Ethan Burns

Department of Computer Science
University of New Hampshire
33 Academic Way, Durham, NH 03824-2619 USA
eaburns at cs unh edu, +1-603-498-8528
http://www.cs.unh.edu/~eaburns

Research Interests	Artificial intelligence, especially heuristic search, planning and optimization.

Education

UNIVERSITY OF NEW HAMPSHIRE Ph.D. in Computer Science, 2013
Dissertation: *Planning Under Time Pressure*. Advisor: Wheeler Ruml.
Attended the ICAPS Summer School on Automated Planning and Scheduling, 2009.

UNIVERSITY OF NEW HAMPSHIRE M.S in Computer Science, 2008
Thesis: *Implementation and Comparison of iSCSI Over RDMA*. Advisor: Robert Russell.

UNIVERSITY OF NEW HAMPSHIRE B.S. in Computer Science, 2006

Honors

Dissertation Year Fellowship, UNH Graduate School	2012–2013
Best Program Committee Member Award, Symposium on Combinatorial Search	2012
Richard Lyczak Memorial Teaching Award for the best department TA	2007

Professional Experience

GOOGLE
Software Engineer August 2013–present

UNIVERSITY OF NEW HAMPSHIRE
Research Assistant September 2008–September 2012
Research in heuristic search, including: parallel heuristic search for multi-core computers, disk-based heuristic search, search for optimization problems and learning in heuristic search.

PALO ALTO RESEARCH CENTER
Visiting Researcher August 2011–August 2012
Continued collaboration with Rong Zhou on parallel search techniques for model checking.

Intern June 2011–August 2011
Research with Rong Zhou on parallel search techniques for model checking, including the implementation of parallel search algorithms in the Spin model checker.

UNIVERSITY OF NEW HAMPSHIRE INTEROPERABILITY LAB
Software Engineer June 2003–September 2008
Testing and software development for IPv4 routing and IPv6 security. Development of an iSER back-end for the UNH-iSCSI Linux kernel module to allow for direct access of the memory on a remote computer over a 10 gigabit Ethernet or Infiniband network.

Refereed Journal Publication

Ethan Burns, Wheeler Ruml, and Minh Do, "Heuristic Search When Time Matters", *Journal of Artificial Intelligence Research*, volume 47, pages 697-740, 2013.

Ethan Burns and Wheeler Ruml, "Iterative-Deepening Search with On-Line Tree Size Prediction", *Annals of Mathematics and Artificial Intelligence*, pages 1-23, 2013.

Ethan Burns, Sofia Lemons, Wheeler Ruml and Rong Zhou, "Best-First Heuristic Search for Multicore Machines," *Journal of Artificial Intelligence Research*, volume 39, pages 689-743, 2010.

Refereed Conference Publications

Ethan Burns, J. Benton, Wheeler Ruml, Minh Do and Sungwook Yoon, "Anticipatory On-line Planning," *Proceedings of the Twenty-second International Conference on Automated Planning and Scheduling (ICAPS-12)*, 2012.

Scott Kiesel, Ethan Burns, Christopher Wilt and Wheeler Ruml, "Integrating Vehicle Routing and Motion Planning," *Proceedings of the Twenty-second International Conference on Automated Planning and Scheduling (ICAPS-12)*, 2012.

Matthew Hatem, Ethan Burns and Wheeler Ruml, "Heuristic Search for Large Problems With Real Costs," *Proceedings of the Twenty-fifth AAAI Conference on Artificial Intelligence (AAAI-11)*, 2011.

Bradford Larsen, Ethan Burns, Wheeler Ruml and Robert C. Holte, "Search Without a Heuristic: Efficient Use of Abstraction," *Proceedings of the Twenty-fourth AAAI Conference on Artificial Intelligence (AAAI-10)*, 2010.

Ethan Burns, Seth Lemons, Rong Zhou and Wheeler Ruml, "Suboptimal and Anytime Heuristic Search Search on Multi-Core Machines," *Proceedings of the Seventeenth International Conference on Automated Planning and Scheduling (ICAPS-09)*, 2009.

Ethan Burns, Seth Lemons, Rong Zhou and Wheeler Ruml, "Best-First Heuristic Search for Multi-Core Machines," *Proceedings of the Twenty-first International Joint Conference on Artificial Intelligence (IJCAI-09)*, 2009.

Refereed Symposium and Workshop Publications

Ethan Burns, Scott Kiesel, and Wheeler Ruml, "Experimental Real-time Heuristic Search Results in a Video Game", *Proceedings of the Sixth Annual Symposium on Combinatorial Search (SoCS-13)*, 2013.

Scott Kiesel, Ethan Burns, Wheeler Ruml, J. Benton, and Frank Kreimendahl, "Open World Planning for Robots via Hindsight Optimization", *Planning and Robotics (PlanRob-13)*, 2013.

Ethan Burns, Matthew Hatem, Michael J. Leighton, and Wheeler Ruml, "Implementing Fast Heuristic Search Code", *Proceedings of the Fifth Annual Symposium on Combinatorial Search (SoCS-12)*, 2012.

Scott Kiesel, Ethan Burns, and Wheeler Ruml, "Abstraction-guided Sampling for Motion Planning", *Proceedings of the Fifth Annual Symposium on Combinatorial Search (SoCS-12)*, 2012.

Ethan Burns and Rong Zhou, "Parallel Model Checking Using Abstraction," *Proceedings of the Nineteenth International SPIN Workshop on Model Checking of Software (SPIN-12)*, Lecture Notes in Computer Science, vol. 7385, Springer-Verlag, pp 172–190, 2012.

Ethan Burns and Wheeler Ruml, "Iterative-Deepening Search with On-line Tree Size Prediction," *Proceedings of the Sixth International Conference on Learning and Intelligent Optimization (LION-12)*, 2012.

Kevin Rose, Ethan Burns, and Wheeler Ruml, "Best-first Search for Bounded-depth Trees," *Proceedings of the Symposium on Combinatorial Search (SoCS-11)*, 2011.

Ethan Burns, Sofia Lemons, Wheeler Ruml and Rong Zhou, "Parallel Best-First Search: The Role of Abstraction," *Proceedings of the AAAI-10 Workshop on Abstraction, Reformulation and Approximation (WARA-10)*, 2010.

Ethan Burns, Seth Lemons, Wheeler Ruml and Rong Zhou, "Parallel Best-First Search: Optimal and Suboptimal Solutions," *Proceedings of the International Symposium on Combinatorial Search (SoCS-09)*, 2009.

Ethan Burns and Robert Russell, "Implementation and Evaluation of iSCSI Over RDMA," *Proceedings of Fifth IEEE International Workshop on Storage Network Architecture and Parallel I/Os (SNAPI-08)*, 2008.

Unrefereed Publications

Scott Kiesel, Ethan Burns, Wheeler Ruml, J. Benton, and Frank Kreimendahl, "Open World Planning via Hindsight Optimization," *University of New Hampshire Technical Report 12-03*, 2012.

Scott Kiesel, Ethan Burns, and Wheeler Ruml, "Abstraction-guided Sampling for Motion Planning," *University of New Hampshire Technical Report 12-01*, 2012.

Ethan Burns, and Wheeler Ruml, "On-line Tree Size Prediction using Incremental Models," University of New Hampshire Technical Report 11-01, 2011.

Teaching Experience

UNIVERSITY OF NEW HAMPSHIRE

Graduate Teaching Assistant

Algorithms (undergrad, grad)	Fall 2010
Introduction to Artificial Intelligence (undergrad-grad)	Spring 2009
Object-oriented Methodology (undergrad-grad)	Fall 2006, 2007; Spring 2007, 2008

Professional Activities

Journal Reviewing (Auxiliary Reviewer)
Advances in Artificial Intelligence
Artificial Intelligence
Journal of Artificial Intelligence Research

Conference Reviewing
AAAI Conference on Artificial Intelligence
Symposium on Combinatorial Search
Learning and Intelligent Optimization

Conference Reviewing (Auxiliary Reviewer)
European Conference on Artificial Intelligence
Florida Artificial Intelligence Research Society Conference

Software systems

Maintainer of the Plotinum plotting tool for the Go language.	2012-present
Maintainer of the SPT simple plotting tool for Objective Caml.	2010-present
Maintainer of the UNH-iSCSI Linux kernel driver.	2007-2008

Membership

Association for the Advancement of Artificial Intelligence	2009-present
Association for Computing Machinery	2007-present

Citizenship U.S.A.