Jon Doyle

Curriculum Vitae
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Laboratory for Computer Science
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Professional interests

Artificial intelligence, logic, economics, theory of computation, physics, and history. Topics in autonomous and cooperative agents, representation, decision-making, planning, control, adaptation, and nonmonotonic reasoning. Applications in medicine, computer security, process control, personal assistants, and music.

Personal background and interests

Married to Carol A. Doyle, two children. U.S. citizen. Interests in people, nature, languages, literature, writing, history, geography, music, art, poetry, swimming, and hiking.

Education

- 1980 Ph.D., Artificial Intelligence, Massachusetts Institute of Technology. *A Model for Deliberation, Action, and Introspection*, G. J. Sussman, advisor, M. Minsky, P. Szolovits, D. McDermott, readers.

- 1977 S.M., Electrical Engineering and Computer Science, Massachusetts Institute of Technology. *Truth Maintenance Systems for Problem Solving*, G. J. Sussman, advisor.

- 1974 B.S., Mathematics, University of Houston (Honors in Mathematics, *Summa Cum Laude*, Honors Program). *Computational Investigations of Non-Repetitive Sequences*, J. A. Schatz, advisor.

- 1971–1972 South Texas Junior College.

- 1971 High School Equivalency Certificate, State of Texas.

- 1967-8 Rice University summer school for middle and high school students.

Employment

- 1990— Principal Research Scientist, Laboratory for Computer Science, Massachusetts Institute of Technology, Cambridge, Massachusetts.

- 1988— Research Assistant Professor, Department of Medicine, Tufts University School of Medicine, Boston, Massachusetts.

- 1988–89 Research Associate, Laboratory for Computer Science, Massachusetts Institute of Technology, Cambridge, Massachusetts.

- 1984–88 Research Scientist, Computer Science, Carnegie-Mellon University, Pittsburgh, Pennsylvania.

- 1981–84 Research Associate, Computer Science, Carnegie-Mellon University, Pittsburgh, Pennsylvania.

- 1980–81 Research Associate, Computer Science, Stanford University, Stanford, California.

- 1975 (Jan.-July) Programmer, Technical Computing Division, Shell Oil Company, Houston, Texas.

- 1974 (May-Aug.) Programmer, Symbiotics International Inc., Houston, Texas.

- 1970–72 Assistant Engineer, KPFT Radio, Houston, Texas.

- 1963–71 Various capacities, Doyle's Delicatessen Inc., Houston, Texas.

Funding

1. 2000-2003 Co-Principal Investigator, Active Trust Management for Autonomous Adaptive Survivable Systems, DARPA, $2,796,332.

2. 1999-2002 Principal Investigator, Adaptive Knowledge-Based Monitoring Environments for Information Assurance, DARPA, $2,531,735.

3. 1999-2001 Key participant, Autonomous Negotiating Teams and Model-Integrated Computing for Autonomic Logistics, $350,000.

4. 1997–2000 Principal Investigator, High-performance knowledge base support for monitoring, analysis and interpretation tasks, DARPA, $1,892,386.

5. 1996–97 Principal Investigator, Air campaign planning ontology development and description, DARPA/Rome Laboratory, $75,000.

6. 1995–97 Principal Investigator, High-level planning ontology construction, DARPA/Rome Laboratory, $25,000.

7. 1995-2000 Key participant (Peter Szolovits, Principal Investigator), Guardian Angel: patient-centered health information systems, ARPA contract N66001-95-D-6019, $4,061,631

8. 1991–94 Principal Investigator, Rational and distributed reason maintenance for planning and replanning of large-scale activities, DARPA/Rome Laboratory contract F30602-91-C-0018, $623,027.

9. 1989 Principal Investigator, Rational planning and replanning, IBM Corporation, $30,000.

Publications

The September 2000 NECI ResearchIndex (`citeseer.nj.nec.com`) citation ranking listed me as the 274st most-cited author across all areas of computer science.

In preparation

1. Jon Doyle, Dynamic negotiation: preferences, policies, and plans

2. Jon Doyle, Contextual equivalence and ceteris paribus comparatives

3. Jon Doyle, Matter, mind and mechanics: new models for dynamogenesis and rationality

4. Jon Doyle, *The Mechanical Foundations of Psychology and Economics* (book)

5. Jon Doyle, *Reasons and Rationality: Economic Foundations for Mental Self-Government* (book)

6. Jon Doyle, Isaac Kohane, William Long, Howard Shrobe, and Peter Szolovits, Event recognition beyond signature and anomaly

7. Jon Doyle, Isaac Kohane, William Long, Howard Shrobe, and Peter Szolovits, Agile monitoring for cyber defense

8. Jon Doyle, Isaac Kohane, Howard Shrobe, and Peter Szolovits, Toward a common attack recognition language

9. Jon Doyle, Isaac Kohane, William Long, and Peter Szolovits, Monitoring in MAITA

Submitted

1. Gabor Karsai, George Bloor, and Jon Doyle, Automating human-based negotiation processes for autonomic logistics.

Books edited

1. Luigia Carlucci Aiello, Jon Doyle, and Stuart C. Shapiro, editors, *Knowledge Representation and Reasoning: Proceedings of the Fifth International Conference*, San Francisco: Morgan Kaufmann (1996).

2. Jon Doyle, Erik J. Sandewall, and Pietro Torasso, editors, *Knowledge Representation and Reasoning: Proceedings of the Fourth International Conference* , San Francisco: Morgan Kaufmann (1994).

Journal issues edited

1. Peter Wegner and Jon Doyle, Strategic Directions in Computing Research, *ACM Computing Surveys*, Vol. 28 (December 1996).

2. Jon Doyle, Symposium on Artificial Intelligence, *ACM Computing Surveys*, Vol. 27 (September 1995).

Works in translation

1. Jon Doyle, Problem solving by TMS (Japanese), *Ninchi kagaku no tenbo* [Foundations of Cognitive Science] (Yutaka Saeki, ed.), Tokyo: Sangyo Tosho. Translation by M. Nakagawa from the 1977 master's thesis "Truth Maintenance Systems for Problem Solving".

2. Jon Doyle, A truth maintenance system (Russian), *Kiberneticheskii sbornik. Novaya seriya. Vyp. 20* [Cybernetics collection. New series. No. 20] (O. B. Lupanov, ed.), Moscow: Mir, 159–215, 1983. Translation of the 1979 *Artificial Intelligence* article.

Invited articles

1. Jon Doyle and Richmond Thomason, Background to qualitative decision theory, *AI Magazine*, Vol. 20, No. 2 (Summer 1999), pp. 55-68.

2. Jon Doyle, Thomas L. Dean, *et alia*, Strategic directions in artificial intelligence, *ACM Computing Surveys*, Vol. 28 (December 1996), pp. 653-670.

3. Jon Doyle, Cleaving (unto) artificial intelligence, *ACM Computing Surveys*, Vol. 28 (December 1996), http://www.acm.org/pubs/citations/journals/surveys/1996-28-4es/a4-doyle/.

4. Jon Doyle, Toward rational planning and replanning rational reason maintenance, reasoning economies, and qualitative preferences, in *Advanced Planning Technology: Technological Achievements of the ARPA/Rome Laboratory Planning Initiative* (Austin Tate, editor), Menlo Park, California: AAAI Press, 1996, pp. 130-135.

5. Jon Doyle, Reasoned assumptions and rational psychology, *Fundamenta Informaticae*, Vol. 20, No. 1–3 (Spring 1994), pp. 35-73.

6. Jon Doyle, Rational belief revision and reason maintenance, *Belief Revision* (P. Gärdenfors, ed.), Cambridge: Cambridge University Press (1992), pp. 29-51.

7. Jon Doyle, Yoav Shoham, and Michael P. Wellman, A logic of relative desire (preliminary report), *Methodologies for Intelligent Systems 6* (Z. W. Ras and M. Zemankova, eds.), Berlin: Springer-Verlag (1991), pp. 16-31.

8. Jon Doyle, The foundations of psychology: a logico-computational inquiry into the concept of mind, *Philosophy and AI: Essays at the Interface* (R. Cummins and J. Pollock, eds.), Cambridge: MIT Press (1991), pp. 39-77.

9. Jon Doyle, Rational control of reasoning in artificial intelligence, *The Logic of Theory Change* (A. Fuhrmann and M. Morreau, eds.), Berlin: Springer-Verlag (1990), pp. 19-48.

10. Jon Doyle, The roles of rationality in reasoning (extended abstract), *AAAI Eighth National Conference on Artificial Intelligence*, Boston, Massachusetts (1990), pp. 1093-1100.

11. Jon Doyle, Rational self-government and universal default logics, *Second Conference on Economics and Artificial Intelligence*, Paris (1990), pp. 7-11.

12. Jon Doyle, Reasoning, representation, and rational self-government, *Methodologies for Intelligent Systems, 4* (Z. W. Ras, ed.), New York: North-Holland (1989), pp. 367-380.

13. Douglas Lenat, Randall Davis, Jon Doyle, Michael Genesereth, Ira Goldstein, and Howard Shrobe, Reasoning about reasoning, *Building Expert Systems* (D. Waterman, R. Hayes-Roth, and D. Lenat, eds.), Reading: Addison-Wesley (1983), pp. 219-239.

14. Jon Doyle, Why I don't play the piano, *SIGART Newsletter*, No. 70 (February 1980), p. 41. (Special knowledge representation survey issue).

Refereed journal articles

1. Jon Doyle, The roles of rationality in reasoning, *Computational Intelligence*, Vol. 8, No. 2 (May 1992), pp. 376-409.

2. Elisha P. Sacks and Jon Doyle, Prolegomena to any future qualitative physics, *Computational Intelligence*, Vol. 8, No. 2 (May 1992), pp. 187-209 (a "Taking Issue" article published with commentaries).

3. Elisha P. Sacks and Jon Doyle, Epilegomenon, *Computational Intelligence*, Vol. 8, No. 2 (May 1992), pp. 326-335 (response to the commentaries on the Prolegomena).

4. Jon Doyle and Michael P. Wellman, Impediments to universal preference-based default theories, *Artificial Intelligence*, Vol. 49, Nos. 1-3 (May 1991), pp. 97-128 (expanded version).

5. Jon Doyle and Ramesh S. Patil, Two theses of knowledge representation: language restrictions, taxonomic classification, and the utility of representation services, *Artificial Intelligence*, Vol. 48, No. 3 (April 1991), pp. 261-297.

6. Jon Doyle and Elisha P. Sacks, Markov analysis of qualitative dynamics, *Computational Intelligence*, Vol. 7, No. 1 (February 1991), pp. 1-10.

7. Jon Doyle, Constructive belief and rational representation, *Computational Intelligence*, Vol. 5, No. 1 (February 1989), pp. 1-11.

8. Jon Doyle, Expert systems and the "myth" of symbolic reasoning, *IEEE Transactions on Software Engineering*, Vol. SE-11, No. 11 (November 1985), pp. 1386-1390.

9. Jon Doyle, Circumscription and implicit definability, *Journal of Automated Reasoning*, Vol. 1 (1985), pp. 391-405.

10. Jon Doyle, Admissible state semantics for representational systems, *IEEE Computer*, V. 16, No. 10, 119-123 (1983) (Special issue on knowledge representation).

11. Drew V. McDermott and Jon Doyle, Non-monotonic logic I, *Artificial Intelligence* Vol. 13, No. 1-2 (April 1980), pp. 41-72 (Special issue on non-monotonic logic).

12. Jon Doyle, A truth maintenance system, *Artificial Intelligence* Vol. 12, No. 2 (November 1979), pp. 231-272.

13. Jon Doyle and Ronald L. Rivest, Linear expected time of a simple union-find algorithm, *Information Processing Letters* Vol. 5 (1976), pp. 146-148.

Refereed conference and workshop articles

1. Jon Doyle and Michael P. Wellman, Representing preferences as *ceteris paribus* comparatives, *AAAI Symposium on Decision-Theoretic Planning*, Stanford: California (1994).

2. Jon Doyle and Michael P. Wellman, Modular utility representation for decision-theoretic planning, *First International Conference on AI Planning Systems*, College Park: Maryland (1992)

3. Michael P. Wellman and Jon Doyle, Preferential semantics for goals, *AAAI Ninth National Conference on Artificial Intelligence*, Anaheim, California (1991), pp. 698-703.

4. Jon Doyle, Rational belief revision (preliminary report), *Second International Conference on Principles of Knowledge Representation and Reasoning*, Boston, (1991), pp. 163-174.

5. Jon Doyle and Michael P. Wellman, Rational distributed reason maintenance for planning and replanning of large-scale activities, *DARPA Workshop on Innovative Approaches to Planning, Scheduling, and Control*, San Diego (1990), pp. 28-36.

6. Jon Doyle, Rational belief revision (preliminary report), *Third International Workshop on Nonmonotonic Reasoning*, California: Stanford Sierra Camp, (1990).

7. Jon Doyle and Elisha P. Sacks, Stochastic analysis of qualitative dynamics, *Eleventh International Joint Conference on Artificial Intelligence*, (N. S. Sridharan, ed.), pp. 1187-1192, San Mateo: Morgan Kaufmann, 1989.

8. Jon Doyle and Michael P. Wellman, Impediments to universal preference-based default theories, *First International Conference on Principles of Knowledge Representation and Reasoning*, Toronto, (1989), pp. 94-102.

9. Jon Doyle, Some impossibility results, *AAAI Workshop on Defeasible Reasoning with Specificity and Multiple Inheritance*, St. Louis, Missouri (1989).

10. Jon Doyle, Mental constitutions and limited rationality, *AAAI Symposium on AI and Limited Rationality*, Palo Alto (1989).

11. Jon Doyle, Knowledge, representation, and rational self-government (extended abstract), *Second Conference on Theoretical Aspects of Reasoning about Knowledge* (M. Y. Vardi, ed.), (1988), pp. 345-354.

12. Jon Doyle, Reasoned assumptions and Pareto optimality, *Ninth International Joint Conference on Artificial Intelligence*, (1985).

13. Jon Doyle, Circumscription and implicit definability, *AAAI Workshop on Non-Monotonic Reasoning*, (1984).

14. Jon Doyle, A society of mind: multiple perspectives, reasoned assumptions, and virtual copies, *Eighth International Joint Conference on Artificial Intelligence*, (1983), pp. 309-314.

15. Jon Doyle, The ins and outs of reason maintenance, *Eighth International Joint Conference on Artificial Intelligence*, (1983), pp. 87-90.

16. Drew V. McDermott and Jon Doyle, An introduction to non-monotonic logic, *Sixth International Joint Conference on Artificial Intelligence*, Tokyo, Japan (1979), pp. 562-567.

17. Jon Doyle, A glimpse of truth maintenance, *Sixth International Joint Conference on Artificial Intelligence*, Tokyo, Japan (1979).

18. Drew V. McDermott and Jon Doyle, Non-monotonic logic I (extended abstract), *Fourth Workshop on Automated Deduction*, Austin, Texas (1979), pp. 26-35.

19. Jon Doyle, A glimpse of truth maintenance, *Fourth Workshop on Automated Deduction*, Austin, Texas (1979).

20. Jon Doyle, Truth maintenance systems for problem solving, *Fifth International Joint Conference on Artificial Intelligence*, Cambridge, Massachusetts (1977), p. 247.

21. Johan de Kleer, Jon Doyle, Guy Lewis Steele Jr, and Gerald Jay Sussman, AMORD: explicit control of reasoning, *ACM Conference on AI and Programming Languages*, Rochester, New York (1977), pp. 116-125.

Encyclopedia articles

1. Jon Doyle, Bounded rationality, *MIT Encyclopedia of the Cognitive Sciences* (Robert A. Wilson and Frank C. Keil, editors), Cambridge: MIT Press, 1999, pp. 92-94.

2. Jon Doyle, Rational decision making, *MIT Encyclopedia of the Cognitive Sciences* (Robert A. Wilson and Frank C. Keil, editors), Cambridge: MIT Press, 1999, pp. 701-703.

3. Jon Doyle, Non-deductive reasoning and non-monotonic logic, *Handbook of Artificial Intelligence* V. III (P. R. Cohen and E. A. Feigenbaum, eds.), Los Altos: Wm. Kaufmann (1982).

4. Johan de Kleer and Jon Doyle, Dependencies and assumptions, *Handbook of Artificial Intelligence* V. II (A. Barr and E. A. Feigenbaum, eds.), Los Altos: Wm. Kaufmann (1982).

Invited reviews

1. Jon Doyle, Inference and acceptance, *Computational Intelligence*, Vol. 10, No. 1 (February 1994), pp. 46-48 (review of Henry Kyburg's Believing on the basis of the evidence, appearing in the same issue).

2. Jon Doyle, Review of *Philosophical Logic and Artificial Intelligence* edited by Richmond H. Thomason, *SIGART Bulletin*, Vol. 2, No. 1 (January 1991), pp. 77-78.

3. Jon Doyle, Perceptive questions about computation and cognition, *Behavioral and Brain Sciences*, Vol. 13, No. 4 (December 1990), p. 661 (review of *The Emperor's New Mind* by R. Penrose).

4. Jon Doyle, Logic, rationality, and rational psychology, *Computational Intelligence*, Vol. 3, No. 3 (August 1987) pp. 175-176. (Review of *Critique of Pure Reason* by D. McDermott.)

5. Review of *Automation of Reasoning* by Siekmann and Wrightson, *American Scientist*, V. 72, No. 3, p. 303 (1984).

Other journal articles

1. Jon Doyle, Thomas L. Dean, *et alia*, Strategic directions in artificial intelligence, *AI Magazine*, Vol. 18, No. 1 (Spring 1997), pp. 87-101.

2. Peter Wegner and Jon Doyle, Editorial: Strategic directions in computing research, *ACM Computing Surveys*, Vol. 28 (December 1996), pp. 565-574.

3. Jon Doyle, Big problems for artificial intelligence, *AI Magazine* (guest editorial), Vol. 9, No. 1, pp. 19-22 (1988).

4. Jon Doyle, Expert systems without computers, or theory and trust in artificial intelligence, *AI Magazine*, V. 5, No. 2, pp. 59-63 (1984). Errata, V. 5, No. 4, p. 78 (1984).

5. Jon Doyle, What should AI want from the supercomputers?, *AI Magazine*, V. 4, No. 4, pp. 33-35, 31 (1983).

6. Jon Doyle, What is rational psychology? Toward a modern mental philosophy, *AI Magazine*, V. 4, No. 3 (1983), pp. 50-53.

7. Jon Doyle, Methodological simplicity in expert system construction: the case of judgments and reasoned assumptions, *AI Magazine*, V. 4, No. 2 (1983), pp. 39-43.

8. Jon Doyle and Philip London, A selected descriptor-indexed bibliography to the literature on belief revision, *SIGART Newsletter*, No. 71 (1980), pp. 7-23.

9. Drew V. McDermott and Jon Doyle, Non-monotonic logic I, abstract in *Notices of the American Mathematical Society*, V. 26, No. 1 (1979), #79T-E4, p. A-16.

10. Jon Doyle, Non-repetitive binary sequences, abstract in *Notices of the American Mathematical Society*, Oct. 1975, p. A-660, #727-A5. Referee recommended but scooped for *J. Combinatorial Theory A*. My theorems 1 and 2 paraphrase theorems 1 and 2 of F. M. Dekking, On repetitions of blocks in binary sequences, *J. C. T. A* Vol. 20 (1976), 292-299.

Other conference articles

1. Jon Doyle, A reasoning economy for planning and replanning, *Proceedings of the ARPA/Rome Laboratory Planning Initiative Workshop*, San Francisco: Morgan Kaufmann (1994).

Reprinted articles

1. Jon Doyle, A truth maintenance system, in *Computational Intelligence* (G. F. Luger, ed.), Menlo Park, California: AAAI Press, 1995, pp. 529-554. An abbreviated version of the 1979 *Artificial Intelligence* article, with added historical notes.

2. Jon Doyle and Michael P. Wellman, Impediments to universal preference-based default theories, in *Knowledge Representation* (R. J. Brachman, H. J. Levesque, and R. Reiter, eds.), Cambridge, MA: MIT Press, (1992), pp. 97-128.

3. Jon Doyle and Michael P. Wellman, Rational self-government and universal default logics, *Economics and Artificial Intelligence* (P. Bourgine and B. Walliser, eds.), London: Pergamon (1991), pp. 5-13.

4. Jon Doyle, Methodological simplicity in expert system construction: the case of judgments and reasoned assumptions, *Readings in Uncertain Reasoning* (G. Shafer and J. Pearl, eds.), San Mateo, CA: Morgan Kaufmann (1990), pp. 689-693.

5. Jon Doyle, Expert systems without computers, or theory and trust in artificial intelligence, *Readings from the AI Magazine* (R. Engelmore, ed.), Menlo Park, CA: American Association for Artificial Intelligence (1988), pp. 167-171.

6. Jon Doyle, What should AI want from the supercomputers?, *Readings from the AI Magazine* (R. Engelmore, ed.), Menlo Park, CA: American Association for Artificial Intelligence (1988), pp. 29-32.

7. Jon Doyle, What is rational psychology? Toward a modern mental philosophy, *Readings from the AI Magazine* (R. Engelmore, ed.), Menlo Park, CA: American Association for Artificial Intelligence (1988), pp. 251-254.

8. Jon Doyle, Methodological simplicity in expert system construction: the case of judgments and reasoned assumptions, *Readings from the AI Magazine* (R. Engelmore, ed.), Menlo Park, CA: American Association for Artificial Intelligence (1988), pp. 162-166.

9. Drew V. McDermott and Jon Doyle, Non-monotonic logic I, *Readings in Nonmontonic Reasoning* (M. Ginsberg, ed.), Los Altos: Morgan Kaufmann (1988), pp. 111-126.

10. Jon Doyle, A truth maintenance system, *Readings in Nonmontonic Reasoning* (M. Ginsberg, ed.), Los Altos: Morgan Kaufmann (1988).

11. Jon Doyle, Admissible state semantics for representational systems, *The Knowledge Frontier: Essays in the Representation of Knowledge* (N. Cercone and G. McCalla, eds.), New York: Springer-Verlag (1987), pp. 174-186.

12. Johan de Kleer, Jon Doyle, Guy Lewis Steele Jr, and Gerald Jay Sussman, AMORD: Explicit control of reasoning, *Readings in Knowledge Representation* (R. Brachman and H. Levesque, eds.), Los Altos: Morgan Kaufmann (1985).

13. Jon Doyle, A truth maintenance system, *Readings in Artificial Intelligence* (B. L. Webber and N. J. Nilsson, eds.), Palo Alto: Tioga (1981).

14. Johan de Kleer, Jon Doyle, Guy Lewis Steele Jr, and Gerald Jay Sussman, AMORD: Explicit control of reasoning, *Artificial Intelligence: An MIT Perspective* (P. H. Winston and R. H. Brown, eds.), Cambridge: MIT Press (1979).

15. Jon Doyle, A glimpse of truth maintenance, *Artificial Intelligence: An MIT Perspective* (P. H. Winston and R. H. Brown, eds.), Cambridge: MIT Press (1979).

Technical reports

1. Jon Doyle, Howard Shrobe, and Peter Szolovits, On widening the scope of attack recognition languages, MIT LCS (July 2000).

2. Howard Shrobe and Jon Doyle, Active trust management for autonomous adaptive survivable systems, MIT AI (January 2000).

3. Jon Doyle, Some representational limitations of the Common Intrusion Specification Language, MIT LCS (October/November 1999).

4. Jon Doyle, Isaac Kohane, William Long, and Peter Szolovits, The architecture of MAITA: a tool for monitoring, analysis, and interpretation, MIT LCS (September 1999).

5. Jon Doyle, Isaac Kohane, William J. Long, and Peter Szolovits, Adaptive knowledge-based monitoring for information assurance, MIT LCS (October 1998).

6. Jon Doyle, Isaac Kohane, William Long, and Peter Szolovits, High-performance knowledge base support for monitoring, analysis, and interpretation tasks, MIT LCS, (December 1996).

7. Peter Szolovits, Jon Doyle, William J. Long, Isaac Kohane, and Stephen G. Pauker, Guardian Angel: patient-centered health information systems , MIT/LCS/TR-604 (May 1994).

8. Elisha P. Sacks and Jon Doyle, Prolegomena to any future qualitative physics, Princeton University Department of Computer Science CS-TR-314-91 (1991).

9. Jon Doyle and Elisha P. Sacks, Stochastic analysis of qualitative dynamics, MIT/LCS/TM-418 (1989).

10. Jon Doyle and Michael P. Wellman, Impediments to universal preference-based default theories, MIT/LCS/TM-416 (1989).

11. Jon Doyle and Ramesh S. Patil, Two dogmas of knowledge representation: language restrictions, taxonomic classification, and the utility of representation services, MIT/LCS/TM-387b (1989).

12. Jon Doyle and Ramesh S. Patil, Language restrictions, taxonomic classification, and the utility of representation services, MIT/LCS/TM-387 (1989).

13. Jon Doyle, Implicit knowledge and rational representation, CMU CSD Report CMU-CS-88-134 (1988).

14. Jon Doyle, Artificial intelligence and rational self-government, CMU CSD Report CMU-CS-88-124 (1988).

15. Jon Doyle, Similarity, conservatism, and rationality, CMU CSD Report CMU-CS-88-123 (1988).

16. Jon Doyle, On rationality and learning, CMU CSD Report CMU-CS-88-122 (1988).

17. Jon Doyle, On universal theories of defaults, CMU CSD Report CMU-CS-88-111 (1988).

18. Jon Doyle, How to frame it: Modern applied logic from the top down, CMU CSD class notes, (1986).

19. Jon Doyle, Reasoned assumptions and Pareto optimality, CMU CSD Report 85-121 (1985).

20. Jon Doyle, Circumscription and implicit definability, CMU CSD Report 84-154 (1984).

21. Jon Doyle, Expert systems without computers, or theory and trust in artificial intelligence, CMU CSD Report 84-116 (1984).

22. Jon Doyle, What should AI want from the supercomputers?, CMU CSD Report 83-160 (1983).

23. Jon Doyle, A society of mind: multiple perspectives, reasoned assumptions, and virtual copies, CMU CSD Report 83-127 (1983).

24. Jon Doyle, The ins and outs of reason maintenance, CMU CSD Report 83-126 (1983).

25. Jon Doyle, Some theories of reasoned assumptions: an essay in rational psychology, CMU CSD Report 83-125 (1983).

26. Jon Doyle, Admissible state semantics for representational systems, CMU CSD Report 83-124 (1983).

27. Jon Doyle, Methodological simplicity in expert system construction: the case of judgments and reasoned assumptions, CMU CSD Report 83-114 (1983).

28. Jon Doyle, What is rational psychology? Toward a modern mental philosophy, CMU CSD Report 83-106 (1983).

29. Jon Doyle, The foundations of psychology: a logico-computational inquiry into the concept of mind, CMU CSD, Report 82-149 (1982).

30. Jon Doyle, Three short essays on decisions, reasons, and logics, Stanford CSD, Report 81-864 (1981).

31. Jon Doyle, A model for deliberation, action, and introspection, MIT AI Lab TR-581 (1980).

32. Jon Doyle and Philip London, A selected descriptor-indexed bibliography to the literature on belief revision, MIT AI Lab Memo 568 (1980).

33. Jon Doyle, A truth maintenance system, MIT AI Lab Memo 521 (1979).

34. Drew V. McDermott and Jon Doyle, Non-monotonic logic I, MIT AI Lab Memo 468 (August 1978), 486a (January 1979), 486b (July 1979).

35. Jon Doyle, A glimpse of truth maintenance, MIT AI Lab Memo 461 (1978).

36. Johan de Kleer, Jon Doyle, Charles Rich, Guy Lewis Steele Jr, and Gerald Jay Sussman, AMORD: a deductive procedure system, MIT AI Lab Memo 435 (1978).

37. Jon Doyle, Truth maintenance systems for problem solving, MIT AI Lab TR-419 (1978).

38. Jon Doyle, Hierarchy in knowledge representations, MIT AI Lab WP-159 (1977).

39. Johan de Kleer, Jon Doyle, Guy Lewis Steele Jr, and Gerald Jay Sussman, Explicit control of reasoning, MIT AI Lab Memo 427 (1977).

40. Jon Doyle, The use of dependency relationships in the control of reasoning, MIT AI Lab WP-133 (1976).

41. Jon Doyle, Analysis by propagation of constraints in elementary geometry problem solving, MIT AI Lab WP-108 (1976).

Invited lectures

1. Reasoned assumptions and rational psychology, *Fifth International Workshop on Non-monotonic Reasoning*, Schloss Dagstuhl, Germany (1994).

2. A logic of relative desire, *Sixth International Symposium on Methodologies for Intelligent Systems*, Charlotte: North Carolina, (1991).

3. The roles of rationality in reasoning, *AAAI Eighth National Conference on Artificial Intelligence*, Boston: Massachusetts (1990).

4. Rational self-government and universal default logics, *Second Conference on Economics and Artificial Intelligence*, Paris (1990).

5. Reasoning, representation, and rational self-government, *Fourth International Symposium on Methodologies for Intelligent Systems*, Charlotte: North Carolina, (1989).

6. Rational control of reasoning in artificial intelligence, *Conference on the Dynamics of Knowledge and Belief*, Lund, Sweden (1989).

7. Jon Doyle, Reasoned assumptions and Pareto optimality, *CSLI Workshop on Planning and Practical Reasoning*, Stanford University, Stanford, California (1984).

8. Rationality in the will to believe, *Colloquium on Practical Reasoning*, University of Dayton, Dayton, Ohio (1983).

9. Jon Doyle, Making difficult decisions, *Stanford Computer Forum*, Stanford University, Stanford, California (1981).

10. Jon Doyle, Non-repetitive binary sequences, *727th Meeting of the American Mathematical Society*, Cambridge, Massachusetts (1975). (Presentation by open invitation to the AMS membership.)

11. Numerous university lectures at Brown, Cornell, Carnegie-Mellon, Georgia Institute of Technology, Harvard, Linköping, Lund, Massachusetts Institute of Technology, Princeton, Rice, Stanford, Stockholm, Tufts New England Medical Center, University of California at Los Angeles, University of Illinois at Chicago, University of Illinois at Urbana-Champaign, University of Maryland, University of Pennsylvania, University of Pittsburgh, University of Texas at Austin, University of Wisconsin-Milwaukee, Umeå, Yale, and Washington University.

12. Numerous industrial lectures at AT&T Bell Laboratories (Murray Hill, Holmdel), Bell Communications Research (Morristown), Bolt, Beranek and Newman, Hewlett-Packard, Microelectronics and Computer Technology Company, SRI International, Thinking Machines, USC Information Sciences Institute, and Xerox PARC.

13. Numerous government presentations at USAF Rome Laboratory and DARPA conferences and workshops.

Invited panelist

- *Progress Since 1984?*, Fourth International Workshop on Nonmonotonic Reasoning, Plymouth, Vermont, 1992.

- Chair, *Why Causality?*, Second International Conference on Principles of Knowledge Representation and Reasoning, Boston, Massachusetts, 1991.

- *The State of the Art of Uncertainty Research*, Sixth Conference on Uncertainty in Artificial Intelligence, Cambridge, Massachusetts, 1990.

- *Directions for the Future*, Workshop on Term Subsumption Languages in Knowledge Representation, Jackson, New Hampshire, 1989.

- *Questions of Substance or Mere Clashes of Intuition?*, AAAI Workshop on Defeasible Reasoning with Specificity and Multiple Inheritance, St. Louis, Missouri, 1989.

- *Research Issues and Prospects in Limited Rationality*, AAAI Symposium on Artificial Intelligence and Limited Rationality, Stanford, California, 1989.

- *Where We Are and Where We Are Going*, American Association for Artificial Intelligence, St. Paul, Minnesota, 1988.

- *Logicality vs. Rationality*, Second Conference on Theoretical Aspects of Reasoning about Knowledge, Monterrey, California, 1988.

- *The Management of Uncertainty in Intelligent Systems*, American Association for Artificial Intelligence, Austin, Texas, 1984.

- *Non-Monotonic Reasoning*, International Joint Conference on Artificial Intelligence, Karlsruhe, Germany, 1983.

- *Non-Monotonic Logic*, American Association for Artificial Intelligence, Stanford, California, 1980.

Mention in newspapers

1. B. Jack Copeland and Diane Proudfoot, "Alan Turing's Forgotten Ideas in Computer Science," *Scientific American*, April 1999, Vol. 280, No. 4, pp. 98-103.

2. Charles C. Mann, "Guardian Angels," *Boston Magazine*, October 1995, pp. 39-42.

3. John Browning, "Minds in the making: a survey of artificial intelligence," *The Economist*, March 14-20, 1992, center section.

4. John Browning, "When logic is not enough," *The Economist*, August 25, 1990, pp. 69-70.

5. John Browning, "Expert systems: Anti-knowledge," *The Economist*, June 23, 1990, pp. 88-89.

University activities

Courses taught

1. Harvard, *Intelligent Machines: Reasoning, Actions, and Plans* (lecture on logic and action), Fall 1996.

2. MIT, *Knowledge-Based Application Systems* (with R. Davis), Spring 1996 and 1997.

3. MIT, *Reasoning and Rationality*, Spring 1993.

4. CMU, *Limited Reasoning and Rational Self-Government*, Spring 1987.

5. CMU, *Artificial Intelligence* (lectures on logic and reasoning), Fall 1986, 1987. Lecture notes, *How to Frame It: Modern applied logic from the top down*.

6. University of Pittsburgh, *Some Theories of Reasoned Assumptions*, Spring 1983.

Students

- 2001 Michael McGeachie, (S.M. expected), (thesis advisor)

- 1995 Latanya Sweeney, A.L.B., Harvard (project supervisor)

- 1994 Nathaniel R. Bogan, M.Eng., MIT (thesis advisor).

- 1994 Whitney Winston, S.B., MIT (thesis advisor).

- 1994 Michael P. Frank, S.M., MIT (thesis advisor).

- 1994 Scott T. Hofmeister, S.M., MIT (thesis advisor).

- 1992 Ronald J. Bodkin, S.M., MIT (thesis advisor).

- 1989 Vijay Saraswat, Ph.D., Carnegie-Mellon University (thesis committee).
  Winner of the 1990 ACM Dissertation Award.

- 1984 David S. Touretzky, Ph.D., Carnegie-Mellon University (thesis committee, de facto co-supervisor).
  Thesis published by Pitman/Morgan Kaufmann.

- 1983 João P. Martins, Ph.D., State University of New York, Buffalo (outside reader).

Service and committee work

- 1996— Undergraduate advisor, MIT Electrical Engineering and Computer Science Department.

- 1989— Oral and Area exam committees, MIT Electrical Engineering and Computer Science Department.

- 1987-88 Member, CMU University Research Council, Computer Science Department representative.

- 1987 Chairman, CMU Computer Science Department Faculty Recruiting Committee.

- 1983-87 Editor, CMU Computer Science Department *Faculty Research Guide*.

Professional activities

Honors

1. 1991— Fellow of the American Association for Artificial Intelligence
   Recognized for "fundamental contributions to the fields of nonmonotonic reasoning, truth maintenance, metareasoning, and the philosophical foundations of artificial intelligence"

2. 1975-1980 Fannie and John Hertz Foundation Graduate Fellow

3. 1974 B.S. *Summa Cum Laude* with Honors in Mathematics, University of Houston

Elected offices

- 1996–99 Member Executive Council, American Association for Artificial Intelligence. Addressed colocation proposals, mission statement, writing prizes, copyright policy, membership directory, mailing lists, online proceedings, preprint server, web site management, relations with other scientific organizations, and organization archives.

- 1989–91 Chair, Association for Computing Machinery Special Interest Group on Artificial Intelligence (ACM SIGART).
  Initiated joint AAAI/CSCSI/SIGART/SMIA membership directory.

Other offices

- 1997 Conference and program co-chair, *Symposium on Qualitative Preferences in Deliberation and Practical Reasoning*

- 1997— Advisory Board, *Journal of Artificial Intelligence Research*

- 1996–98 President, Principles of Knowledge Representation and Reasoning, Inc.

- 1996 Conference Chair, *Fifth International Conference on Knowledge Representation and Reasoning*

- 1996 AAAI Representative to National Research Council Board of Mathematical Sciences

- 1996 Associate Chair, *Workshop on Strategic Directions in Computing Research*

- 1996 Co-Chair, Artificial Intelligence Working Group, *Workshop on Strategic Directions in Computing Research*

- 1996–98 Information Director, ACM *Computing Surveys*

- 1995–98 Associate Editor, ACM *Computing Surveys*

- 1995–98 Webmaster, The Ontology Page

- 1995— Webmaster, International Workshops on Nonmonotonic Reasoning

- 1995— Webmaster, Principles of Knowledge Representation and Reasoning, Inc.

- 1994 Member, AAAI/NSF Panel on the Information Infrastructure Technologies and Applications

- 1994 Program co-chair, *Fourth International Conference on Knowledge Representation and Reasoning*

- 1993-97 Associate Editor, *Journal of Artificial Intelligence Research*

- 1993 Editorial Board, *Journal of Artificial Intelligence Research*

- 1992— Director, Principles of Knowledge Representation and Reasoning, Inc.

- 1992— Associate editor, *Journal of Logic, Language and Information*

- 1991-93 Past Chair, *Association for Computing Machinery Special Interest Group on Artificial Intelligence (ACM SIGART).*

- 1990— Editorial board, *Computational Intelligence*

- 1990— Associate, *Behavioral and Brain Sciences*

- 1989-96 Editorial board, *Applied Intelligence*

- 1988 Program area chair for automated reasoning, *AAAI Seventh National Conference on Artificial Intelligence.*

- 1978-79 Associate Editor, *ACM SIGART Newsletter.*

- Referee for *Air Force Office of Scientific Research, American Association for Artificial Intelligence, Artificial Intelligence, Behavioral and Brain Sciences, Computational Intelligence, Decision Support Systems, International Joint Conferences on Artificial Intelligence, Journal of Automated Reasoning, Journal of Philosophical Logic, Journal of Symbolic Logic, Journal of the Association for Computing Machinery,* MIT Press, the National Research Council of Canada, the National Science Foundation, *Notre Dame Journal of Formal Logic,* and *Symbolic Computation.*

Program committee memberships

- 2001 *AAAI Symposium on Game Theoretic and Decision Theoretic Agents*

- 1997 *AAAI Fourteenth National Conference on Artificial Intelligence*

- 1996 *Ninth International Symposium on Artificial Intelligence*

- 1995 *Eighth International Symposium on Artificial Intelligence*

- 1994 *Eighth International Symposium on Methodologies for Intelligent Systems*

- 1994 *Seventh International Symposium on Artificial Intelligence*

- 1994 *Fifth International Conference on Non-Monotonic Reasoning*

- 1993 *Sixth International Symposium on Artificial Intelligence, Intelligent Systems Applications in Industry and Business*

- 1993 *AAAI Symposium on Mental States: Formal Theories and Applications*

- 1992 *International Conference on Economics/Management and Information Technology 92.*

- 1992 *Fifth International Symposium on Artificial Intelligence: Applications in Manufacturing and Robotics.*

- 1992 *Third International Conference on Knowledge Representation and Reasoning.*

- 1992 *Eighth International Conference on Uncertainty in Artificial Intelligence.*

- 1992 *AAAI Tenth National Conference on Artificial Intelligence.*

- 1991 *Second International Conference on Knowledge Representation and Reasoning.*

- 1990 *AAAI Eighth National Conference on Artificial Intelligence.*

- 1990 *Fifth International Symposium on Methodologies for Intelligent Systems.*

- 1990 *Second International Conference on Economics and Artificial Intelligence*, Paris, France.

- 1990 *Third International Conference on Non-Monotonic Reasoning*, Stanford Sierra Lodge, California.

- 1990 *Third Conference on Theoretical Aspects of Reasoning about Knowledge*, Monterey, California.

- 1989 *AAAI Spring Symposium on AI and Limited Rationality.*

- 1988 *Third International Symposium on Methodologies for Intelligent Systems.*

- 1986 *AAAI Fifth National Conference on Artificial Intelligence.*

- 1984 *AAAI Workshop on Non-Monotonic Reasoning.*

- 1982 *Sixth Conference on Automated Deduction.*

Society memberships

- American Association for Artificial Intelligence

- American Mathematical Society

- Association for Computing Machinery

- Society for Industrial and Applied Mathematics