Jiaoyang Li

Curriculum Vitae

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Current Appointment

2022-present	Assistant Professor,	**Robotics Institute, Carnegie Mellon University (CMU)**, USA.

Education

2017-2022	Ph.D. in Computer Science,	**University of Southern California (USC)**, USA
2013-2017	B.Eng. in Automation,	**Tsinghua University**, China

Honors and Awards

2024	Best Student Paper Award,	*International Conference on Automated Planning and Scheduling*.
2023	Winner team (advisor) of the League of Robot Runners, a competition focusing on the coordination of moving robots,	*sponsored by Amazon Robotics*.
2023	Best Paper Award Finalist,	*IEEE International Symposium on Multi-Robot & Multi-Agent Systems*.
2023	Distinguished PC Member,	*International Joint Conference on Artificial Intelligence*.
2023	Best Dissertation Award,	*International Conference on Automated Planning and Scheduling*.
2023	Best Student Paper Award Honorable Mention,	*International Conference on Automated Planning and Scheduling*.
2023	William F. Ballhaus, Jr. Prize for Best Dissertation,	*USC Viterbi School of Engineering*.
2023	Victor Lesser Distinguished Dissertation Award,	*International Foundation for Autonomous Agents and Multiagent Systems*.
2023	AAAI New Faculty Highlights,	*AAAI Conference on Artificial Intelligence*.
2021	Selected Participant for Rising Stars: An Academic Career Workshop in EECS,	*MIT*.
2021	Best System Demonstration Award,	*International Conference on Automated Planning and Scheduling*.
2021	WiSE Merit Award for Doctoral Students (4 recipients in Viterbi School of Engineering),	*USC*.
2021	Best Research Assistant Award (2 recipients in Computer Science Department),	*USC*.
2020	Winner team (team leader) of both rounds of the Flatland Challenge, a competition on multi-agent reinforcement learning on trains with >700 participants and >2000 submissions over 4 months; An updated version of our software won again in the extended Flatland competition in 2021,	*Annual Conference on Neural Information Processing Systems*.
2020	Outstanding Student Paper Award,	*International Conference on Automated Planning and Scheduling*.
2020	WiSE Qualcomm Top-Off Fellowship (8 recipients in Viterbi School of Engineering),	*USC*.
2018	Technology Commercialization Award,	*USC*.
2017	Viterbi/Graduate School Fellowship,	*USC*.
2017	Excellent Graduate Award of Beijing,	*Beijing Municipal Education Commission*.
2017	Excellent Graduate Award of Department of Automation,	*Tsinghua*.
2015	Fellowship of Spark Talents Program (50 recipients in Tsinghua),	*Tsinghua*.
2015	"12.9" Scholarship (1 recipient in Department of Automation),	*Tsinghua*.
2015	Weimin Zheng Scholarship (2 recipients in Department of Automation),	*Tsinghua*.

Publications

Stars (*) next to names in the author lists indicate equal contribution.

Conferences

2025 **[C73] New Mechanisms in Flex Distribution for Bounded Suboptimal Multi-Agent Path Finding**.
Shao-Hung Chan, Thomy Phan, **Jiaoyang Li** and Sven Koenig.
Symposium on Combinatorial Search (**SoCS**), (in print), 2025.
Acceptance rate: 22/59=37.29%

[C72] Real-Time LaCAM (short paper).
Runzhe Liang, Rishi Veerapaneni, Daniel Harabor, **Jiaoyang Li** and Maxim Likhachev.
Symposium on Combinatorial Search (**SoCS**), (in print), 2025.
Acceptance rate: 9/17=52.94%

[C71] Reevaluation of Large Neighborhood Search for MAPF: Findings and Opportunities.
Jiaqi Tan, Yudong Luo, **Jiaoyang Li** and Hang Ma.
Symposium on Combinatorial Search (**SoCS**), (in print), 2025.
Acceptance rate: 22/59=37.29%

[C70] APEX-MR: Multi-Robot Asynchronous Planning and Execution for Cooperative Assembly.
Philip Huang*, Ruixuan Liu*, Shobhit Aggarwal1, Changliu Liu and **Jiaoyang Li**.
Robotics: Science and Systems (**RSS**), (in print), 2025.
Acceptance rate: 163/594=27.33%

[C69] Deploying Ten Thousand Robots: Scalable Imitation Learning for Lifelong Multi-Agent Path Finding.
He Jiang*, Yutong Wang*, Rishi Veerapaneni, Tanishq Duhan, Guillaume Sartoretti and **Jiaoyang Li**.
IEEE International Conference on Robotics and Automation (**ICRA**), (in print), 2025.
Acceptance rate: 1606/4153=38.67%

[C68] Work Smarter Not Harder: Simple Imitation Learning with CS-PIBT Outperforms Large Scale Imitation Learning for MAPF.
Rishi Veerapaneni*, Arthur Jakobsson*, Kevin Ren, Samuel Kim, **Jiaoyang Li** and Maxim Likhachev.
IEEE International Conference on Robotics and Automation (**ICRA**), (in print), 2025.
Acceptance rate: 1606/4153=38.67%

[C67] Multi-Robot Motion Planning with Diffusion Models.
Yorai Shaoul, Itamar Mishani, Shivam Vats, **Jiaoyang Li** and Maxim Likhachev.
International Conference on Learning Representations (**ICLR**), (in print), 2025.
Acceptance rate: 32.08%

[C66] Windowed MAPF with Completeness Guarantees.
Rishi Veerapaneni, Muhammad Suhail Saleem, **Jiaoyang Li** and Maxim Likhachev.
AAAI Conference on Artificial Intelligence (**AAAI**), (in print), 2025.
Acceptance rate: 3,032/12,957=23.4%

[C65] Multi-agent Motion Planning for Differential Drive Robots Through Stationary State Search.
Jingtian Yan and **Jiaoyang Li**.
AAAI Conference on Artificial Intelligence (**AAAI**), (in print), 2025.
Acceptance rate: 3,032/12,957=23.4%

[C64] Speedup Techniques for Switchable Temporal Plan Graph Optimization.
He Jiang, Muhan Lin and **Jiaoyang Li**.
AAAI Conference on Artificial Intelligence (**AAAI**), (in print), 2025.
Acceptance rate: 3,032/12,957=23.4%

[C63] Online Guidance Graph Optimization for Lifelong Multi-Agent Path Finding.
Hongzhi Zang*, Yulun Zhang*, He Jiang, Zhe Chen, Daniel Harabor, Peter J. Stuckey and **Jiaoyang Li**.
AAAI Conference on Artificial Intelligence (**AAAI**), (in print), 2025.
Acceptance rate: 3,032/12,957=23.4%

[C62] LNS+RL: Combining Multi-agent Reinforcement Learning with Large Neighborhood Search in Multi-agent Path Finding.
Yutong Wang, Tanishq Duhan, **Jiaoyang Li** and Guillaume Adrien Sartoretti.
AAAI Conference on Artificial Intelligence (**AAAI**), (in print), 2025.
Acceptance rate: 3,032/12,957=23.4%

2024 **[C61] Guidance Graph Optimization for Lifelong Multi-Agent Path Finding**.
Yulun Zhang, He Jiang, Varun Bhatt, Stefanos Nikolaidis and **Jiaoyang Li**.
International Joint Conference on Artificial Intelligence (**IJCAI**), 311-320, 2024.

[C60] **Scalable Mechanism Design for Multi-Agent Path Finding**.
Paul Friedrich*, Yulun Zhang*, Michael Curry, Ludwig Dierks, Stephen McAleer, **Jiaoyang Li**, Tuomas Sandholm and Sven Seuken.
International Joint Conference on Artificial Intelligence (**IJCAI**), 58-66, 2024.

[C59] **Scaling Lifelong Multi-Agent Path Finding to More Realistic Settings: Research Challenges and Opportunities**. Winner of 2023 League of Robot Runners.
He Jiang, Yulun Zhang, Rishi Veerapaneni and **Jiaoyang Li**.
Symposium on Combinatorial Search (**SoCS**), 234-242, 2024.
Acceptance rate: $31/62 = 50.0\%$.

[C58] **Unconstraining Multi-Robot Manipulation: Enabling Arbitrary Constraints in ECBS with Bounded Sub-Optimality**.
Yorai Shaoul, Rishi Veerapaneni, Maxim Likhachev and **Jiaoyang Li**.
Symposium on Combinatorial Search (**SoCS**), 109-117, 2024.
Acceptance rate: $31/62 = 50.0\%$.

[C57] **ITA-ECBS: A Bounded-Suboptimal Algorithm for The Combined Target-Assignment and Path-Finding Problem**.
Yimin Tang, Sven Koenig and **Jiaoyang Li**.
Symposium on Combinatorial Search (**SoCS**), 134-142, 2024.
Acceptance rate: $31/62 = 50.0\%$.

[C56] **MAPF in 3D Warehouses: Dataset and Analysis**.
Qian Wang*, Rishi Veerapaneni*, Yu Wu, **Jiaoyang Li** and Maxim Likhachev.
International Conference on Automated Planning and Scheduling (**ICAPS**), 623-632, 2024.
Acceptance rate: $82/379 = 21.6\%$.

[C55] **Improving Learnt Local MAPF Policies with Heuristic Search**.
Rishi Veerapaneni*, Qian Wang*, Kevin Ren*, Arthur Jakobsson*, **Jiaoyang Li** and Maxim Likhachev.
International Conference on Automated Planning and Scheduling (**ICAPS**), 597-606, 2024.
Acceptance rate: $82/379 = 21.6\%$.

[C54] **Accelerating Search-Based Planning for Multi-Robot Manipulation by Leveraging Online-Generated Experiences**. Best Student Paper Award.
Yorai Shaoul, Itamar Mishani, Maxim Likhachev and **Jiaoyang Li**.
International Conference on Automated Planning and Scheduling (**ICAPS**), 523-531, 2024.
Acceptance rate: $82/379 = 21.6\%$.

[C53] **Efficient Approximate Search for Multi-Objective Multi-Agent Path Finding**.
Fangji Wang*, Han Zhang*, Sven Koenig and **Jiaoyang Li**.
International Conference on Automated Planning and Scheduling (**ICAPS**), 613-622, 2024.
Acceptance rate: $82/379 = 21.6\%$.

[C52] **A Real-Time Rescheduling Algorithm for Multi-robot Plan Execution**.
Ying Feng, Adittyo Paul, Zhe Chen and **Jiaoyang Li**.
International Conference on Automated Planning and Scheduling (**ICAPS**), 201-209, 2024.
Acceptance rate: $82/379 = 21.6\%$.

[C51] **Bidirectional Temporal Plan Graph: Enabling Switchable Passing Orders for More Efficient Multi-Agent Path Finding Plan Execution**.
Yifan Su, Rishi Veerapaneni and **Jiaoyang Li**.
AAAI Conference on Artificial Intelligence (**AAAI**), 17559-17566, 2024.
Acceptance rate: $2,342/9,862 = 23.7\%$.

[C50] **Traffic Flow Optimisation for Lifelong Multi-Agent Path Finding**.
Zhe Chen, **Jiaoyang Li**, Daniel Harabor and Peter J. Stuckey.
AAAI Conference on Artificial Intelligence (**AAAI**), 20674-20682, 2024.
Acceptance rate: $2,342/9,862 = 23.7\%$.

2023 [C49] **Arbitrarily Scalable Environment Generators via Neural Cellular Automata**.
Yulun Zhang, Matthew Christopher Fontaine, Varun Bhatt, Stefanos Nikolaidis and **Jiaoyang Li**.
Annual Conference on Neural Information Processing Systems (**NeurIPS**), 57212-57225, 2023.
Acceptance rate: 26.1%.

[C48] **Solving Multi-Agent Target Assignment and Path Finding with a Single Constraint Tree**.   Best Paper Award Finalist.
Yimin Tang, Zhongqiang Ren, **Jiaoyang Li** and Katia Sycara.
IEEE International Symposium on Multi-Robot and Multi-Agent Systems (**MRS**), 8-14, 2023.
Acceptance rate: $30/85 = 35.3\%$.

[C47] **Multi-Robot Coordination and Layout Design for Automated Warehousing**.
Yulun Zhang, Matthew Fontaine, Varun Bhatt, Stefanos Nikolaidis and **Jiaoyang Li**.
International Joint Conference on Artificial Intelligence (**IJCAI**), pages 5503-5511, 2023.
Acceptance rate: 15%.

[C46] **Binary Branching Multi-Objective Conflict-Based Search for Multi-Agent Path Finding**.
Zhongqiang Ren*, **Jiaoyang Li***, Han Zhang, Sven Koenig, Sivakumar Rathinam and Howie Choset.
International Conference on Automated Planning and Scheduling (**ICAPS**), pages 361-369, 2023.
Acceptance rate: $79/258 = 30.6\%$.

[C45] **Deadline-Aware Multi-Agent Tour Planning**.   Best Student Paper Award Honorable Mention.
Taoan Huang, Vikas Shivashankar, Michael Caldara, Joseph W. Durham, **Jiaoyang Li**, Bistra Dilkina and Sven Koenig.
International Conference on Automated Planning and Scheduling (**ICAPS**), 189-197, 2023.
Acceptance rate: $79/258 = 30.6\%$.

[C44] **Beyond Pairwise Reasoning in Multi-Agent Path Finding**.
Bojie Shen, Zhe Chen, **Jiaoyang Li**, Muhammad Aamir Cheema, Daniel Harabor and Peter J. Stuckey.
International Conference on Automated Planning and Scheduling (**ICAPS**), pages 384-392, 2023.
Acceptance rate: $79/258 = 30.6\%$.

[C43] **Cost Splitting for Multi-Objective Conflict-Based Search**.
Cheng Ge*, Han Zhang*, **Jiaoyang Li** and Sven Koenig.
International Conference on Automated Planning and Scheduling (**ICAPS**), pages 128-137, 2023.
Acceptance rate: $79/258 = 30.6\%$.

[C42] **Exact Anytime Multi-Agent Path Finding Using Branch-and-Cut-and-Price and Large Neighborhood Search** (short paper).
Edward Lam, Daniel Harabor, Peter J. Stuckey and **Jiaoyang Li**.
International Conference on Automated Planning and Scheduling (**ICAPS**), pages 254-258, 2023.
Acceptance rate: $79/258 = 30.6\%$.

[C41] **Intersection Coordination with Priority-Based Search for Autonomous Vehicles**.
Jiaoyang Li, The Anh Hoang, Eugene Lin, Hai L. Vu and Sven Koenig.
AAAI Conference on Artificial Intelligence (**AAAI**), pages 11578-11585, 2023.
Acceptance rate: $1,721/8,777 = 19.6\%$.

2022 **[C40]** **Multi-Goal Multi-Agent Pickup and Delivery**.
Qinghong Xu, **Jiaoyang Li**, Sven Koenig and Hang Ma.
IEEE/RSJ International Conference on Intelligent Robots and Systems (**IROS**), pages 9964-9971, 2022.

[C39] **A MIP-Based Approach for Multi-Robot Geometric Task-and-Motion Planning**.
Hejia Zhang, Shao-Hung Chan, Jie Zhong, **Jiaoyang Li**, Sven Koenig and Stefanos Nikolaidis.
IEEE International Conference on Automation Science and Engineering (**CASE**), pages 2102-2109, 2022.

[C38] **Which MAPF Model Works Best for Automated Warehousing?**
Sumanth Varamballly, **Jiaoyang Li** and Sven Koenig.
Symposium on Combinatorial Search (**SoCS**), pages 190-198, 2022.
Acceptance rate: $31/79 = 39.2\%$.

[C37] **Learning a Priority Ordering for Prioritized Planning in Multi-Agent Path Finding**.
Shuyang Zhang, **Jiaoyang Li**, Taoan Huang, Sven Koenig and Bistra Dilkina.
Symposium on Combinatorial Search (**SoCS**), pages 208-216, 2022.
Acceptance rate: $31/79 = 39.2\%$.

[C36] **Multi-Train Path Finding Revisited**.
Zhe Chen, **Jiaoyang Li**, Daniel Harabor, Peter Stuckey and Sven Koenig.
Symposium on Combinatorial Search (**SoCS**), pages 38-46, 2022.
Acceptance rate: $31/79 = 39.2\%$.

[C35] **Mutex Propagation in Multi-Agent Path Finding for Large Agents** (short paper).
Han Zhang, Yutong Li, **Jiaoyang Li**, T. K. Satish Kumar and Sven Koenig.
Symposium on Combinatorial Search (**SoCS**), pages 249-253, 2022.
Acceptance rate: $31/79 = 39.2\%$.

[C34] **Optimal and Bounded-Suboptimal Multi-Goal Task Assignment and Path Finding**.
Xinyi Zhong, **Jiaoyang Li**, Sven Koenig and Hang Ma.
IEEE International Conference on Robotics and Automation (**ICRA**), pages 10731-10737, 2022.

[C33] **Multi-Agent Path Finding for Precedence-Constrained Goal Sequences**.
Han Zhang*, Jingkai Chen*, **Jiaoyang Li**, Brian C. Williams and Sven Koenig.
International Joint Conference on Autonomous Agents and Multiagent Systems (**AAMAS**), pages 1464-1472, 2022.
Acceptance rate: $166/629 = 26.4\%$.

[C32] **MAPF-LNS2: Fast Repairing for Multi-Agent Path Finding via Large Neighborhood Search**.
Jiaoyang Li, Zhe Chen, Daniel Harabor, Peter J. Stuckey and Sven Koenig.
AAAI Conference on Artificial Intelligence (**AAAI**), pages 10256-10265, 2022.
Acceptance rate: $1,349/9,251 = 14.9\%$.

[C31] **Anytime Multi-Agent Path Finding via Machine Learning-Guided Large Neighborhood Search**.
Taoan Huang, **Jiaoyang Li**, Sven Koenig and Bistra Dilkina.
AAAI Conference on Artificial Intelligence (**AAAI**), pages 9368-9376, 2022.
Acceptance rate: $1,349/9,251 = 14.9\%$.

[C30] **Shard Systems: Scalable, Robust and Persistent Multi-Agent Path Finding with Performance Guarantees**.
Christopher Leet, **Jiaoyang Li** and Sven Koenig.
AAAI Conference on Artificial Intelligence (**AAAI**), pages 9386-9395, 2022.
Acceptance rate: $1,349/9,251 = 14.9\%$.

[C29] **Flex Distribution for Bounded-Suboptimal Multi-Agent Path Finding**.
Shao-Hung Chan, **Jiaoyang Li**, Graeme Gange, Daniel Harabor, Peter J. Stuckey and Sven Koenig.
AAAI Conference on Artificial Intelligence (**AAAI**), pages 9313-9322, 2022.
Acceptance rate: $1,349/9,251 = 14.9\%$.

2021 [C28] **Anytime Multi-Agent Path Finding via Large Neighborhood Search**.
Jiaoyang Li, Zhe Chen, Daniel Harabor, Peter J. Stuckey and Sven Koenig.
International Joint Conference on Artificial Intelligence (**IJCAI**), pages 4127-4135, 2021.
Acceptance rate: $587/4204 = 13.9\%$.

[C27] **Scalable Rail Planning and Replanning: Winning the 2020 Flatland Challenge**. Winner of the Flatland Challenge at NeurIPS'20.
Jiaoyang Li, Zhe Chen, Yi Zheng, Shao-Hung Chan, Daniel Harabor, Peter J. Stuckey, Hang Ma and Sven Koenig.
International Conference on Automated Planning and Scheduling (**ICAPS**), pages 477-485, 2021.

[C26] **Conflict-Based Increasing Cost Search**.
Thayne T. Walker, Nathan R. Sturtevant, Ariel Felner, Han Zhang, **Jiaoyang Li** and T. K. Satish Kumar.
International Conference on Automated Planning and Scheduling (**ICAPS**), pages 385-395, 2021.

[C25] **EECBS: A Bounded-Suboptimal Search for Multi-Agent Path Finding**.
Jiaoyang Li, Wheeler Ruml and Sven Koenig.
AAAI Conference on Artificial Intelligence (**AAAI**), pages 12353-12362, 2021.
Acceptance rate: $1692/7911 = 21.4\%$.

[C24] **Lifelong Multi-Agent Path Finding in Large-Scale Warehouses**.
Jiaoyang Li, Andrew Tinka, Scott Kiesel, Joseph W. Durham, T. K. Satish Kumar and Sven Koenig.
AAAI Conference on Artificial Intelligence (**AAAI**), pages 11272-11281, 2021.
Acceptance rate: $1692/7911 = 21.4\%$.

[C23] **Scalable and Safe Multi-Agent Motion Planning with Nonlinear Dynamics and Bounded Disturbances**.
Jingkai Chen, **Jiaoyang Li**, Chuchu Fan and Brian Williams.
AAAI Conference on Artificial Intelligence (**AAAI**), pages 11237-11245, 2021.
Acceptance rate: $1692/7911 = 21.4\%$.

[C22] **Symmetry Breaking for k-Robust Multi-Agent Path Finding**.
Zhe Chen, Daniel Harabor, <u>Jiaoyang Li</u> and Peter J. Stuckey.
AAAI Conference on Artificial Intelligence (**AAAI**), pages 12267-12274, 2021.
Acceptance rate: $1692/7911 = 21.4\%$.

2020 [C21] **Flatland Competition 2020: MAPF and MARL for Efficient Train Coordination on a Grid World**.
Florian Laurent, Manuel Schneider, Christian Scheller, Jeremy Watson, **<u>Jiaoyang Li</u>**, Zhe Chen, Yi Zheng,
Shao-Hung Chan, Konstantin Makhnev, Oleg Svidchenko, Vladimir Egorov, Dmitry Ivanov, Aleksei
Shpilman, Evgenija Spirovska, Oliver Tanevski, Aleksandar Nikov, Ramon Grunder, David Galevski, Jakov
Mitrovski, Guillaume Sartoretti, Zhiyao Luo, Mehul Damani, Nilabha Bhattacharya, Shivam Agarwal,
Adrian Egli, Erik Nygren and Sharada Mohanty.
NeurIPS 2020 Competition and Demonstration Track, Proceedings of Machine Learning Research (**PMLR**),
volume 133, pages 275-301, 2020.

[C20] **Mutex Propagation for SAT-Based Multi-Agent Path Finding**.
Pavel Surynek, **<u>Jiaoyang Li</u>**, Han Zhang, T. K. Satish Kumar and Sven Koenig.
International Conference on Principles and Practice of Multi-Agent Systems (**PRIMA**), pages 248-258,
2020.
Acceptance rate: $19/50 = 38.0\%$.

[C19] **Multi-Directional Heuristic Search**.
Dor Atzmon, **<u>Jiaoyang Li</u>**, Ariel Felner, Eliran Nachmani, Shahaf Shperberg, Nathan R. Sturtevant and
Sven Koenig.
International Joint Conference on Artificial Intelligence (**IJCAI**), pages 4062-4068, 2020.
Acceptance rate: $592/4717 = 12.6\%$.

[C18] **Iterative-Deepening Conflict-Based Search**.
Eli Boyarski, Ariel Felner, Daniel Harabor, Peter J. Stuckey, Liron Cohen, **<u>Jiaoyang Li</u>** and Sven Koenig.
International Joint Conference on Artificial Intelligence (**IJCAI**), pages 4084-4090, 2020.
Acceptance rate: $592/4717 = 12.6\%$.

[C17] **New Techniques for Pairwise Symmetry Breaking in Multi-Agent Path Finding**.
<u>Jiaoyang Li</u>, Graeme Gange, Daniel Harabor, Peter J. Stuckey, Hang Ma and Sven Koenig.
International Conference on Automated Planning and Scheduling (**ICAPS**), pages 193-201, 2020.
Acceptance rate: $69/216 = 31.9\%$.

[C16] **Multi-Agent Pathfinding with Mutex Propagation**.   Outstanding Student Paper Award.
Han Zhang, **<u>Jiaoyang Li</u>**, Pavel Surynek, Sven Koenig and T. K. Satish Kumar.
International Conference on Automated Planning and Scheduling (**ICAPS**), pages 323-332, 2020.
Acceptance rate: $69/216 = 31.9\%$.

[C15] **Moving Agents in Formation in Congested Environments**.
<u>Jiaoyang Li</u>, Kexuan Sun, Hang Ma, Ariel Felner, T. K. Satish Kumar and Sven Koenig.
International Joint Conference on Autonomous Agents and Multiagent Systems (**AAMAS**), pages 726-734,
2020.
Acceptance rate: $186/808 = 23.0\%$.

[C14] **Model AI Assignments 2020**.
Todd W.Neller, Stephen Keeley, Michael Guerzhoy, Wolfgang Hoenig, **<u>Jiaoyang Li</u>**, Sven Koenig, Ameet
Soni, Krista Thomason, Lisa Zhang, Bibin Sebastian, Cinjon Resnick, Avital Oliver, Surya Bhupatiraju,
Kumar Krishna Agrawal, James Allingham, Sejong Yoon, Johnathan Chen, Tom Larsen, Marion Neumann,
Narges Norouzi, Ryan Hausen and Matthew Evett.
Symposium on Educational Advances in Artificial Intelligence (**EAAI**), 2020.

2019 [C13] **Scheduling and Airport Taxiway Path Planning under Uncertainty**.
<u>Jiaoyang Li</u>, Han Zhang, Mimi Gong, Zi Liang, Weizi Liu, Zhongyi Tong, Liangchen Yi, Robert Morris,
Corina Pasareanu and Sven Koenig.
AIAA Aviation and Aeronautics Forum and Exposition (**AIAA AVIATION Forum**), 2019.

[C12] **Multi-Agent Pathfinding: Definitions, Variants, and Benchmarks** (position paper).
Roni Stern, Nathan R. Sturtevant, Ariel Felner, Sven Koenig, Hang Ma, Thayne T. Walker, **<u>Jiaoyang Li</u>**,
Dor Atzmon, Liron Cohen, T. K. Satish Kumar, Eli Boyarski and Roman Bartak.
Symposium on Combinatorial Search (**SoCS**), pages 151-159, 2019.
Acceptance rate: $14/31 = 45.2\%$.

[C11] Improved Heuristics for Conflict-Based Search for Multi-Agent Path Finding.
Jiaoyang Li, Ariel Felner, Eli Boyarski, Hang Ma and Sven Koenig.
International Joint Conference on Artificial Intelligence (**IJCAI**), pages 442-449, 2019.
Acceptance rate: $850/4752 = 17.9\%$.

[C10] Using FastMap to Solve Graph Problems in a Euclidean Space (short paper).
Jiaoyang Li, Ariel Felner, Sven Koenig and T. K. Satish Kumar.
International Conference on Automated Planning and Scheduling (**ICAPS**), pages 273-278, 2019.

[C9] Disjoint Splitting for Multi-Agent Path Finding with Conflict-Based Search (short paper).
Jiaoyang Li, Daniel Harabor, Peter J. Stuckey, Ariel Felner, Hang Ma and Sven Koenig.
International Conference on Automated Planning and Scheduling (**ICAPS**), pages 279-283, 2019.

[C8] Task and Path Planning for Multi-Agent Pickup and Delivery.
Minghua Liu, Hang Ma, **Jiaoyang Li** and Sven Koenig.
International Joint Conference on Autonomous Agents and Multiagent Systems (**AAMAS**), pages 1152-1160, 2019.
Acceptance rate: $189/781 = 24.2\%$.

[C7] Multi-Agent Path Finding for Large Agents.
Jiaoyang Li, Pavel Surynek, Ariel Felner, Hang Ma, T. K. Satish Kumar and Sven Koenig.
AAAI Conference on Artificial Intelligence (**AAAI**), pages 7627-7634, 2019.
Acceptance rate: $1150/7095 = 16.2\%$.

[C6] Symmetry Breaking Constraints for Grid-Based Multi-Agent Path Finding.
Jiaoyang Li, Daniel Harabor, Peter J. Stuckey, Hang Ma and Sven Koenig.
AAAI Conference on Artificial Intelligence (**AAAI**), pages 6087-6095, 2019.
Acceptance rate: $1150/7095 = 16.2\%$.

[C5] Searching with Consistent Prioritization for Multi-Agent Path Finding.
Hang Ma, Daniel Harabor, Peter J. Stuckey, **Jiaoyang Li** and Sven Koenig.
AAAI Conference on Artificial Intelligence (**AAAI**), pages 7643-7650, 2019.
Acceptance rate: $1150/7095 = 16.2\%$.

2018 **[C4] Adding Heuristics to Conflict-Based Search for Multi-Agent Path Finding** (short paper).
Ariel Felner, **Jiaoyang Li**, Eli Boyarski, Hang Ma, Liron Cohen, T. K. Satish Kumar and Sven Koenig.
International Conference on Automated Planning and Scheduling (**ICAPS**), pages 83-87, 2018.
Acceptance rate: $69/209 = 33.0\%$.

[C3] Multi-Agent Path Finding with Deadlines.
Hang Ma, G. Wagner, Ariel Felner, **Jiaoyang Li**, T. K. Satish Kumar and Sven Koenig.
International Joint Conference on Artificial Intelligence (**IJCAI**), pages 417-423, 2018.
Acceptance rate: $710/3470 = 20.5\%$.

2017 **[C2] Lifelong Multi-Agent Path Finding for Online Pickup and Delivery Tasks**.
Hang Ma, **Jiaoyang Li**, T. K. Satish Kumar and Sven Koenig.
International Joint Conference on Autonomous Agents and Multiagent Systems (**AAMAS**), pages 837-845, 2017.
Acceptance rate: $155/595 = 26.1\%$.

[C1] Planning for Electric Taxi Charging System from the Perspective of Transport Energy Supply Chain: A Data-Driven Approach in Beijing.
Yinghao Jia, Huimiao Chen, **Jiaoyang Li**, Fang He, Meng Li, Zechun Hu and Zuo-Jun Max Shen.
IEEE Transportation Electrification Conference & EXPO Asia-Pacific (**ITEC-AP**), pages 1-6, 2017.

Journals

2024 **[J5] Multi-Agent Motion Planning with Bézier Curve Optimization under Kinodynamic Constraint**.
Jingtian Yan and **Jiaoyang Li**.
IEEE Robotics and Automation Letters, volume 9, number 3, pages 3021-3028, 2024.

2023 **[J4] Multi-Robot Geometric Task-and-Motion Planning for Collaborative Manipulation Tasks**.
Hejia Zhang, Shao-Hung Chan, Jie Zhong, **Jiaoyang Li**, Peter Kolapo, Sven Koenig, Zach Agioutantis, Steven Schafrik and Stefanos Nikolaidis.
Autonomous Robots, volume 47, pages 1637-1558, 2023.

[J3] Conflict-Tolerant and Conflict-Free Multi-Agent Meeting.
Dor Atzmon, Ariel Felner, **Jiaoyang Li**, Shahaf Shperberg, Nathan Sturtevant and Sven Koenig.
Artificial Intelligence, volume 322, page 103950, 2023.

2022 [J2] **Multi-Agent Path Finding with Mutex Propagation**.
Han Zhang, **Jiaoyang Li**, Pavel Surynek, T. K. Satish Kumar and Sven Koenig.
Artificial Intelligence, volume 311, page 1034766, 2022.

2021 [J1] **Pairwise Symmetry Reasoning for Multi-Agent Path Finding Search**.
Jiaoyang Li, Daniel Harabor, Peter J. Stuckey, Hang Ma, Graeme Gange and Sven Koenig.
Artificial Intelligence, volume 301, page 103574, 2021.

Book Chapters

2025 [B2] **Multi-Agent Pathfinding**.
Jiaoyang Li.
In Encyclopedia of Robotics, Marcelo H. Ang Jr., Oussama Khatib, Bruno Siciliano (editors), Springer, 2025. `https://doi.org/10.1007/978-3-642-41610-1`

2023 [B1] **Artificial Intelligence and Automation**.
Sven Koenig, Shao-Hung Chan, **Jiaoyang Li** and Yi Zheng.
In Handbook of Automation, Shimon Y. Nof (editor), Springer, 2023. `https://doi.org/10.1007/978-3-030-96729-1`

Workshops

Workshop papers with a conference version are not listed below.

2023 [W4] **Enhancing Multi-Drone Coordination for Filming Group Behaviours in Dynamic Environments**.
Aditya Rauniyar, **Jiaoyang Li** and Sebastian Scherer.
IROS Workshop on Advances in Multi-Agent Learning—Coordination, Perception, and Control, 2023.

[W3] **Load Balancing in Distributed Multi-Agent Path Finder (DMAPF)**.
Poom Pianpak, **Jiaoyang Li** and Tran Cao Son.
AAMAS Workshop on Engineering Multi-Agent Systems (**EMAS**), 2023.

2021 [W2] **A Hierarchical Approach to Multi-Agent Path Finding**.
Han Zhang, Mingze Yao, Ziang Liu, **Jiaoyang Li**, Lucas Terr, Shao-Hung Chan, T. K. Satish Kumar and Sven Koenig.
ICAPS Workshop on Hierarchical Planning (**HPLAN**), 2021.

2020 [W1] **Nested ECBS for Bounded Suboptimal Multi-Agent Path Finding**.
Shao-Hung Chan, **Jiaoyang Li**, Daniel Harabor, Peter J. Stuckey, Graeme Gange, Liron Cohen and Sven Koenig.
IJCAI Workshop on Multi-Agent Path Finding (**WoMAPF**), 2020.

Demos

2021 [D1] **Scalable Rail Planning and Replanning: Winning the 2020 Flatland Challenge**.   Best System Demonstration Award.
Jiaoyang Li, Zhe Chen, Yi Zheng, Shao-Hung Chan, Daniel Harabor, Peter J. Stuckey, Hang Ma and Sven Koenig.
System Demonstrations and Exhibits Program at International Conference on Automated Planning and Scheduling (**ICAPS**), 2021.

Extended Abstracts

Extended abstracts with a conference or workshop version are not listed below.

2024 [E4] **A Quality Diversity Approach to Automatically Generate Multi-Agent Path Finding Benchmark Maps** (extended abstract).
Cheng Qian, Yulun Zhang and **Jiaoyang Li**.
Symposium on Combinatorial Search (**SoCS**), 279-280, 2024.

[E3] **From Space-Time to Space-Order: Directly Planning a Temporal Planning Graph by Redefining CBS** (extended abstract).
Yu Wu, Rishi Veerapaneni, **Jiaoyang Li** and Maxim Likhachev.
Symposium on Combinatorial Search (**SoCS**), 293-294, 2024.

[E2] **Optimal Task Assignment and Path Planning using Conflict-Based Search with Precedence and Temporal Constraints** (extended abstract).
Yu Quan Chong, **Jiaoyang Li** and Katia Sycara.
International Joint Conference on Autonomous Agents and Multiagent Systems (**AAMAS**), 2210-2212, 2024.
Acceptance rate: 47%.

2019 [E1] **A New Constraint Satisfaction Perspective on Multi-Agent Path Finding: Preliminary Results** (extended abstract).
Jiangxing Wang, **Jiaoyang Li**, Hang Ma, Sven Koenig and T. K. Satish Kumar.
International Joint Conference on Autonomous Agents and Multiagent Systems (**AAMAS**), pages 2253-2255, 2019.
Acceptance rate: 407/781=52.1%.

Preprints

[P5] **Enhancing Lifelong Multi-Agent Path Finding with Cache Mechanism**.
Yimin Tang, Zhenghong Yu, Yi Zheng, T. K. Satish Kumar, **Jiaoyang Li** and Sven Koenig. 2024. `https://arxiv.org/abs/2403.13421`

[P4] **No Panacea in Planning: Algorithm Selection for Suboptimal Multi-Agent Path Finding**.
Weizhe Chen, Zhihan Wang, **Jiaoyang Li**, Sven Koenig and Bistra Dilkina. 2024. `https://arxiv.org/abs/2404.03554`

[P3] **Scalable Rail Planning and Replanning with Soft Deadlines**.
Zhe Chen, **Jiaoyang Li**, Daniel Harabor and Peter J. Stuckey. 2023. `https://arxiv.org/abs/2306.06455`

[P2] **Cooperative Task and Motion Planning for Multi-Arm Assembly Systems**.
Jingkai Chen, **Jiaoyang Li***, Yijiang Huang*, Caelan Garrett, Dawei Sun, Chuchu Fan, Andreas Hofmann, Caitlin Mueller, Sven Koenig and Brian C. Williams. 2022. `https://arxiv.org/abs/2203.02475`

[P1] **Multi-Robot Routing with Time Windows: A Column Generation Approach**.
Naveed Haghani, **Jiaoyang Li**, Sven Koenig, Gautam Kunapuli, Claudio Contardo, Amelia Regan and Julian Yarkony. 2021. `https://arxiv.org/abs/2103.08835`

Teaching

Teaching at CMU

Fall 2025	Manipulation, Estimation, and Control, 16-642 (graduate level)
Spring 2025	Multi-Robot Planning and Coordination, 16-891 (graduate level)
Fall 2024	Manipulation, Estimation, and Control, 16-642 (graduate level)
Spring 2024	Multi-Robot Planning and Coordination, 16-891 (graduate level)
Fall 2023	Manipulation, Estimation, and Control, 16-642 (graduate level) -revised.
Spring 2023	Multi-Robot Planning and Coordination, 16-891 (graduate level) -new.

Teaching Assistants at USC

Summer 2021 Research Coach at Viterbi Summer Institute (VSI).
- *A program designed to enhance the transition of engineering students from underrepresented backgrounds to USC.*

Spring 2021 Teaching Assistant at Advanced Analysis of Algorithms, CSCI670 (graduate level).

Fall 2019 Teaching Assistant at Introduction to Artificial Intelligence, CSCI360 (undergraduate level).

Summer 2019 Lab Assistant at the Third Summer School on Cognitive Robotics.
- *Co-developed a lab project on multi-agent path finding, which was later chosen as a Model AI Assignment 2020 by the Symposium on Educational Advances in Artificial Intelligence.*

Student Supervision and Mentoring

Supervised Ph.D. Students at CMU

2024-present Rishi Veerapaneni (Ph.D. in Robotics, started in 2020), co-advised with Maxim Likhachev
- Winner team of the League of Robot Runners, a competition sponsored by Amazon Robotics that focuses on the coordination of multiple moving robots, 2023.
- Publications: [C51], [C55], [C56], [C58], [C59], [C66], [C68], [C69], [C72], [E3].

2023-present   Jingtian Yan (Ph.D. in Robotics, started in 2024), co-advised with Stephen F. Smith
- Publications: [J5], [C65].

2023-present   Philip Huang (Ph.D. in Robotics, started in 2023)
- Received Alan Guisewite Memorial Fellowship by Robotics Institute at CMU, 2024.
- Publications: [C70].

2023-present   Yorai Shaoul (Ph.D. in Robotics, started in 2022), co-advised with Maxim Likhachev
- His paper [C54] received the Best Student Paper Award from ICAPS 2024.
- Publications: [C67], [C54], [C58].

2022-present   Yulun Zhang (Ph.D. in Robotics, started in 2022)
- Received a CMU fellowship on Quality of Life Tech Center Student Research Fund, 2023.
- Winner team of the League of Robot Runners, a competition sponsored by Amazon Robotics that focuses on the coordination of multiple moving robots, 2023.
- Publications: [C47], [C49], [C59], [C60], [C61], [C63], [E4].

Supervised Master's Students at CMU

2023-present   He Jiang (Master of Science in Robotics)
- Winner team (team leader) of the League of Robot Runners, a competition sponsored by Amazon Robotics that focuses on the coordination of multiple moving robots, 2023.
- Publications: [C59], [C61], [C63], [C64], [C69].

2022-2024   Harvey Mei (Master of Science in Mechanical Engineering - Research)

Mentored Master's Students at CMU

2022-2023   Yimin Tang (Master of Science in Robotics)
- His paper [C48] was selected as the finalist of the best paper award.
- Publications: [C48], [C57].

Mentored Undergraduate Students at CMU

2023-present   Cheng Qian (CS Undergraduate in Artificial Intelligence and Additional Major in Statistics)
- Received Summer Undergraduate Research Apprenticeships (SURA) from CMU, 2024.
- Publications: [E4].

2023-2024   Yifan Su (CS Undergraduate)
- Publications: [C51].

2022-2023   Adittyo Paul (CS Undergraduate w/ Concentration in Machine Learning and Minor in Statistics)
- Publications: [C52].

2022-2023   Ying Feng (CS Undergraduate w/ Minor in Algorithms and Complexity Theory)
- Publications: [C52].

Mentored Visiting Students at CMU

2024   Yutong Wang (Visiting Ph.D. student from National University of Singapore)
- Publications: [C62], [C68].

2024   Hongzhi Zang (Visiting undergraduate from Computer Science at Tsinghua University)
- Publications: [C63].

2023   Fangji Wang (Visiting undergraduate from Mechanical Engineering at Tsinghua University)
- Publications: [C53].

M.S. Thesis Committee at CMU

2025   Shuyang Shi (Master of Science in Robotics)
TBD, advised by Katia Sycara

2024   Nayana Suvarna (Master of Science in Robotics)
Multi-Resolution Informative Path Planning for Small Teams of Robots, advised by Sebastian Scherer

2024   Aditya Rauniyar (Master of Science in Robotics)
VP4D: View Planning for 3D/4D Scene Understanding, advised by Sebastian Scherer

2024   Yu Quan Chong (Master of Science in Robotics)
Expressive Attentional Communication Learning using Graph Neural Networks, advised by Katia Sycara

2023   Ziwen Ye (Master of Science in Computer Science-Research)
Evolutionary Topology in Truss Optimization via Dissolvable Beams, advised by Lining Yao

| 2023 | Yimin Tang (Master of Science in Robotics) |
| | *Solving Multi-Agent Target Assignment and Path Finding with a Single Constraint Tree*, advised by Katia Sycara |

Mentored Undergraduate and Master's Students at USC

2021-2022	Sumanth Varambally (Undergraduate Student at Indian Institute of Technology Delhi), *IUSSTF-Viterbi Summer Research Program.*
	○ Publications: [C38].
2021-2022	Shuyang Zhang (Undergraduate Student at USC), *Center for Undergraduate Research in Viterbi Engineering (CURVE) Program.*
	○ Her poster was selected as a winner of the CURVE Symposium at USC.
	○ Won a Best Research Award in Computer Science at USC.
	○ Publications: [C37].
2021	Qinghong Xu (Master's Student at Simon Fraser University).
	○ Publications: [C40].
2020-2021	Xinyi Zhong (Master's Student at Simon Fraser University).
	○ Publications: [C34].
2020-2021	Eugene (Zijun) Lin (Master's Student at USC).
	○ Publications: [C41].
2018	Jiangxing Wang (Master's Student at USC), *Directed Research Project.*
	○ Won a Best Research Award in Computer Science at USC.
	○ Publications: [E1].
Summer 2018	Minghua Liu (Undergraduate Student at Tsinghua University), *USC-Tsinghua Summer Research Program.*
	○ Publications: [C8].

Professional Experience

02/2020	Visiting Researcher (11 months),	**Monash University**, Australia.
	- Host: Daniel Harabor and Peter J. Stuckey,	Faculty of Information Technology.
05/2019	Research Intern (14 weeks),	**Amazon Robotics**, USA.
	- Mentor: Andrew Tinka; Supervisor: Joseph W. Durham.	
12/2018,	Visiting Student (twice, 5 weeks in total),	**Ben-Gurion University**, Israel.
11/2019	- Advisor: Ariel Felner,	Department of Software and Information Systems Engineering.
08/2016	Visiting Student (5 weeks),	**University of California, Berkeley**, USA.
	- Advisor: Zuojun (Max) Shen,	Department of Industrial Engineering and Operations Research.
06/2016	Visiting Student (6 weeks),	**University of Southern California**, USA.
	- Advisor: Sven Koenig,	Department of Computer Science.

Media Coverage

03/2021	Making the (Virtual) Trains Run On Time: USC Team World Champs in AI Challenge,	USC Press
05/2020	Amazon Studies Anti-Collision Method for Robots to Increase Throughput,	Supply Chain Dive
05/2020	Amazon's AI Tool Can Plan Collision-Free Paths for 1,000 Warehouse Robots,	Venture Beat
	- Also distributed via ACM TechNews.	

Academic Activities

Conference Organizing Committee

2026	Workshop Co-Chair of AAAI Conference on Artificial Intelligence (AAAI)
2026	Sponsorship Co-Chair of International Conference on Automated Planning and Scheduling (ICAPS)
2025	Job Fair Co-Chair of AAAI Conference on Artificial Intelligence (AAAI)
2024, 2025	System Demonstration Track Co-Chair of International Conference on Automated Planning and Scheduling (ICAPS)
2024	Conference Co-chair of International Symposium on Combinatorial Search (SoCS)
2023	Doctoral Consortium Co-Chair of Symposium on Combinatorial Search (SoCS)

| 2022 | Local organizing committee of International Conference on the Integration of Constraint Programming, Artificial Intelligence, and Operations Research (CPAIOR) |

Workshop Organizing Committee

2025	Co-Chair of RSS Workshop on Large Foundation Model for Interactive Robot Learning
2022-2024	3x Co-chair of AAMAS Workshop on Optimization and Learning in Multi-Agent Systems (OptLearnMAS)
2023	Co-organizer of AAAI Fall Symposium on Agent Teaming in Mixed-Motive Situations
2023	Co-chair of AAAI Workshop on Multi-Agent Path Finding (WoMAPF)
2020	Co-chair of IJCAI Workshop on Multi-Agent Path Finding (WoMAPF)

Conference Senior Program Committee, Area Chair, and Associate Editor

2025	Associate Editor of IEEE International Conference on Robotics and Automation (ICRA)
2025	Area Chair of International Joint Conference on Autonomous Agents and Multiagent Systems (AAMAS)
2024, 2025	Area Chair of International Conference on Automated Planning and Scheduling (ICAPS)
2021	Senior Program Committee of International Joint Conference on Artificial Intelligence (IJCAI)

Conference and Workshop Program Committee

2021-2025	5x AAAI Conference on Artificial Intelligence (AAAI)
2020-2025	5x International Joint Conference on Artificial Intelligence (IJCAI)
2024, 2025	2x Student Program at AAAI Conference on Artificial Intelligence (AAAI)
2023, 2025	2x International Symposium on Combinatorial Search (SoCS)
2019, 2025	2x AAAI/IJCAI Workshop on Multi-Agent Path Finding (WoMAPF)
2023, 2024	2x International Joint Conference on Autonomous Agents and Multiagent Systems (AAMAS)
2023, 2024	2x Robotics: Science and Systems (RSS)
2022, 2023	2x International Conference on the Integration of Constraint Programming, Artificial Intelligence, and Operations Research (CPAIOR)
2021-2023	3x International Conference on Automated Planning and Scheduling (ICAPS)
2021-2023	3x Special track on Autonomous Robots and Agents at International Conference of the Florida Artificial Intelligence Research Society (FLAIRS)
2021	System demonstrations track at International Conference on Automated Planning and Scheduling (ICAPS)
2019, 2020	2x International Conference on Autonomic and Autonomous Systems (ICAS)

Conference and Workshop Reviewer (of Individual Papers)

2021-2024	5x IEEE International Conference on Robotics and Automation (ICRA)
2023	Workshop Proposal for IEEE International Conference on Robotics and Automation (ICRA)
2021	2x IEEE International Symposium on Multi-Robot and Multi-Agent Systems (MRS)
2021	IEEE/RSJ International Conference on Intelligent Robots and Systems (IROS)
2021	Undergraduate Consortium at AAAI Conference on Artificial Intelligence (AAAI-UC)
2018-2021	3x AAAI/ACM Conference on Artificial Intelligence, Ethics, and Society (AIES)
2020	Workshop on the Algorithmic Foundations of Robotics (WAFR)
2019	Global Conference on Artificial Intelligence (GCAI)
2019	International Joint Conference on Artificial Intelligence (IJCAI)
2019	International Conference on Automated Planning and Scheduling (ICAPS)
2019	International Joint Conference on Autonomous Agents and Multiagent Systems (AAMAS)
2018, 2019	2x International Symposium on Combinatorial Search (SoCS)
2018	AAAI Conference on Artificial Intelligence and Interactive Digital Entertainment (AIIDE)
2018	ACM Siggraph Conference on Motion, Interaction and Games (MIG)
2018	IEEE Conference on Computational Intelligence and Games (CIG)
2018	ICAPS Workshop on Planning and Robotics (PlanRob)

Journal Editor

| 2025-2027 | Associate Editor of Journal of Artificial Intelligence (AIJ) |

| 2024 | Editor of Journal of Artificial Intelligence (AIJ) |

Journal Reviewer (of Individual Papers)

2021-2025	6x Journal of Artificial Intelligence Research (JAIR)
2024	ACM Transactions on Autonomous and Adaptive Systems (TAAS)
2021-2024	5x Artificial Intelligence (AIJ)
2023	Robotics and Autonomous Systems
2022	Autonomous Agents and Multi-Agent Systems (JAAMAS)
2022	2x IEEE Transactions on Robotics (T-RO)
2019-2022	6x IEEE Robotics and Automation Letters (RA-L)
2020, 2021	2x IEEE Transactions on Automation Science and Engineering (T-ASE)
2020	IEEE Transactions on Control of Network Systems (TCNS)
2020	Journal of Aerospace Information Systems (JAIS)
2020	Aerospace Lab (AL)
2017	Tsinghua Science and Technology (TST)

Grant Proposal Reviewer

2024	Natural Sciences and Engineering Research Council of Canada (NSERC) Alliance - Mitacs Accelerate Grant
2024	National Science Foundation (NSF) CMMI - OE Operations Engineering
2022	Natural Sciences and Engineering Research Council of Canada (NSERC) - Discovery Grants Program

Conference Session Chair

2025	Session "Multi-Robot Planning" at IEEE International Conference on Robotics and Automation (ICRA)
2025	Sessions "Robotics" and "Multiagent Systems" at AAAI Conference on Artificial Intelligence (AAAI)
2024	Session "Reinforcement Learning" at International Conference on Automated Planning and Scheduling (ICAPS)
2023	Session 6 at IEEE International Symposium on Multi-Robot and Multi-Agent Systems (MRS)
2023	Session "Multiagent Path Finding" at International Joint Conference on Autonomous Agents and Multiagent Systems (AAMAS)
2022	Session (16a) "Multi-Agent Planning" at International Conference on Automated Planning and Scheduling (ICAPS)

Others

2024-present	International Symposium on Combinatorial Search (SoCS) - Governing Council
2024	Mentor of the Doctoral Consortium at ICAPS 2024
2021	Mentor of the WiSE PhD Mentorship Program at USC
2021	Judge of the Symposium of the Center for Undergraduate Research in Viterbi Engineering (CURVE) Program at USC
2021	Invited Panelist of Grad Student Panel at AAAI Undergraduate Consortium
2020	Invited Panelist of Flatland Townhall Panel at NeurIPS Competition Track

Talks and Presentations

Invited Talks

02/2025	**Layout Design for Large-Scale Multi-Robot Coordination** (virtual). University of Macau.
02/2025	**From Plans to Reality: Robust Execution Frameworks for Multi-Agent Path Finding** (virtual). Amazon Robotics.
08/2024	**Layout Design for Large-Scale Multi-Robot Coordination**. 7th YinzOR Conference.
03/2024	**Intelligent Planning for Large-Scale Multi-Agent Coordination** (virtual). Autonomy Talks.
02/2024	**Layout Design for Large-Scale Multi-Robot Coordination**. Simon Fraser University.
02/2024	**Layout Design for Large-Scale Multi-Robot Coordination**. CMU RI faculty talk.
02/2024	**Intelligent Planning for Large-Scale Multi-Agent Coordination** (virtual). CCFAI talk.

12/2023 **Multi-Robot Coordination and Layout Design for Automated Warehousing**. Amazon Robotics.

07/2023 **Efficient and Effective Techniques for Large-Scale Multi-Agent Path Finding**. Dissertation award talk at the International Conference on Automated Planning and Scheduling (ICAPS).

06/2023 **Efficient and Effective Techniques for Large-Scale Multi-Agent Path Finding**. Dissertation award talk at the International Joint Conference on Autonomous Agents and Multiagent Systems (AAMAS).

05/2023 **Efficient and Effective Techniques for Large-Scale Multi-Agent Path Finding**. Dissertation award talk at the Viterbi School of Engineering at the University of Southern California.

05/2023 **Large-Scale Multi-Agent Path Finding** (virtual). OMRON Corporation.

04/2023 **Large-Scale Multi-Agent Path Finding** (virtual). Robotics and Controls Seminar at the University of North Carolina at Charlotte.

02/2023 **Intelligent Planning for Large-Scale Multi-Agent Coordination**. AAAI New Faculty Highlights.

06/2022 **Intelligent Planning for Large-Scale Multi-Agent Coordination** (virtual). ICAPS'22 Workshop on Heuristics and Search for Domain-independent Planning.

10/2019 **Fast and Realistic Multi-Agent Path Finding**. Amazon Research Awards - Robotics Symposium.

Guest Lectures

02/2025 **Recent Advancements in Multi-Agent Path Finding** (virtual). University of Virginia Course on Multi-Robot Navigation (taught by Rohan Chandra).

03/2024 **Large-Scale Multi-Agent Path Finding**. CMU Course on Mobile Robots (taught by Wennie Tabib).

03/2022 **Introduction to Multi-Agent Path Finding** (virtual). MIT Course on Cognitive Robotics (taught by Brian Williams).

Conference Tutorials

05/2022 AAMAS tutorial on **Recent Advances in Multi-Agent Path Finding** (with Daniel Harabor, Sven Koenig, and Ariel Felner).

02/2022 AAAI tutorial on **Recent Advances in Multi-Agent Path Finding** (with Daniel Harabor, Sven Koenig, and Ariel Felner).

Paper Presentations at Conferences and Symposiums

06/2024 **A Real-Time Rescheduling Algorithm for Multi-robot Plan Execution**. International Conference on Automated Planning and Scheduling (ICAPS).

06/2024 **Solving Multi-Agent Target Assignment and Path Finding with a Single Constraint Tree**. International Conference on Automated Planning and Scheduling (ICAPS).

02/2023 **Intersection Coordination with Priority-Based Search for Autonomous Vehicles**. AAAI Conference on Artificial Intelligence (AAAI).

02/2022 **MAPF-LNS2: Repairing Multi-Agent Path Finding via Large Neighborhood Search** (virtual). AAAI Conference on Artificial Intelligence (AAAI).

08/2021 **Anytime Multi-Agent Path Finding via Large Neighborhood Search** (virtual). International Joint Conference on Artificial Intelligence (IJCAI).

08/2021 **Scalable Rail Planning and Replanning: Winning the 2020 Flatland Challenge** (virtual). International Conference on Automated Planning and Scheduling (ICAPS).

02/2021 **EECBS: A Bounded-Suboptimal Search on Multi-Agent Path Finding** (virtual). AAAI Conference on Artificial Intelligence (AAAI).

02/2021 **Lifelong Multi-Agent Path Finding in Large-Scale Warehouses** (virtual). AAAI Conference on Artificial Intelligence (AAAI).

12/2020 **Winning the 2020 Flatland Challenge** (virtual). Conference on Neural Information Processing Systems (NeurIPS).

10/2020 **New Techniques for Pairwise Symmetry Breaking in Multi-Agent Path Finding** (virtual). International Conference on Automated Planning and Scheduling (ICAPS).

10/2020 **Pairwise Symmetry Reasoning for Multi-Agent Path Finding** (virtual). Doctoral Consortium at the International Conference on Automated Planning and Scheduling (ICAPS).

05/2020 **Moving Agents in Formation in Congested Environments** (virtual). Symposium on Combinatorial Search (SoCS).

05/2020   **New Techniques for Pairwise Symmetry Breaking in Multi-Agent Path Finding** (virtual). Symposium on Combinatorial Search (SoCS).

05/2020   **Moving Agents in Formation in Congested Environments** (virtual). International Joint Conference on Autonomous Agents and Multiagent Systems (AAMAS).

05/2020   **Lifelong Multi-Agent Path Finding in Large-Scale Warehouses** (virtual). International Joint Conference on Autonomous Agents and Multiagent Systems (AAMAS).

02/2020   **A Project on Multi-Agent Path Finding**. Educational Advances in Artificial Intelligence (EAAI).

08/2019   **Improved Heuristics for Conflict-Based Search for Multi-Agent Path Finding**. International Joint Conference on Artificial Intelligence (IJCAI).

08/2019   **Disjoint Splitting for Multi-Agent Path Finding with Conflict-Based Search**. IJCAI-19 Workshop on Multi-Agent Path Finding (WoMAPF).

07/2019   **Using FastMap to Solve Graph Problems in a Euclidean Space**. International Conference on Automated Planning and Scheduling (ICAPS).

07/2019   **Disjoint Splitting for Multi-Agent Path Finding with Conflict-Based Search**. International Conference on Automated Planning and Scheduling (ICAPS).

01/2019   **Multi-Agent Path Finding for Large Agents**. AAAI Conference on Artificial Intelligence (AAAI).

01/2019   **Symmetry Breaking Constraints for Grid-Based Multi-Agent Path Finding**. AAAI Conference on Artificial Intelligence (AAAI).