# Wheeler Ruml

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| **Research Interests** | Artificial intelligence, robotics, operations research. |

**Education**

HARVARD UNIVERSITY — Ph.D. in Computer Science, 2002
Dissertation: *Adaptive Tree Search*. Advisor: Stuart M. Shieber.

HARVARD COLLEGE — A.B. *cum laude* in Computer Science, 1993
Honors thesis: *Stochastic Approximation Algorithms for Number Partitioning*.

**Honors**

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| Senior Member, AAAI | 2016 |
| Best Student Paper Award, Symposium on Combinatorial Search | 2015 |
| Best Paper Award, Symposium on Combinatorial Search | 2014 |
| Best Student Paper Award, Symposium on Combinatorial Search | 2014 |
| Outstanding Assistant Professor Award, University of New Hampshire | 2012 |
| Best Paper Presentation Award, Symposium on Combinatorial Search | 2010 |
| Personal letter of commendation from the President of R&D, Xerox Corporation | 2006 |
| Golden Acorn Award for most valuable patent of the year (co-winner), PARC | 2005 |
| Best Application Paper Award, Int'l Conf. on Automated Planning and Scheduling | 2005 |
| Outstanding Performance Award, PARC | 2003, 2005 |
| Thomas T. Hoopes Prize for undergraduate research, Harvard College | 1993 |

**Professional Experience**

UNIVERSITY OF NEW HAMPSHIRE

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| *Professor* | August 2017–present |
| *Associate Professor* | August 2012–July 2017 |
| *Assistant Professor* | July 2007–July 2012 |

Founded a research group in artificial intelligence.

LAAS-CNRS and INSA TOULOUSE

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| *Visiting Researcher* | August 2013–July 2014 |

Sabbatical visitor in the planning and robotics group with Malik Ghallab and Félix Ingrand.

PALO ALTO RESEARCH CENTER

*Area Manager, Embedded Reasoning* — April 2005–June 2007
Led a group of seven Ph.D.-level researchers in artificial intelligence and automatic control. Responsible for technical direction, sponsor relationships, hiring, discretionary budget, and evaluation of potential patents.

*Research Staff* — July 2002–March 2005
Initiated group research direction in artificial intelligence planning. Designed and built core software for a major Xerox robotics project.

**Edited Proceedings**

Steve Chien, Alan Fern, Wheeler Ruml, and Minh Do (eds), *Proceedings of the Twenty-fourth International Conference on Automated Planning and Scheduling (ICAPS-14)*, AAAI Press, 564 pp., 2014.

Daniel Borrajo, Ariel Felner, Richard Korf, Maxim Likhachev, Carlos Linares López, Wheeler Ruml, and Nathan Sturtevant (eds), *Proceedings of the Fifth International Symposium on Combinatorial Search (SoCS-12)*, AAAI Press, 232 pp., 2012.

David Furcy, Sven Koenig, Wheeler Ruml, and Rong Zhou (eds), *Proceedings of the First International Symposium on Search Techniques in Artificial Intelligence and Robotics (STAIR-08)*, AAAI Press Technical Report WS-08-10, 184 pp., 2008.

Ian Miguel and Wheeler Ruml (eds), *Abstraction, Reformulation, and Approximation: Proceedings of the Seventh International Symposium*, Springer Lecture Notes in Artificial Intelligence, volume 4612, 418 pp., 2007.

Raja Bala, Linda Emberley, Patrick Mazeau, Howard Mizes, Emily Moore, Peter Odell, Sudhendu Rai, Palghat Ramesh, Cheryl Roland, Wheeler Ruml, and Tracie Zanders (eds), *Proceedings of the First Annual Xerox Innovation Group Research and Technology Conference*, 328 pp., 2006. (not distributed externally)

Wheeler Ruml and Frank Hutter (eds), *Learning for Search: Papers from the AAAI Workshop*, AAAI Press Technical Report WS-06-11, 154 pp., 2006.

**Journal Publications**

Matthew Hatem, Ethan Burns, and Wheeler Ruml, "Solving Large Problems with Heuristic Search: General-Purpose Parallel External-Memory Search," *Journal of Artificial Intelligence Research*, 62, pp. 233–268, 2018.

Christopher Wilt and Wheeler Ruml, "Effective Heuristics for Suboptimal Best-First Search," *Journal of Artificial Intelligence Research*, 57, pp. 273–306, 2016.

Scott Kiesel, Ethan Burns, and Wheeler Ruml, "Achieving Goals Quickly Using Real-time Search: Experimental Results in Video Games," *Journal of Artificial Intelligence Research*, 54, pp. 123–158, 2015.

Jarad Cannon, Kevin Rose, and Wheeler Ruml, "Real-time Heuristic Search for Motion Planning with Dynamic Obstacles," *AI Communications*, 27, pp. 345–362, 2014.

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

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

Wheeler Ruml, Minh Binh Do, Rong Zhou, and Markus P. J. Fromherz, "On-line Planning and Scheduling: An Application to Controlling Modular Printers," *Journal of Artificial Intelligence Research*, 40, pp. 415–468, 2011.

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

Yi Shang, Wheeler Ruml, and Markus P. J. Fromherz, "Positioning using Local Maps," *Ad Hoc Networks*, 4(2), pp. 240–253, 2006.

Wheeler Ruml, Alfonso Caramazza, Rita Capasso, and Gabriele Miceli, "Interactivity and Continuity in Language Production: An Investigation Using Italian Aphasics," *Cognitive Neuropsychology*, 22(2), pp. 131-168, 2005.

Yi Shang, Wheeler Ruml, Ying Zhang, and Markus P. J. Fromherz, "Localization from Connectivity in Sensor Networks," *IEEE Transactions on Parallel and Distributed Systems*, 15(11), pp. 961–974, 2004.

Alfonso Caramazza, Costanza Papagno, and Wheeler Ruml, "The Selective Impairment of Phonological Processing in Speech Production," *Brain and Language*, 75(3), pp. 428–450, 2000.

Wheeler Ruml, Alfonso Caramazza, Jennifer R. Shelton, and Doriana Chialant, "Testing Assumptions in Computational Theories of Aphasia," *Journal of Memory and Language*, 43(2), pp. 217–248, 2000.

Wheeler Ruml and Alfonso Caramazza, "An Evaluation of a Computational Model of Lexical Access: Comment on Dell et al. (1997)," *Psychological Review*, 107(3), pp. 609–634, 2000.

Wheeler Ruml, J. Thomas Ngo, Joe Marks, and Stuart Shieber, "Easily Searched Encodings for Number Partitioning," *Journal of Optimization Theory and Applications*, 89(2), pp. 251–291, 1996. Also appeared as Harvard CS Technical Report TR-10-94r.

**Conference Publications**

Michael Cashmore, Andrew Coles, Bence Cserna, Erez Karpas, Daniele Magazzeni, Wheeler Ruml, "Temporal Planning While the Clock Ticks," *Proceedings of the Twenty-eighth International Conference on Automated Planning and Scheduling (ICAPS-18)*, 2018.

Bence Cserna, William J. Doyle, Jordan S. Ramsdell, and Wheeler Ruml, "Avoiding Dead Ends in Real-time Heuristic Search," *Proceedings of the Thirty-Second AAAI Conference on Artificial Intelligence (AAAI-18)*, 2018.

Scott Kiesel, Tianyi Gu, and Wheeler Ruml, "An Effort Bias for Sampling-based Motion Planning," *Proceedings of the IEEE/RSJ International Conference on Intelligent Robots and Systems (IROS-17)*, 2017.

Bence Cserna, Marek Petrik, Reazul Hasan Russel, and Wheeler Ruml, "Value Directed Exploration in Multi-Armed Bandits with Structured Priors," *Proceedings of the Thirty-third Conference on Uncertainty in Artificial Intelligence (UAI-17)*, 2017.

Bence Cserna, Wheeler Ruml, and Jeremy Frank, "Planning Time to Think: Metareasoning for On-line Planning with Durative Actions," *Proceedings of the Twenty-seventh International Conference on Automated Planning and Scheduling (ICAPS-17)*, 2017.

Matthew Hatem, Scott Kiesel, and Wheeler Ruml, "Recursive Best-First Search with Bounded Overhead," *Proceedings of the Twenty-ninth AAAI Conference on Artificial Intelligence (AAAI-15)*, 2015.

Matthew Hatem and Wheeler Ruml, "Simpler Bounded Suboptimal Search," *Proceedings of the Twenty-eighth AAAI Conference on Artificial Intelligence (AAAI-14)*, 2014.

Matthew Hatem and Wheeler Ruml, "External Memory Best-First Search for Multiple Sequence Alignment," *Proceedings of the Twenty-seventh AAAI Conference on Artificial Intelligence (AAAI-13)*, 2013.

Christopher Wilt and Wheeler Ruml, "Robust Bidirectional Search via Heuristic Improvement," *Proceedings of the Twenty-seventh AAAI Conference on Artificial Intelligence (AAAI-13)*, 2013.

Nathan R. Sturtevant, Ariel Felner, Maxim Likhachev, and Wheeler Ruml, "Heuristic Search Comes of Age (invited paper)," *Proceedings of the Twenty-sixth AAAI Conference on Artificial Intelligence (AAAI-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.

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.

Jordan Thayer, Roni Stern, Ariel Felner, and Wheeler Ruml, "Faster Bounded-Cost Search Using Inadmissible Estimates," *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.

Jordan T. Thayer and Wheeler Ruml, "Bounded Suboptimal Search: A Direct Approach Using Inadmissible Estimates," *Proceedings of the Twenty-second International Joint Conference on Artificial Intelligence (IJCAI-11)*, 2011.

Jordan T. Thayer, Austin Dionne, and Wheeler Ruml, "Learning Inadmissible Heuristics During Search," *Proceedings of the Twenty-first International Conference on Automated Planning and Scheduling (ICAPS-11)*, 2011.

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

Sungwook Yoon, Wheeler Ruml, J. Benton, and Minh B. Do, "Improving Determinization in Hindsight for On-line Probabilistic Planning," *Proceedings of the Twentieth International Conference on Automated Planning and Scheduling (ICAPS-10)*, 2010.

Silvia Richter, Jordan T. Thayer, and Wheeler Ruml, "The Joy of Forgetting: Faster Anytime Search via Restarting," *Proceedings of the Twentieth International Conference on Automated Planning and Scheduling (ICAPS-10)*, 2010.

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

Jordan T. Thayer and Wheeler Ruml, "Using Distance Estimates in Heuristic Search," *Proceedings of the Nineteenth 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.

Jordan Thayer and Wheeler Ruml, "Faster than Weighted A*: An Optimistic Approach to Bounded Suboptimal Search," *Proceedings of the Sixteenth International Conference on Automated Planning and Scheduling (ICAPS-08)*, 2008.

Minh B. Do, Rong Zhou, and Wheeler Ruml, "Planning for Modular Printers: Beyond Productivity," *Proceedings of the Sixteenth International Conference on Automated Planning and Scheduling (ICAPS-08)*, 2008.

Minh B. Do, Wheeler Ruml, and Rong Zhou, "On-line Planning and Scheduling: An Application to Controlling Modular Printers," *Proceedings of the Twenty-Third AAAI Conference on Artificial Intelligence (AAAI-08)*, 2008.

Wheeler Ruml and Minh B. Do, "Best-first Utility-guided Search," *Proceedings of the Twentieth International Joint Conference on Artificial Intelligence (IJCAI-07)*, pp. 2378–2384, 2007.

Haitham Hindi and Wheeler Ruml, "Network Flow Modeling for Flexible Manufacturing Systems with Re-entrant Lines," *Proceedings of the 45th IEEE Conference on Decision and Control (CDC-06)*, 2006.

Minh B. Do and Wheeler Ruml, "Lessons Learned in Applying Domain-independent Planning to High-speed Manufacturing," *Proceedings of the Sixteenth International Conference on Automated Planning and Scheduling (ICAPS-06)*, pp. 370–373, 2006.

Wheeler Ruml, Minh B. Do, and Markus P. J. Fromherz, "On-line Planning and Scheduling for High-speed Manufacturing," *Proceedings of the Fifteenth International Conference on Automated Planning and Scheduling (ICAPS-05)*, pp. 30–39, 2005. Winner of the Best Application Paper Award.

Hai Fang and Wheeler Ruml, "Complete Local Search for Propositional Satisfiability," *Proceedings of the Nineteenth National Conference on Artificial Intelligence (AAAI-04)*, pp. 161–166, 2004.

Yi Shang and Wheeler Ruml, "Improved MDS-Based Localization," *Proceedings of the 23rd Conference of the IEEE Communications Society (Infocom '04)*, pp. 2640–2651, 2004.

Yi Shang, Wheeler Ruml, Ying Zhang and Markus P. J. Fromherz, "Localization from Mere Connectivity," *Proceedings of the Fourth ACM International Symposium on Mobile Ad Hoc Networking and Computing (MobiHoc '03)*, pp. 201–212, 2003.

Wheeler Ruml, "Constructing Distributed Representations using Additive Clustering," *Advances in Neural Information Processing Systems 14 (NIPS-01)*, pp. 107–114, 2001. Preliminary version appeared as "Assigning Features using Additive Clustering," Harvard CS Technical Report TR-04-01.

Wheeler Ruml, "Incomplete Tree Search using Adaptive Probing," *Proceedings of the Seventeenth International Joint Conference on Artificial Intelligence (IJCAI-01)*, pp. 235–341, 2001.

Joe Marks, Brad Andalman, Paul Beardsley, William Freeman, Sarah Gibson, Jessica Hodgins, Tom Kang, Brian Mirtich, Hanspeter Pfister, Wheeler Ruml, Kathy Ryall, Josh Seims, and Stuart Shieber, "Design Galleries: A General Approach to Setting Parameters for Computer Graphics and Animation," *Proceedings of SIGGRAPH '97*, pp. 389–400, 1997.

**Symposium and Workshop Publications**

Shane Kochvi and Wheeler Ruml, "Does Fast Beat Thorough?: Comparing LSS-LRTA* and RTAA*," *Proceedings of the Symposium on Combinatorial Search (SoCS-18)*, 2018.

Michael Cashmore, Andrew Coles, Bence Cserna, Erez Karpas, Daniele Magazzeni, Wheeler Ruml, "Situated Planning for Execution Under Temporal Constraints," *AAAI Spring Symposium on Integrating Representation, Reasoning, Learning, and Execution for Goal Directed Autonomy (SIRLE-18)*, 2018.

Alison Paredes and Wheeler Ruml, "Real-Time Planning for Traffic Signal Control," *Proceedings of the AAAI-18 Workshop on AI Enhanced IoT Data Processing for Intelligent Applications (SmartIoT)*, 2018.

Alison Paredes and Wheeler Ruml, "Goal Reasoning as Multilevel Planning," *Proceedings of the ICAPS-17 Workshop on Integrated Execution of Planning and Acting (IntEx-17)*, 2017.

Scott Kiesel and Wheeler Ruml, "A Bayesian Effort Bias for Sampling-based Motion Planning," *Proceedings of the ICAPS-15 Workshop on Planning and Robotics (PlabRob-16)*, 2016.

Bence Cserna, Mike Bogochow, Stephen Chambers, Michaela Tremblay, Sammie Katt, and Wheeler Ruml, "Anytime versus Real-Time Heuristic Search for On-Line Planning," *Proceedings of the Symposium on Combinatorial Search (SoCS-16)*, 2016.

Dylan O'Ceallaigh and Wheeler Ruml, "Metareasoning in Real-time Heuristic Search," *Proceedings of the Symposium on Combinatorial Search (SoCS-15)*, 2015. Winner of the Best Student Paper Award. A mildly augmented version entitled "Metareasoning for Concurrent Planning and Acting" appeared in *Proceedings of the ICAPS-15 Workshop on Planning and Robotics (PlanRob-15)*.

Christopher Wilt and Wheeler Ruml, "Building a Heuristic for Greedy Search," *Proceedings of the Symposium on Combinatorial Search (SoCS-15)*, 2015.

Alon Palombo, Roni Stern, Rami Puzis, Ariel Felner, Scott Kiesel, and Wheeler Ruml, "Solving the Snake in the Box Problem with Heuristic Search: First Results," *Proceedings of the Symposium on Combinatorial Search (SoCS-15)*, 2015.

Roni Stern, Scott Kiesel, Rami Puzis, Ariel Felner, and Wheeler Ruml, "Max is More than Min: Solving Maximization Problems with Heuristic Search," *Proceedings of the Symposium on Combinatorial Search (SoCS-14)*, 2014. Winner of the Best Paper Award.

Christopher Wilt and Wheeler Ruml, "Speedy versus Greedy Search," *Proceedings of the Symposium on Combinatorial Search (SoCS-14)*, 2014. Winner of the Best Student Paper Award.

Matt Hatem and Wheeler Ruml, "Bounded Suboptimal Search in Linear Space: New Results," *Proceedings of the Symposium on Combinatorial Search (SoCS-14)*, 2014.

Scott Kiesel and Wheeler Ruml, "Planning Under Temporal Uncertainty Using Hindsight Optimization," *Proceedings of the ICAPS-14 Workshop on Planning and Robotics (PlanRob-14)*, 2014.

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

Matthew Hatem, Roni Stern, and Wheeler Ruml, "Bounded Suboptimal Heuristic Search in Linear Space" *Proceedings of the 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," *Proceedings of the ICAPS-13 Workshop on Planning and Robotics (PlanRob-13)*, 2013.

Jarad Cannon, Kevin Rose, and Wheeler Ruml, "Real-time Motion Planning with Dynamic Obstacles," *Proceedings of the Symposium on Combinatorial Search (SoCS-12)*, 2012.

Christopher Wilt and Wheeler Ruml, "When does Weighted A* Fail?," *Proceedings of the Symposium on Combinatorial Search (SoCS-12)*, 2012.

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

Scott Kiesel, Ethan Burns, and Wheeler Ruml, "Abstraction-guided Sampling for Motion Planning," *Proceedings of the Symposium on Combinatorial Search (SoCS-12)*, 2012. Extended version available as UNH Technical Report 12-01, 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. Earlier version available as UNH Technical Report 11-01, 2011.

Austin J. Dionne, Jordan T. Thayer, and Wheeler Ruml, "Deadline-Aware Search Using On-line Measures of Behavior," *Proceedings of the Symposium on Combinatorial Search (SoCS-11)*, 2011.

Michael J. Leighton, Wheeler Ruml, and Robert C. Holte, "Faster Optimal and Suboptimal Hierarchical Search," *Proceedings of the Symposium on Combinatorial Search (SoCS-11)*, 2011.

Christopher Wilt and Wheeler Ruml, "Cost-Based Heuristic Search is Sensitive to the Ratio of Operator Costs," *Proceedings of the Symposium on Combinatorial Search (SoCS-11)*, 2011.

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

David Biegelsen, Lara Crawford, Minh Do, Dave Duff, Craig Eldershaw, Markus Fromherz, Haitham Hindi, Greg Kott, Dan Larner, Barry Mandel, Steve Moore, Bryan Preas, Wheeler

Ruml, Greg Schmitz, Lars Swartz, and Rong Zhou, "Integrated Parallel Printing Systems with Hypermodular Architecture," *IS&T/SPIE Conference on Electronic Imaging, Symposium on Parallel Processing for Imaging Applications*, 2011.

Jordan Thayer and Wheeler Ruml, "Finding Acceptable Solutions Faster Using Inadmissible Information," *Proceedings of the Symposium on Combinatorial Search (SoCS-10)*, 2010. Extended version available as UNH CS Technical Report 10-01, 19pp.

Wheeler Ruml, "The Logic of Benchmarking: A Case Against State-of-the-Art Performance," *Proceedings of the Symposium on Combinatorial Search (SoCS-10)*, 2010.

David M. Bond, Niels A. Widger, Wheeler Ruml and Xiaoxun Sun, "Real-Time Search in Dynamic Worlds," *Proceedings of the Symposium on Combinatorial Search (SoCS-10)*, 2010.

Jordan Thayer and Wheeler Ruml, "Anytime Heuristic Search: Frameworks and Algorithms," *Proceedings of the Symposium on Combinatorial Search (SoCS-10)*, 2010.

Christopher Wilt, Jordan Thayer and Wheeler Ruml, "A Comparison of Greedy Search Algorithms," *Proceedings of the Symposium on Combinatorial Search (SoCS-10)*, 2010.

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.

Seth Lemons, J. Benton, Wheeler Ruml, Minh B. Do, and Sungwook Yoon, "Continual On-line Planning as Decision-Theoretic Incremental Heuristic Search," *Proceedings of the AAAI Spring Symposium on Embedded Reasoning*, 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.

Silvia Richter, Jordan T. Thayer, and Wheeler Ruml, "The Joy of Forgetting: Faster Anytime Search via Restarting," *Proceedings of the International Symposium on Combinatorial Search (SoCS-09)*, 2009.

Jordan T. Thayer, Wheeler Ruml, and Jeff Kreis, "Using Distance Estimates in Heuristic Search: A Re-evaluation," *Proceedings of the International Symposium on Combinatorial Search (SoCS-09)*, 2009.

Allen Hubbe, Wheeler Ruml, Sungwook Yoon, J. Benton, and Minh B. Do, "On-line Anticipatory Planning," *Proceedings of the ICAPS-08 Workshop on A Reality Check for Planning and Scheduling Under Uncertainty*, 2008.

Jordan T. Thayer, Wheeler Ruml, and Ephrat Bitton, "Fast and Loose in Bounded Suboptimal Heuristic Search," *Proceedings of the First International Symposium on Heuristic Search in Artificial Intelligence and Robotics (STAIR-08)*, pp. 120–126, 2008.

Minh B. Do, Rong Zhou, and Wheeler Ruml, "Beyond Planning for Productivity," *Proceedings of the Second Xerox Innovation Group Research and Technology Conference*, 6 pp., 2008. (not distributed externally)

J. Benton, Minh B. Do, and Wheeler Ruml, "A Simple Testbed for On-line Planning," *Proceedings of the ICAPS-07 Workshop on Moving Planning and Scheduling Systems into the Real World*, 8 pp., 2007. Also appeared in the *Proceedings of the Second International Competition on Knowledge Engineering for Planning and Scheduling (ICKEPS-07)*.

Wheeler Ruml, "Tightly Integrated Parallel Printing: An Overview", *Proceedings of the First Annual Xerox Innovation Group Research and Technology Conference*, pp. 84–85, 2006. (not distributed externally)

Minh B. Do, Wheeler Ruml, and Rong Zhou, "Beyond Scheduling: Using On-line Planning to Control Printers," *Proceedings of the First Annual Xerox Innovation Group Research and Technology Conference*, pp.91–94, 2006. (not distributed externally)

Wheeler Ruml and Elisabeth H. Crawford, "Best-first Utility-Guided Search," *Working Notes of the IJCAI-05 Workshop on Planning and Learning in A Priori Unknown or Dynamic Domains*, pp. 103–109, 2005.

Ying Lu, Lara S. Crawford, Wheeler Ruml, Markus P. J. Fromherz, "Feedback Control for Real-Time Solving," *Working Notes of the CP-04 Workshop on Constraint Solving under Change and Uncertainty (Changes-04)*, pp. 21–35, 2004.

Wheeler Ruml and Markus P. J. Fromherz, "On-line Planning and Scheduling in a High-speed Manufacturing Domain," *Proceedings of the ICAPS-04 Workshop on Integrating Planning into Scheduling*, pp. 60–66, 2004.

Wheeler Ruml, "Heuristic Search in Bounded-depth Trees: Best-Leaf-First Search," *Working Notes of the AAAI-02 Workshop on Probabilistic Approaches in Search*, pp. 45–51, 2002. Preliminary version appeared as Harvard CS Technical Report TR-01-02.

Wheeler Ruml, "Using Prior Knowledge with Adaptive Probing," *Proceedings of the 2001 AAAI Fall Symposium on Using Uncertainty Within Computation* (AAAI Technical Report FS-01-04), pp. 116-120, 2001.

Wheeler Ruml, "Stochastic Tree Search: Where to Put the Randomness?," *Proceedings of the IJCAI-01 Workshop on Stochastic Search*, pp. 43–47, 2001.

Wheeler Ruml, "Learning to Search Trees," selected for oral presentation at *The AAAI-2000 Workshop on Leveraging Probability and Uncertainty in Computation*, 2000.

Wheeler Ruml, "Alan W. Biermann, *Great Ideas in Computer Science*" (book review), *Mind and Machines*, 9(3), pp. 417–421, 1999.

Joe Marks, Wheeler Ruml, Stuart Shieber, and Tom Ngo, "A Seed-Growth Heuristic for Graph Bisection," *Proceedings of Algorithms and Experiments '98*, pp. 76–87, 1998. Also appeared as Harvard CS Technical Report TR-01-98.

Brad Andalman, Kathy Ryall, Wheeler Ruml, Joe Marks, and Stuart Shieber, "Design Gallery Browsers Based on 2D and 3D Graph Drawing," *Proceedings of the International Symposium on Graph Drawing (GD '97)*, Lecture Notes in Computer Science, vol. 1353, Springer-Verlag, pp. 322-329, 1998.

**Trade Publications**

Lara S. Crawford, Minh Binh Do, Wheeler Ruml, Haitham Hindi, Craig Eldershaw, Rong Zhou, Lukas Kuhn, Markus P.J. Fromherz, David Biegelsen, Johan de Kleer, Daniel Larner, "On-line Reconfigurable Machines," *AI Magazine*, Fall, pp. 73–88, 2013.

Matthew Hatem, Ethan Burns, and Wheeler Ruml, "Problem Solving with Heuristic Search and Java," *IBM developerWorks*, July, 2013, 24 pp. Chinese, Japanese, and Russian translations, January, 2014.

**Theses**

Wheeler Ruml, *Adaptive Tree Search*. Ph.D. thesis, Harvard University, May, 2002, 144 pp.

Wheeler Ruml, *Stochastic Approximation Algorithms for Number Partitioning*. Undergraduate honors thesis and Harvard CS Technical Report TR-17-93, April, 1993, 79 pp.

**Unrefereed Publications**

Christopher Wilt, Jordan Thayer, and Wheeler Ruml, "Selecting a Greedy Search Algorithm," UNH CS Technical Report 10-07, 18 pp.

Wheeler Ruml, Adam Ginsburg, and Stuart Shieber, "Speculative Pruning for Boolean Satisfiability," Harvard CS Technical Report TR-02-99, 18 pp.

Wheeler Ruml, Joe Marks, Stuart Shieber, and Tom Ngo, "Seed-Growth Heuristics for Graph Bisection," Harvard CS Technical Report TR-10-99, 33 pp.

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| **Grants** | *Modular AI Based Response Engine for ICS NTA and Correction* | July, 2018–June, 2019 |
| | In cooperation with C3I, Inc. NH IRC, $60,453. | |

*Advanced Analysis of Geothermal Heat Pump System Data*     July, 2017–August, 2018
PI: Matt Davis. DoE SBIR Program, $150,000.

*UNH Data Science Working Group*     July, 2017–June, 2018
Co-PIs: Mark Lyon, Tevfik Aktekin. UNH CoRE Program, $9,915.

Research Experiences for Undergraduates Supplement     Summer, 2015
NSF Robust Intelligence Program, $6,160.

Visiting Researcher Fellowship     August, 2013–May, 2014
LAAS-CNRS and INSA Toulouse.

*From Heuristic Search To Robotics*     September, 2013–May, 2014
UNH Faculty Scholars Program, sabbatical teaching release.

*Time-Aware Heuristic Search*     June, 2012–May, 2017
NSF Career Program, $498,403.

International Collaboration Supplement     Summer, 2011
NSF Robust Intelligence Program, $18,508.

Research Experiences for Undergraduates Supplement     Summer, 2011
NSF Robust Intelligence Program, $12,000.

*Time-aware Optimization for Battlespace Management*     June, 2010–May, 2013
DARPA Computer Science Study Group Program, $396,120.

*A Symposium on Combinatorial Search*     July, 2009–June, 2010
Co-PIs: Sven Koenig, Rong Zhou. NSF Robust Intelligence Program, $30,971.

International Development Grant     Summer, 2009
UNH Center for International Education, $500.

*Lightweight Metareasoning for Ubiquitous Optimization*     March, 2009–May, 2010
DARPA Computer Science Study Group Program, $99,220.

*Combinatorial Search Algorithms as Rational Agents*     September, 2008–August, 2012
NSF Robust Intelligence Program, $448,192.

*A Symposium Series on Heuristic Search and Its Applications*     June, 2008–May, 2009
Co-PIs: David Furcy, Sven Koenig, Rong Zhou. NSF Robust Intelligence Program, $14,646.

**Patents**     Sungwook Yoon, Wheeler Ruml, Minh B. Do, "AI Planning-based Quasi-Montecarlo Simulation Method for Probabilistic Planning," US patent 8,473,447 issued June, 2013.

Wheeler Ruml, Minh B. Do, Rong Zhou, and Haitham Hindi, "System and Method for Real-Time System Control Using Precomputed Plans," US patent 7,925,366, issued April, 2011. Also filed in Japan.

Minh B. Do, Wheeler Ruml, and Rong Zhou, "Model-Based Planning with Multi-Capacity Resources," US patent 9,250,967 issued February, 2016. Also filed in Europe.

Wheeler Ruml, Minh B. Do, and Rong Zhou, "System and Method for On-Line Planning Utilizing Multiple Planning Queues," US patent 7,590,464 issued September, 2009 and US patent 8,463,416 issued June, 2013. Also filed in Japan.

Wheeler Ruml, "System and Method for Bounded Sub-Optimal Problem-Solving," US patent 7,966,336, issued June, 2011. Also filed in Japan.

Wheeler Ruml and Minh B. Do, "Exception Handling," US parent 8,145,335, issued March 2012. Also filed in Japan.

Wheeler Ruml, Robert M. Lofthus, and Minh B. Do, "Model-Based Planning Using Query-Based Model Components," US patent 7,689,311, issued March, 2010. Also filed in Japan.

Wheeler Ruml, "System and Method for Solving Multiple Interacting State-Space Search Problems," US patent 8,086,595, issued December, 2011.

Meera Sampath, Markus P. J. Fromherz, Dusan G. Lysy, Rajinderjeet S. Minhas, Naveen Sharma, William J, Hannaway, Wheeler Ruml, "Fault Management for a Printing System," US patent 8,607,102 issued December, 2013.

Haitham Hindi and Wheeler Ruml, "System and Method for Manufacturing System Design and Shop Scheduling Using Network Flow Modeling," US patent 8,407,077, issued March, 2013.

Wheeler Ruml and Elisabeth H. Crawford, "System and Method for Time-aware Path Finding," US patent 7,389,279, issued June, 2008.

Lara S. Crawford, Haitham A. Hindi, Markus P. J. Fromherz, Craig Eldershaw, Wheeler Ruml, and Kimon D. Roufas, "Distributed Control Systems and Methods that Selectively Acivate Respective Coordinators for Respective Tasks," US patent 7,873,962 issued January, 2011.

Wheeler Ruml and Markus P. J. Fromherz, "System and Method for Production Planning Utilizing On-line State-space Planning," US patent 7,451,132, issued November, 2008.

Yi Shang and Wheeler Ruml, "Node Localization in Communication Networks," US patent 7,457,860, issued November, 2008.

Wheeler Ruml, Robert M. Lofthus, Ronald J. Root, Markus P. J. Fromherz, and Marc W. Webster, "Exception Handling in Manufacturing Systems Combining On-line Planning and Predetermined Rules," US patent 7,043,321, issued May, 2006. Also filed in Europe and Japan.

Wheeler Ruml and Markus P. J. Fromherz, "System and Method Utilizing Temporal Constraints to Coordinate Multiple Planning Sessions," US patent 6,898,475, issued May, 2005. Also filed in Europe and Japan. Co-winner of 2005 PARC Golden Acorn Award for most valuable patent of the year.

Wheeler Ruml, Joseph Marks, Kathleen Ryall, and Stuart M. Shieber, "User Interface for Creation of Image Generation and Transformation Functions," US patent 6,421,050, issued July, 2002. Also filed in Europe and Japan.

**Invited Presentations**
*Invited Talks*
"Goal Reasoning as Multilevel Planning"
    IJCAI-18 Workshop on Goal Reasoning, July 2018

"Planning: When Optimal Is Just Not Good Enough"
    New Mexico State University (the 2015-16 Frank Harary Distinguished Lecture), April 2016

"Robots: Today and Tomorrow"
    Kendal at Hanover Retirement Community, January 2015

"Two General Approaches for Fast Planning"
    MIT, October 2014

"Better Than Optimal Planning: Balancing Search Time and Solution Cost"
    Ben-Gurion University of the Negev, Israel, March 2014
    Universität Basel, Switzerland, March 2014
    LAAS-CNRS, France, February 2014
    ONERA Toulouse, France, January 2014

"The Symposium on Combinatorial Search: What's Hot"
　　AAAI, July 2013

"What Your Mama Didn't Tell You About Heuristic Search"
　　ICAPS, June 2013

"Integrating Vehicle Routing and Motion Planning"
　　ICRA Workshop on Combining Task and Motion Planning, May 2013

"Planning Algorithms: When Optimal Just Isn't Good Enough"
　　Vassar College, November 2012
　　Harvard University, September 2012
　　Tufts University, September 2012
　　University of Massachusetts, Lowell, November 2011

"Search Algorithms as Agents"
　　Symposium on Combinatorial Search, July 2011

"Best-first Graph Search on Multicore Machines"
　　Dagstuhl Seminar on Graph Search Engineering, November 2009

"Job Hunting in Industry and Academia"
　　ICAPS Doctoral Consortium, September 2008, May 2010, June 2013, June 2015

"Planning Under Time Pressure"
　　Williams College, October 2007

"Heuristic Search and Rational Agents"
　　University of New Hampshire, March 2007
　　Worcester Polytechnic Institute, February 2007
　　Pomona College, February 2007

"Learning to Search Trees"
　　Stanford University, March 2006

"On-line Planning for High-speed Manufacturing"
　　University of Nebraska, Lincoln, November 2005
　　University of Alberta, Edmonton, November 2005

"Best-first Search for Combinatorial Optimization"
　　University of California, Berkeley, April 2002
　　SRI International, April 2002
　　Palo Alto Research Center, April 2002

"Computational Modeling of Lexical Access"
　　U.S. Army Research Laboratory, Aberdeen Proving Ground, February, 2000

*Tutorials*
"Recent Directions in Heuristic Search"
　　with Ariel Felner and Nathan Sturtevant, AAAI 2016

"Heuristic Search: The Basics and Beyond"
　　with Jordan Thayer, ICAPS 2012 and AAAI 2012

"Using Solution Length Estimates in Heuristic Search"
　　with Jordan Thayer, ICAPS 2011

"A Survey of Suboptimal Search Algorithms"
　　with Jordan Thayer, ICAPS 2011

*Panel Presentations*
Symposium on Combinatorial Search, 2015 (moderator)

Symposium on Combinatorial Search, 2010 (moderator)

ICAPS Workshop on Planning and Learning, 2007

ICAPS Workshop on Planning Under Uncertainty and Execution Control for Autonomous
Systems, 2006

AAAI Fall Symposium on Using Uncertainty Within Computation, 2001

| | | |
|---|---|---|
| **Teaching Experience** | UNIVERSITY OF NEW HAMPSHIRE | |
| | *Instructor* | |
| | Introduction to Artificial Intelligence | Spring 2008–present |
| | Algorithms | Fall 2010–present |
| | Planning for Robots | Spring 2013, Fall 2014–present |
| | Combinatorial Search and Heuristic Optimization | Fall 2008–2009, Spring 2011–2012 |
| | Classic Papers in Artificial Intelligence | Fall 2008 |
| | Undergraduate Presentation Seminar | Fall 2007, Spring 2008 |
| | PALO ALTO RESEARCH CENTER | |
| | *Guest Lecturer* | |
| | Foundations of Constraint Processing (University of Nebraska, Lincoln) | Fall 2005 |
| | HARVARD UNIVERSITY | |
| | *Instructor* | |
| | Introduction to Artificial Intelligence | Fall 2001 |
| | *Co-lecturer* | |
| | Introduction to Artificial Intelligence | Fall 1999, 2000 |
| | *Guest Lecturer* | |
| | Introduction to Computer Science II (Harvard Summer School) | Summer 1998, 1999 |
| | Theory of Computation | Fall 1997 |
| | Theory of Computation (Harvard Extension School) | Fall 1997 |
| **Students Supervised** | UNIVERSITY OF NEW HAMPSHIRE | |
| | *Ph.D. Dissertations* | |
| | Scott Kiesel, *Robotics Needs Non-classical Planning* | Fall 2010–Summer 2016 |
| | Matt Hatem, *Heuristic Search with Limited Memory* | Fall 2010–Spring 2014 |
| | Chris Wilt, *Steps Towards a Science of Heuristic Search* | Summer 2009–Spring 2014 |
| | Ethan Burns, *Planning Under Time Pressure* | Fall 2008–Spring 2013 |
| | Jordan Thayer, *Heuristic Search Under Time and Cost Bounds* | Summer 2007–Spring 2012 |
| | *M.S. Theses* | |
| | Dylan O'Ceallaigh, *Metareasoning in Real-time Heuristic Search* | Spring 2013–Fall 2014 |
| | Frank Kreimendahl, *Stacker Crane Problem State Space Reduction* | Summer 2012–Spring 2013 |
| | Chris Sexton, *Anytime Solving by Solution Refinement* | Fall 2011–Fall 2012 |
| | Mike Leighton, *Faster Optimal and Suboptimal Hierarchical Search* | Summer 2010–Spring 2012 |
| | Jarad Cannon, *Robot Motion Planning Using Real-time Heuristic Search* | Fall 2010–Fall 2011 |
| | Kevin Rose, *Real-time Sampling-based Motion Planning with Dynamic Obstacles* | Summer 2010–Fall 2011 |
| | Austin Dionne, *Heuristic Search Under a Deadline* | Summer 2010–Spring 2011 |
| | *M.S. Projects* | |
| | Kasra Dalvand, Exploring a Maze Using a Pioneer 3-DX Robot | Spring 2014–Spring 2015 |
| | Jake Mandel, Scheduling for Quality | Fall 2007–Fall 2009 |
| | *Graduate Research* | |
| | Jordan Ramsdell, Real-time search | Spring 2017–Summer 2017 |

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|---|---|
| Nate Beaulieu, Suboptimal search | Fall 2016–Summer 2017 |
| Alison Paredes, Open-world planning | Summer 2016–present |
| Will Doyle, Real-time search | Summer 2016–present |
| Tianyi Gu, Motion planning | Summer 2016–present |
| Patrick Merrill, Multi-level planning | Spring–Summer 2015 |
| Bence Cserna, Real-time search | Spring 2015–present |
| Simon Obgamichael, Class sectioning | Summer 2014 |
| Stephen Dunn, Motion planning | Summer 2013–Summer 2014 |
| David Bond, Real-time search | Spring–Fall 2009 |
| Sofia Lemons, Multi-core search, continual planning | Fall 2008–2010 |

*Ph.D. External Examiner*

Rick Valenzano, *Design Decisions in Suboptimal Heuristic Search-based Systems*, University of
Alberta, September, 2014.

David Tolpin, *Rational Metareasoning in Problem-Solving Search*, Ben-Gurion University of
the Negev, January, 2014.

Santiago Franco, *Automatic Heuristic Selection, on a Problem by Problem Basis, Using an
Analytical Model and In Situ Sampling*, University of Auckland, November, 2010.

*Ph.D. Committee Member*

Dan Pineo, *The Application of Computational Modeling to Data Visualization*, University of
New Hampshire, December, 2010.

*M.S. Committee Member*

Chris Hebert, *Inferring Types to Eliminate Ownership Checks in an Intentional
JavaScript Compiler*, University of New Hampshire, May, 2015

*Doctoral Mentoring Programs*

| | |
|---|---|
| International Joint Conference on Artificial Intelligence (IJCAI) | 2011 |
| International Conference on Automated Planning and Scheduling (ICAPS) | 2007, 2008, 2010, |

2013

*Senior Theses*

| | |
|---|---|
| Shane Kochvi, *Does Fast Beat Thorough?: Comparing Real-Time Search Algorithms LSS-LRTA\* and RTAA\** | Fall 2016–2017 |
| Adam Nastasia, *Explorations with a Custom RGBD Camera System* | Fall 2016–Spring 2017 |
| Dylan O'Ceallaigh, *Enhanced Real-time Search for Dynamic Worlds* | Fall 2012–Spring 2013 |
| Chris Hebert, *Real-time Cooperative Path-finding* | Spring 2012–2013 |
| Kevin Rose, *Best-first Search for Solving Constraint Satisfaction Problems* | Spring 2009–2010 |

*Undergraduate Research*

| | |
|---|---|
| Tyler Slabinski, Motion planning | Summer 2015 |
| Jennifer Baker, Real-time search | Fall 2010–2011 |
| Allen Hubbe, Modeling heuristic error | Summer 2008 |
| Austin Dionne, Shortest-path search under a deadline | Fall 2007–Spring 2008 |

*Senior Projects*

| | |
|---|---|
| Matin Masimli, Aung Khant Nyar; model fitting | Fall 2017–Spring 2018 |
| Bradley Snay, Zachary Specht; class sectioning | Fall 2015–Spring 2016 |
| William Breen, Tyler Janowski, Alex Schwartz; robotic manipulation | Fall 2012–Spring 2013 |
| Bryan Custer, Zach Piispanen, Jeremy Smith; robot navigation | Fall 2012–Spring 2013 |

*Secondary School Research*

| | |
|---|---|
| Bernard Suwirjo (Pinkerton Academy), Robotics | Fall 2015–Summer 2016 |

Palo Alto Research Center

*Graduate Interns*

| | |
|---|---|
| J. Benton (Arizona State), On-line continual planning | Summer 2006 |

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|---|---|
| Elisabeth Crawford (Carnegie Mellon), Time-aware search | Summer 2004 |
| Hai Fang (Yale), Complete local search | Summer–Fall 2003 |

*Undergraduate Interns*

| | |
|---|---|
| Ephrat Bitton (Berkeley), Fast shortest-path search | Summer 2006–Spring 2007 |
| Kevin Canini (Cornell), Data structures for temporal planning | Summer 2005 |
| Daniel Hsu (Berkeley), Local search algorithms | Summer 2003 |

*Doctoral Mentoring Program*

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|---|---|
| International Conference on Automated Planning and Scheduling (ICAPS) | 2004, 2005 |

HARVARD UNIVERSITY

*Senior Theses*

| | |
|---|---|
| Gaby Pollack, Cognitive modeling of brain-damaged picture naming | Spring 1999–Spring 2000 |
| Ellis Verosub, Heuristic search for protein folding | Spring 1997–Spring 1998 |
| Nailah Robinson, Analysis of algorithms for boolean satisfiability | Spring 1997–Spring 1998 |
| Adam Ginsburg, Heuristic search for boolean satisfiability | Fall 1996–Spring 1997 |

*Undergraduate Research*

| | |
|---|---|
| Paul Gusmorino, Visualization for combinatorial optimization | Fall 2001 |
| Lea Sullivan, Estimating probabilities for human naming errors | Fall 2000–Spring 2001 |
| Jeffrey Enos, Heuristic tree search algorithms | Spring 2000 |
| Jeffrey Shneidman, Heuristic tree search algorithms | Spring 2000 |
| Kevin Cheung, Stochastic search algorithms | Spring 2000 |
| Emil Gilliam, Local search algorithms for additive clustering | Fall 1999 |
| Joseph Turian, Move strategies for local search | Fall 1998–Spring 1999 |
| Pavel Vasilyev, Heuristic search and geometric embedding | Fall 1997–Fall 1999 |
| Angelos Kottas, Cognitive modeling of brain-damaged picture naming | Fall 1997–Winter, 1999 |
| Joshua Von Korff, Cross-validation for clustering | Fall 1997–Spring 1998 |

**Professional Activities**

*Steering Committees*

International Conference on Automated Planning and Scheduling (ICAPS), 2014–2020.
  Councilor, Treasurer (2015–2019).
International Symposium on Combinatorial Search (SoCS), 2008–present.
  Co-founder (2008), President (2008-2016), Past President (2016–present),
  Co-treasurer (2010-2014).

*Conference Organization*

Co-chair, ICAPS-17 Doctoral Consortium, 2017.
Co-chair, International Conference on Automated Planning and Scheduling (ICAPS-14), 2014.
Co-chair, International Symposium on Combinatorial Search (SoCS-12), 2012.
Co-chair, International Symposium on Combinatorial Search (SoCS-09), 2009.
Co-chair, International Symposium on Search Techniques in Artificial Intelligence and
  Robotics (STAIR-08), 2008.
Co-chair, Seventh International Symposium on Abstraction, Reformulation, and Approximation
  (SARA-07), 2007.
Organizing committee, International Knowledge Engineering Competition for Planning and
  Scheduling, 2007.
Organizing committee, First Annual Xerox Innovation Group Research and Technology
  Conference, 2006. (attendance restricted to employees)
Co-chair, AAAI-06 Workshop on Learning for Search, 2006.

*Editorial Board*

Journal of Artificial Intelligence Research, 2006–2014. Associate editor, 2014–2017.

*Program Reviewing*

Plymouth State University

*Grant Reviewing*
Australian Research Council
Comisión Nacional de Investigación Científica y Tecnológica (Chile)
European Research Council
Israel Science Foundation
L'Agence Nationale de la Recherche (France)
National Science Foundation
Natural Sciences and Engineering Research Council of Canada
Swiss National Science Foundation
U.S. Army Research Office
U.S.-Israel Binational Science Foundation

*Manuscript Reviewing*
Morgan Kaufmann Publishers

*Journal Reviewing*
ACM Transactions on Intelligent Systems and Technology
Ad Hoc Networks
Advances in Artificial Intelligence
AI Communications
Artificial Intelligence
Cognitive Neuropsychology
Computer Networks
Constraints
IBM Journal of Research and Development
IEEE Transactions on Mobile Computing
IEEE Transactions on Robotics
International Journal of Robotics Research
International Journal on Artificial Intelligence Tools
Journal of Artificial Intelligence Research
Journal of Automated Reasoning
Journal of Combinatorial Optimization
Journal of Heuristics
Journal of Machine Learning Research
Journal of Mathematical Modelling and Algorithms
Journal of Scheduling
Operations Research
Psychological Review
Robotics and Autonomous Systems
Telecommunication Systems

*Trade Magazine Reviewing*
AI Magazine

*Conference Reviewing*
AAAI Conference on Artificial Intelligence
European Conference on Artificial Intelligence
IEEE International Conference on Robotics and Automation
IEEE/RSJ International Conference on Intelligent Robots and Systems
IEEE Wireless Communications and Networking Conference
International Conference on Automated Planning and Scheduling
International Conference on Autonomous Agents and Multiagent Systems
International Conference on Machine Learning
International Federation of Automatic Control World Congress
International Florida Artificial Intelligence Research Society Conference
International Joint Conference on Artificial Intelligence

International Symposium on Artificial Intelligence and Mathematics
International Workshop on Parallel and Distributed Methods in Verification
International Workshop on the Algorithmic Foundations of Robotics
Learning and Intelligent Optimization
Robotics: Science and Systems
SIGGRAPH
Symposium on Abstraction, Reformulation, and Approximation
Symposium on Combinatorial Search
Workshop of the UK Planning and Scheduling Special Interest Group
and various other international workshops

*Membership*
Association for Computing Machinery
Association for the Advancement of Artificial Intelligence (Senior Member as of 2016,
    life member as of 2003)
IEEE and the IEEE Robotics and Automation Society
    including the Technical Committee on Algorithms for
    Planning and Control of Robot Motion

**University
Activities**
*Department*
Faculty search committee, 2011, 2012-13, 2013-14, 2015-16 (chair)
Library representative, 2012–present
Graduate program committee, 2007–present
Video colloquium, founder and organizer, 2007–2014,2016–present

*College*
Robotics Seminar, co-organizer, 2015–present
Integrated Applied Math Program, affiliated faculty

*University*
Faculty Senate, 2015-2017. Co-chair, IT Committee (2016-17)
Ad hoc Committee on Data Science, 2016–present
Undergraduate research advisory committee, 2007–2012

**Citizenship**    U.S.A.

[Information current as of January, 2018.]