Jordan T Thayer
Research Scientist & Developer

Tel. (219) 680 8104
Email jordan.thayer@gmail.com

Academic Profile

I am an educator and applied AI expert with a career spanning both academia and industry. My research in heuristic search and automated planning has been published in top-tier venues, but my recent focus has been on bringing real-world AI to bear in domains such as manufacturing, transportation, and cybersecurity. As a technical leader in industry, I have mentored engineers, taught internal workshops, and built an AI practice grounded in practical, ethical deployment of technology. This commitment to education extends back to my graduate and undergraduate years, where I supported courses in algorithms, AI, and computer science fundamentals. I am passionate about preparing students for careers in computing by connecting foundational concepts to current industry practice, and by fostering confidence, curiosity, and critical thinking in the classroom.

Research Interests

Heuristic search & automated planning and scheduling

Education

PhD in Artificial Intelligence — University of New Hampshire — 2006 - 2012
Thesis: Heuristic Search Under Time and Quality Bounds
Advisor: Wheeler Ruml

B.S. in Computer Science — Rose-Hulman Institute of Technology — 2002-2006

Professional Experience

AI Practice Strategist *SEP 2019 - Present*

Built a software product consultancy's AI practice from the ground up. Responsibilities include:

- Technical sales, explaining cost/benefit of applying AI for business needs

- Hiring other AI Experts
- Teaching AI techniques to fellow engineers
- Mentoring Junior Engineers
- Public speaking (workshops, technical talks, outreach)
- Technical leadership and individual contributor for AI-enhanced systems in many industries
    - Retail Allocation Planning (heuristic search, machine learning)
    - Automated board edging in lumber mills (computer vision, heuristic search)
    - Scoring of pre-interview screening tests (NLP, static analysis, LLMs)
    - Planning municipal road network maintenance (heuristic search, machine learning)
    - Predictive maintenance of turbine engines (machine learning)

Staff Scientist *Codiscope, Synopsys*
2017 - 2018

One of two scientists for a static analysis and cybersecurity training startup. Combined expert systems, cloud computing, and static analysis to provide better user experiences for code checking as part of a CI/CD pipeline. Transferred techniques to Coverity post-acquisition by Synopsys.

Senior Member Technical Staff *Charles-Stark Draper Laboratory*
2015 - 2017

Wrote and fulfilled grants. Notable projects included analysis of java byte code to identify timing attacks, and validating the manufacturability of microfluidics devices using computational geometry. Mentored junior engineers and interns along with research duties.

Researcher *Smart Information Flow Technologies*
2012 - 2015

Wrote and fulfilled grants. My work was split between the probabilistic verification and synthesis of controllers for industrial and aerospace applications, and various cyber security research efforts. Notable projects include mission resilient computing under kinetic threats, automated program repair for java, and an entrant in DARPA's Cyber Grand Challenge.

Research Assistant *University of New Hampshire*
July 2007 – May 2012

Researcher in heuristic search.

Visiting Researcher *Ben-Gurion University of the Negev, Israel*
November 2011 – December 2011

Worked with Roni Stern and Ariel Felner on Bounded Cost Search, a new problem setting for heuristic search. Resulted in accepted ICAPS-12 paper.

Visiting Researcher *Albert-Ludwigs-Universitaet Freiburg Germany*
June 2011 – August 2011
Worked with Malte Helmert on integrating my state-of-the-art bounded suboptimal search algorithms into the state-of-the-art Fast Downward planning system.

Software Engineer *Rose-Hulman Ventures*
August 2004 – May 2005
Developer for OBTech, a company which made medical transcription software targeted for obstetricians and gynecologists. In charge of synchronization between desktop and PDA version of software, backup and security of patient data.

Teaching Experience

Corporate AI Training for Sales & Project Management — Instructor

SEP, 2019-Present

- Overview of Subfields of AI
- Machine Learning & How It Manifests in Our Projects
- Optimization, Planning, Search, and Other Industrial Problems
- Generative AI for Products (rather than development)

Corporate AI Training for Software Developers — Instructor

SEP, 2025
Provided sales training and basic AI literacy training for our sales and management staff so that they could speak confidently about how AI can:

- Help Solve Client Needs
- Be Reliably Estimated
- Integrate with Traditional Software

Machine Learning for Aeronautical Engineers — Instructor

Roll-Royce Corporation, Indianapolis Campus 2019

- An introduction to programming in python
- An introduction to programming tools including
    - Version Control
    - Diff tools
    - Debuggers
- Theory of basic ML techniques
- ML for Time Series Analisys

University of New Hampshire — Teaching Assistant

Algorithms Fall 2011
Introduction to Artificial Intelligence Spring 2007 – 2010
Introduction to Computer Science I Fall 2006

Rose-Hulman Institute of Technology — Programming Tutor

Databases Fall 2004
Introduction to Computer Science II Winter 2003
Introduction to Computer Science I Winter 2002

Publications Summary

- **Total Publications**: 24 peer-reviewed papers
- **Total Citations**: 935 (Google Scholar)
- **h-index**: 14
- **i10-index**: 16
- **Top Venues**: International Joint Conference on Artificial Intelligence (IJCAI), International Conference on Automated Planning and Scheduling (ICAPS), AAAI Conference on Artificial Intelligence (AAAI)
- **Most Cited Work**: "Bounded Suboptimal Search: A Direct Approach Using Inadmissible Estimates" (IJCAI 2011) – 143 citations

My research focuses on heuristic search and automated planning, with a strong emphasis on suboptimal and bounded-cost search algorithms. These contributions have been recognized in leading AI conferences and have influenced both theoretical frameworks and practical applications in the field.

Refereed Conference Publications

Kuter, U., Burstein, M., Benton, J., Bryce, D., Thayer, J., & McCoy, S. (2015, January). HACKAR: helpful advice for code knowledge and attack resilience. In Proceedings of the AAAI Conference on Artificial Intelligence (Vol. 29, No. 2, pp. 3987-3992).

Thayer, J. T., Burstein, M., Goldman, R. P., Kuter, U., Robertson, P., & Laddaga, R. (2013, September). Comparing strategic and tactical responses to cyber threats. In 2013 IEEE 7th international conference on self-adaptation and self-organizing systems workshops (pp. 35-40). IEEE.

Richard Anthony Valenzano, Shahab Jabbari Arfaee, Jordan Thayer, Roni Stern, Nathan R. Sturtevant, “Using Alternative Suboptimality Bounds in Heuristic Search” *Proceedings of the Twenty-third International Conference on Automated Planning and Scheduling (ICAPS-13)* 2013.

Jordan T. Thayer, Roni Stern, Ariel Felner, Wheeler Ruml, “Faster Bounded-Cost Search Using Inadmissible Estimates” *Proceedings of the Twenty-Second International Conference on Automated Planning and Scheduling (ICAPS-12)* 2012.

Jordan T. Thayer, 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, pages 674-679.
A preliminary version appeared as UNH Technical Report 10-01.

Jordan T. Thayer, Austin Dionne, Wheeler Ruml, “Learning Inadmissible Heuristics During Search” Proceedings of the Nineteenth International Conference on Automated Planning and Scheduling (ICAPS-11) 2011, pages 250-257. Selected for plenary presentation.

Silvia Richter, Jordan T. Thayer, Wheeler Ruml, “The Joy of Forgetting: Faster Anytime Search via Restarting” *Proceedings of the Eighteenth International Conference on Automated Planning and Scheduling (ICAPS-10)* 2010, pages 137-144.
Preliminary version appeared in *Proceedings of the Second International Symposium on Combinatorial Search (SoCS-09)*.

Jordan T. Thayer, Wheeler Ruml, “Using Distance Estimates in Heuristic Search” *Proceedings of the Seventeenth International Conference on Automated Planning and Scheduling (ICAPS-09)* 2009, pages 382-385.

Jordan T. Thayer, 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, pages 355-362.

Refereed Symposia Publications

Jordan T. Thayer, Mark Burstein, Robert P. Goldman, Ugur Kuter, Paul Robertson, Robert Laddaga, “Comparing Strategic and Tactical Responses to Cyber Threats” *Proceedings of the Second Annual Workshop on Adaptive Host and Network Security* 2013.

Jordan T. Thayer, J. Benton, Malte Helmert “Better Parameter-free Anytime Search by Minimizing Time Between Solutions” *Proceedings of the Fifth International Symposium on Combinatorial Search (SoCS-12)* 2012.

Jordan T. Thayer, Roni Stern, Levi Lellis “Are We There Yet? – Estimating Search Progress” *Proceedings of the Fifth International Symposium on Combinatorial Search (SoCS-12)* 2012.

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

Jordan T. Thayer, Wheeler Ruml “Finding Acceptable Solutions Faster Using Inadmissible Information“ *Proceedings of the Third International Symposium on Combinatorial Search (SoCS-10)* 2010.

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

Chris Wilt, Jordan T. Thayer, Wheeler Ruml “A Comparison of Greedy Search Algorithms” *Proceedings of the Third International Symposium on Combinatorial Search (SoCS-10)* 2010.

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

Jordan T. Thayer, Wheeler Ruml, Ephrat Bitton, “Fast and Loose in Bounded Suboptimal Heuristic Search” *Proceedings of the First International Symposium on Search Techniques in Artificial Intelligence and Robotics (STAIR-08)*, pp. 120–126, 2008.
Also presented at the North East Student Colloquium on Artificial Intelligence, 2008.

Tutorials & Workshops

“Data Structures Crash Course” Given at

- CodeMash 2025
- Kansas City Developers Conference 2025

“Off the Shelf AI” Given at

- Techbash 2025
- Beer City Code 2024
- CodeMash 2024
- Indy.Code() 2023

“Heuristic Search: The Basics and Beyond” Given at

- Twenty-sixth Conference on Artificial Intelligence (AAAI-12) in Toronto, Canada with Wheeler Ruml, July 2012

“A Survey Of Suboptimal Search Algorithms” Given at

- Twenty-first International Conference on Planning and Scheduling (ICAPS-11) in Freiburg, Germany with Wheeler Ruml, June 2011,
- Twenty-Second International Conference on Planning and Scheduling (ICAPS-12) in Sao Paulo, Brazil, June 2012

“Using Solution Length Estimates In Heuristic Search” Given at

- Twenty-first International Conference on Planning and Scheduling (ICAPS-11) in Freiburg, Germany with Wheeler Ruml, June 2011
- Twenty-Second International Conference on Planning and Scheduling (ICAPS-12) in Sao Paulo, Brazil, June 2012

Industry Conference Presentations

“Everything You Wanted to Know But Were Afraid to Ask about AI & Product Discovery” Given at:

- CodeMash 2025

“AI for Lumber Mills: A Case Study” Given At:

- Beer City Code 2024
- CodeMash 2023
- Nebraska.Code() 2022

“AI for Highway Maintenance” Given At

- StirTrek 2025
- CodeMash 2024
- Indy.Code() 2023
- Momentum 2023

A recording is available at: https://vimeo.com/855443918

“How to Get Started with AI: Moving Beyond ChatGPT” Given at

- Momentum 2024
- StirTrek 2024

A recording is available at: https://youtu.be/GbhIXAvDVIQ?si=mXQrQvJcwEoJn3o1

“Avoiding False Starts with Artificial Intelligence”
Co-Author & Presenter: Robert Herbig Given at

- Agile Indy 2024
- StirTrek 2023

A recording is available at: https://youtu.be/LAx5Rr8Hkss?si=IvAuCIcuCLnBZRnD

Panels

“Is Your Data Ready for AI”, Indy IT Symposium, 2024.

“Everything Everywhere All at Once: AI, Disruption, Ethics, & Innovation”, IEEE Conference on AI, 2023.

Grants

International Collaboration Supplement 2011
PI: Wheeler Ruml. NSF Robust Intelligence Program, $18,508.
Wrote initial draft, was heavily involved with editing and submission. Supported research performed in collaboration with Malte Helmert at Albert-Ludwigs-Universitaet Freiburg.

IJCAI Extended Research Visit 2011
Awarded $7,500 to visit Malte Helmert at Albert-Ludwigs-Universitaet Freiburg as part of a program associated with the IJCAI-11 doctoral consortium.

Volunteer for IJCAI-11 2011
Received complimentary registration for volunteering during IJCAI-11.

ICAPS-10 Doctoral Consortium 2010
Received complimentary registration and a travel grant for attending the doctoral consortium associated with ICAPS-10.

IJCAI-09 Doctoral Consortium 2009
Received complimentary registration and a travel grant for attending the doctoral consortium

associated with IJCAI-09.

Professional Activities

Organizing

Co-organizer, Fifth International Symposium on Combinatorial Search 2012

Co-organizer, ICAPS workshop on Heuristics and Search

for Domain-Independent Planning 2012 – 2014

Journal Reviewing

Journal of Artificial Intelligence Research 2011-2013

Artificial Intelligence Journal 2012-2013

Conference Reviewing

AAAI Conference on Artificial Intelligence 2012 – 2014

International Joint Conference on Artificial Intelligence 2011, 2013

International Conference on Automated Planning and Scheduling 2012 – 2014, 2022

Learning and Intelligent Optimization Conference 2011

Symposium on Combinatorial Search 2011 – 2014

Conference Reviewing (Auxiliary Reviewer)

International Conference on Autonomous Agents and Multi-Agent Systems 2012

Learning and Intelligent Optimization Conference 2010, 2012

International Symposium on Artificial Intelligence and Mathematics 2010