

CURRICULUM VITA

Wayne Iba

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TEACHING EXPERIENCE

Westmont College, Santa Barbara, California: *Professor* (Fall 2003-present). Teaching upper and lower-division Computer Science courses.

Messiah College, Grantham, Pennsylvania: *Visiting Lecturer* (Winter Term, 2001). Designed and taught Models of Mind, an upper-division interdisciplinary course on Philosophy of Mind, Cognitive Science, and Computational Models of Intelligence.

College of Notre Dame, Belmont, California: *Lecturer* (2000-2001). Designed and taught a new course, Structured Problem Solving, for two semesters; also taught a second-semester advanced course in Discrete Mathematics.

University of California, Irvine: *Teaching Assistant* (1985-1986). Designed and co-taught advanced programming class, Projects in Artificial Intelligence. Supervised two undergraduates' independent study projects in Machine Learning. Also lead discussion and laboratory sections for courses in Introduction to Artificial Intelligence and Digital Logic Design.

University of California, Santa Cruz: (1984-1985) *Teaching Assistant*. Assisted faculty in Experimental Psychology, Cybernetics, Systems Programming, and Digital Logic Design. Presented laboratory sections, tutorials, and occasional lectures.

EDUCATION

University of California, Irvine

Ph.D., 1991; M.S., 1988, Information and Computer Sciences.

Dissertation title: *Acquisition and Improvement of Human Motor Skills: Learning Through Observation and Practice*. Graduate course work included Artificial Intelligence, Machine Learning, Software Engineering, Semantics of Programming Languages, Parallel Machine Architectures, and Social Impacts of Computing.

University of California, Santa Cruz

B.A., 1984, Computer and Information Sciences, with Honors in the Major

Completed course work for Masters degree emphasizing Theory of Computation and Analysis of Algorithms but also including Heuristic Search Methods, Computer Graphics and Program Transformation. Undergraduate course work included Experimental and Cognitive Psychology, Linguistics, and Mathematics.

RESEARCH EXPERIENCE

Independent Consultant, October, 1998-present. Provide contract services in variety of areas including: machine learning, data mining, click-stream analysis, personalization, adaptive user interfaces, financial risk analysis.

Kanisa Inc., *Research Scientist*, February, 2001-June, 2003. Head of Machine Learning efforts in the Advanced Technology Group. Improve product performance through data mining of web logs. Design and develop Machine Learning workbench. Conceive methods for improving on-line community interaction through observed behavior patterns.

Institute for the Study of Learning and Expertise, *Assistant Director and Senior Research Scientist*, September, 1996–September, 2000. As Assistant Director, oversee three research grants and in-house research activities; pursue additional funding sources; track grant expenditures and supervise administrative assistant and accountant. As Senior Research Scientist, direct research and supervise post-doc on project developing intelligent software assistants for adaptive crisis response planning; maintain collaboration with the Computational Learning Laboratory as a *Visiting Scholar* at Stanford University's Center for the Study of Language and Information; coordinate the Seminar on Computational Learning and Adaptation at Stanford University.

Recom Technologies, Incorporated, *Computer Scientist*, May, 1990–September, 1996. Recom is a national support-service contractor providing professionals for a variety of organizations and efforts in government and industry. Assignments included:

Lockheed Martin, August, 1994–September, 1996. Managed and implemented the design of the human-machine interface and automation mechanisms for the FBI's Automated Fingerprint Identification System. Developed the Master Test Plan for the Operational Readiness Review of the Fingerprint Image Conversion Operation facility. Provided system administration support on HP, Sun, and Convex computer systems.

NASA Ames Research Center, Artificial Intelligence Research Laboratory, May, 1990–July, 1994. Directed the design and implementation of an early version of the ICARUS intelligent agent architecture. Supervised six graduate students during this period. Developed theoretical average-case analyses for several machine learning and planning algorithms. Exploited clustering techniques from Machine Learning in applications to NASA Space Shuttle telemetry analysis, air-traffic control, and automobile traffic control. Designed an automatic scheduling system for the Extreme Ultraviolet Explorer (EUVE) satellite. Reduced the human involvement required for scheduling ongoing astronomical EUVE observations.

SELECTIVE REFEREED PAPERS

- Iba, W. (2012). What if reality is simulated and simulations are real? *Journal of the ACMS*, 2012-2013 Issue.
- Iba, W. (2012). Searching for better performance on the king-rook-king chess endgame problem. In *Proceedings of the Twenty-fifth International FLAIRS Conference*. Marco Island, FL: AAAI Press.
- Iba, W., Langley, P. (2011). Exploring moral reasoning in a cognitive architecture. *Proceedings of the Thirty-Third Annual Meeting of the Cognitive Science Society*. Boston.
- Brooks, L., Iba, W. & Sen, S. (2011). Modeling the emergence and convergence of norms. *Proceedings of the Twenty-Second International Joint Conference on Artificial Intelligence*. Barcelona.
- Iba, W., Marshman, K., & Fisk, B. (2008). Evaluating a parallel evolutionary algorithm on the chess endgame problem. *Proceedings of the 2008 International Conference on Genetic and Evolutionary Methods*. Las Vegas, NV.
- Iba, W., & Holm, J. (2006). Assistance: Is it better to receive than to give? *Proceedings of the International Conference on Artificial Intelligence, WORLDCOMP'06*. Las Vegas, NV.
- Iba, W. & Burwell, N. (2005). Studying service: An exploration of the costs and benefits of assistance. *Proceedings of the Eighteenth International FLAIRS Conference*. Menlo Park, CA: AAAI Press.
- Iba, W. & Gervasio, M. (2000). Adaptive assistance for crisis response. *Adaptive User Interfaces: Papers from the 2000 AAAI Spring Symposium* (Technical Report SS-00-01). Menlo Park, CA: AAAI Press.
- Iba, W. & Gervasio, M. (1999). Adapting to user preferences in crisis response. *Proceedings of the International Conference on Intelligent User Interfaces*. Redondo Beach, CA: ACM Press.
- Gervasio, M. T., Iba, W., & Langley, P. (1999). Learning user evaluation functions for adaptive scheduling assistance. *Proceedings of the Sixteenth International Conference on Machine Learning* (pp. 152-161). Bled, Slovenia: Morgan Kaufmann.
- Iba, W., Gervasio, M., Langley, P., & Sage, S. (1998). Evaluating computational assistance for crisis response. *Proceedings of the Twentieth Annual Conference of the Cognitive Science Society*. Madison, WI.
- Gervasio, M. T., Iba, W., & Langley, P. (1998). Learning to predict user operations for adaptive scheduling. *Proceedings of the Fifteenth National Conference on Artificial Intelligence*. Madison, WI.
- Langley, P., & Iba, W. (1994). Reactive and automatic behavior in plan execution. *Proceed-*

ings of the Second International Conference on AI Planning Systems. Chicago: AAAI Press.

Langley, P., & Iba, W. (1993). Average-case analysis of a nearest neighbor algorithm. *Proceedings of the Thirteenth International Joint Conference on Artificial Intelligence*. San Mateo, CA: Morgan Kaufmann.

Iba, W., & Langley, P. (1992). Induction of one-level decision trees. *Proceedings of the Ninth International Machine Learning Conference*. Aberdeen, Scotland: Morgan Kaufmann.

Langley, P., Iba, W., & Thompson, K. (1992). An analysis of Bayesian classifiers. *Proceedings of the Tenth National Conference on Artificial Intelligence*. San Jose, CA: Morgan Kaufmann.

Iba, W. (1991). Learning to classify observed motor behavior. *Proceedings of the Twelfth International Joint Conference on Artificial Intelligence* (pp. 732–738). Sydney, Australia: Morgan Kaufmann.

Iba, W., Wogulis, J., & Langley, P. (1988). Trading off simplicity and coverage in incremental concept learning. In *Proceedings of the Fifth International Conference on Machine Learning* (pp. 73–79). Ann Arbor, MI: Morgan Kaufmann.

Iba, W., & Langley, P. (1987). A computational theory of motor learning. *Computational Intelligence*, 3, 338–350.

PAPERS UNDER REVIEW

Iba, W. (submission). Individual influence on emergent phenomena in communities. COMSOC-2016: Sixth International Workshop on Computational Social Choice, Toulouse, France, June, 2016.

OTHER PAPERS

Iba, W. (2013). Before we get there, where are we going? In R. Trappl (Ed.), *Your virtual butler: The making of*. Berlin: Springer.

Iba, W. & Langley, P. (2011). Cobweb models of categorization and probabilistic concept formation. In E. M. Pothos & A. J. Wills (Eds.), *Formal approaches in categorization*. Cambridge: Cambridge University Press.

Brooks, L., Iba, W. & Sen, S. (2011). Modeling the emergence of norms. Extended abstract in *Proceedings of the Tenth International Conference on Autonomous Agents and Multiagent Systems*. Taipei.

Iba, W. (2011). Real simulations and simulated reality. In *Proceedings of the 2011 ACMS Conference*.

Iba, W. (2008). There’s something about AI Exercises. *Using AI to Motivate Greater Participation in Computer Science: Papers from the AAAI Spring Symposium* (TR SS-

- 08-08). Stanford, CA: AAI Press.
- Iba, W. (2007). When is assistance really helpful? *Interaction Challenges for Intelligent Assistants: Papers from the AAI Spring Symposium* (TR SS-07-04). Stanford, CA: AAI Press.
- Iba, W. (2005). Swarm behavior: A multi-faceted extended project. *Proceedings of the TeachScheme! Anniversary Workshop*. (Technical Report NU-CCIS-05-05). Boston, MA: Northeastern University, College of Computer and Information Science.
- Iba, W. & Burwell, N. (2005). Building a testbed for studying service. *Persistent Assistants: Papers from the AAI Spring Symposium*. Stanford, CA: AAI Press.
- Iba, W (2003). Means-Ends Analysis. *Encyclopedia of Cognitive Science*. Macmillan Publishers Ltd.
- Iba, W (2003). Artificial service vs. artificial servants. *Proceedings of the Fourteenth Conference of the Association of Christians in the Mathematical Sciences*, (pp. 120-125). San Diego, CA.
- Iba, W., & Langley, P. (2001). Unsupervised learning of probabilistic concept hierarchies. In G. Paliouras, V. Karkaletsis, & C. D. Spyropoulos (Eds.), *Machine learning and its applications*. Berlin: Springer.
- Rogers, S. & Iba, W. (Eds.). (2000). *Adaptive User Interfaces: Papers from the AAI Spring Symposium*. Stanford, CA: AAI Press.
- Gervasio, M. T., Iba, W., & Langley, P. (1998). Interactive adaptation for crisis response. *Proceedings of the AIPS-98 Workshop on Interactive and Collaborative Planning* (pp. 29-36). Pittsburgh, PA.
- Gervasio, M. T., Iba, W., & Langley, P. (1998). Case-based seeding for an interactive crisis response assistant. *Case-Based Reasoning Integrations: Papers from the 1998 Workshop* (Technical Report WS-98-15, pp. 61-66). Menlo Park, CA: AAI Press.
- Iba, W. (1997). Attenuation of the speed-accuracy tradeoff through learning. *Proceedings of the Nineteenth Annual Conference of the Cognitive Science Society* (pp. 956). Stanford, CA: LEA.
- Iba, W., & Gervasio, M. T. (1997). Crisis response planning: A task analysis. *Proceedings of the Nineteenth Annual Conference of the Cognitive Science Society* (pp. 929). Stanford, CA: LEA.
- Iba, W. (1993). Improving the cost-performance tradeoff in traffic control using autonomous intelligent agents. *Proceedings of the AAI Workshop on Artificial Intelligence in Intelligent Vehicle Highway Systems*. Menlo Park, CA: AAI Press.
- Iba, W. (1993). Concept formation in temporally structured domains. NASA Workshop on the Automation of Time Series, Signatures, and Trend Analysis. NASA Ames.

- Iba, W. (1991). Modeling the acquisition and improvement of motor skills. *Proceedings of the Eighth International Workshop on Machine Learning* (pp. 60–64). San Mateo, CA: Morgan Kaufmann.
- Iba, W. & Gennari, J. (1991). Learning to recognize movements. In D. Fisher & M. Pazzani (Eds.) *Concept formation: Knowledge and experience in unsupervised learning*. San Mateo, CA: Morgan Kaufmann.
- Langley, P., McKusick, K. B., Allen, J. A., Iba, W. F., & Thompson, K. (1991). A design for the ICARUS architecture. *SIGART Bulletin*, 2, 104–109.
- Thompson, K., Langley, P., & Iba, W. (1991). Using background knowledge in concept formation. *Proceedings of the Eighth International Workshop on Machine Learning* (pp. 554–558). San Mateo, CA: Morgan Kaufmann.
- Iba, W. (1989). *Human motor behavior: A short review of phenomena, theories, and systems* (Technical Report 89-34). Irvine, California: University of California, Department of Information and Computer Sciences.
- Langley, P., Thompson, K., Iba, W., Gennari, J., & Allen, G. A. (1989). *An integrated cognitive architecture for autonomous agents* (Technical Report 89-28). Irvine, California: University of California, Department of Information and Computer Sciences.
- Langley, P., Gennari, J. H., & Iba, W. (1987). Hill-climbing theories of learning. *Proceedings of the Fourth International Workshop on Machine Learning* (pp. 312–323). San Mateo, CA: Morgan Kaufmann.

POSTERS AND INVITED PRESENTATIONS

- The Power of One: The Surprising Influence of an Individual*. Wayne Iba. Poster presentation at COMSOC-2014: Fifth International Workshop on Computational Social Choice, Pittsburgh, PA, June, 2014.
- Sincere and Strategic Voting in American Presidential Elections: An Experimental Design*. Thomas Knecht, Wayne Iba, Patti Hunter, & Kristabel Stark. Paper presented at the Annual Conference of the Midwest Political Science Association, Chicago, April 11-14, 2013.
- Simulated Worlds, Creatures and Creators*. Keynote address at the Symposium on Intelligent Design & Artificial Intelligence: The Ghost in the Machine?, sponsored by Journal of Interdisciplinary Studies, International Christian Studies Association, and Institute for Interdisciplinary Research. Pasadena, CA. 2009.
- Artificial Intelligence as Window on Service*. Paul C. Wilt Phi Kappa Phi Lecture, Westmont College. Santa Barbara, CA. 2009.
- Before We Get There, Where Are We Going?*. Invited paper and talk at the workshop, The Virtual Butler: Prerequisites to its Development. Austrian Research Institute for Artificial Intelligence (OFAI). Vienna, Austria: September, 2008.

Characterization of a Novel Mouse Strain that Spontaneously Develops Arthritis: A Potentially New Model of RA, Poster presentation with Joel T. Wilcox, Heather L. Parrish, Stephen D. Miller and Eileen J. McMahon. Federation of American Societies for Experimental Biology Summer Research Conference on Autoimmunity. June, 2005.

Introductory Lessons on Machine Learning and Adaptive User Interfaces, Eight-part lecture series on Machine Learning and its applications to personalized software assistants. SferaSoft, Inc., San Francisco, CA. 1998–1999.

Attenuating the Speed-Accuracy Tradeoff through Learning, Seminar on Computational Learning and Adaptation, Stanford University. 1997.

Performance, Improvement, and Evaluation in Machine Learning Research, University of Aberdeen, Artificial Intelligence Spring Seminar Series, Aberdeen, Scotland. 1995.

Improving the Cost Tradeoff in Traffic Signal Control, AAI Workshop on Intelligent Vehicle Highway Systems, Washington D.C. 1993.

Learning Temporally Structured Concepts from Shuttle Telemetry Data, NASA Time Series workshop, Moffett Field, CA. 1993.

Learning To Recognize Movements From Observation, ISLE Concept Formation Workshop, Stanford, CA. 1990.

PROFESSIONAL SERVICE

Board of directors, Institute for the Study of Learning and Expertise (2011-present; 2008-2010; 1994-1996).

External reviewer for Computer Science Program at California State University Channel Islands (2014).

Autonomous Agents and Multiagent Systems (AAMAS), Program Committee (2011-2012).

Board of directors, MindShadow.com, Palo Alto, CA (1999-2001).

Area Chair, International Conference on Machine Learning, Stanford, CA (2000).

Co-chair, AAI Spring Symposium on Adaptive User Interfaces, Stanford, CA (2000).

NASA review panelist for Thinking Space Systems, Washington DC (2000).

Co-chair, IJCAI workshop, *Learning About Users*, Stockholm, Sweden (1999).

AAAI Program Committee (1997).

Co-Organizer of Seminar on Computational Learning and Adaptation at Stanford University (1996–1998).

Reviewer for: *Machine Learning* journal, AAI Conference, International Conference on Autonomous Agents and Multiagent Systems, Cognitive Science Conference, *Journal of Artificial Intelligence Research*, *IEEE Transactions on Pattern Analysis and Machine Intelligence*, *Christian Scholar Review*, *Computational Cognitive Science*, IEEE Conference on Applications of Artificial Intelligence.

Institutional Service: Faculty Budget and Salary Committee, Westmont (2015-present); General Education Committee, Westmont (2011-2014); Chair of Academic Resources Committee, Westmont (2007-2009); Department Head, Mathematics and Computer Science, Westmont (2006-2007); Admissions and Retention Committee, Westmont (2006-2007); CTAC, Westmont (2004-2007); Rajeev Saraf's dissertation committee (external member), Vanderbilt University (1994); Committee on Academic Personnel (graduate student representative), UC Irvine (1989-1990); Information and Computer Science Executive Committee (graduate student representative), UC Irvine (1988-1989).

Member: ACMS, AAI, Cognitive Science Society, and Society for Machines and Mentality.