PRADEEP VARAKANTHAM

Lee Kuan Yew Fellow
Professor of Computer Science, Director CARE.AI Lab
Singapore Management University
Email: pradeepv@smu.edu.sg
Website: http://www.mysmu.edu.sg/faculty/pradeepv
Phone: +65 85223264

EDUCATION

- Aug 1 2003- Feb 20, 2007: Ph.D. in Computer Science, University of Southern California, Los Angeles, CA, USA
- Sep 1, 2003 - Dec 1, 2005: M.S. in Computer Science, University of Southern California, Los Angeles, CA, USA
- Sep 1, 1998 - Jun 30, 2002: B.S. in Computer Science, IIIT Hyderabad, Andhra Pradesh, India

PROFESSIONAL EXPERIENCE

- Jul 1, 2022 - Now: Professor of Computer Science, Singapore Management University
- Jan 31, 2023 - May 1, 2023: Visiting Researcher, Harvard
- Sep 9, 2020 - April 30, 2021: Visiting Researcher, Google
- Jan 1, 2017 -Jun 30, 2022: Associate Professor, School of Computing and Information Systems, Singapore ManagementUniversity
- Jun 1, 2009 - Dec 31, 2017: Assistant Professor, School of Computing and Information Systems, Singapore Management University
- Mar 1, 2007 - May 31, 2009: Post Doctoral Fellow, Carnegie Mellon University
- Jul 1, 2002 - Jun 30, 2003: Software Engineer, Divine Inc, Hyderabad, India

RESEARCH INTERESTS

- Single and Multi-Agent Reinforcement Learning
- Imitation Learning
- Preference based RL
- Large Language Models
- Diffusion Models

AWARDS, RECOGNITIONS AND HONORS

- Our paper on "Improving Environment Novelty Quantification for Effective Unsupervised Environment Design" was selected NeurIPS 2024 Oral Presentation. Only 70 out of 15000 papers selected for oral presentation.
- PRICAI 2024 best paper runner up
- Lee Kuan Yew Fellowship (one faculty at SMU gets this fellowship every year)
- General Chair for ICAPS 2022
- Elected to the council of ICAPS (International Conference on Automated Planning and Scheduling).
- Recognized as AAAI Senior Member.
- One of the six projects selected by Google's AI for Social Good program.
- Finalist for INFORMS Innovative Applications in Analytics award, 2020.
- ICAPS'2019 best application paper award for our work on real-time high capacity ridesharing.
- Best deployed system award at AAMAS'18.
- Singapore Civil Defense Force (SCDF) strategic partner award for our work on emergency response, 2018 and 2019.
- Serve on scientific board of AI Singapore.

- Invited to give an “Early Career Spotlight” talk at IJCAI-16
- Elected to the IFAAMAS (International Foundation for Autonomous Agents and Multi Agent Systems) Board of Directors
- Finalist for the best Senior Program Committee (SPC) member at AAMAS 2013.
- Our paper titled "Caching Schemes for DCOP Search Algorithms" was nominated for Jay Modi Best student paper award at AAMAS, 2009.

GRANTS

I. (PI) Grant from AI Singapore on “Trust to train and Train to Trust”. 6.1 million. April 2021 - Mar 2025.
II. (Co-PI) Grant from AI Singapore on “The Other Me”. 10 million. April 2021 - Mar 2025.
III. (Co-PI) Grant from AI Singapore on collaboration with UBS Bank. Jan 2020 - Jan 2021. Amount: ~650,000 SGD.
IV. (PI) Grant from Ministry of Education (MOE) Tier 2 on “Moving Beyond Data Insights: Optimising Dynamics in Safety and Security Networks”. Jan 2017- Jan 2020. Amount: ~680,000 SGD.
V. (PI) Grants from Ministry of Home Affairs Singapore on Safety and Security Issues. August 2016 - Oct 2020. Amount: ~1,350,000 SGD.
VI. (PI) Google research award on “AI for Social Good”. Amount: ~21,000 SGD.
VII. (Co-PI) Grant from National Research Foundation (NRF) on “Urban Management Computing Lab”. Aug-2014 to Jul-2019. Co-Principal Investigator. Amount: 13,000,000 SGD.
VIII. (PI) Grant from SMART Future Mobility on “Stochastic Selfish Routing”. Nov-2013 to Aug 2015. Principal Investigator. Amount: 250,000 SGD.
IX. (PI) Grant from SMART Future Mobility on “Decentralized Decision Support to Improve Performance of a Taxi Fleet”. Mar-2011 to Feb-2013. Principal Investigator. Amount: 136,000 SGD.
X. (PI) Grant from DSO Labs for project on “Active Malware Analysis using Stochastic Games”. Nov-2010 to Oct-2013. Principal Investigator. Amount: 202,000 SGD.
XI. (PI) Grant from AFOSR (Air Force Science Research) in US for project on “Enhancing Organizations using POMDPs”. Feb-2009 to May 2009. Amount: 85,000 USD.

RIGOROUSLY REVIEWED PUBLICATIONS

1. “ On Generalization Within Multi-Objective Reinforcement Learning Algorithms” by Jayden Teoh, **Pradeep Varakantham** and Peter Vamplew. ICLR, 2025.
2. “ On Minimizing Adversarial Counterfactual Error in Adversarial Reinforcement Learning” by Roman Belaire, Arunesh Sinha and **Pradeep Varakantham**. ICLR, 2025.
3. “ On Semantic Loss-Guided Data-Efficient Supervised Fine-Tuning for Safe Responses in LLMs” by Yuxiao Lu, Arunesh Sinha and **Pradeep Varakantham**. ICLR, 2025.
4. “ Bootstrapping Language Models with DPO Implicit Rewards” by Changyu Chen, Zichen Liu, Chao Du, Tianyu Pang, Qian Liu, Arunesh Sinha, **Pradeep Varakantham** and Min Lin. ICLR, 2025.
5. “ Unlocking the Planning Capabilities of LLMs Through Maximum Diversity Fine-Tuning” by Wenjun Li, Changyu Chen and **Pradeep Varakantham** . NAACL, 2025.
6. “ Marginal Benefit Driven RL Teacher for Unsupervised Environment Design” by Dexun Li, Wenjun Li and **Pradeep Varakantham** . AAAI, 2025. **Oral Presentation**
7. “ Offline Safe Reinforcement Learning Using Trajectory Classification” by Ze Gong, Akshat Kumar and **Pradeep Varakantham** . AAAI, 2025. **Oral Presentation**
8. “ EduQate: Generating Adaptive Curricula through RMABs in Education Settings” by Sidney Tio, Dexun Li and **Pradeep Varakantham** . AAMAS, 2025.
9. “ On Learning Informative Trajectory Embeddings for Imitation, Classification and Regression” by Zichang Ge, Changyu Chen, Arunesh Sinha and **Pradeep Varakantham** . AAMAS, 2025.
10. “ Improving Environment Novelty Quantification for Effective Unsupervised Environment Design” by Jayden Teoh, Wenjun Li and **Pradeep Varakantham**. NeurIPS, 2024. **Oral Presentation**
11. “ Safety through feedback in Constrained RL” by Shashank Chirra **Pradeep Varakantham** and Praveen Paruchuri. NeurIPS, 2024.
12. “ SPRINQL: Sub-optimal Demonstrations driven Offline Imitation Learning"” by Hoang Minh Huy, Mai Anh Tien and **Pradeep Varakantham**. NeurIPS, 2024.

13. " IRL for Restless Multi-armed Bandits with Applications in Maternal and Child Health."" by Gauri Jain, **Pradeep Varakantham**, Aparna Taneja, Haifeng Xu, Prashant Doshi and Milind Tambe. PRICAI, 2024. **Best Paper Runner up**
14. "Unsupervised Training Sequence Design: Efficient and Generalizable Agent Training" by Wenjun Li and **Pradeep Varakantham**. AAAI, 2024.
15. "Imitate the Good and Avoid the Bad: An incremental approach to Safe Reinforcement Learning" by Minh Huy Hoang, Mai Anh Tien and **Pradeep Varakantham**. AAAI, 2024.
16. "Reward Penalties on Augmented States for Solving Richly Constrained RL Effectively" by Jiang Hao, Mai Anh Tien, **Pradeep Varakantham** and Minh Huy Hoang. AAAI, 2024.
17. "Handling Long and Richly Constrained Tasks through Constrained Hierarchical Reinforcement Learning" by Yuxiao Lu, Arunesh Sinha and **Pradeep Varakantham**. AAAI, 2024.
18. "Regret-based Defense in Adversarial Reinforcement Learning" by Roman Belaire, **Pradeep Varakantham**, Thanh Nguyen, David Lo. In Proceedings of the joint conference on Autonomous Agents and Multi-Agent Systems, AAMAS 2024.
19. "Imitating Cost-Constrained Behaviors in Reinforcement Learning" by Qian Shao, **Pradeep Varakantham**, Shih-Fen Cheng. In 34th International Conference on Automated Planning and Scheduling, ICAPS 2024.
20. " Generalization through Diversity: Improving Unsupervised Environment Design" by Wenjun Li, **Pradeep Varakantham** and Dexun Li. IJCAI, 2023.
21. " Transferable Curricula through Difficulty Conditioned Generators " by Sidney Tio and **Pradeep Varakantham**. IJCAI, 2023.
22. " Constrained Reinforcement Learning in Hard Exploration Problems " by Pankayaraj Pathmanathan and **Pradeep Varakantham**. AAAI, 2023.
23. " Future Aware Pricing and Matching for Sustainable On-demand Ride Pooling " by Xianjie Zhang, **Pradeep Varakantham** and Hao Jiang. AAAI, 2023.
24. " Knowledge Compilation for Constrained Combinatorial Action Spaces in Reinforcement Learning " by Jiajing Ling, Moritz Lukas Schuler, Akshat Kumar and **Pradeep Varakantham**. AAMAS, 2023.
25. " Avoiding Starvation of Arms in Restless Multi-Armed Bandits" by Dexun Li and **Pradeep Varakantham**. AAMAS, 2023.
26. " Strategic Planning for Flexible Agent Availability in Large Taxi Fleets " by Rajiv Ranjan Kumar, **Pradeep Varakantham** and Shih-fen Cheng. AAMAS, 2023.
27. "Field Study in Deploying Restless Multi-Armed bandits: Assisting Non-Profits in Improving Maternal and Child Health". Aditya Mate, Lovish Madan, Aparna Taneja, Neha Madhiwalla, Shresth Verma, Gargi Singh, Aparna Hegde, **Pradeep Varakantham** and Milind Tambe. AAAI 2022.
28. "Fairness in RMABs". Dexun Li and Pradeep VARAKANTHAM. UAI 2022.
29. "Joint Pricing and Matching for City-Scale Ride Pooling" by Sanket Shah, Meghna Lowalekar and **Pradeep Varakantham**. ICAPS 2022.
30. "Hierarchical Value Decomposition for Effective On-Demand Ride Pooling" by Jiang Hao and **Pradeep Varakantham**. AAMAS 2022.
31. "Facilitating Human-Wildlife Cohabitation through Conflict Prediction" by Susobhan Ghosh, **Pradeep Varakantham**, Aniket Bhatkhande, Tamanna Ahmad, Anish Andheria, Wenjun Li, Aparna Taneja, Divy Thakkar and Milind Tambe. IAAI 2022.
32. "Zone pAth Construction (ZAC) based Approaches for Effective Real-Time Ridesharing" by Meghna Lowalekar, **Pradeep Varakantham** and Patrick Jaillet. Accepted for publication at Journal of Artificial Intelligence Research (JAIR), 2021. **JAIR Award Track**.
33. "Adaptive Operating Hours for Improved Performance of Taxi Fleets" by Rajiv Ranjan Kumar, **Pradeep Varakantham** and Shih-fen Chang. Accepted for publication at AAMAS 2021.
34. "Learning Index Policies for Restless Bandits with Application to Maternal Healthcare" by Arpita Biswas, Gaurav Aggarwal, **Pradeep Varakantham** and Milind Tambe. Accepted for publication as extended abstract at AAMAS 2021.
35. "Neural Approximate Dynamic Programming for On-Demand Ride-Pooling" by Sanket Shah, Meghna Lowalekar and **Pradeep Varakantham**. Published in AAAI 2020.
36. "Solving Online Threat Screening Games using Constrained Action Space Reinforcement Learning" by Sanket Shah, Arunesh Sinha, **Pradeep Varakantham**, Andrew Perrault and Milind Tambe. Published in AAAI 2020.
37. "Competitive Ratios for Online Multi-Capacity Ridesharing" by Meghna Lowalekar, **Pradeep Varakantham** and Patrick Jaillet. Published in AAMAS 2020.
38. "Online Traffic Signal Control through Sample-Based Constrained Optimization" by Srishti Dhamija, Alolika Gon, Pradeep Varakantham and William Yeoh. Published in ICAPS 2020.

39. " ZAC: A Zone Path Construction Approach for Effective Real-time Ridesharing " by Meghna Lowalekar, **Pradeep Varakantham** and Patrick Jaillet. Published in International Conference on Automated Planning and Scheduling, ICAPS 2019. **Best Application Paper award.**
40. " Resource Constrained Deep Reinforcement Learning " by Abhinav Bhatia, **Pradeep Varakantham** and Akshat Kumar. Published in International Conference on Automated Planning and Scheduling, ICAPS 2019.
41. " Correlated Learning for Aggregation Systems " by Tanvi Verma and **Pradeep Varakantham**. Published in International Conference on Uncertainty in Artificial Intelligence, UAI 2019.
42. " Entropy based Independent Learning in Anonymous Multi-Agent Settings " by Tanvi Verma, **Pradeep Varakantham** and Hoong Chuin Lau. Published in International Conference on Automated Planning and Scheduling, ICAPS 2019.
43. " Online Spatio-Temporal Matching in Stochastic and Dynamic Domains " by Meghna Lowalekar, **Pradeep Varakantham** and Patrick Jaillet. Published in Artificial Intelligence Journal (AIJ)
44. " Dispatch Guided Allocation Optimization for Effective Emergency Response " by Supriyo Ghosh and **Pradeep Varakantham**. Published at National Conference on Artificial Intelligence, AAAI-18
45. " Decentralized Planning for Non-Dedicated Agent Teams with Submodular Rewards in Uncertain Environments " by Pritee Agrawal, **Pradeep Varakantham** and William Yeoh. Accepted for publication at the conference on Uncertainty in Artificial Intelligence, UAI-18
46. " Bounded Rank Optimization for Effective and Efficient Emergency Response " by Pallavi Manohar, **Pradeep Varakantham** and Hoong Chuin Lau. Accepted for publication at the International Conference on Automated Planning and Scheduling, ICAPS-18
47. " Reserved Optimization: Handling Incident Priorities in Emergency Response Systems " by Muralidhar Konda, Supriyo Ghosh and **Pradeep Varakantham**. Accepted for publication at the International Conference on Automated Planning and Scheduling, ICAPS-18
48. " Upping the game of taxi driving in the age of Uber " by Shashi Shekhar Jha, Shih-Fen Cheng, Meghna Lowalekar, Nicholas Wong Wai Hin, Rishikeshan Rajendram, Tran Trong Khiem, **Pradeep Varakantham**, Truong Trong Nghia and Firmansyah Rahman. Published at the conference on Innovative Applications of Artificial Intelligence (IAAI-18)
49. " Sampling based Approaches for Minimizing Regret in Uncertain Markov Decision Problems (MDPs) ", by Asrar Ahmed, **Pradeep Varakantham**, Meghna Lowalekar, Yossiri Adulyasak and Patrick Jaillet. Accepted for Publication at Journal of Artificial Intelligence Research (JAIR)
50. "Dynamic Repositioning to Reduce Lost Demand in Bike Sharing Systems ", by Supriyo Ghosh, **Pradeep Varakantham**, Yossiri Adulyasak and Patrick Jaillet. Accepted for Publication at Journal of Artificial Intelligence Research (JAIR)
51. "Risk-Sensitive Stochastic Orienteering Problems for Trip Optimization in Urban Environments ", by **Pradeep Varakantham**, Akshat Kumar, Hoong Chuin Lau, William Yeoh. Accepted for Publication at Transactions on Intelligent Systems and Technology (TIST)
52. "Proactive and Reactive Coordination of Non-dedicated Agent Teams Operating in Uncertain Environments ", by Pritee Agrawal and **Pradeep Varakantham**. Accepted for Publication at International Joint Conference on Artificial Intelligence, IJCAI-17
53. "Mechanism Design for Strategic Project Scheduling ", by **Pradeep Varakantham** and Na Fu . Accepted for Publication at International Joint Conference on Artificial Intelligence, IJCAI-17.
54. "Decentralized Planning in Stochastic Environments with Submodular Rewards ", by Rajiv Ranjan Kumar, **Pradeep Varakantham** and Akshat Kumar. In Proceedings of the AAAI Conference on Artificial Intelligence, AAAI-17
55. "Exploiting Anonymity and Homogeneity in Factored Dec-MDPs through Pre-computed Binomial Distributions ", by Rajiv Ranjan Kumar and **Pradeep Varakantham**. In Proceedings of the International Joint Conference on Autonomous Agents and Multiagent Systems, AAMAS-17.
56. "Incentivizing the Use of Bike Trailers for Dynamic Repositioning in Bike Sharing Systems ", by Supriyo Ghosh and **Pradeep Varakantham**. In Proceedings of the International Conference on Automated Planning and Scheduling, ICAPS-17.
57. "Augmenting Decisions of Taxi Drivers through Reinforcement Learning for Improving Revenues ", by Tanvi Verma, **Pradeep Varakantham**, Sarit Kraus and Hoong Chuin Lau. In Proceedings of the International Conference on Automated Planning and Scheduling, ICAPS-17.
58. "Online Repositioning in Bike Sharing Systems ", by Meghna Lowalekar, **Pradeep Varakantham**, Supriyo Ghosh, Sanjay Dominik Jena and Patrick Jaillet. In Proceedings of the International Conference on Automated Planning and Scheduling, ICAPS-17.
59. " Artificial Intelligence Research in Singapore: Assisting the Development of a Smart Nation", by **Pradeep Varakantham**, Bo An, Bryan Low and Jie Zhang. Accepted for publication in AI Magazine.

60. *Scalable Greedy Algorithms for Task/Resource Constrained Multi-Agent Planning* by Pritee Agrawal, Pradeep Varakantham and William Yeoh. In proceedings of the International Joint Conference on Artificial Intelligence (IJCAI-16). Acceptance: 25%
61. *Robust Repositioning to Counter Unpredictable Demand in Bike Sharing Systems* by Supriyo Ghosh, Michael Trick and Pradeep Varakantham. In proceedings of the AAAI Conference on Artificial Intelligence (IJCAI-16). Acceptance: 25%
62. *Online Spatio-Temporal Matching in Stochastic and Dynamic Domains* by Meghna Lowalekar, Pradeep Varakantham and Patrick Jaillet. In proceedings of the AAAI Conference on Artificial Intelligence (AAAI-16). Acceptance: 26%
63. *A Proactive Sampling Approach to Project Scheduling under Uncertainty* by Pradeep Varakantham, Na Fu and Hoong Chuin Lau. In proceedings of the AAAI Conference on Artificial Intelligence (AAAI-16). Acceptance: 26%
64. *A Proactive Sampling Approach to Project Scheduling under Uncertainty* by Pradeep Varakantham, Na Fu and Hoong Chuin Lau. In proceedings of the AAAI Conference on Artificial Intelligence (AAAI-16). Acceptance: 26%
65. *Robust Decision Making for Stochastic Network Design* by Akshat Kumar, Arambam Singh, Pradeep Varakantham and Daniel Sheldon. In proceedings of the AAAI Conference on Artificial Intelligence (AAAI-16). Acceptance: 26%
66. *Strategic Planning for Setting up Base Stations in Emergency Medical Systems* by Supriyo Ghosh and Pradeep Varakantham. In proceedings of the International Conference on Automated Planning and Scheduling (ICAPS-16). Acceptance: 33%
67. *Robust Partial Order Schedules for RCPSP/max with Durational Uncertainty* by Na Fu, Pradeep Varakantham and Hoong Chuin Lau. In proceedings of the International Conference on Automated Planning and Scheduling (ICAPS-16). Acceptance: 33%
68. *Robust Influence Maximisation* by Meghna Lowalekar, Pradeep Varakantham and Akshat Kumar. In proceedings of the International Conference on Autonomous Agents and Multi-Agent Systems (AAMAS-16). Acceptance: 25%
69. *DIRECT: A Scalable Approach for Route Guidance in Selfish Orienteering Problems* by Pradeep Varakantham, Hala Mostafa, Na Fu and Hoong Chuin Lau. In Proceedings of the Joint Conference of Autonomous Agents and Multi-Agent Systems (AAMAS-15). Acceptance: 25%
70. *Near-Optimal Decentralised Power Supply Restoration in Smart Grids* by Pritee Agrawal, Akshat Kumar and Pradeep Varakantham. In Proceedings of the Joint Conference of Autonomous Agents and Multi-Agent Systems (AAMAS-15). Acceptance: 25%
71. *Dynamic Redeployment to Counter Congestion or Starvation in Vehicle Sharing Systems by Supriyo Ghosh, Pradeep Varakantham, Yossiri Adulyasak and Patrick Jaillet.* In Proceedings of the International Conference on Automated Planning and Scheduling (ICAPS-15). Acceptance: 33%
72. *Risk based Optimization for Improving Emergency Medical Response Systems* by Sandhya Saisubramanian, Pradeep Varakantham and Hoong Chuin Lau. In Proceedings of the AAAI Conference on Artificial Intelligence (AAAI-15). Acceptance: 26%
73. *Decentralized Stochastic Planning with Anonymity in Interactions* by Pradeep Varakantham, Yossiri Adulyasak and Patrick Jaillet. In Proceedings of the AAAI Conference on Artificial Intelligence (AAAI-14). Acceptance: 28%
74. *STREETS: Game Theoretic Traffic Patrolling with Exploration and Exploitation* by Matthew Brown, Sandhya Subramanian, Pradeep Varakantham and Milind Tambe. In Proceedings of Innovative Applications in Artificial Intelligence at AAAI Conference on Artificial Intelligence (AAAI-14). Acceptance: 28%
75. *On Understanding Diffusion Dynamics of Patrons at a Theme Park* by Du Jiali, Akshat Kumar and Pradeep Varakantham. In Proceedings of Autonomous Agents and Multi-Agent Systems (AAMAS-14). Acceptance: 23%
76. *Unleasing Dec-MDPs in Security Games: Enabling Effective Defender Teamwork*, by Eric Shieh, Albert Jiang, Amulya Yadav, Pradeep Varakantham and Milind Tambe. In Proceedings of European Conference on Artificial Intelligence (ECAI-14). Acceptance: 28%
77. *Robust Execution Strategies for Project Scheduling under Unreliable Resources and Stochastic Durations* by Na Fu, Pradeep Varakantham and Hoong Chuin Lau. Accepted for publication in Journal of Scheduling (JOSH), 2014.
78. *Revisiting Risk Sensitive MDPs: New Algorithms and Results* by Ping Hou, William Yeoh and Pradeep Varakantham. In Proceedings of International Conference on Automated Planning and Scheduling (ICAPS-14). Acceptance: 33%
79. *Building THINC: User Incentivization and Meeting Rescheduling for Energy Savings* by Jun Young Kwak, Debarun Kar, William haskell, Pradeep Varakantham, Milind Tambe. Proceedings of the

International Conference on Autonomous Agents and Multi-Agent Systems (AAMAS-14). Acceptance: 23%

80. *Regret based Robust Solutions for Uncertain Markov Decision Processes* by Asrar Ahmed, Pradeep Varakantham, Yossiri Adulyasak and Patrick Jaillet. In Proceedings of Neural Information Processing Systems (NIPS-13). Acceptance: 25%

81. *TESLA: An Extended Study of an Energy-saving Agent that Leverages Schedule Flexibility* by Jun Young Kwak, Pradeep Varakantham, Rajiv Maheswaran, Yu-Han Chang, Milind Tambe, Burcin Becerik-Gerber and Wendy Wood. In the Journal of Autonomous Agents and Multi-Agent Systems (JAAMAS).

82. *Optimization Approaches for Solving Chance Constrained Stochastic Orienteering Problems* by Pradeep Varakantham and Akshat Kumar. In Proceedings of Algorithmic Decision Theory (ADT-13). Acceptance: 35%

83. *Budgeted Personalized Incentive Approaches for Smoothing Congestion in Resource Networks* by Pradeep Varakantham, Fu Na, William Yeoh, Shih-Fen Cheng and Lau Hoong Chuin. In Proceedings of the Conference on Algorithmic Decision Theory (ADT-13). Acceptance: 35%

84. *Scalable Randomized Patrolling for Securing Rapid Transit Networks* by Pradeep Varakantham, Hoong Chuin Lau and Zhi Yuan. In Proceedings of Innovative Applications in Artificial Intelligence at AAAI Conference on Artificial Intelligence (AAAI-13). Acceptance: 29%

85. *Robust Local Search for Solving Resource Constrained Project Scheduling Problems with Durational Uncertainty* by Na Fu, Hoong Chuin Lau, Pradeep Varakantham and Xiao Fei. In Journal of Artificial Intelligence Research (JAIR), 2012.

86. *Decision Support for Agent Populations in Uncertain and Congested Environments* by Pradeep Varakantham, Shih-Fen Cheng, Geoff Gordon and Asrar Ahmed. In Proceedings of AAAI Conference on Artificial Intelligence (AAAI-12). Acceptance: 26%

87. *Uncertain Congestion Games with Assorted Human Agent Populations* by Asrar Ahmed, Pradeep Varakantham and Shih-Fen Cheng. In Proceedings of Uncertainty in Artificial Intelligence (UAI-12). Acceptance: 31%

88. *Dynamic Stochastic Orienteering Problems for Risk-Aware Applications* by William Yeoh, Lau Hoong Chuin, Pradeep Varakantham, Huaxing Chen and Duc Thien Nguyen. Twenty Eighth International Conference on Uncertainty in Artificial Intelligence (UAI-12). Acceptance: 31%

89. *Active Malware Analysis using Stochastic Games* by Simon Williamson, Pradeep Varakantham, Debin Gao and Chen Hui Ong. Eleventh International Conference on Autonomous Agents and Multi-Agent Systems (AAMAS-12). Acceptance: 20%

90. *SAVES: A Sustainable Multi-Agent Application to Conserve Building Energy Considering Applicants* by Jun-Young Kwak, Pradeep Varakantham, Rajiv Maheswaran, Milind Tambe, Farrokh Jazizadeh, Geoffrey Kavulya, Laura Klein, Burcin Becerik-Gerber, Timothy Hayes and Wendy Wood. Eleventh International Conference on Autonomous Agents and Multi-Agent Systems (AAMAS-12). Acceptance: 20%

91. *Lagrangian Relaxation for Large Scale Multi-Agent Planning* by Geoff Gordon, Pradeep Varakantham, William Yeoh, Lau Hoong Chuin, Ajay Srinivasan and Cheng Shih-Fen. Poster paper in Eleventh International Conference on Autonomous Agents and Multi-Agent Systems (AAMAS-12). Acceptance: 20%

92. *Delayed Observation Planning in Partially Observable Domains* by Pradeep Varakantham and Janusz Marecki. Poster paper in Eleventh International Conference on Autonomous Agents and Multi-Agent Systems (AAMAS-12). Acceptance: 20%

93. *Prioritized Shaping of Models for Solving DEC-POMDPs* by Pradeep Varakantham, William Yeoh, Prasanna Velagapudi, Katia Sycara and Paul Scerri. Poster paper in Eleventh International Conference on Autonomous Agents and Multi-Agent Systems (AAMAS-12). Acceptance: 20%

94. *Sustainable Multiagent Application to Conserve Energy* by Jun-Young Kwak, Pradeep Varakantham, Rajiv Maheswaran, Milind Tambe, Farrokh Jazizadeh, Geoffrey Kavulya, Laura Klein, Burcin Becerik-Gerber, Timothy Hayes and Wendy Wood. Demonstration paper at Eleventh International Conference on Autonomous Agents and Multi-Agent Systems (AAMAS-12).

95. *Coordinating Occupant Behavior for Building Energy and Comfort Management using Multi-Agent Systems* by Laura Klein, Jun-Young Kwak, Geoffrey Kavulya, Farookh Jazizadeh, Burcin Bercerik-Gerber, Pradeep Varakantham and Milind Tambe. Automation in Construction: An International Research Journal.

96. *Distributed Model Shaping for Scaling to Decentralized POMDPs with hundreds of agents* by Prasanna Velagapudi, Pradeep Varakantham, Paul Scerri and Katia Sycara. Accepted for publication in the proceedings of the Tenth International Joint Conference on Autonomous Agents and MultiAgent Systems (AAMAS-11). Acceptance: 22%

97. *Decentralized Decision Support for an agent population in dynamic and uncertain domains* by Pradeep Varakantham, Shih-Fen Cheng and Thi Duong Nguyen. Poster paper in proceedings of the Tenth International Joint Conference on Autonomous Agents and MultiAgent Systems (AAMAS-11). Acceptance: 23%
98. *Adaptive Decision Support for Structured Organizations: A Case for OrgPOMDPs* by Pradeep Varakantham, Nathan Schurr, Alan Carlin and Christopher Amato. Poster paper in proceedings of the Tenth International Joint Conference on Autonomous Agents and MultiAgent Systems (AAMAS-11). Acceptance: 23%
99. *Incremental DCOP Search Algorithms for Solving Dynamic DCOP Problems* by William Yeoh, Pradeep Varakantham, Xiaoxun Sun and Sven Koenig. Poster paper in proceedings of the Tenth International Joint Conference on Autonomous Agents and MultiAgent Systems (AAMAS-11). Acceptance: 23%
100. *Social Model Shaping for Solving Generic DEC-POMDPs* by Pradeep Varakantham. In Proceedings of IEEE/WIC/ACM International Conference on Intelligent Agent Technology (IAT-11). Acceptance: 21%
101. *Decision Theoretic Approach to Data Leakage Prevention* by Janusz Marecki, Mudhakar Srivastava and Pradeep Varakantham. Proceedings of the Second IEEE International Conference on Information Privacy, Security, Risk and Trust (PASSAT-10). Acceptance: 13%
102. *Effect of human biases on human-agent teams* by Praveen Paruchuri, Pradeep Varakantham, Katia Sycara and Paul Scerri, 2010, Proceedings of the International Conference on Intelligent Agent Technology (IAT-10). Acceptance: 19%
103. *Analyzing the impact of human bias on human-agent teams in resource allocation* by Praveen Paruchuri, Pradeep Varakantham, Katia Sycara, and Paul Scerri, 2010, Poster Paper in Proceedings of Ninth International Joint Conference on Autonomous Agents and Multi Agent Systems (AAMAS-10). Acceptance: 18%
104. *Risk-Sensitive Planning in Partially Observable Domains* by Janusz Marecki and Pradeep Varakantham. In Proceedings of the Ninth International Joint Conference on Autonomous Agents and MultiAgent Systems (AAMAS-10). Acceptance: 24%
105. *Towards Finding Robust Execution Strategies for RCPSP with Durational Uncertainty* by Na Fu, Pradeep Varakantham, and Hoong Chuin Lau. In Proceedings of the Twentieth International Conference on Automated Planning and Scheduling (ICAPS-10). Acceptance: 34%
106. *Introducing Communication in Dis-POMDPs with Locality of Interaction* by Makoto Tasaki, Yuichi Yabu, Yuki Iwanuri, Makoto Yokoo, Janusz Marecki, Pradeep Varakantham, Milind Tambe, 2010, Journal of Web Intelligence and Agent Systems(WIAS), 2010 Vol. 8, No. 3 pp 8.
107. *Caching Schemes for DCOP Search Algorithms* by William Yeoh, Pradeep Varakantham, and Sven Koenig, 2009, Proceedings of the Eighth International Conference on Autonomous Agents and Multi Agent Systems, (AAMAS-09). **Nominated for Jay Modi Best Student Paper Award.** Acceptance: 22%
108. *Exploiting Coordination Locales in Distributed POMDPs via Social Model Shaping* by Pradeep Varakantham, Jun Young Kwak, Matthew Taylor, Janusz Marecki, Paul Scerri, and Milind Tambe. Proceedings of the Nineteenth International Conference on Automated Planning and Scheduling (ICAPS-09). Acceptance: 34%
109. *Linear Relaxation Techniques for Task Management in Uncertain Settings* by Pradeep Varakantham and Stephen Smith, 2008, Proceedings of the Eighteenth International Conference on Automated Planning and Scheduling, ICAPS. Acceptance: 31%
110. *Introducing Communication in Dis-POMDPs with Locality of Interaction* by Makoto Tasaki, Yuichi Yabu, Yuki Iwanari, Makoto Yokoo, Milind Tambe, Janusz Marecki and Pradeep Varakantham,. In Proceedings of IEEE/WIC/ACM International Conference on Intelligent Agent Technology (IAT-08). Acceptance: 19%
111. *Not All Agents are Equal: Scaling up Distributed POMDPs for Agent Networks* by Tapana Gupta, Janusz Marecki, Pradeep Varakantham, and Makoto Yokoo, 2008, Proceedings of the Seventh International Conference on Autonomous Agents and MultiAgent Systems (AAMAS-08). Acceptance: 22%
112. *What went wrong and why* by Milind Tambe, Emma Bowring, Jonathan Pearce, Pradeep Varakantham, David Pynadath, and Paul Scerri, 2008, AI Magazine Article.
113. *Towards efficient planning for real world partially observable domains* by Pradeep Varakantham , *Dissertation for Doctor of Philosophy* in Computer Science, University of Southern California, Los Angeles, CA, 02/2007.
114. *Letting loose a SPIDER on a network of POMDPs: Generating quality guranteed policies* by Pradeep Varakantham, Janusz Marecki, Makoto Yokoo, and Milind Tambe. Proceedings of the Sixth

International Joint Conference on Autonomous Agents and Multi Agent Systems (AAMAS-07). Acceptance: 23%

115. *Towards efficient computation of quality bounded solutions in POMDPs* by Pradeep Varakantham, Rajiv Maheswaran, Tapana Gupta, and Milind Tambe. In Proceedings of the Twentieth International Joint Conference on Artificial Intelligence (IJCAI-07). Acceptance: 15%
116. *Winning back the CUP for Distributed POMDPs: Planning over continuous belief spaces* by Pradeep Varakantham, Ranjit Nair, Milind Tambe, and Makoto Yokoo. Proceedings of the Fifth International Conference on Autonomous Agents and Multi Agent Systems (AAMAS-06). Acceptance: 23%
117. *Privacy Loss in Distributed Constraint Reasoning: A Quantitative Framework for Analysis and its Applications* by Rajiv Maheswaran, Jonathan Pearce, Emma Bowring, Pradeep Varakantham, and Milind Tambe. Journal of Autonomous Agents and Multi-Agent Systems (JAAMAS-06).
118. *Hybrids in Multiagent Teamwork* by Praveen Paruchuri, Emma Bowring, Ranjit Nair, Jonathan Pearce, Nathan Schurr, Milind Tambe, Pradeep Varakantham, and Rajiv Maheswaran, 2006, 19-24, Communications of the Computer Society of India.
119. *Exploiting Belief Bounds: Practical POMDPs for Personal Assistant Agents* by Pradeep Varakantham, Rajiv Maheswaran, and Milind Tambe, 2005, Proceedings of the Fourth International Conference on Autonomous Agents and Multi Agent Systems (AAMAS-05). Acceptance: 24%
120. *Networked Distributed POMDPs: A Synthesis of Distributed Constraint Optimization and POMDPs* by Ranjit Nair, Pradeep Varakantham, Milind Tambe, and Makoto Yokoo, 2005, Proceedings of the Twentieth National Conference on Artificial Intelligence (AAAI-05). Acceptance: 18%
121. *Valuations of Possible States (VPS): A Unifying Quantitative Framework for Evaluating Privacy in Collaboration* by Rajiv Maheswaran, Jonathan Pearce, Pradeep Varakantham, Emma Bowring, and Milind Tambe, 2005, Proceedings of the Fourth International Conference on Autonomous Agents and Multi Agent Systems (AAMAS-05). Acceptance: 24%
122. *Taking DCOP to the Real World: Efficient Complete Solutions for Distributed Event Scheduling* by Rajiv Maheswaran, Milind Tambe, Emma Bowring, Jonathan Pearce, and Pradeep Varakantham. In Proceedings of the Third International Conference on Autonomous Agents and Multi Agent Systems (AAMAS-04). Acceptance: 24%

RESEARCH: PRACTICAL SYSTEMS AND RESULTS (LATEST)

1. ***Emergency Medical Systems (EMS)***: Developed risk based optimization methods for reducing response time of Ambulances/Fire trucks. This system was **successfully deployed** with Singapore Civil Defence Force.
2. ***Traffic Police Scheduling***: Developed game theoretic optimization methods for randomized scheduling of traffic police in order to reduce traffic incidents and project omni-presence of traffic police to drivers. This system was **successfully deployed** by two organisations within SPF, namely Police Coast Guard and Singapore Antiterrorism unit.
3. ***Taxi Fleet Optimization*: D**eveloped optimization methods to provide decision support to taxi drivers so as to improve revenue for taxi drivers and taxi availability for customers. **Successfully deployed** by LTA and demonstrated 33% improvement in reduction of idle time.
4. ***Theme Park Route Guidance*:** Developed stochastic optimization methods to provide route guidance at large overcrowded theme parks. Demonstrated improvement of at least 25% in wait time over best research method from literature on a real theme park setting.
5. ***Bike Sharing Systems (BSS)*:** Developed dynamic redeployment and routing optimization methods to reduce lost demand in bike sharing systems. Demonstrated reduction of lost demand by about 30% on datasets in Washington DC and Boston.
6. ***Energy Optimized Meeting Room Scheduling*:** Developed stochastic optimization methods to reduce energy usage by scheduling meeting rooms efficiently in large office buildings. Demonstrated expected reduction of 17000 USD per year on a real office building.

TEACHING/MENTORING: PRESENT AND PAST STUDENTS

1. Have graduated 7 PhD students and there are 9 current PhD students.
2. Have mentored more than 25 post-doctoral fellows and research engineers.

TEACHING/MENTORING: COURSES TAUGHT

1. "Introduction to Artificial Intelligence". Undergraduate elective course from 2018 onwards and covers the following topics:
    - Heuristic Search
    - Graphical Models
    - Computer Vision
    - Planning and Learning under Uncertainty (MDPs and Reinforcement Learning)
    - Natural Language Processing
2. "Learning and Planning in Intelligent Systems". Graduate course taught since 2013 and covers the following topics:
    - Graphical Models
    - Reasoning with Uncertainty
    - Reasoning with Multiple Agents
3. "Computer as an Analysis Tool". Undergraduate core course (involving students from business, social science, law, economics, information systems, accountancy schools) taught from 2009-2018 and it covers the following topics with case studies from real businesses:
    - Spreadsheet modeling
    - Financial and accounting basics
    - Monte-carlo simulation
    - Linear optimisation
    - Data access
    - Data fitting

SERVICE: ORGANIZING WORKSHOPS/CONFERENCES

1. Outreach chair for AAAI 2026
2. Sponsorship Chair for ICAPS 2023
3. ICAPS Council member
4. General Chair for ICAPS 2022
5. Tutorial Chair for AAAI-2020.
6. Doctoral Consortium chair for IJCAI-2019
7. Innovative Applications track chair for AAMAS 2017
8. Sponsorship chair for AAMAS 2019
9. Local Organization Chair for AAMAS-2016.
10. Organizing Committee AAAI-2016: Co-Chair for "Student Abstracts and Posters" program.
11. Co-Chair for the workshop on Optimization in MultiAgent Systems (OptMAS-2016).
12. Tutorial Chair for Intelligent Agent Technology (IAT) Conference in 2015.
13. Co-chair on IJCAI 2015 Workshop on "Behavioral, Economic and Computational Intelligence for Security".
14. Workshop on "Protecting Critical Infrastructure using Strategic Planning and Analytics".
15. AAAI Spring Symposium in 2011 on "Multiagent Coordination under Uncertainty".
16. AAMAS Workshop in 2008 and 2009 on "Multiagent Sequential Decision Making".

SERVICE: REVIEWING (since 2007)

1. Conferences (served on both PC, SPC and AC):

- International Joint Conference on Autonomous Agents and Multi Agent Systems (AAMAS)
- International Conference on Automated Planning and Scheduling (ICAPS)
- International Joint Conference on Artificial Intelligence (IJCAI)
- National Conference on Artificial Intelligence (AAAI)
- Intelligent Agent Technology (IAT)

2. Journals:
   - Artificial Intelligence Journal (AIJ)
   - Journal of Artificial Intelligence Research (JAIR)
   - Journal of Autonomous Agents and Multi Agent Systems (JAAMAS)

OTHER RELEVANT EXPERIENCE

1. Leading/led the development of research prototypes for industry partners:
   - Singapore Civil Defense Force (SCDF)
   - Ministry of home affairs (MHA)
   - A major taxi fleet operator in Singapore
   - Two major theme park operators in Singapore
2. Over the 10 years at SMU, guided more than 300 post graduate and under graduate projects for improvement in operations of small and medium scale businesses in Singapore related to:
   - Inventory management for supermarkets, restaurants, apparel stores, pet stores etc.
   - Server and queue optimization at ATM machines, clinics, help desks etc.
   - Man-power or crew scheduling for tuitions, hospitals etc.
   - Decision optimization for hotels, restaurants, tuitions, etc.