Online Algorithm for Segmenting Time Series. *IEEE International Conference on Data Mining*.
67. Keogh, E., Chu, S. & Pazzani, M. (2001). Ensemble-Index: A New Approach to Indexing Large Databases. In *7th ACM SIGKDD International Conference on Knowledge Discovery and Data Mining*, San Francisco.

68. Keogh, E., Chakrabarti, K., Pazzani, M. & Mehrotra (2001). Locally adaptive dimensionality reduction for indexing large time series databases. *SIGMOD 2001. Best paper award.*
69. Keogh, E. & Pazzani, M. (2001). Derivative Dynamic Time Warping. *In First SIAM International Conference on Data Mining (SDM'2001)*, Chicago, USA.
70. George Buchanan, Sarah Farrant, Matt Jones, Harold W. Thimbleby, Gary Marsden, Michael J. Pazzani: (2001) *Improving mobile internet usability*. WWW 10: 673-680.
71. Chu, S., Keogh, E., Hart, D. & Pazzani, M. (2002). *Iterative Deepening Dynamic Time Warping for Time Series*. The Second Siam International Conference on Data Mining.
72. Pazzani, M. (2002). *Commercial Applications of Machine Learning for personalized wireless portals*. Pacific Rim Conference on Artificial Intelligence, Springer. Pp 1-5.
73. Billus, D., Klefstad, R & Pazzani, M.(2005). *Adaptive Personalization of Mobile Content Delivery*. Human Computer Interaction, Las Vegas.
74. Pazzani, M. & Brunk, C. (2005). *An Improved Representation for Content-Based Television Personalization*. Human Computer Interaction, Las Vegas.
75. Hettich, S & Pazzani M (2006). *Mining for Proposal Reviewers: Lessons Learned at the National Science Foundation*. The Twelfth Annual SIGKDD International Conference on Knowledge Discovery and Data Mining. Philadelphia.

REFEREED WORKSHOPS

1. Pazzani, M. (1987). Inducing causal and social theories: a prerequisite for explanation-based learning. *Proceedings of the Fourth International Workshop on Machine Learning* (pp. 230-241). Irvine, CA: Morgan Kaufmann.
2. Pazzani, M. (1987). Creating high-level knowledge structures from primitive elements. *Knowledge Representation and Knowledge Organization in Machine Learning Workshop*. Geseke, Germany.
3. Pazzani, M. (1988). Selecting the best explanation for explanation-based learning. *AAAI Symposium on Explanation-Based Learning* (pp. 156-170). Stanford University.
4. Pazzani, M. (1988). Learning during plan recognition. *AAAI Workshop on Plan Recognition*. (pp. 1-5). St. Paul, MN.
5. Pazzani, M. (1989). Indexing strategies for goal specific retrieval of cases. *Proceedings of the Case-Based Reasoning Workshop* (pp. 31-35). Pensacola Beach, FL: Morgan Kaufmann.

6. Pazzani, M. (1989). Explanation-based learning with weak domain theories. *Proceedings of the Sixth International Workshop on Machine Learning* (pp. 72-74). Ithaca, NY: Morgan Kaufmann.
7. Sarrett, W. & Pazzani, M. (1989). One-sided algorithms for integrating empirical and explanation-based learning. *Proceedings of the Sixth International Workshop on Machine Learning* (pp. 26-28). Ithaca, NY: Morgan Kaufmann.
8. Schulenburg, D. & Pazzani, M. (1989). Explanation-based learning of indirect speech act interpretation rules. *Proceedings of the First International Lexical Acquisition Workshop*. Detroit, MI.
9. Pazzani, M. J. & Brunk, C. A. (1990). Detecting and correcting errors in rule-based expert systems: an integration of empirical and explanation-based learning. *Knowledge Acquisition for Knowledge-Based Systems Workshop*.
10. Pazzani, M., Brunk, C. & Silverstein, G. (1991). A knowledge-intensive approach to learning relational concepts. *Proceedings of the Eighth International Workshop on Machine Learning* (pp. 432-436). Evanston, IL: Morgan Kaufmann.
11. Silverstein, G. & Pazzani, M. (1991). Relational clichés: Constraining constructive induction during relational learning. *Proceedings of the Eighth International Workshop on Machine Learning* (pp. 203-207). Evanston, IL: Morgan Kaufmann.
12. Cain, T., Pazzani, M. & Silverstein, G. (1991). Using domain knowledge to influence similarity judgments. *Proceedings of the Case-Based Reasoning Workshop*. Washington, DC: Morgan Kaufmann.
13. Brunk, C. & Pazzani, M. (1991). An investigation of noise tolerant relational learning algorithms. *Proceedings of the Eighth International Workshop on Machine Learning* (pp. 389-391). Evanston, IL: Morgan Kaufmann.
14. Murphy, P. & Pazzani, M. (1991). ID2-of-3: Constructive induction of *m-of-n* discriminators for decision trees. *Proceedings of the Eighth International Workshop on Machine Learning* (pp. 183-187). Evanston, IL: Morgan Kaufmann.
15. Hirschberg, D., Pazzani, M. & Ali, K. (1991). Average case analysis of *k*-CNF and *k*-DNF learning algorithms. *Second International Workshop on Computational Learning Theory and Natural Learning Systems: Constraints and Prospects*. Berkeley, CA.
16. Pazzani, M. (1992). When Prior Knowledge Hinders Learning. *AAAI Workshop on Constraining learning with Prior Knowledge*. San Jose, CA.
17. Murphy, P & Pazzani, M. (1993). Exploring the decision forest. *Computational Learning and Natural Learning*, Provincetown, MA.

18. Pazzani, M., Murphy, P., Ali, K. & Schulenburg, D. (1994). Trading off coverage for accuracy in forecasts: Applications to clinical data analysis. *AAAI Symposium on AI in Medicine* (pp. 106-110). Stanford, CA.
19. Ali K., Brunk C. & Pazzani M. (1995). Learning Multiple Relational Rule-based Models. In *Preliminary Papers of the 5th International Workshop on Artificial Intelligence and Statistics*. Fort Lauderdale, FL.
20. Pazzani, M. (1995). Searching for dependencies in Bayesian classifiers. In *Preliminary Papers of the 5th International Workshop on Artificial Intelligence and Statistics*. Fort Lauderdale, FL.
21. Pazzani, M., Muramatsu J. & Billsus, D. (1996). Syskill & Webert: Identifying interesting web sites. *AAAI Spring Symposium*. Stanford, CA.
22. Starr, B. Ackerman, M. & Pazzani, M. (1996). Do I Care? -- Tell Me What's Changed on the Web. *AAAI Spring Symposium*. Stanford, CA.
23. R. Shankle, P. Datta & Pazzani, M. (1996). Applying machine learning to an Alzheimer's database, *AAAI-96 Spring Symposium AI in Medicine: Applications of Current Technologies*. Stanford, CA.
24. Merz, C. & Pazzani, M. (1997). Handling redundancy in ensembles of learned models using principal components. *AAAI Workshop on Integrating Multiple Models*.
25. Merz, C. & Pazzani M. (1997). Combining neural network regression estimates using principal components. *Preliminary Papers of the 6th International Workshop on Artificial Intelligence and Statistics*.
26. Mani, M., McDermott, S. & Pazzani, M. (1997). Generating models of mental retardation from data with machine learning *Proceedings IEEE Knowledge and Data Engineering Exchange Workshop (KDEX-97)*, p. 114-119, IEEE Computer Society.
27. Keogh, E. & Pazzani, M. (1998). An enhanced representation of time series which allows fast and accurate classification, clustering and relevance feedback. *AAAI Workshop on Predicting the Future: AI Approaches to Time-Series Analysis*. Madison, Wisc.
28. Pazzani, M. & Billsus, D. (1999). Evaluating Adaptive Web site Agents. *Workshop on Recommender Systems Algorithms and Evaluation, 22nd International Conference on Research and Development in Information Retrieval*.
29. Bay, S. D. & Pazzani, M. J. (2000). Characterizing Model Performance in the Feature Space. In *ICML 2000 Workshop on What Works Well Where*.

30. Keogh, E., S. Chu & Pazzani, M. (2001). Using ensembles of representations for indexing large databases. *International Workshop on Mining Spatial and Temporal data*. In conjunction with the Fifth Pacific-Asia Conference on Knowledge Discovery and Data Mining (PAKDD-01).
31. Pazzani, M. (2005). Beyond Idiot Savants: Recommendations and Common Sense Workshop on Beyond personalization: the next stage of recommender systems research. Intelligent User Interfaces Conference, San Diego, CA

OTHER PUBLICATIONS

1. Ackerman, M., Billsus, D., Gaffney, S., Hettich, S., Khoo, G., Kim, D., Klefstad, R., Lowe, C., Ludeman, A., Muramatsu, J., Omori, K., Pazzani, M., Semler, D., Starr, B. & Yap, P. (1997). Learning Probabilistic User Profiles: Applications to Finding Interesting Web Sites, Notifying Users of Relevant Changes to Web Pages, and Locating Grant Opportunities. *AI Magazine* 18(2) 47-56.
2. Lathrop, R.H., Steffen, N.R., Raphael, M., Deeds-Rubin, S., Pazzani, M.J., Cimoch, P.J., See, D.M., Tilles, J.G.; (1999) *Knowledge-based Avoidance of Drug-Resistant HIV Mutants*. *AI Magazine*, volume 20, number 1, Spring 1999, pages 13-25.
3. Michael J. Pazzani: (2003) Adaptive Interfaces for Ubiquitous Web Access. *User Modeling 2003*
4. Kamal Abdali, Gregory Andrews, Mari Maeda, Michael Pazzani (2004). NSF/CISE Plans for FY2005. *Computing Research News*, Vol. 16/No. 2
5. Michael Pazzani, Kamal Abdali, Greg Andrews & Sangtae Kim (2004) CISE Update: Adjusting to the Increase in Proposals. *Computing Research News*, Vol. 16/No. 5
6. Rita Koch & Michael Pazzani. An Analysis of CISE Funding in FY 2005, *Computing Research News*, Vol. 17/No. 1

PROFESSIONAL ACTIVITIES

Reviewer for Grant Agencies

National Science Foundation, Air Force Office of Scientific Research, Defense Advanced Research Project Agency, Central Intelligence Agency, Office of Naval Research, UC MICRO

Reviewer for Journals

Artificial Intelligence, Machine Learning Journal, Journal of Artificial Intelligence Research, IEEE Expert, IEEE Systems Man and Cybernetics, IEEE Pattern Analysis and Machine Intelligence, IEEE Transactions of Knowledge and Data Engineering, Cognitive Science, Cognition, Journal of Experimental Psychology: Learning Memory & Cognition.

Editorial Board

Machine Learning Journal (1993-2000, 2001-Present)

Journal of Artificial Intelligence Research (1994-1998)

Reviewer for Conferences

International Joint Conference on Artificial Intelligence, National Conference on Artificial Intelligence, Machine Learning Conference, Intelligent User Interfaces, User Modeling, European Conference on Artificial Intelligence, Knowledge Discovery in Databases, Autonomous Agents, ACM Special Interest Group on Information Retrieval

Chair: Machine Learning Workshop on Combining Empirical and Explanation-Based Learning. June 26-27, 1989. Cornell University.

Co-Chair: Symposium on Computational Approaches to Concept Formation. Jan. 6-7, 1990. Stanford University.

Co-Chair: Machine Learning Workshop on Learning Relations. June 27-30, 1991. Northwestern University.

Editor of Special Issue of Machine Learning Journal on “Computational models of human learning”. 1994

Co-Chair: SIGIR Workshop on Recommender Systems. Berkeley, CA, August 1999

PH.D. ADVISEES

James Wogulis, 1991

David Schulenburg, 1991

Kamal Ali, 1995

Clifford Brunk, 1996

Christopher Merz, 1996

Daniel Billsus, 1999

Eamonn Keogh, 2000

Stephen Bay, 2001

Seth Hettich, advanced 2004

POSTDOCTORAL SCHOLARS SUPERVISED

Giovanni Semarro, 1993-1994

Donato Malerba, 1994-1995

Guiliano Armano, 1995-1996

Subramani Mani, 1995-1998

Takefumi Yamazaki, 1997-1998

Robin Burke, 1998-99

EXTRAMURAL FUNDING

University

Induction of Causal Theories. University of California, Irvine Committee on Research Grant. January 1 - June 30, 1989. \$5,000.

Learning Constraints on Indirect Speech Act Interpretation Rules. University of California, Irvine Faculty Research Fellowship. July 1, 1989 - June 30, 1990. \$10,000.

Knowledge Discovery in Problem Reports, TouchStone/UC Micro, 1997-1998. \$21,905.

Adaptive Navigation in Information Space, Daimler Chrysler/UC, 1998-1999. \$31,069.

Adaptive Navigation in Information Space, Daimler Chrysler/UC, 1999-2000. \$26,000.

Organization and Navigation of Digital Documents, UC DIMI/FileNET, 1999-2000.
\$119,176 (\$10,775 in kind)

Federal

Research Initiation: Induction of Causal Theories. National Science Foundation. July 15, 1989 - December 31, 1991. \$69,981.

A Combined Analytic and Inductive Approach to Learning in Knowledge-Based Systems. AFOSR and ARPA, 9/30/92- 9/29/95. \$378,468.

Issues in Scaling up Machine Learning. AFOSR, 9/93 - 8/96. \$129,863

Long and Medium-Term Research: Information-based Approaches to Learning Relational Concepts. National Science Foundation, 9/92 - 11/93. \$9550.

Learning Probabilistic Relational Concepts. National Science Foundation, 1994-1997. \$185,000.

Approximate Methods for Inference and Learning in Belief Networks. 1996 - 1997. AFOSR. \$138,454.

A Distributed Biomedical Computing Laboratory, National Science Foundation, 1997-1998. \$149,917 (PI: Lubimor Bic).

Graduate Fellowships in Biomedical Computing, Department of Education, 1997-2000. \$731,790 (PI: Lubimor Bic)

From Computer Data to Human Knowledge: A Cognitive Approach to Knowledge Discovery and Data Mining, National Science Foundation, 1998-2001. \$240,000.

Graduate Assistance in Areas of National Need - UCI - ICS, Department of Education, 1998-2001. \$734,365.

An Online Repository of Large Data Sets for Data Mining Research and

Experimentation, National Science Foundation, 1998-2000. \$99,737. (PI: Padhraic Smyth)

Transfer Learning, DARPA, \$550,000. 2005-2007

“Partnerships for Innovation” program to explore the use of agricultural materials in medical devices, food packaging, and fragrance delivery.: NSF, \$600K (PI: K. Kohn): 2007-2009

NJ-NANO: New Jersey Commission on Science and Technology: \$500K: 2006-7

Technology Commercialization Fund: New Jersey Commission on Science and Technology: \$500K: 2007-8

Industrial

Using Domain Knowledge to Influence Similarity Judgments. Science Applications International Corporation, McLean, VA 22102. April 1, 1990 - Sept 30, 1993. \$154,000.

Machine Learning Techniques for Modification and Maintenance of Expert System Knowledge Bases. NYNEX: 8/92 - 7/94. \$50,000.

Research in Machine Learning: Nippon Telephone and Telegraph. 6/93 - 7/94. \$22,500.

Minimizing misclassification costs: NYNEX 8/93 - 7/94. \$25,000.

Knowledge discovery in economic and political databases: Evidence Based Research, Arlington, VA 1994 - 1995. \$75,000.

Intelligent Agents: Mitsubishi Electronics Corp. \$40,000 (1999)

Machine Learning: Hughes Research Laboratory. \$10,000 (1999)

Mobile Personalization, Qualcomm, equipment donation (1999).

Text Classification: Websense. 20,000 (2000).

E-commerce: The Irvine Company, \$10,000 (2000).