



Nicholas (Nick) Mattei

CONTACT INFORMATION

IBM T.J. Watson Research Center
1101 Kitchawan Rd.
Office 33-238
Yorktown Heights, NY 10598
USA

Phone: +1 914 945 3305
E-mail: n.mattei@ibm.com
or nsmattei@gmail.com
Web: <http://www.nickmattei.net>
[IBM Researcher Page](#)
Nationality: USA

EDUCATION

University of Kentucky, Lexington, Kentucky USA

PhD, Computer Science, May 2012

- Adviser: Professor Judy Goldsmith
- Dissertation title: Decision Making Under Uncertainty: Theoretical and Empirical Results on Social Choice, Manipulation, and Bribery.

Graduate Certificate in College Teaching and Learning, August 2012

M.S., Computer Science, May 2010

B.S., Computer Science, May 2006 and **B.S.**, Computer Engineering, August 2006

- *Magna cum Laude*, Honors Program, Minor in Mathematics

RESEARCH INTERESTS

My research broadly centers around the theory and practice of artificial intelligence (AI) and its applications; I am enticed by problems that require a blend of techniques to develop systems and algorithms that support decision making for autonomous agents and/or humans. My research vision is to use both theory and experiments to create novel algorithms, mechanisms, and systems that enable and support individual and group decision making. My research has advanced the state of the art in algorithms and complexity; game theory and computational social choice; data analytics, data mining, and machine learning; and preference reasoning.

I also work on advancing computer science education especially with respect to ethics and the impact of technology on society. We have received received some popular media coverage about our work on using science fiction to teach ethics to computer science students including: “Should Computer Scientists Study SF?,” *The Guardian* ([Link](#)). and “The Science Fiction Books That Every Computer Scientist Should Check Out,” *IO9* ([Link](#)).

EMPLOYMENT

IBM Research, T.J. Watson Research Center, New York

Research Staff Member, IBM Research AI: Reasoning

Oct. 2016 – Current

- Research staff member in the AI Research Engine, AI Foundations: Reasoning group which focuses on academic and applied research in reasoning and knowledge representation.
- Research and client project work spanning a number of theoretical and applied areas including data mining, machine learning, social choice, optimization, ethics, and multi-agent systems. All work is focused on theoretical and practical research that leverages theory, data, and experiment to create novel algorithms, mechanisms, and systems that enable and support individual and group decision making for autonomous agents and/or humans.

Data61 (formerly known as NICTA) and

Conjoint Lecturer at the University of New South Wales (UNSW), Sydney, Australia

Senior Researcher, Optimisation / Algorithmic Decision Theory **Sept. 2015 – Oct. 2016**

Researcher, Optimisation / Algorithmic Decision Theory **Sept. 2012 – Sept. 2015**

- Senior researcher working with Prof. Toby Walsh on projects in optimization, machine learning, and decision making; specifically related to computational social choice, mechanism design, game theory, and fair allocation. Projects range in focus from purely academic to working with external and commercial partners around Australia.
- Founder, maintainer, and lead developer for PREFLIB.ORG: A Library for Preferences ([Link](#)) and the associated tool chain PREFLIB TOOLS ([Link](#)). Also founder and main organizer of the Exploring Beyond the Worst Case in Computational Social Choice (EXPLORE) workshops.
- Lecturer for COMP4418: Knowledge Representation and Reasoning at UNSW.

Bluegrass Community and Technical College, Lexington, KY

Instructor, Communications and Information Technologies **Jan. – May, 2012**

- Lecturer for multiple introductory courses in the Communications and Information Technologies department. Fully responsible for all courses and content.

University of Padova, Padova, Italy

Visiting Researcher, Department of Pure and Applied Mathematics **May – July, 2011**

- NSF funded research visit with Prof. Francesca Rossi. Developed new models and proved complexity results for bribery and manipulation in sequential voting systems.

NASA Ames Research Center, Moffett Field, CA

Engineering: Aerospace Technology **2007–2011**

- Full-time: May – Aug. 2007, May 2008 – Aug. 2009
- Responsible for the design and implementation of control systems software for multiple small satellites (NanoSats / CubeSats [Wiki](#)); designed, fabricated, and tested custom flight and ground electronics components; developed hardware and software test suites and ground station simulation for pseudo-mission operation and data analysis.
- Worked on four successful small satellite missions (Gene-SAT, Gene-Box, Pharma-SAT and O/OREOS [Wiki](#)) and one (Pre-SAT) lost due to a SpaceX launch abort ([Wiki](#)).
- Patent granted and commercial license of technology developed on the COTS-Sat Project.

Undergraduate Student Research Program Intern (USRP) **May – Aug. 2005**

- Designed and deployed an emergency wireless safety over-ride for a pair of robots.
- Assistant programmer for embedded satellite flight electronics (Gene-SAT mission).

University of Kentucky, Lexington, KY

Research Assistant **Jan. 2008 – May 2008, Aug. 2010 – May 2012**

- Research Assistant for NSF-EAGER: Changing Minds, Changing Probabilities; developed models and proved complexity results for influence and manipulation under probabilistic voting and preference aggregation systems.
- Research Assistant for NSF-ITR: Decision-Theoretic Planning with Constraints; developed models, software, and algorithms to work with large state space Markov Decision Processes.

Teaching Assistant **Aug. 2006 – Dec. 2007, Aug. 2009 – May 2010**

- Lecturer for the first course in computer programming for two semesters. Other semesters were spent as a lab instructor for different introductory computer programming courses, often supplementing lectures given by the course coordinators.

University of Kentucky Network Engineering and Operations Management Center,
Lexington, KY

UK/CISCO Sponsored Work-Study Program

Aug. 2005 – June 2006

- Designed, implemented, and deployed custom network monitoring tools. Also performed site surveys and layout design for wireless network installations in multiple buildings on campus.

NASA Glenn Research Center, Cleveland, OH

LERCIP Intern

May – August 2004

- Designed, programmed, and executed test suites for RTAI and RT-Linux real-time kernel implementations to test their effectiveness versus VxWorks for use in satellites.

AWARDS

- Selected as a junior researcher participant to the 5th Heidelberg Laureate Forum (2017).
- 2015 NASA Ames Research Center Patent Application Award for Low Burden Star Tracker.
- Association for the Advancement of Artificial Intelligence (AAAI) 2015 Conference Outstanding Program Committee Member Award.
- Most Social Researcher, NICTA/Data61 Optimization Research Group, 2014.
- American Society for Engineering Education (ASEE) 2014 Zone 1 Conference Finalist for Best Paper Award for *Lessons Learned from Development of a Software Tool to Support Academic Advising*.
- Australasian Joint Conference on Artificial Intelligence (AUAI) 2013 Finalist for Best Paper Award for *Updates and Uncertainty in CP-Nets*.
- International Joint Conference on Artificial Intelligence (IJCAI) 2013 Video Competition Most Educational Video Award for [ADT @ NICTA \(YouTube\)](#).
- Florida Artificial Intelligence Research Society (FLAIRS) 2012 Conference Best Student Paper Award for *On the Complexity of Bribery and Manipulation in Tournaments with Uncertain Information*.
- 2012 University of Kentucky Myrle E. and Verle D. Nietzel Visiting Distinguished Faculty Program Award which includes funding to include Prof. Francesca Rossi on my dissertation committee (2 awards university wide, \$1,500).
- Selected to attend the 2011 International Joint Conference on Artificial Intelligence (IJCAI) Doctoral Consortium which included funding from the NSF for an extended research visit with Dr. Francesca Rossi in Padova, Italy, Summer 2011, \$7,000.
- 2011 University of Kentucky Provost's Award for Outstanding Teaching, Finalist (4 awards university wide).
- 2010 NASA Ames Honor Award for Outstanding Team (Nano-Satellite Team).
- 2010 University of Kentucky Department of Computer Science ACM/UPE Outstanding Teaching Assistant Award Honorable Mention.
- 2008 University of Kentucky Department of Computer Science ACM/UPE Outstanding Teaching Assistant Award.
- 2001 Kentucky Governors' Scholar (full academic scholarship to the University of Kentucky).

GRANTS

- Co-Author with Prof. Judy Goldsmith (Principle Investigator) NSF-EAGER Grant: “Teaching Computer Ethics through Literature,” \$151,802 (08/2016).
- Co-Author with Prof. Judy Goldsmith (Principle Investigator) NSF-CCF Grant: “Doctoral Consortium for Algorithmic Decision Theory and Logic Programming and Non-monotonic Reasoning,” \$15,000 (09/2015).
- Co-Author with Prof. Judy Goldsmith (Principle Investigator) and Prof. Michel Regenwetter (Principle Investigator) on NSF-ICES Grant: “Robust Preference Aggregation,” \$125,000 (09/2012 – 08/2014).
- Co-Author with Prof. Judy Goldsmith (Principle Investigator) on NSF-EAGER Grant: “Changing Minds, Changing Probabilities,” \$168,300 (09/2010 – 08/2013).
- 2010 Northern Kentucky Alumni Association Fellowship (university wide competitive fellowship, \$5,000).
- Full Academic Scholarship to the University of Kentucky (2002–2006) and College of Engineering Academic Scholarship (2002–2006).

PUBLICATIONS AND RESEARCH

Book Chapters

1. “A WWW.PREFLIB.ORG Retrospective: Lessons Learned and New Directions.” Nicholas Mattei and Toby Walsh. *Trends in Computational Social Choice*.

Refereed Journal Publications

14. “How to Teach Computer Ethics with Science Fiction.” Emanuelle Burton, Judy Goldsmith, Nicholas Mattei. *Communications of the ACM*. Accepted.
13. “Strategyproof Peer Selection using Randomization, Partitioning, and Apportionment.” Haris Aziz, Omer Lev, Nicholas Mattei, Jeffrey S. Rosenschein, and Toby Walsh. *Artificial Intelligence*. Accepted with Minor Revisions.
12. “Fixing a Balanced Knockout and Double Elimination Tournaments.” Haris Aziz, Serge Gaspers, Simon Mackenzie, Nicholas Mattei, Paul Stursberg, and Toby Walsh. *Artificial Intelligence*. Accepted with Minor Revisions.
11. “Uniform Random Generation and Dominance Testing for CP-nets.” Thomas E. Allen, Judy Goldsmith, Hayden Elizabeth Justice, Nicholas Mattei, and Kayla Raines. *Journal of Artificial Intelligence Research (JAIR)*. Volume 59, 2017.
10. “Ethical Considerations in Artificial Intelligence Courses.” Emanuelle Burton, Judy Goldsmith, Sven Koenig, Benjamin Kuipers, Nicholas Mattei, and Toby Walsh. *AI Magazine*. Volume 38, Number 2, 2017.
9. “A Study of Proxies for Shapley Allocations of Transport Costs.” Haris Aziz, Casey Cahan, Charles Gretton, Phillip Kilby, Nicholas Mattei, and Toby Walsh. *Journal of Artificial Intelligence Research (JAIR)*. Volume 56, 2016.
8. “Analysis of Fixed and Biased Asset Allocation Rebalancing Strategies.” Michael D. Mattei and Nicholas Mattei. *Managerial Finance*, Volume 42, Issue 1, 2016.
7. “On the Complexity of Bribery and Manipulation in Tournaments with Uncertain Information.” Nicholas Mattei, Judy Goldsmith, Andrew Klapper, and Martin Mundhenk. *Journal of Applied Logic*, Volume 13, Issue 4, 2015.
6. “Who is Watching You Eat?” Judy Goldsmith, Nicholas Mattei, and Robert H. Sloan. *ACM Special Interest Group on Artificial Intelligence (SIGAI): AI Matters*, Volume 1, Number 4, June 2015.
5. “Science Fiction as an Introduction to AI Research.” Judy Goldsmith and Nicholas Mattei. *ACM Transactions on Computer Science Education (ACM:TOCE)*, Volume 14, Number 1, 2014.

4. “The Complexity of Probabilistic Lobbying.” Daniel Binkele-Raible, Gábor Erdélyi, Henning Fernau, Judy Goldsmith, Nicholas Mattei, and Jörg Rothe. *Discrete Optimization*, Volume 11, Number 1, 2014.
3. “Bribery in Voting with CP-nets.” Nicholas Mattei, Maria Silvia Pini, Francesca Rossi, and K. Brent Venable. *Annals of Mathematics and Artificial Intelligence*, Volume 68, Number 1–3, 2013.
2. “A Behavioral Perspective on Social Choice.” Anna Popova, Michel Regenwetter, and Nicholas Mattei. *Annals of Mathematics and Artificial Intelligence*, Volume 68, Number 1–3, 2013.
1. “An English-Language Argumentation Interface for Explanation Generation with Markov Decision Processes in the Domain of Academic Advising.” Thomas Dodson, Nicholas Mattei, Joshua T. Guerin, and Judy Goldsmith. *ACM Transactions on Intelligent Interactive Systems (ACM:TiiS)*, Volume 3, Number 3, 2013.

Conference Proceedings

30. “Fairness in Deceased Organ Matching.” Nicholas Mattei, Abdallah Saffidine and Toby Walsh. *Proceedings of the 1st ACM/AAAI Conference on AI, Ethics, and Society (AIES 2018)*, Feb. 2018.
29. “The Conference Paper Assignment Problem: Using Order Weighted Averages to Assign Indivisible Goods.” Jing Wu Lian, Nicholas Mattei, Renee Noble, Toby Walsh. *Proceedings of the 32nd AAAI Conference on Artificial Intelligence (AAAI 2018)*, Feb. 2018.
28. “Mechanisms for Online Organ Matching.” Nicholas Mattei, Abdallah Saffidine, Toby Walsh. *Proceedings of the 26th International Joint Conference on Artificial Intelligence (IJCAI 2017)*, August 2017.
27. “Stable Matching with Uncertain Pairwise Preferences.” Haris Aziz, Péter Biró, Tamas Fleiner, Serge Gaspers, Ronald de Haan, Nicholas Mattei, Baharak Rastegari.
 - *Proceedings of the 16th International Conference on Autonomous Agents and Multiagent Systems (AAMAS 2017)*, May 2017.
 - *4th International Workshop on Matching Under Preferences (MATCHUP 2017)*, April 2017.
26. “Stable Matching with Uncertain Linear Preferences.” Haris Aziz, Péter Biró, Serge Gaspers, Ronald de Haan, Nicholas Mattei, Baharak Rastegari. *9th International Symposium on Algorithmic Game Theory (SAGT 2016)*, September 2016.
25. “Interdependent Scheduling Games.” Andres Abeliuk, Haris Aziz, Gerardo Berbeglia, Serge Gaspers, Petr Kalina, Simon Mackenzie, Nicholas Mattei, Paul Stursberg, Pascal Van Hentenryck and Toby Walsh.
 - *Proceedings of the 25th International Joint Conference on Artificial Intelligence (IJCAI 2016)*, July 2016.
 - *Workshop on Innovative Applications of Game Theory and Market Design, IJCAI 2015 Workshop Program*, July 2015.
24. “Egalitarianism of Random Assignment Mechanisms.” Haris Aziz, Jiashu Chen, Aris Filos-Ratsikas, Simon Mackenzie, and Nicholas Mattei. *Proceedings of the 15th International Conference on Autonomous Agents and Multiagent Systems (AAMAS 2016, short paper)*, May 2016.
23. “Strategyproof Peer Selection: Mechanisms, Analyses, and Experiments.” Haris Aziz, Omer Lev, Nicholas Mattei, Jeffery S. Rosenschein, and Toby Walsh. *Proceedings of the 30th AAAI Conference on Artificial Intelligence (AAAI 2016)*, Feb. 2016.
22. “Generating CP-nets Uniformly at Random.” Thomas E. Allen, Judy Goldsmith, Hayden Elizabeth Justice, Nicholas Mattei, and Kayla Raines.

- *Proceedings of the 30th AAAI Conference on Artificial Intelligence (AAAI 2016)*, Feb. 2016.
 - *8th Workshop on Advances in Preference Handling (MPREF 2014)*, AAAI 2014 Workshop Program, Aug. 2014.
21. “Beyond Theory and Data in Preference Modeling: Bringing Humans into the Loop.” Thomas E. Allen, Muye Chen, Judy Goldsmith, Nicholas Mattei, Anna Popova, Michel Regenwetter, Francesca Rossi and Christopher Zwilling. *Proceedings of the 4th International Conference on Algorithmic Decision Theory (ADT 2015)*, Sept. 2015.
 20. “Equilibria Under the Probabilistic Serial Rule.” Haris Aziz, Serge Gaspers, Simon Mackenzie, Nicholas Mattei, Nina Narodytska, and Toby Walsh. *Proceedings of the 24th International Joint Conference on Artificial Intelligence (IJCAI 2015)*, June 2015.
 19. “Strategic Aspects of the Probabilistic Serial Rule for the Allocation of Goods.” Haris Aziz, Serge Gaspers, Simon Mackenzie, Nicholas Mattei, Nina Narodytska, and Toby Walsh.
 - *Proceedings of the 14th International Conference on Autonomous Agents and Multiagent Systems (AAMAS 2015)*, May 2015.
 - *3rd International Workshop on Matching Under Preferences (MATCHUP 2015)*, April 2015.
 18. “Reasoning with PCP-nets in a Multi-Agent Context.” Cristina Cornelio, Umberto Grandi, Judy Goldsmith, Nicholas Mattei, Francesca Rossi, and K. Brent Venable. *Proceedings of the 14th International Conference on Autonomous Agents and Multiagent Systems (AAMAS 2015)*, May 2015.
 17. “Computational Aspects of Multi-Winner Approval Voting.” Haris Aziz, Serge Gaspers, Joachim Gudmundsson, Simon Mackenzie, Nicholas Mattei, and Toby Walsh.
 - *Proceedings of the 14th International Conference on Autonomous Agents and Multiagent Systems (AAMAS 2015)*, May 2015.
 - *8th Workshop on Advances in Preference Handling (MPREF 2014)*, AAAI 2014 Workshop Program, Aug. 2014.
 16. “How Hard Is It to Control an Election by Breaking Ties?” Nicholas Mattei, Nina Narodytska, and Toby Walsh.
 - *Proceedings of the 21st European Conference on Artificial Intelligence (ECAI 2014, short paper)*, Aug. 2014.
 - *7th Workshop on Advances in Preference Handling (MPREF 2013)*, AAAI 2013 Workshop Program, Aug. 2013.
 15. “Voting with Rank Dependent Scoring Rules.” Judy Goldsmith, Jerome Lang, Nicholas Mattei, and Patrice Perny.
 - *Proceedings of the 28th AAAI Conference on Artificial Intelligence (AAAI 2014)*, July 2014.
 - *5th International Workshop on Computational Social Choice (COMSOC-2014)*, June 2014.
 14. “Fixing a Balanced Knockout Tournament” Haris Aziz, Serge Gaspers, Simon Mackenzie, Nicholas Mattei, Paul Stursberg, and Toby Walsh. *Proceedings of the 28th AAAI Conference on Artificial Intelligence (AAAI 2014)*, July 2014.
 13. “Lessons Learned from Development of a Software Tool to Support Academic Advising.” Nicholas Mattei, Thomas Dodson, Joshua T. Guerin, Judy Goldsmith, and Joan M. Mazur. *Proceedings of the American Society for Engineering Education (ASEE) Zone 1 Conference*, April, 2014. **Finalist for Best Paper Award.**
 12. “Updates and Uncertainty in CP-Nets.” Cristina Cornelio, Judy Goldsmith, Nicholas Mattei, Francesca Rossi, and K. Brent Venable.
 - *Proceedings of the 26th Australasian Joint Conference on Artificial Intelligence (AUAI 2013)*, Dec. 2013. **Finalist for Best Paper Award.**

- *7th Workshop on Advances in Preference Handling (MPREF 2013)*, AAAI 2013 Workshop Program, Aug. 2013.
11. “PrefLib: A Library for Preferences.” Nicholas Mattei and Toby Walsh. *Proceedings of the 3rd International Conference on Algorithmic Decision Theory (ADT 2013)*, Nov. 2013.
 10. “Ties Matter: Complexity of Manipulation when Tie-breaking with a Random Vote.” Haris Aziz, Serge Gaspers, Nicholas Mattei, Nina Narodytska, and Toby Walsh. *Proceedings of the 27th AAAI Conference on Artificial Intelligence (AAAI 2013)*, July 2013.
 9. “On the Complexity of Bribery and Manipulation in Tournaments with Uncertain Information.” Nicholas Mattei, Judy Goldsmith, and Andrew Klapper.
 - *Proceedings of the 25th International Florida Artificial Intelligence Research Society Conference (FLAIRS 2012)*, June 2012. **Best Student Paper Award.**
 - *AAAI Fall Symposium on Machine Aggregation of Human Judgment*, Nov. 2012.
 - *36th Australasian Conference on Combinatorial Mathematics and Combinatorial Computing (ACCMCC)*, Dec. 2012.
 8. “Bribery in Voting Over Combinatorial Domains Is Easy.” Nicholas Mattei, Maria Silvia Pini, Francesca Rossi, K. Brent Venable.
 - *Proceedings of the 11th International Conference on Autonomous Agents and Multiagent Systems (AAMAS 2012, short paper)*, June 2012.
 - *12th International Symposium on Artificial Intelligence and Mathematics (ISAIM 2012), Special Session on Computational Social Choice*, Jan. 2012.
 7. “Empirical Evaluation of Voting Rules with Strictly Ordered Preference Data.” Nicholas Mattei. *Proceedings of the 2nd International Conference on Algorithmic Decision Theory (ADT 2011)*, Oct. 2011.
 6. “A Natural Language Argumentation Interface for Explanation Generation in Markov Decision Processes.” Thomas Dodson, Nicholas Mattei, and Judy Goldsmith.
 - *Proceedings of the 2nd International Conference on Algorithmic Decision Theory (ADT 2011)*, Oct. 2011.
 - *6th Workshop on Explanation Aware Computing (EXACT 2011)*, July 2011.
 5. “Science Fiction as an Introduction to AI Research.” Judy Goldsmith and Nicholas Mattei. *Proceedings of the 2nd Symposium on Educational Advances in Artificial Intelligence (EAAI 2011)*, Aug. 2011.
 4. “Decision Making Under Uncertainty: Social Choice and Manipulation.” Nicholas Mattei. *Proceedings of the 22nd International Joint Conference on Artificial Intelligence (IJCAI 2011, extended abstract)*, July 2011.
 3. “The Complexity of Probabilistic Lobbying.” Gábor Erdélyi, Henning Fernau, Judy Goldsmith, Nicholas Mattei, Daniel Raible and Jörg Rothe. *Proceedings of the 1st International Conference on Algorithmic Decision Theory (ADT 2009)*, Oct. 2009.
 2. “COTSAT: Small Spacecraft Cost Optimization for Government and Commercial Use.” Aaron Swank, Nicholas Mattei, David Bui, Stevan Spremo, Peter Klupar, Christopher Dallara, Shakib Ghassemieh, James Hanratty, Evan Jackson, Kuok Ling, Michael Lindsay, David Mayer, Emmett Quigley, Zion Young. *Proceedings of the American Institute of Aeronautics and Astronautics SPACE 2009 Conference and Exposition (AIAA SPACE 2009)*, Aug. 2009.
 1. “Low Cost Rapid Response Spacecraft, (LCRSS): A Case Study in Small Satellite Cost Optimization for Government and Commercial Use.” Jesse Bregman, Christopher Dallara, Shakib Ghassemieh, James Hanratty, Evan Jackson, Chris Kitts, Pete Klupar, Michael Lindsay, Ignacio Mas, Nicholas Mattei, David Mayer, Emmett Quigley, Mike Rasay, Aaron Swank, Adam Talcott, Jeroen Vandersteen, Zion Young. *Proceedings of the American Institute of Aeronautics and Astronautics SPACE 2008 Conference and Exposition (AIAA SPACE 2008)*, Aug. 2008.

Refereed Workshops (not appearing or superseded elsewhere)

9. “A Notion of Distance Between CP-nets.” Andrea Loreggia, Nicholas Mattei, Francesca Rossi, K. Brent Venable. *5th International Workshop on Graph Structures for Knowledge Representation and Reasoning, IJCAI 2017 Workshop Program*, August 2017.
8. “Using *The Machine Stop* for Teaching Ethics in Artificial Intelligence and Computer Science.” Emanuelle Burton, Judy Goldsmith, and Nicholas Mattei. *2nd International Workshop on AI and Ethics, AAAI 2016 Workshop Program*, Feb. 2016.
7. “Teaching AI Ethics Using Science Fiction.” Emanuelle Burton, Judy Goldsmith and Nicholas Mattei. *1st International Workshop on AI and Ethics, AAAI 2015 Workshop Program*, Jan. 2015.
6. “Voting with CP-nets using a Probabilistic Preference Structure.” Cristina Cornelio, Umberto Grandi, Judy Goldsmith, Nicholas Mattei, Francesca Rossi, and K. Brent Venable. *5th International Workshop on Computational Social Choice (COMSOC 2014)*, June 2014.
5. “ADT @ NICTA.” Haris Aziz, Serge Gaspers, Nicholas Mattei, Nina Narodytska, and Toby Walsh. *23rd Intl. Joint Conference on Artificial Intelligence (IJCAI 2013) Video Competition*, Aug. 2013. **Most Educational Video Award.**
4. “An Empirical Study of Voting Rules and Manipulation with Large Datasets.” Nicholas Mattei, James Forshee, and Judy Goldsmith. *4th International Workshop on Computational Social Choice (COMSOC 2012)*, Sept. 2012.
3. “The Academic Advising Planning Domain.” Joshua Guerin, Josiah Hanna, Libby Knouse, Nicholas Mattei, and Judy Goldsmith. *22nd International Conference on Automated Planning and Scheduling: Planning Competition Workshop (ICAPS 2012)*, June 2012.
2. “Nanosatellite Payload Software: Managing Full Space Science Missions.” Shakib Ghassemieh, Nicholas Mattei, Gregory Defouw, Michael J. McIntyre, and Millan Diaz-Aguado. *Small Satellite Systems and Services Symposium*, June 2010.
1. “COTSAT-1: Cost Optimization and Technology Enablement on a Small Spacecraft Platform.” Michael C. Lindsay, Peter Klupar, Stevan Spremo, Aaron Swank, David Bui, Evan Jackson, Nicholas Mattei, David Mayer, Emmett Quigley, Zion Young.
 - *NATO Research and Technology Organization Conference: RTO-MP-AVT-171 Multifunctional Structures and System Technologies for Small Spacecraft*, May 2010.
 - *European Space Agency (ESA) Small Satellite Systems and Services Symposium (4S)*, June 2010.

Invited Talks and Tutorials (not including conference presentations)

18. Theory and Data for Better Decisions.
 - Spotify Research (Oct. 27, 2017).
 - Union College Math/CS Seminar Series, Schenectady, NY, USA (Nov. 2, 2017).
17. Mechanisms for Online Organ Matching.
 - Sydney Economics and Computation Workshop, Sydney, Australia (Aug. 29, 2017).
16. Doctoral Consortium Panel: Your Research Career.
 - IJCAI 2017 Doctoral Consortium, Melbourne, Australia (Aug. 21, 2017).
15. Strategyproof Peer Selection using Randomization, Partitioning, and Apportionment.
 - Schloss Dagstuhl Seminar 17261: Voting: Beyond Simple Majorities and Single-Winner Elections, Wadern, Germany (June 27th, 2017).
14. A Novel Strategyproof Peer Selection Mechanism.

- IBM TJ Watson Research Center: Knowledge and Reasoning Seminar (November 1st, 2016).
 - University of Sydney Algorithms Group Seminar (March 15th, 2016).
13. Tutorial: Using PrefLib for Social Choice Research.
 - Invited Tutorial, Center for Mathematical Social Sciences Summer Workshop 2016, Auckland, New Zealand (Feb. 19th, 2016).
 12. Tutorial: Computational Social Choice, with Haris Aziz.
 - 28th Australasian Joint Conference on Artificial Intelligence (AUAI 2015), Canberra, Australia (Dec. 2nd, 2015).
 - 13th Pacific Rim International Conference on Artificial Intelligence (PRICAI 2014), Gold Coast, Australia (Dec. 1st, 2014).
 11. From Theory to Practice: Crowdsourcing and Cost Allocation.
 - College of Charleston (Feb. 4, 2016).
 - Tulane University Colloquia (Sept. 16, 2015).
 - Forum for Artificial Intelligence, University of Texas at Austin (Oct. 9, 2015).
 10. OWAs for Voting and Matching.
 - Schloss Dagstuhl Seminar 15241: Computational Social Choice: Theory and Applications, Wadern, Germany (June 11th, 2015).
 9. Tutorial: PrefLib for Empirical Testing in Social Choice.
 - 1st Workshop on Exploring Beyond the Worst Case in Computational Social Choice (EXPLORE 2014), Paris, France (May 6th, 2014).
 8. A Study of Proxies for Shapley Allocations of Transport Costs.
 - University of Kentucky (July 3rd, 2014).
 - Decision, Intelligent Systems and Operational Research Department (DESIR), Pierre et Marie Curie (Paris 6) University, Paris, France (May 14th, 2014).
 - NICTA Game Theory and Optimization Workshop, Sydney, Australia (April 9th, 2014).
 - NICTA Optimization Seminar, Sydney, Australia (March 28, 2014).
 7. Empirical Social Choice: PrefLib and Randomized Tie-Breaking.
 - NICTA Optimization Seminar, Sydney, Australia (Sept. 13, 2013).
 - University of Kentucky (July 31, 2013).
 - University of Texas at Dallas (July 23, 2013).
 6. Academic Advising: Automatically Generating Convincing Explanations of Recommendations from Complex Models.
 - University of Louisville (July 17, 2014).
 - NICTA Optimization Seminar, Sydney, Australia (July 5, 2013).
 - University of Texas at Austin (Aug. 12, 2011).
 - Eastern Kentucky University 25th Annual Symposium in the Mathematics, Statistical, and Computer Sciences (April 1, 2011).
 5. Empirical Analysis of Voting Rules and Large Datasets. *Institute of Mathematical Science (Singapore) Workshop on Social Choice and Algorithmic Game Theory*, Jan. 2013.
 4. Influence, Bribery, and Manipulation in Voting Systems: Current Results and Ongoing Work.
 - NICTA Optimization Seminar, Sydney, Australia (Nov. 30, 2013).
 - Capital Area Theory Seminar (CATS), University of Maryland, College Park (Feb. 24, 2012).
 - University of Padova, Italy (June 16, 2011).
 3. Decision Making Under Uncertainty: Social Choice and Manipulation.
 - Comparative Decision Making Seminar, University of Kentucky (May 29, 2010).

- Mid-West Theory Day, Indiana University (May 17, 2010).
- 2. Wireless Emergency Stop for the K-10 Lunar Rover. Nicholas Mattei. Poster Presentation. *NASA Ames Research Center USRP Poster Day*, Aug. 2005.
- 1. Real-Time Linux Testing and Results. Nicholas Mattei. *NASA Glenn Research Center LER-CIP Presentation Day*, Aug. 2004.

Working Papers (not appearing elsewhere)

- 12. “Latent Event Chain Models for Event Datasets.” Debarun Bhattacharjya, Tian Gao, Nicholas Mattei, and Dharmashankar Subramanian.
- 11. “Markov Models for Predicting Inter-Event Times from Event Datasets.” Debarun Bhattacharjya and Nicholas Mattei.
- 10. “Preferences and Ethical Principles in Decision Making.” Andrea Loreggia, Nicholas Mattei, Francesca Rossi and Kristen Brent Venable.
- 9. “Combining Ethics and Contextual Bandits.” Avinash Balakrishnan, Djallel Bouneffouf, Nicholas Mattei and Francesca Rossi.
- 8. “The Heart of the Matter: Patient Autonomy as a Model for the Wellbeing of Technology Users.” Emanuelle Burton, Judy Goldsmith, Nicholas Mattei and Kristel Clayville.
- 7. “On the Distance Between CP-nets.” Andrea Loreggia, Nicholas Mattei, Francesca Rossi and Kristen Brent Venable.
- 6. “Stable Matchings with Uncertain Pairwise Preferences (Extended Version).” Haris Aziz, Péter Biró, Tamas Fleiner, Serge Gaspers, Ronald de Haan, Nicholas Mattei, Baharak Rastegari.
- 5. “Reasoning with PCP-nets.” Cristina Cornelio, Umberto Grandi, Judy Goldsmith, Nicholas Mattei, Francesca Rossi, and K. Brent Venable.
- 4. “Empirical Evaluation of Real World Tournaments.” Nicholas Mattei and Toby Walsh.
- 3. “Testing CP-nets in the Laboratory.” Thomas E. Allen, Muye Chen, Judy Goldsmith, Ying Guo, Nicholas Mattei, Anna Popova, Michel Regenwetter, Francesca Rossi and Christopher Zwilling.
- 2. “The Effects of Asymmetrical Information on Mating Decisions.” Christopher R. Stieha, Nathaniel T. Wheelwright, and Nicholas Mattei
- 1. “Empirical Evaluation of Voting Rules with Strictly Ordered Preference Data.” Nicholas Mattei

Patents and Disclosures

- 3. “A System for Collective Decision Making by Consensus in Cognitive Environments.” Jeffrey O. Kephart, Nicholas Mattei, Francesca Rossi. Disclosure filed.
- 2. “A System for Multi-Attribute Evaluation of Narratives using Event Datasets.” Debarun Bhattacharjya and Nicholas Mattei. Disclosure filed.
- 1. “Low Burden Star Tracker.” Christopher Dallara, Stevan Spremo, Nicholas Mattei. *NASA Ames Research Center ARC-16289-1*, Provisional patent granted, licensed to Bay Area startup.

Other Technical Communication

3. “Facilitating Peer Review with Cognitive Computing.” Haris Aziz, Omer Lev, and Nicholas Mattei. *IBM Research Blog*, 2017.
2. Review of *Who’s Bigger?: Where Historical Figures Really Rank*, by Steven Skiena and Charles B. Ward. Nicholas Mattei. *SIGACT News*, Volume 45, Number 2, 2014.
1. Review of *Who’s #1?: The Science of Ranking and Rating*, by Amy N. Langville and Carl D. Meyer. Nicholas Mattei. *SIGACT News*, Volume 45, Number 1, 2014.

PROFESSIONAL SERVICE AND ACTIVITIES

Organization

13. Co-Chair for the AAAI/ACM SIGAI 2018 Job Fair (AAAI 2018).
12. Chair for the 1st Student Program at the 1st AAAI/ACM Conference on AI, Ethics, and Society (AIES 2018). We raised over \$30,000 for this event including funding from IBM, DeepMind, ACM:SIGAI, and the Future of Life Institute.
11. Co-Chair for the 11th Multidisciplinary Workshop on Advances in Preference Handling (MPREF) held in Feb 2018 at the 32nd AAAI Conference on Artificial Intelligence (AAAI 2018).
10. Co-Chair for the doctoral consortium at the 5th International Conference on Algorithmic Decision Theory (ADT 2017).
9. Organizer for ACM: Panel and Town Hall: Big Thoughts and Big Questions about Ethics in Artificial Intelligence which drew over 700 live viewers; coordinated through ACM:SIGAI.
8. Organizer for the ACM: SIGAI Student Essay Contest on the Responsible Use of AI Technologies.
7. Co-Chair for the 4th Workshop on Exploring Beyond the Worst Case in Computational Social Choice held in May 2017 at the 16th International Conference on Autonomous Agents and Multiagent Systems (AAMAS 2017).
6. Co-Chair for the 10th Multidisciplinary Workshop on Advances in Preference Handling (MPREF) held in June 2016 at the 25th International Joint Conference on Artificial Intelligence (IJCAI).
5. Co-Chair for the 3rd Workshop on Exploring Beyond the Worst-Case in Computational Social Choice (EXPLORE) held in May 2016 at the 15th International Conference on Autonomous Agents and Multiagent Systems (AAMAS 2016).
4. Chair for the doctoral consortium at the 4th International Conference on Algorithmic Decision Theory (ADT 2015), held jointly with the doctoral consortium for the 13th International Conference on Logic Programming and Non-Monotonic Reasoning (LPNMR 2015). We raised over \$15,000 for this event including funding from the Artificial Intelligence Journal and the National Science Foundation.
3. Co-Chair for the 2nd Workshop on Exploring Beyond the Worst-Case in Computational Social Choice (EXPLORE) held in May 2015 at the 14th International Conference on Autonomous Agents and Multiagent Systems (AAMAS 2015).
2. Co-Chair for the 1st Workshop on Exploring Beyond the Worst-Case in Computational Social Choice (EXPLORE) held in May 2014 at the 13th International Conference on Autonomous Agents and Multiagent Systems (AAMAS 2014).
1. Publicity Chair for the 2012 International Symposium on Artificial Intelligence and Mathematics (ISAIM 2012) special session on computational social choice.

Editorial

- Ethics Officer for the ACM Special Interest Group on AI (ACM: SIGAI).
- Public Relations for the Journal of Artificial Intelligence Research.

Senior Program Committee

- International Joint Conference on Artificial Intelligence (IJCAI 2016).
- International Conference on Autonomous Agents and Multiagent Systems (AAMAS 2018, 2017).

Program Committees

- ACM/AAAI Conference on AI, Ethics, and Society (AIES 2018).
- AAAI Conference on Artificial Intelligence (AAAI 2018, 2017, 2016, 2015, 2014, 2013).
- AAAI Conference on Artificial Intelligence Doctoral Consortium (AAAI:DC 2018).
- European Conference on Artificial Intelligence (ECAI 2016).
- Florida Artificial Intelligence Research Society Conference (FLAIRS 2018, 2017, 2016, 2015, 2014, 2013).
- International Conference on Algorithmic Decision Theory (ADT 2017).
- International Conference on Autonomous Agents and Multiagent Systems (AAMAS 2016, 2015).
- International Joint Conference on Artificial Intelligence (IJCAI 2018, 2017, 2015, 2013).
- International Conference on Principles and Practice of Constraint Programming (CP 2016).
- Italian Association for Artificial Intelligence Doctoral Consortium (IA*AI 2014).
- Workshop on Computational Social Choice (COMSOC 2018, 2016).

Journal Reviewing

- Journal of Autonomous Agents and Multi-Agent Systems (JAAMAS).
- ACM Transactions on Economics and Computation (TEAC).
- Artificial Intelligence (AIJ).
- Annals of Mathematics and Artificial Intelligence (AMAI).
- Ethics and Information Technology.
- IEEE Intelligent Systems.
- International Journal of Approximate Reasoning (IJAR).
- Journal of Artificial Intelligence Research (JAIR).
- Journal of Heuristics.
- Management Science.
- Mathematical Social Sciences (MSS).

Other Conference Reviewing

- Conference on Web and Internet Economics (WINE 2016).
- IEEE International Conference on Tools with Artificial Intelligence (ICTAI 2015).
- Conference on Theoretical Aspects of Rationality and Knowledge (TARK 2015).
- ACM Conference on Economics and Computation (EC 2015).
- International Conference on Autonomous Agents and Multiagent Systems (AAMAS 2014).
- Workshop on Computational Social Choice (COMSOC 2014).
- European Conference on Artificial Intelligence (ECAI 2014, 2012).
- Symposium on Experimental Algorithms (SEA 2014).
- International Conference on Algorithmic Decision Theory (ADT 2013).
- International Conference on Principles and Practice of Constraint Programming (CP 2013).
- AAAI Conference on Artificial Intelligence (AAAI 2011, 2010).
- Midwest / Modern AI and Cognitive Science Conference (MAICS 2008).

Grants and Funding Reviewing

- I have served as an ad-hoc reviewer for the National Science Foundation (NSF) - Information and Intelligent Systems (IIS).
- I have served as a panel reviewer for the National Science Foundation (NSF) - Computing and Communication Foundations (CCF).

Other Service

- At IBM I am an organizer for the New Hire Network and the Culture Club.

- At Data61/NICTA was involved with various education, outreach, and diversity projects including the establishment of the Data61/NICTA Young Researcher Internship for Undergraduate Women and the redesign of the Optimization Research Group website.
- Volunteer organizer and assistant for the 2010 NSF Broader Impacts in Computer Science summit held in Washington D.C., 2010.
- Member of AAAI, ACM, Tau Beta Pi Engineering Honors Society, Upsilon Pi Epsilon Computer Science Honors Society, and former President of the University of Kentucky student ACM.
- At the University of Kentucky I served as undergraduate and graduate student representative to the curriculum committee, the computer science department chair selection committee, department meetings, and the ABET accreditation process.

SUPERVISION

- Emira Ziberi, European Masters in Computational Logic (EMCL), Research Thesis Project, Aug. 2015 – Nov. 2015. Project: “Phase Changes in Computational Social Choice.”
- Manos Thanos, European Masters in Computational Logic (EMCL), Research Thesis Project, Nov. 2014 – Jan. 2015. Project: “Shapley Allocations of Transport Costs with Order Sizes.”
- Jack (Jing Wu) Lian, Taste of Research Summer Scholarship, Nov. 2014 – Feb. 2015. Project: “Algorithms for Conference Paper Assignment.” **Winner of NICTA Summer Scholar Best Presentation 2015.**
- Renee Noble, NICTA Young Researcher Internship for Undergraduate Women, Nov. 2014 – Feb. 2015. Project: “Algorithms for Conference Paper Assignment.”
- I have also mentored and worked closely with many other students including: Cristina Cornelio (University of Padova PhD Student), Simon Mackenzie (University of New South Wales PhD Student), Paul Stursberg (TU Munich PhD Student visiting NICTA), Thomas E. Allen (University of Kentucky PhD Student), Thomas Dodson (University of Kentucky undergraduate), and James Forshee (University of Kentucky undergraduate).

TEACHING

University of New South Wales

- **Spring 2015, Spring 2014, Spring 2013:** Lecturer at UNSW for *COMP4418: Knowledge Representation and Reasoning* with (variously) Maurice Pagnucco, Michael Thielscher, and Toby Walsh. Fully responsible for lecture content and programming assignments (30-60 students, 3 contact hours per week) for 1/3 of the semester (4 weeks) with a primary focus on Constraint Programming.

Bluegrass Community and Technical College

- **Spring 2012:** Lecturer for *CIT-105: Introduction to Computing* (20 students, 3 contact hours per week), introductory course covering how computers work and the broad cultural issues surrounding modern technology. Fully responsible for the course including lectures, assignments, and grading.
- **Spring 2012:** Lecturer for *CIT-130: Productivity Software* (15 students, 3 contact hours per week), basic proficiency in the Microsoft Office suite of products. Fully responsible for the course including lectures, assignments, and grading.

University of Kentucky

- **Spring 2010:** Lab Instructor for *CS215: Introduction to Program Design, Abstraction, and Problem Solving*; 2 Sections (about 35 students, 1.5 contact hours per week), second semester programming course for majors in C++. Responsible for the supervision and grading of all work done in the lab as well as weekly lab mini-lectures.
- **Fall 2007, Fall 2009:** Lecturer for *CS115: Introduction to Computer Programming* (night course); 1 Section (about 20 students, 4 contact hours per week), first semester programming course for majors in C++. Primary lecturer for the night iteration of the course and was fully responsible for all lectures, course material, assignments, and grading.
- **Spring 2007:** Lab Instructor for *CS221: First Course in Computer Science for Engineers*; 2 Sections (about 35 students, 1 contact hour per week), broad survey course of C++ aimed at non-computer science majors. Responsible for the supervision and grading of all work in the lab as well as weekly lab mini-lectures.

- **Fall 2006:** Lab Instructor for *CS115: Introduction to Computer Programming*; 2 Sections (about 35 students, 1 contact hour per week), first semester programming course for majors in C++. Responsible for the supervision and grading of all work done in the lab sections.

TECHNICAL
SKILLS

- Languages: Python, C, C++, Prolog, Java, MiniZinc.
- Software: Matlab, R, SQL, Solr, SVN, Git, Travis, IPython Notebook / SciPy Stack, Pandas, Gurobi, L^AT_EX, ORCAD-Design, Capture, SPICE.
- Hardware and Systems: Extensive electrical bench and hardware experience (e.g., micro-controllers, ICDs, VHDL, Xilinx FPGAs, MPLab, VxWorks).

Last updated: January 7, 2018.