

Matthew Streeter

CONTACT INFORMATION

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RESEARCH INTERESTS

Artificial intelligence, optimization, online algorithms, operations research, planning and scheduling, evolutionary computation theory

EDUCATION

Carnegie Mellon University, Pittsburgh, Pennsylvania USA

Postdoctoral Fellowship, spring 2008

Ph.D., Computer Science, December 2007

- Thesis: “Using Online Algorithms to Solve NP-Hard Problems More Efficiently in Practice”
- Advisor: Stephen F. Smith

Worcester Polytechnic Institute, Worcester, Massachusetts USA

M.S., Computer Science, May 2001

B.S., Computer Science, May 2000

SELECTED PUBLICATIONS

All of the following papers are refereed. Brief descriptions of each paper are available from my home page.

1. Matthew Streeter, Daniel Golovin, and Stephen F. Smith, *Combining Multiple Heuristics Online*, in Proceedings of the Twenty-Second Conference on Artificial Intelligence, 1197–1203, 2007.
2. Matthew Streeter, Daniel Golovin, and Stephen F. Smith, *Restart Schedules for Ensembles of Problem Instances*, in Proceedings of the Twenty-Second Conference on Artificial Intelligence, 1204–1210, 2007.
3. Matthew Streeter and Stephen F. Smith, *Using Decision Procedures Efficiently for Optimization*, in Proceedings of the Seventeenth International Conference on Automated Planning and Scheduling, 312–319, 2007.
4. Matthew Streeter and Stephen F. Smith, *How the Landscape of Random Job Shop Scheduling Instances Depends on the Ratio of Jobs to Machines*, in Journal of Artificial Intelligence Research 26:247–287, 2006.
5. Matthew Streeter and Stephen F. Smith, *Characterizing the Distribution of Low-Makespan Schedules in the Job Shop Scheduling Problem*, in Proceedings of the Fifteenth International Conference on Automated Planning and Scheduling, 61–70, 2005.
6. Matthew Streeter and Stephen F. Smith, *A Simple Distribution-Free Approach to the Max k -Armed Bandit Problem*, in Proceedings of the Twelfth International Conference on Principles and Practice of Constraint Programming, 560–574, 2006.
7. Matthew Streeter and Stephen F. Smith, *An Asymptotically Optimal Algorithm for the Max k -Armed Bandit Problem*, in Proceedings of the Twenty-First National Conference on Artificial Intelligence, 135–142, 2006.
8. Matthew Streeter and Stephen F. Smith, *Exploiting the Power of Local Search in a Branch and Bound Algorithm for Job Shop Scheduling*, in Proceedings of the Sixteenth International Conference on Automated Planning and Scheduling, 324–332, 2006.

9. Matthew Streeter, *Upper Bounds on the Time and Space Complexity of Optimizing Additively Separable Functions*, in Proceedings of the Genetic and Evolutionary Computation Conference, 186–197, 2004.
10. Matthew Streeter, *Two Broad Classes of Functions for which a No-Free-Lunch Result Does Not Hold*, in Proceedings of the Genetic and Evolutionary Computation Conference, 1418–1430, 2003.
11. Matthew Streeter and Lee A. Becker, *Automated Discovery of Numerical Approximation Formulae via Genetic Programming*, in Genetic Programming and Evolvable Machines, 4(3):255–286, 2003.
12. Matthew Streeter, *The Root Causes of Code Growth in Genetic Programming*, in Proceedings of the European Conference on Genetic Programming, 449–458, 2003.
13. Matthew Streeter, Martin A. Keane, and John R. Koza, *Automatic Synthesis using Genetic Programming of Improved PID Tuning Rules*, in Proceedings of the 2003 Intelligent Control Systems and Signal Processing Conference, 494–499, 2003.
14. Matthew Streeter, Martin A. Keane, and John R. Koza, *Automatic Synthesis using Genetic Programming of an Improved General-Purpose Controller for Industrially-Representative Plants*, in Proceedings of the NASA/DoD Conference on Evolvable Hardware, 113–122, 2002.
15. Matthew Streeter, Martin A. Keane, and John R. Koza, *Iterative Refinement of Computational Circuits using Genetic Programming*, in Proceedings of the Genetic and Evolutionary Computation Conference, 877–884, 2002.
16. Matthew Streeter, Martin A. Keane, and John R. Koza, *Routine Duplication of Post-2000 Patented Inventions by Means of Genetic Programming*, in Proceedings of the European Conference on Genetic Programming, 26–36, 2002.
17. Matthew Streeter, Matthew O. Ward, and Sergio A. Alvarez, *N² VIS: An Interactive Visualization Tool for Neural Networks*, in Proceedings of SPIE, 234–241, 2001.

INVITED
PUBLICATIONS

18. John R. Koza, Martin A. Keane, and Matthew Streeter, *Evolving Inventions*, Scientific American, 288(2):52–59, 2003.
19. John R. Koza, Martin A. Keane, Matthew Streeter, William Mydlowec, Jessen Yu, and Guido Lanza, *Genetic Programming IV: Routine Human-Competitive Machine Intelligence*, Kluwer Academic Publishers, 2003.
20. John R. Koza, Martin A. Keane, and Matthew Streeter, *What’s AI Done for Me Lately? Genetic Programming’s Human-Competitive Results*, in IEEE Intelligent Systems, 18(3):25–31, 2003.

WORKING PAPER

21. Matthew Streeter and Daniel Golovin, *An Online Algorithm for Maximizing Submodular Functions*, Technical Report CMU-CS-07-171, Carnegie Mellon University, 2007.

HONORS

- Best Student Paper Award at ICAPS 2005 for “Characterizing the Distribution of Low-Makespan Schedules in the Job Shop Scheduling Problem”
- Best Doctoral Consortium Paper Runner-Up Award at ICAPS 2007 for “Using Decision Procedures Efficiently for Optimization”
- Hertz Fellowship Finalist
- NSF Fellowship Honorable Mention
- Worcester Polytechnic Institute: John Calvert Strauss award for excellence in computer science (awarded annually to one junior)
- Worcester Polytechnic Institute: graduated with High Distinction

TEACHING
EXPERIENCE

Carnegie Mellon University, Pittsburgh, Pennsylvania USA

Teaching Assistant, Great Theoretical Ideas in Computer Science, Spring 2006

Taught weekly recitations, graded and prepared homework assignments, and gave one guest lecture. Average student evaluation: 4.0/4.0.

Teaching Assistant, Algorithms, Fall 2005

Taught weekly recitations, graded homework assignments, and gave one guest lecture. Average student evaluation: 3.75/4.0.

SERVICE

- Program Committee Member, International Conference on Automated Planning and Scheduling (ICAPS) 2008
- Reviewer for journals: *Journal of Scheduling*, *International Journal of Computational Intelligence and Applications*, *Control Systems Magazine*, *Evolutionary Computation Journal*, *IEEE Transactions on Evolutionary Computation*
- Reviewer for conferences: Learning and Intelligent Optimization 2007, IEEE Visualization Conference 2005, the Genetic and Evolutionary Computation Conference 2004-2007, Foundations of Genetic Algorithms 2005, the NASA/DoD Conference on Evolvable Hardware 2004-2005
- Member of Dec/5 (CMU computer science student social organization)

PROFESSIONAL
EXPERIENCE

Genetic Programming, Inc., Mountain View, California USA

Research Programmer, 2001 – 2003

Avid Technology, Tewksbury, Massachusetts USA

Software Engineer, Summer 2000

Etcbin Systems, Groton, Massachusetts USA

Software Engineer, Summers, 1995-1999

REFERENCES

Stephen F. Smith, Research Professor of Computer Science, Carnegie Mellon University

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Avrim Blum, Professor of Computer Science, Carnegie Mellon University

Email: avrim@cs.cmu.edu

Tuomas Sandholm, Professor of Computer Science, Carnegie Mellon University

Email: sandholm@cs.cmu.edu

Carla Gomes, Associate Professor of Computer Science, Cornell University

Email: gomes@cs.cornell.edu

John Koza, Consulting Professor of Electrical Engineering and Biomedical Informatics, Stanford University

Email: koza@stanford.edu