Jim Blythe

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Objective

A challenging research and teaching position focussed on artificial intelligence.

Research Interests

Planning under uncertainty, machine learning, Bayesian networks, decision theory, mobile robots, visualization of graphical structures.

Education

1990–present, Carnegie Mellon University **Pittsburgh, PA**
Ph.D. in Computer Science (expected), Summer 1997
Thesis: *Planning Under Uncertainty in Dynamic Domains*
Committee: Jaime Carbonell (chair), Manuela Veloso, Reid Simmons and Judea Pearl.

M.S. in Computer Science, 1993

1982–1985, Cambridge University **Cambridge, UK**
B.A. in Mathematics, 1st class honors

Research Experience

August 90 – present, Carnegie Mellon University **Pittsburgh, PA**
Graduate research assistant. My thesis extends the Prodigy architecture with a novel architecture for planning and learning under uncertainty.
Lead designer, implementor and maintainer of the Prodigy 4.0 planning system, 1991–1995
Lead designer, implementor and maintainer of KrackPlot 3.0, a program for visualizing graphical structures, with David Krackhardt and Cathleen McGrath of the Heinz School.

May 1992 – August 1992, Nasa Ames Research Center **Mountain View, CA**
Summer intern at NASA Ames, working with Steve Minton to develop algorithms for automatically generating constraint satisfaction programs.

August 1988 – August 1989, Carnegie Mellon University **Pittsburgh, PA**
Visiting scientist from GEC, working in Tom Mitchell's robot learning laboratory. Designed an algorithm to learn reactive robot control from deliberative planning behavior, implemented on a Hero 2000 robot.

Sept 1985 – August 1990, General Electric Plc, Marconi Research Centre **Chelmsford, UK**
Senior Research Scientist in the Artificial Intelligence Group.
Developed several systems for problem solving, knowledge acquisition and machine learning.

Teaching Experience

1994–1996, Introduction to AI **Carnegie Mellon**

Taught individual lectures in planning under uncertainty, helped design assignments and gave recitations in using Prodigy in the undergraduate AI courses taught by Manuela Veloso and Jaime Carbonell.

Spring 1993, Fundamental Principles of CS II **Carnegie Mellon**

Taught recitations and formulated homework assignments for Bob Harper's course on the fundamental principles of computer science.

Fall 1991, Software Engineering **Carnegie Mellon**

Advised a group of senior students and formulated homework assignments in a project-based software engineering course using object-oriented design, taught by Bernd Bruegge. The course was reported in an OOPSLA '92 paper.

1991, Volunteer Math Tutor **Pittsburgh**

Gave individual instruction in Mathematics to high school students through a tutoring program.

Awards

Open scholarship to read Mathematics at Christ's College, Cambridge, 1982-1985
GEC Fellowship to visit Carnegie Mellon University, 1988-1989

Professional Service

Member of AAAI and ACM.

Referee

Journal of AI Research (1995)
IJCAI (1995, 1997)
AI Planning Systems conference (1996)
European Workshop on Planning Systems (1995)
International Conference on Machine Learning (1990)
Portuguese Conference on AI (1995)

Web site maintainer

Prodigy project home page: http://www.cs.cmu.edu/˜prodigy
Computer science tech-report page: http://www.cs.cmu.edu/˜jblythe/cs-reports.html

Other

Ran the computer science department's social group, Dec5, 1990-1992

References

Available on request.

Publications

Refereed Journal Publications

Manuela Veloso, Jaime Carbonell, Alicia Pérez, Daniel Borrajo, Eugene Fink, and Jim Blythe. Integrating planning and learning: The prodigy architecture. *Journal of Experimental and Theoretical AI*, 7:81–120, 1995.

Cathleen McGrath, Jim Blythe, and David Krackhardt. The effect of spatial arrangement on judgments and errors in interpreting graphs. *Social Networks*, forthcoming.

Yves Kodratoff, Michel Manago, and Jim Blythe. Generalization and noise. *International Journal of Man-Machine Studies*, 27(2):181–204, August 1987.

Book Chapters

Jim Blythe. The footprint principle for heuristics for probabilistic planners. In Malik Ghallab and Alfredo Milani, editors, *New Directions in AI Planning*, pages 173–185, Assissi, Italy, September 1995. IOS Press.

Michel Manago and Jim Blythe. Learning disjunctive concepts. In Katarina Morik, editor, *Knowledge representation and organization in machine learning*, pages 211–230, Berlin, West Germany, 1989.

Refereed Conference Proceedings

Jim Blythe. Decompositions of Markov chains for reasoning about external change in planners. In Brian Drabble, editor, *Proc. Third International Conference on Artificial Intelligence Planning Systems*, University of Edinburgh, May 1996. AAAI Press.

Jim Blythe, Cathleen McGrath, and David Krackhardt. The effect of graph layout on inference from social network data. In F. J. Brandenburg, editor, *International Symposium on Graph Drawing*, pages 40–51, Passau, Germany, September 1995. Springer-Verlag.

Jim Blythe. Planning with external events. In Ramon Lopez de Mantaras and David Poole, editors, *Proc. Tenth Conference on Uncertainty in Artificial Intelligence*, pages 94–101, Seattle, WA, July 1994. Morgan Kaufmann.

Jim Blythe. Probabilistic knowledge of external events in planning. In *Proc. Twelfth National Conference on Artificial Intelligence*, page 1427. AAAI Press, 1994.

Manuela Veloso and Jim Blythe. Linkability: Examining causal link commitments in partial-order planning. In Kristian Hammond, editor, *Proc. Second International Conference on Artificial Intelligence Planning Systems*, pages 170–175, University of Chicago, Illinois, June 1994. AAAI Press.

Peter Stone, Manuela Veloso, and Jim Blythe. The need for different domain-independent heuristics. In Kristian Hammond, editor, *Proc. Second International Conference on Artificial Intelligence Planning Systems*, pages 164–169, University of Chicago, Illinois, June 1994. AAAI Press.

Jim Blythe and Manuela Veloso. An analysis of search techniques for a totally-ordered nonlinear planner. In Jim Hendler, editor, *Proc. First International Conference on Artificial Intelligence Planning Systems*, 1992.

Bernd Bruegge, Jim Blythe, Jeff Jackson, and Jeff Shufelt. Object-oriented system modeling with OMT. In *Conference on Object-Oriented Programming Systems, Languages, and Applications*, Vancouver, BC, Canada, 1992.

Jim Blythe and Tom Mitchell. On becoming reactive. In *International Conference on Machine Learning*, Ithaca, NY, June 1989.

Jim Blythe. Constraining search in a hierarchical discriminative learning system. In Yves Kodratoff, editor, *Proceedings of the 8th European Conference on Artificial Intelligence*, pages 378–83, Munich, West Germany, August 1988.

Jim Blythe, David Needham, and Patrick Corsi. An experimental protocol for gathering examples for empirical learning. In *First European Workshop on Knowledge Acquisition*, 1987.

Refereed workshop proceedings and technical reports.

Jim Blythe and Manuela Veloso. Learning to improve uncertainty handling in a hybrid planning system. In Simon Kasif, editor, *AAAI Fall Symposium on Learning Complex Behaviors in Intelligent Adaptive Systems*, Boston, MA, November 1996.

Jim Blythe. A representation for efficient planning in dynamic domains with external events. In Chitta Baral, editor, *AAAI Workshop on Theories of Action, Planning and Control*. AAAI Press, August 1996.

Jim Blythe. Decision-theoretic subgoaling in goal-directed search. In *AAAI Spring Symposium on Decision-Theoretic Planning*, Stanford University, 1994.

Jim Blythe and W. Scott Reilly. Integrating reactive and deliberative planning for agents. Technical Report CMU-CS-93-135, School of Computer Science, Carnegie Mellon University, May 1993.

Jaime G. Carbonell, Jim Blythe, Oren Etzioni, Yolanda Gil, Robert Joseph, Dan Kahn, Craig Knoblock, Steven Minton, Alicia Pérez, Scott Reilly, Manuela Veloso, and Mei Wang. PRODIGY4.0: The manual and tutorial. Technical Report CMU-CS-92-150, School of Computer Science, Carnegie Mellon University, June 1992.