Marek Petrik

CONTACT

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RESEARCH INTERESTS

Reinforcement learning, robust and risk-averse optimization, machine learning, natural resource management, pest management.

EMPLOYMENT

- **Associate Professor**, Computer Science Department, University of New Hampshire, Durham, NH
  (August 2022 – present)
- **Vising Faculty Scientist**, Google Research, Mountain View, CA (September 2022 – June 2023)
- **Assistant Professor**, Computer Science Department, University of New Hampshire, Durham, NH
  (August 2016 – July 2022)
- **Research Staff Member**, IBM T.J. Watson Research Center, Yorktown, NY
  (December 2011 – August 2016)
  (Business Analytics/Solutions) and Mathematical Sciences
  - Precision agriculture, forecasting and optimization
  - Online recommender and personalization system
  - Robust supply chain optimization, revenue management, customer models
- **Postdoctoral Researcher**, IBM T.J. Watson Research Center, Yorktown, NY
  (July 2010 – November 2011)
  Department of Business Analytics and Mathematical Sciences
  - Supply chain optimization and disaster response *Department of Business Analytics and Mathematical Sciences*
- **Research/Teaching Assistant**, University of Massachusetts Amherst
  (September 2005 – June 2010)
  Resource bounded reasoning lab
- **Researcher and Developer**, Whitestein Technologies
  (October 2003 – August 2005)
  Optimization of large-scale production and transport processes.
  - Research on Multi-agent systems and optimization
  - Combinatorial optimization for production planning and vehicle routing
- **Programmer**, OneTwoTech (June 2001 – June 2003)
  Design, implementation and evaluation of new technologies for a web-application server, using: Advanced .NET Framework, COM+, MS SQL Server, Web Services
- **Programmer** SWTeam (July 2000 – July 2001) Implementation of high performance components for client-side data management for multi-dimensional (OLAP) databases using: C++, MS SQL.

EDUCATION

- **University of Massachusetts Amherst**, Amherst, MA, USA. (2005 – 2010)
  Ph.D. in Computer Science: September 1, 2010, GPA: 4.0/4.0
  Advisor: Shlomo Zilberstein
  Thesis: Optimization-based Approximate Dynamic Programming
  Committee: Shlomo Zilberstein, Andrew Barto, Sridhar Mahadevan, Ana Muriel, Ronald Parr
- **University of Massachusetts Amherst**, Amherst, MA, USA. (2005 – 2008)
  M.Sc. in Computer Science, May 2008, GPA: 4.0/4.0
- **Univerzita Komenskeho**, Bratislava, Slovakia. (2000 – 2005)
  B.Sc. in Computer Science, graduated: June 2005
  Major in *Artificial Intelligence* and *Parallel Algorithms*
  GPA: 3.84/4.0 Graduation thesis: *Learning Parallel Portfolios of Algorithms*

JOURNAL ARTICLES

- Chin Pang Ho, Marek Petrik, Wolfram Wiesemann, *Partial Policy Iteration For L_1-Robust Markov Decision Processes*, Journal of Machine Learning Research, 22(275):1–46, 2021.
- Shannon Stang, Masoumeh Khalkhalia, Marek Petrik, Michael Palace, Zhongming Lu, Weiwei Mo, *Spatially optimized distribution of household rainwater harvesting and greywater recycling systems*, Journal of Cleaner Production 312:20, 2021.
- Matthew R. Argall, Colin Small, Samantha Piatt, Liam Breen, Marek Petrik, and others, *MMS SITL Ground Loop: Automating the burst data selection process*, Frontiers in Astronomy and Space Sciences 7, 2020.
- Kathryn Kaspar, Erin Santini-Bell, Marek Petrik, Masoud Sanayei, *Comparison Between a Linear Regression and an Artificial Neural Network Model to Detect and Localize Damage in the Powder Mill Bridge*, Transportation Research Record: Journal of the Transportation Research Board, 2020.
- Bo Liu, Ian Gemp, Mohammad Ghavamzadeh, Ji Liu, Sridhar Mahadevan, Marek Petrik, *Proximal Gradient Temporal Difference Learning: Stable Reinforcement Learning with Polynomial Sample Complexity*, Journal of Artificial Intelligence Research 63:462-493, 2018.
- Dan Iancu, Marek Petrik, Dharmashankar Subramanian, *Tight approximations of dynamic risk measures*, Mathematics of Operations Research 40(3), 2015.
- Amit Dhurandhar, Marek Petrik, *Efficient and accurate methods for updating generalized linear models with multiple feature additions*, Journal of Machine Learning Research 15:2607–2627, 2014.
- Markus Ettl, Prateek Jain, Ronny Luss, Marek Petrik, Rajesh Ravi, Chitra Venkatramani, *Combining social media and customer behavior analytics for personalized customer engagements*, IBM Journal of Research and Development 58(5/6):7:1-7:12, 2014.
- Marek Petrik and Shlomo Zilberstein, *Robust approximate bilinear programming for value function approximation*, Journal of Machine Learning Research 12:3027–3063, 2011.
- Marek Petrik, *Optimization-based Approximate Dynamic Programming*, Ph.D. Dissertation 2010, University of Massachusetts Amherst.
- Marek Petrik and Shlomo Zilberstein, *A bilinear programming approach for multiagent systems*, Journal of Artificial Intelligence Research 35:235–274, 2009.

◇ Jeff Johns, Marek Petrik, and Sridhar Mahadevan, *Hybrid Least-Squares Algorithms for Approximate Policy Evaluation*, Machine Learning 76(2):243–256 and European Conference on Machine Learning (ECML), 2009.

◇ Marek Petrik and Shlomo Zilberstein, *Learning parallel portfolios of algorithms*, Annals of Mathematics and Artificial Intelligence, 48(1-2):85–106, 2006.

Refereed Conference Publications

◇ Chin Pang Ho, Marek Petrik, Wolfram Wiesemann, *Robust Phi-divergence MDPs*, Neural Information Processing Systems, 2022.

◇ Elita Lobo, Harvineet Singh, Marek Petrik, Cynthia Rudin, Himabindu Lakkaraju, *Data poisoning attacks on off-policy policy evaluation methods*, Uncertainty in Artificial Intelligence, 2022. (Plenary)

◇ Bahram Behzadian, Marek Petrik, Chin Pang Ho, *Fast Algorithms for L_∞-constrained S-rectangular Robust MDPs*, Neural Information Processing Systems, 2021. (Acceptance rate: 26%)

◇ Mostafa Hussein, Brendan Crowe, Madison Clark, Marek Petrik, Momotaz Begum, *Robust Behavior Cloning with Adversarial Demonstration Detection*, International Conference on Intelligent Robots and Systems (IROS), 2021.

◇ Zaynah Javed, Daniel S. Brown, Satvik Sharma, Jerry Zhu, Ashwin Balakrishna, Marek Petrik, Anca D. Dragan, Ken Goldberg, *Policy Gradient Bayesian Robust Optimization for Imitation Learning*, International Conference on Machine Learning (ICML), 2021. (Acceptance rate: 21.5%)

◇ Bahram Behzadian, Reazul Russel, Chin Pang Ho, Marek Petrik, *Optimizing Percentile Criterion using Robust MDPs*, Conference on Artificial Intelligence and Statistics (AI-Stats) 2021. (Acceptance rate: 30%)

◇ Daniel S. Brown, Scott Niekum, Marek Petrik, *Bayesian Robust Optimization for Inverse Reinforcement Learning*, Advances in Neural Information Processing Systems (NeurIPS) 2020. (Acceptance rate: 20%)

◇ Maximilian Fickert, Tianyi Gu, Leonhard Staut, Wheeler Ruml, Joerg Hoffmann, and Marek Petrik, *Beliefs We Can Believe In: Replacing Assumptions with Data in Real-Time Search*, AAAI Conference on Artificial Intelligence, 2020. (Acceptance rate: 20.6%)

◇ Reazul Hasan Russel, Marek Petrik, *Beyond Confidence Regions: Tight Bayesian Ambiguity Sets for Robust MDPs*, Advances in Neural Information Processing Systems (NeurIPS), 2019. (Acceptance rate: 21%)

◇ Bahram Behzadian, Marek Petrik, *Fast Feature Selection for Linear Value Function Approximation*, International Conference on Automated Planning and Scheduling (ICAPS), 2019. (Acceptance rate: about 35%)

◇ Mostafa Hussein, Momotaz Begum, and Marek Petrik, *Inverse Reinforcement Learning of Interaction Dynamics from Demonstrations*, International Conference on Robotics and Automation (ICRA), 2019. (Acceptance rate: 44%)

◇ Andrew Mitchell, Wheeler Ruml, Fabian Spaniol, Joerg Hoffmann, Marek Petrik, *Real-time Planning as Decision-making Under Uncertainty*, AAAI Conference on Artificial Intelligence, 2019. (Acceptance rate: 16%)

- ◇ Andrea Tirinzoni, Xiangli Chen, Marek Petrik and Brian Ziebart, *Policy-Conditioned Uncertainty Sets for Robust Markov Decision Processes*, Neural Information Processing Systems (NIPS), 2018. (Acceptance rate: 20%, spotlight 3%)
- ◇ Ching Pang Ho, Marek Petrik, Wolfram Wiesemann, *Fast Bellman Updates for Robust MDPs*, International Conference on Machine Learning (ICML), 2018. (Acceptance rate: 24%)
- ◇ Bence Cserna, Marek Petrik, Reazul Hasan Russel, Wheeler Ruml, *Value Directed Exploration in Multi-Armed Bandits with Structured Priors*, Uncertainty in Artificial Intelligence (UAI), 2017. (Acceptance rate: 31%)
- ◇ Adam N. Elmachtoub, Ryan McNellis, Marek Petrik, *A Practical Method for Solving Contextual Bandit Problems Using Decision Trees*, Uncertainty in Artificial Intelligence (UAI), 2017. (Plenary presentation, Acceptance rate: 31%)
- ◇ Stephen Becker, Ban Kawas, Marek Petrik, *Robust Partially-Compressed Least-Squares*, National Conference of AAAI, 2017. (Acceptance rate: 25%)
- ◇ Marek Petrik, Yinlam Chow, Mohammad Ghavamzadeh, *Safe Policy Improvement by Minimizing Robust Baseline Regret*, Advances in Neural Information Processing Systems (NIPS) 2016. (Acceptance rate: 22%)
- ◇ Marek Petrik, Ronny Luss, *Interpretable Policies for Dynamic Product Recommendations*, Uncertainty in Artificial Intelligence (UAI) 2016. (Acceptance rate: 31%)
- ◇ Bo Liu, Ji Liu, Mohammad Ghavamzadeh, Sridhar Mahadevan, Marek Petrik, *Finite-Sample Analysis of Proximal Gradient TD Algorithms*, Uncertainty in Artificial Intelligence (UAI), 2015. (Best Student Paper Award) (Acceptance rate: 25 %)
- ◇ Marek Petrik, Xiaojian Wu, *Optimal Threshold Control for Energy Arbitrage with Degradable Battery Storage*, Uncertainty in Artificial Intelligence (UAI), 2015. (Acceptance rate: 25%)
- ◇ Marek Petrik, Dharmashankar Subramanian, *RAAM: The benefits of robustness in approximating aggregated MDPs in reinforcement learning*, Neural Information Processing Systems (NIPS), 2014. (Acceptance rate: spotlight 4.8%)
- ◇ Francisco Barahona, Markus Ettl, Marek Petrik, Peter Rimshnick, *Optimizing deliveries in agile supply chains with demand shocks*, Winter Simulation Conference, 2013.
- ◇ Janusz Marecki, Marek Petrik, Dharmashankar Subramanian, *Solution methods for constrained Markov decision process with continuous probability modulation*, Conference on Uncertainty in Artificial Intelligence (UAI), 2013. (Acceptance rate: 31%)
- ◇ Marek Petrik and Dharmashankar Subramanian, *An approximate solution method for large risk-averse Markov decision processes*, Conference on Uncertainty in Artificial Intelligence (UAI), 2012. (Acceptance rate: 31%)
- ◇ Marek Petrik, *Approximate dynamic programming by minimizing distributionally robust bounds*, International Conference on Machine Learning (ICML), 2012. (Acceptance rate: 27%)
- ◇ Marek Petrik and Shlomo Zilberstein, *Resource management using point-based dynamic programming*, Proceedings of the 25th Conference on Artificial Intelligence (AAAI), 2011. (Acceptance rate 24.8%)

- ◇ Marek Petrik, Gavin Taylor, Ron Parr, and Shlomo Zilberstein, *Feature selection using regularization in approximate linear programs for Markov decision processes*, Proceedings of the International Conference on Machine Learning (ICML) 27, 2010. (Acceptance rate: 26%)
- ◇ Marek Petrik and Shlomo Zilberstein, *Robust value function approximation using bilinear programming*, Proceedings of the Advances in Neural Information Processing Systems (NIPS) 22, 2009. (Acceptance rate — spotlight: 8%)
- ◇ Marek Petrik and Shlomo Zilberstein, *Constraint relaxation in approximate linear programs*, Proceedings of the International Conference on Machine Learning (ICML), 2009. (Acceptance rate 26%)
- ◇ Marek Petrik and Bruno Scherrer, *Biasing approximate dynamic programming with a lower discount factor*, Proceedings of the Advances in Neural Information Processing Systems (NIPS) 21, 2008. (Acceptance rate 27%)
- ◇ Marek Petrik and Shlomo Zilberstein, *Learning heuristic functions through approximate linear programming*, Proceedings of the International Conference on Automated Planning and Scheduling (ICAPS), 2008. (Acceptance rate 34%)
- ◇ Martin Allen, Marek Petrik, and Shlomo Zilberstein, *Interaction structure and dimensionality in decentralized problem solving*, Proceedings of the Conference on Artificial Intelligence (AAAI) (Short Paper), 2008. (Acceptance rate 26%)
- ◇ Marek Petrik and Shlomo Zilberstein, *Anytime coordination using separable bilinear programs*, Proceedings of the Conference on Artificial Intelligence (AAAI), 2007. (Acceptance rate 27%)
- ◇ Marek Petrik *An analysis of Laplacian methods for value function approximation in MDPs*, Proceedings of the International Joint Conference on Artificial Intelligence (IJCAI), 2007 (Acceptance rate 16%)
- ◇ Marek Petrik and Shlomo Zilberstein, *Average-reward decentralized Markov decision processes*, Proceedings of the International Joint Conference on Artificial Intelligence (IJCAI), 2007 (Acceptance rate 16%)

PEER-REVIEWED SYMPOSIA

- ◇ Elita Lobo, Harvineet Singh, Marek Petrik, Cynthia Rudin, Himabindu Lakkaraju, *Data poisoning attacks on off-policy policy evaluation algorithms*, ICLR Workshop PAIR, 2022.
- ◇ Gerard Donahue, Brendan Crowe, Marek Petrik, Daniel Brown, Soheil Gharatappeh, *Unbiased Efficient Feature Counts for Inverse RL*, NeurIPS Workshop on Safe and Robust Control of Uncertain Systems, 2021.
- ◇ Elita Lobo, Yash Chandak, Dharmashankar Subramanian, Josiah Hannah, Marek Petrik, *Behavior Policy Search for Risk Estimators in RL*, NeurIPS Workshop on Safe and Robust Control of Uncertain Systems, 2021.
- ◇ Elita Lobo, Mohammad Ghavamzadeh, Marek Petrik, *Soft-robust Algorithms for Batch Reinforcement Learning*, R2AW Workshop, IJCAI 2021.
- ◇ Mostafa Hussein, Marek Petrik, Brendan Crowe, Momotaz Begum, *Robust Maximum Entropy Behavior Cloning*, NeurIPS 3rd Robot Learning Workshop: Grounding Machine Learning Development in the Real World, 2020.

- ◇ Maximilian Fickert, Tianyi Gu, Leonhard Staut, Sai Lekyang, Wheeler Ruml, Joerg Hoffmann and Marek Petrik, *Real-time Planning as Data-driven Decision-making*, ICAPS workshop on Bridging the Gap Between AI Planning and Reinforcement Learning (PRL), 2020.
- ◇ Jason Carter, Marek Petrik, *Robust Risk-Averse Sequential Decision Making*, NeurIPS Safety and Robustness in Decision Making Workshop, 2019.
- ◇ Bahram Behzadian, Reazul Hasan Russel, Marek Petrik, *Optimizing Norm-bounded Weighted Ambiguity Sets for Robust MDPs*, NeurIPS Safety and Robustness in Decision Making Workshop, 2019.
- ◇ Reazul Hasan Russel, Tianyi Gu, Marek Petrik, *Robust Exploration with Tight Bayesian Plausibility Sets*, The Multi-disciplinary Conference on Reinforcement Learning and Decision Making, 2019
- ◇ Talha Siddique, Jia Lin Hau, Shadi Atallah, Marek Petrik, *Robust Pest Management Using Reinforcement Learning*, The Multi-disciplinary Conference on Reinforcement Learning and Decision Making, 2019
- ◇ Reazul Hasan Russel, Marek Petrik, *Tight Bayesian Ambiguity Sets for Robust MDPs*, Infer2Control NIPS Workshop, 2018.
- ◇ Bahram Behzadian, Marek Petrik, *Feature Selection by Singular Value Decomposition for Reinforcement Learning*, Prediction and Generative Modeling in Reinforcement Learning Workshop, IJCAI/ICML 2018.
- ◇ Andrea Tirinzoni, Xiangli Chen, Marek Petrik and Brian Ziebart, *Policy-Conditioned Uncertainty Sets for Robust Markov Decision Processes*, Planning and Learning Workshop, IJCAI/ICML 2018.
- ◇ Andreas Lydakis, Jenica Allen, Marek Petrik, Tim Szewczyk, *Computing Robust Strategies for Managing Invasive Plants*, AI for Wildlife Conservation Workshop at IJCAI/ICML, 2018.
- ◇ Talha Siddique, Shadi S. Atallah, Marek Petrik, *Farm spatial configurations for increased pest resistance*, Northeastern Agricultural and Resource Economics Association, 2018.
- ◇ Talha Siddique, Shadi S. Atallah, Marek Petrik, *Optimal farm spatial configurations for increased pest resistance: a bio-economic application to apple orchards*, Southern Economic Alliance meeting, 2018.
- ◇ Bahram Behzadian, Marek Petrik, *Low-rank Feature Selection for Reinforcement Learning*, International Symposium on Artificial Intelligence and Mathematics, 2018.
- ◇ Amit Dhurandhar, Sechan Oh, Marek Petrik, *Building an Interpretable Recommender via Loss-Preserving Transformation*, ICML Workshop on Human Interpretability in Machine Learning (WHI 2016), 2016.
- ◇ Marek Petrik, Yinlam Chow, Mohammad Ghavamzadeh, *Safe Policy Improvement by Minimizing Robust Baseline Regret*, ICML Workshop on Reliable Machine Learning in the Wild, 2016.
- ◇ Marek Petrik, Dharmashankar Subramanian, *RAAM: The Benefits of Robustness in Approximating Aggregated MDPs in Reinforcement Learning*, From Bad Models to Good Policies (Sequential Decision Making under Uncertainty), NIPS Workshop, 2014.

◇ Marek Petrik, *Distributionally Robust Approach to Approximate Dynamic Programming*, European Workshop on Reinforcement Learning, 2012.

◇ Brenda Dietrich, Markus Ettl, Roger D. Lederman, Marek Petrik, *Optimizing the end-to-end value chain through demand shaping and advanced customer analytics*, 11th International Symposium on Process Systems Engineering, 2012.

◇ Marek Petrik, *Robust Approximate Optimization for Large Scale Planning Problems*. AAAI Doctoral Consortium, Pasadena, CA, 2009.

◇ Marek Petrik and Shlomo Zilberstein, *A Successive approximation algorithm for coordination problems*. In Proceedings of the International Symposium on Artificial Intelligence and Mathematics, Fort Lauderdale, FL, 2008

◇ Marek Petrik and Shlomo Zilberstein, *Learning static parallel portfolios of algorithms*. In Proceedings of the International Symposium on Artificial Intelligence and Mathematics, Fort Lauderdale, FL, 2006.

◇ Marek Petrik, *Statistically optimal combination of algorithms*. In Local Proceedings of the International Conference on Current Trends in Theory and Practice of Computer Science (SOFSEM), 2005.

Book Chapters

◇ Marek Petrik and Shlomo Zilberstein, *Learning Feature-Based Heuristic Functions*. In Y. Hamadi, E. Monfroy, and F. Saubion (Eds.), Autonomous Search, Springer, June, 2011.

Invited Talks & Presentations

◇ Marek Petrik, *Bayesian Soft-Robust Reinforcement Learning*, Brown University, April 2021.

◇ Marek Petrik, *Robust Reinforcement Learning*, University of Massachusetts, Lowell, September, 2019.

◇ Marek Petrik, *Fast Solution Methods for Robust Markov Decision Processes*, Sixth International Conference on Continuous Optimization, 2019.

◇ Marek Petrik, *Robust Reinforcement Learning*, Deep Learning and Reinforcement Learning Summer School, 2019.

◇ Marek Petrik, *Robust Reinforcement Learning without Simulation*, Microsoft Research, Montreal, 2019.

◇ Marek Petrik, *Robust Reinforcement Learning without Simulation*, Google Brain and Deepmind, Montreal, 2019.

◇ Marek Petrik, *Using Prior Knowledge in Reinforcement Learning*, Imperial College, 2018.

◇ Marek Petrik, *Reinforcement Learning for Managing Invasive Species*, UNH Data Science Seminar, 2018.

◇ Marek Petrik, *Robust Reinforcement Learning*, Oracle Research, 2017.

◇ Marek Petrik, *Robust Reinforcement Learning*, Lehigh University, 2017.

◇ Marek Petrik, Mohammad Ghavamzadeh, Yinlam Chow, *Computing Safe Policies with Inaccurate Models*, SIAM Conference on Optimization, 2017.

◇ Marek Petrik, Mohammad Ghavamzadeh, Yinlam Chow, *Computing Safe Policies with Inaccurate Models*, Data Learning and Inference (DALI), 2016.

- ◇ Marek Petrik, Ronny Luss, Rajesh Ravi, Markus Ettl, *Strategic Interpretable Online Recommendations*, NIPS eCommerce workshop 2015.
- ◇ Marek Petrik, *Threshold Policies for Energy Arbitrage*, INFORMS Annual Meeting, 2015.
- ◇ Marek Petrik, *Robust Approximate Dynamic Programming*, INFORMS Annual Meeting, 2015.
- ◇ Marek Petrik, *Benefits of Robust Optimization*, University of Massachusetts, Amherst, 2015.
- ◇ Stephen Becker, Marek Petrik, Ban Kawas, Karthikeyan N. Ramamurthy, *Robust Compressed Least Squares Regression*, Out of the Box: Robustness in High Dimension, NIPS Workshop, 2014.
- ◇ Marek Petrik, Dharmashankar Subramanian, *Using Robustness in Approximate Dynamic Programming*, INFORMS Annual Meeting, 2014.
- ◇ Marek Petrik, *Using Robust Optimization for Solving Large Data-driven Problems*, CS Colloquium, University of Colorado, Boulder, 2014.
- ◇ Marek Petrik, *Using Robustness in Value Function Approximation*, Modeling and Optimization: Theory and Applications (MOPTA), 2014
- ◇ Marek Petrik, *Distributionally Robust Approach to Approximate Dynamic Programming*, OR & OM Seminar, Tepper School of Business, Carnegie Mellon University, 2012
- ◇ Marek Petrik, Dharmashankar Subramanian, *Feature Selection in Linear Dynamical Systems*, INFORMS Annual Meeting, 2012
- ◇ Marek Petrik, *Distributionally Robust Approach to Approximate Dynamic Programming*, INFORMS Annual Meeting, 2011
- ◇ Marek Petrik, Dharmashankar Subramanian, *Risk Sensitive Resource Management in Dynamic Settings*, INFORMS Annual Meeting, 2011
- ◇ Dan Iancu, Marek Petrik, Dharmashankar Subramanian, Pu Huang, *The Price of Dynamic Inconsistency for Distortion Risk Measures*, INFORMS Annual Meeting 2011
- ◇ Marek Petrik, *Optimization-based Methods for Approximate Dynamic Programming*, INFORMS Annual Meeting, 2010.
- ◇ Marek Petrik, *Approximate Dynamic Programming for Resource Management*, IBM T.J. Watson Research Center, 2010
- ◇ Marek Petrik, *Approximate Dynamic Programming for Resource Management*, Robotics Institute, Carnegie-Mellon University, 2010
- ◇ Marek Petrik and Shlomo Zilberstein, *Value Function Approximation for Reservoir Management*, 2nd International Conference on Computational Sustainability, 2010
- ◇ Marek Petrik and Shlomo Zilberstein, *Blood Inventory Management Using Approximate Linear Programming Marek Petrik and Shlomo Zilberstein*. Presented at INFORMS Computing Society Meeting, Charleston, SC, 2009
- ◇ Marek Petrik and Shlomo Zilberstein, *Constraint Relaxation in Approximate Linear Programs*. Dagstuhl Seminar 09181: "Sampling-based Optimization", Dagstuhl, Germany, 2009
- ◇ Marek Petrik, *Aggregation in MDPs: Policy iteration and linear programming*. Presented at New England Student Colloquium on Artificial Intelligence, 2007.

◇ Marek Petrik, Shlomo Zilberstein, *Coordination in multi-agent systems*. Presented at MAIA research group in INRIA 2007.

◇ Marek Petrik *Basis construction using Krylov method*. Presented at TAM 2006, Bratislava, Slovakia.

◇ Marek Petrik, *Knowledge representation for expert systems*. Presented at International Conference for Undergraduate and Graduate Students of Applied Mathematics 2004.

FUNDING

◇ NSF 2144601: *CAREER: Soft-robust Methods for Offline Reinforcement Learning*, 2022–2027, $\$575,866$. (PI)

◇ NSF RI 1815275: *Robust Reinforcement Learning Using Bayesian Models*, 2018–2022, $\$437,753$. (PI, co-PI: Shadi Attalah)

◇ NSF III 1717368: *Robust Reinforcement Learning for Invasive Species Management*, 2017–2021, $\$497,335$. (PI, co-PI: Jenica Allen)

◇ IBM Faculty Award 2017, $\$30,000$

◇ RII Track-2 FEC: Leveraging Intelligent Informatics and Smart Data for Improved Understanding of Northern Forest Ecosystem Resiliency (INSPIRES), $\$5,099,999$. (Senior Personnel for UNH, UMaine led)

◇ Served on NSF CISE panels, 2017, 2017, 2018, 2019, 2021, 2022

AWARDS

◇ UNH CEPS Outstanding Research Award (Assistant Professor), 2022

◇ NSF CAREER Award, 2022

◇ IBM Faculty Award, 2017

◇ (Co-author) Best Student Paper Award, UAI 2015

◇ IBM Research Division Award, "DataCenter Risk Resiliency Rationalization Analysis", 2013

◇ IBM First Patent Application Invention Achievement Award, "Robust Inventory Management in Multi-Stage Inventory Networks with Demand Shocks", 2012

◇ Awarded Graduate School Fellowship, University of Massachusetts Amherst, 2008-2009

◇ Passed portfolio (Ph.D. candidacy exam) with distinction, University of Massachusetts Amherst 2008

◇ Received: "Outstanding Synthesis Project" award for "A linear programming approach to bounds and basis construction for Markov decision processes", 2007-2008

◇ 2nd Place in Tetris Domain in Reinforcement Learning Competition 2008 (with Jeff Johns and Colin Barringer)

◇ Invited to Dagstuhl seminar 09181: "Sampling-based Optimization"

◇ Final Round of Microsoft Fellowship 2007/2008

PROFESSIONAL SERVICE

◇ **Local co-chair of ICML 2016**

◇ **Guest Editor**

· Machine Learning Special Issue on Risk and Fairness, 2021, 2022

◇ **Workshop Organization**

- NeurIPS 2021 Workshop: Safe and Robust Control of Uncertain Systems
- NeurIPS 2019 Workshop: Safety and Robustness in Decision-making

◇ **Journal Reviewing**

- Management Science 2019–2022
- Operations Research 2013–2021
- SIAM Journal on Optimization 2016, 2017
- Annals of Statistics, 2021, 2022
- Journal of Machine Learning Research 2010–2016, 2019–2022
- Machine Learning 2016, 2017
- Operations Research Letters, 2020, 2022
- Mathematics of Operations Research 2012–2021
- Transactions on Pattern Analysis and Machine Intelligence, 2021
- Journal of Artificial Intelligence Research 2008–2021 (Editorial board)
- Artificial Intelligence 2017, 2022
- European Journal of Operations Research 2017
- Computational Optimization and Applications 2017
- AdHoc Networks Journal 2015
- A Quarterly Journal of Operations Research 2015
- Information Processing Letters 2011
- International Journal of Approximate Reasoning 2011
- Journal of Autonomous Agents and Multi-Agent Systems 2007–2010
- IEEE Transactions on Automatic Control 2009–2010, 2016–2017
- Annals of Mathematics and Artificial Intelligence 2006, 2010
- Applied Stochastic Models in Business and Industry 2015

◇ **Senior Program Committee of Conferences**

- Artificial Itelligence and Statistics (AIStats) 2023
- International Joint Conference on Artificial Intelligence (IJCAI) 2018–2023
- Conference on Artificial Intelligence (AAAI) 2019–2021

◇ **Program Committee of Conferences**

- International Conference on Machine Learning (ICML) 2011–2015, 2017–2022
- Advances in Neural Information Processing Systems (NIPS) 2011–2018
- Artificial Intelligence and Statistics (AI-STATS) 2011–2012, 2016–2022
- Conference on Artificial Intelligence (AAAI) 2008, 2012–2018
- International Conference on Automated Planning and Scheduling (ICAPS) 2017, 2018, 2019
- Uncertainty in Artificial Intelligence (UAI) 2010, 2013–2016

- Conference on Knowledge Discovery and Data Mining (KDD) 2016
- International Conference on Acoustics, Speech and Signal Processing (ICASSP) 2016
- International Symposium on Artificial Intelligence and Mathematics 2011
- International Joint Conference on Artificial Intelligence (IJCAI) 2009, 2011, 2013, 2016, 2018
- Autonomous Agents and Multiagent Systems (AAMAS) 2010, 2016, 2017, 2020, 2021

◇ **Conference Reviewing**

- Neural Information Processing Systems (NIPS) 2018
- North–East Student Colloquium on Artificial Intelligence (NESCAI) 2010
- International Conference on Automated Planning and Scheduling (ICAPS) 2007–2009
- National Conference on Artificial Intelligence (AAAI) 2006
- International Symposium on Artificial Intelligence and Mathematics 2006

◇ **Panels**

- NSF CISE 2017, 2017, 2018, 2019, 2021, 2022
- UNH Core 2018, 2019

◇ **Other Reviewing**

- Judge for SIAM Moody's Mega Math Challenge 2014, 2015

PROGRAMMING ◇ LaTeX, R, Python, C/C++, Julia, SQL, Stan