

David A. Furcy

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Research Interests

My research interests lie in the areas of artificial intelligence and computer science education. In AI, I am interested in building intelligent agents that can quickly solve large problems by combining smart search techniques with domain knowledge. Particular areas of focus include: heuristic search algorithms, anytime algorithms, real-time search, incremental search, neighborhood search, and applications of heuristic search to symbolic planning and replanning. I am also interested in designing effective algorithm visualizations to foster student learning in CS courses.

Education

Georgia Institute of Technology College of Computing, Atlanta, GA.

Ph.D. in Computer Science, December 2004.

Dissertation: *Speeding Up the Convergence of Online Heuristic Search and Scaling Up Offline Heuristic Search.*

Advisor: Dr. Sven Koenig.

Major: Intelligent Systems. Minor: Cognitive Science.

University of Iowa Computer Science Department, Iowa City, IA.

M.S. in Computer Science, July 1997.

Thesis: *Formal Description of and Experiments with Knuth-Bendix-Based Theorem Proving in OTTER.*

Advisor: Dr. Maria P. Bonacina.

Université de Technologie de Compiègne Department of Computer Engineering, Compiègne, France.

M.S. in Computer Science (Diplôme d'Etudes Approfondies), August 1994.

Thesis: *Real-Time Monitoring of Dynamical Systems with Temporal Scenarios* (in French).

Co-advisors: Dr. Dominique Fontaine and Dr. Claudette Sayettat.

Université de Technologie de Compiègne Department of Computer Engineering, Compiègne, France.

B.S. in Computer Engineering (Diplôme d'Ingénieur), July 1993.

Teaching Experience

Fall 2005 — present University of Wisconsin Oshkosh, WI.

Assistant professor. Courses taught:

- *Elementary Programming in Visual Basic - CS142* (2 sections)
- *Object-Oriented Design and Programming I - CS221* (3 sections)
- *File Structures - CS321* (2 sections)
- *Theory of Computing - CS381* (1 section)
- *Topics in Computing: Heuristic Search - CS480* (1 section)

Spring 2005 Blackburn College, Carlinville, IL.

Interim professor (one-semester sabbatical replacement). Courses taught:

- *Paradigms - CS212* (1 section)
- *Environments - CS214* (1 section)
- *Theory of Computation - CS440* (1 section)

Academic and Industrial Experience

- 2000 — present** College of Computing, Georgia Institute of Technology, Atlanta, GA.
Graduate Research Assistant. Researched real-time heuristic search methods for online search, as well as approximation and anytime heuristic search algorithms for offline search. Also researched heuristic-search-based planning and replanning methods. Faculty: Sven Koenig.
- 1997 — 1998** College of Computing, Georgia Institute of Technology, Atlanta, GA.
Graduate Research Assistant. Researched methods to represent, recognize and learn spatio-temporal patterns in the "Multi-Agent Plan Recognition with Noisy and Incomplete Data" project, funded by the Army Research Lab. Faculty: Ashwin Ram.
- 1994 — 1995** S.T.C.P.M.V.N., Compiègne, France.
Research Scientist. Participated in the design and implementation of a geotechnics expert system used to optimize drilling campaigns.
- 1993** S.T.C.P.M.V.N., Compiègne, France.
Computer Scientist. Developed a software connection between a harbor-design expert system and a calculation program for the Technical Service of the French Department of Transportation.

Publications

- Robert C. Holte, Jack Newton, Ariel Felner, Ram Meshulam, and David Furcy; Multiple Pattern Databases; Accepted for publication in: *Artificial Intelligence Journal*; August 2006.
- David Furcy; ITSA*: Iterative Tunneling Search with A*; *Proceedings of the AAAI Workshop on Heuristic Search, Memory-Based Heuristics and Their Applications*; pages 21-26; July 2006.
- David Furcy and Sven Koenig; Limited Discrepancy Beam Search; *Proceedings of the Nineteenth International Joint Conference on Artificial Intelligence (IJCAI)*; pages 125-131; July 2005.
- David Furcy and Sven Koenig; Scaling up WA* with Commitment and Diversity; *Proceedings of the Nineteenth International Joint Conference on Artificial Intelligence (IJCAI)*; pages 1521-1522; July 2005.
- Robert C. Holte, Jack Newton, Ariel Felner, Ram Meshulam, and David Furcy; Multiple Pattern Databases; *Proceedings of the 14th International Conference on Automated Planning and Scheduling (ICAPS)*; pages 122-131; 2004 (**Runner Up for Best Paper Award**).
- Sven Koenig, Maxim Likhachev, Yaxin Liu, and David Furcy; Incremental Heuristic Search in Artificial Intelligence; *Artificial Intelligence Magazine*; Vol. 25 (2); pages 99-112; Summer 2004.
- Sven Koenig, Maxim Likhachev, and David Furcy; Lifelong Planning A*; *Artificial Intelligence Journal*; Vol. 155 (1-2); pages 93-146; May 2004.
- Yaxin Liu, Sven Koenig, and David Furcy; Speeding up the Calculation of Heuristics for Heuristic Search-Based Planning; *Proceedings of the Eighteenth National Conference on Artificial Intelligence (AAAI)*; pages 484-491; July 2002.
- Sven Koenig, David Furcy, and Colin Bauer; Heuristic Search-Based Replanning; *Proceedings of the International Conference on Artificial Intelligence Planning and Scheduling (AIPS)*; pages 310-317; May 2002.
- David Furcy and Sven Koenig; STRIPS; *Encyclopedia of Cognitive Science, London: Macmillan*; December 2002 (invited paper).

- David Furcy and Sven Koenig; Combining Two Fast-Learning Real-Time Search Algorithms Yields Even Faster Learning; *Proceedings of the Sixth European Conference on Planning (ECP)*; September 2001.
- David Furcy and Sven Koenig; Speeding up the Convergence of Real-Time Search; *Proceedings of the Seventeenth National Conference on Artificial Intelligence (AAAI)*; pages 891-897; July 2000.

Citizenship and Immigration Status

- Citizen of France.
- Permanent resident of the USA.