Cathy Wu

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Employment History

2024 – . . . **Massachusetts Institute of Technology (MIT)**,
Class of 1954 Career Development Professor
Associate Professor, Department of Civil and Environmental Engineering (CEE) and the Institute for Data, Systems, and Society (IDSS) [dual]
Affiliated Faculty, Operations Research Center (ORC)

2019 – . . . **Massachusetts Institute of Technology (MIT)**,
Principal Investigator, Laboratory for Information and Decision Systems (LIDS)

2019 – 2024 **Massachusetts Institute of Technology (MIT)**,
Gilbert W. Winslow (1937) Career Development Professor
Assistant Professor, Department of Civil and Environmental Engineering (CEE) and the Institute for Data, Systems, and Society (IDSS) [dual]

2018 – 2019 **Microsoft Research AI**,
Postdoctoral Researcher, Reinforcement Learning Group

2017 **OpenAI**,
Member of Technical Staff Intern
Basic Research and Reinforcement Learning Groups

2016 **Google X**,
Software Engineer Intern, Self-Driving Car Team (now Waymo)

2015 **Microsoft Research**,
Research Intern, Adaptive Systems and Interaction and Theory Groups

Education

2013 – 2018 **Ph.D., University of California, Berkeley**
Electrical Engineering and Computer Sciences
Specialization: Control, Intelligent Systems, and Robotics
Thesis: *Learning and Optimization for Mixed Autonomy Systems – A Mobility Context*

2012 – 2013 **M.Eng., Massachusetts Institute of Technology**
Electrical Engineering and Computer Science
Specialization: Robotics
Thesis: *GPSZip: Semantic Representation and Compression System for GPS using Coresets*

2008 – 2012 **B.S., Massachusetts Institute of Technology**
Electrical Engineering and Computer Science

Summary

Area Artificial Intelligence and Transportation; Expertise: Machine Learning for Optimization; Intelligent Transportation Systems; Deep Reinforcement Learning

Research 64 peer reviewed publications (39 in selective journals and conferences), including KDD '25 Oral, NeurIPS '21 Spotlight, ICLR '18 Oral, ITSC '16 Best Paper Honorable Mention, and ISTTT '15 Oral.

Funding Career research portfolio of $5.4M, consisting of $3.7M PI funding and $1.7M Co-PI funding.

Teaching Instructor for 2 courses at MIT, avg. instructor quality of 6.0/7.0, course quality of 5.7/7.0.

Summary (continued)

Advising	Research advisor of 9 PhD students (3 completed); 2 Masters students (8 completed); 5 undergraduates (22 completed); 1 postdoc (1 completed).
Awards	NSF CAREER Award, MIT CEE Mentoring Award, IEEE and CUTC Dissertation Awards.
Service	Board of Governors for IEEE ITSS; Program Co-chair for RLC 2025; Chair and Co-founder of REproducible Research In Transportation Engineering (RERITE) Working Group; Associate Editor or Area Chair for ICML, NeurIPS, ICRA, and TRC; Co-organizer of 20 workshops and competitions; Grant reviewer for NSF (3x) and C3.ai DTI (2x).
Media	Media citations including features in New Scientist, TechCrunch, NPR, Science Magazine, Wired, ABC News, Anthropocene, and MIT News, including several home page features.

Selected Awards and Honors

2025 — **MIT CEE Ole Madsen Mentoring Award**
For conspicuous contributions to mentoring and educating CEE students outside the classroom, and to inspire them to pursue a career in the field of civil and environmental engineering.

2023 – 2028 — **NSF CAREER Award**
CAREER: Learning for Generalization in Large-Scale Cyber-Physical Systems

2019 — **IEEE ITS Best Dissertation Award**, *First Place Award*
For the best dissertation in any ITS area that is innovative and relevant to practice

Microsoft Location Summit, *First Place Award, Hall of Fame Inductee*

2018 — **CUTC Milton Pikarsky Memorial Award**
For the best national doctoral dissertation for science and technology in transportation studies

UC Berkeley Outstanding Graduate Student Instructor Award, *CS189 Machine Learning*

2017 — **ACM Future of Computing Academy**, *Inaugural Class*

UC Berkeley ITS Outstanding Graduate Student Award

2016 — **IEEE Best Paper Award Honorable Mention**, *Intelligent Transportation Systems Conference (ITSC)*

Rising Stars Workshop, *Carnegie Mellon University, Department of Electrical and Computer Engineering (ECE)*

2015 — **Dwight David Eisenhower Graduate Fellowship (DDETFP)**, *Awardee*

2013 — **National Defense Science and Engineering (NDSEG) Graduate Fellowship**, *Awardee*

2013 – 2018 — **National Science Foundation (NSF) Graduate Fellowship**, *Fellow*

2013 – 2017 — **UC Berkeley Chancellor's Fellowship for Graduate Study**

Research awards

2025 – 2027 — **JR East**
Leveraging Machine Learning for Energy-Efficient Train Operations

2025 – 2028 — **National Science Foundation, Division of Civil, Mechanical and Manufacturing Innovation (CMMI), Award #2434399**
CPS: Medium: Collaborative Research: Accelerating Societal-Scale Control Design via Offline Reinforcement Learning

2024 – 2026 — **Cintra**
Quantifying Controllable Congestion on Highways

Research awards (continued)

2024 – 2027 **Symbotic**
Generalizable Path Finding for Growing Complexity in Warehousing

2023 – 2028 **National Science Foundation, CAREER program, Division Of Computer and Network Systems (CNS), Award #2239566**
CAREER: Learning for Generalization in Large-Scale Cyber-Physical Systems

2022 – 2025 **National Science Foundation, Division Of Computer and Network Systems (CNS), Award #2149520**
CPS: Medium: Collaborative Research: An Online Learning Framework for Socially Emerging Mixed Mobility

2022 – 2024 **MIT Mobility Initiative (MMI)**
Learning a Pareto Frontier for Safety and Performance in Autonomous Mobility

2021 – 2024 **Amazon Science Hub**
Fleet management and routing optimization for warehouse operations

2021 – 2022 **MIT Energy Initiative (MITEI) Mobility Systems Center**
Reinforcement Learning for Guiding Drivers to Reduce Congestion in the Developing World

2021 **Amazon Robotics**
Factored Multi-agent Reinforcement Learning

2021 – 2023 **DOT FHWA Advanced Transportation and Congestion Management Technologies Deployment Initiative (ATCMTDI)**
Utah Broadly Connected, Project on Connected Traffic Signal Corridor Operations

2021 **Mathworks**
Dynamical systems equilibria for exploration in reinforcement learning

2021 – 2024 **Mathworks**
Learning local search for combinatorial optimization

2020 – 2021 **MIT-IBM Watson AI Lab**
Hierarchical Disentangled Representations for Scalable Multi-agent Reinforcement Learning

MIT-Indonesia Seed Fund
Reinforcement learning for sensor selection in networked dynamical systems

2019 – 2020 **MIT CSAIL-MSR Trustworthy AI Collaboration (TRAC) Research Award**
Off-policy evaluation for risk-aware autonomous systems

Amazon AWS Machine Learning Research Award (MLRA)
Representation learning for enabling decision science in urban systems

Taiwan National Applied Research Laboratories (NARLabs) I-Dream Grant
AIOT for Urban Science (co-PI)

2019 **MIT Research Support Committee (RSC) Research Award**
Representation learning for enabling decision science in urban systems

2018 – 2019 **Amazon AWS Machine Learning Research Award (MLRA)**
Applications of deep-RL for training connected, autonomous vehicles in mixed environments

Research Publications

Articles in review

11 H. Bang, J.-H. Cho, **C. Wu**, and A. A. Malikopoulos, "Route Recommendations for Traffic Management Under Learned Partial Driver Compliance," in *Conference on Decision and Control (CDC)*, In review. DOI: 10.48550/arXiv.2504.02993. arXiv: 2504.02993 [eess].

10 J. Bi, Z. Cao, J. Zhou, W. Song, Y. Wu, J. Zhang, Y. Ma, and **C. Wu**, "Learning to Handle Constraints in Routing Problems via a Construct-and-Refine Framework," in *ICLR*, In review.

9. J.-H. Cho, H. Zhang, S. Du, R. Dong, and **C. Wu**, "Formalizing Task-Space Complexity for Zero-Shot Generalization," in *L4DC*, In review.

8. J.-H. Cho, H. Zhang, S. Du, R. Dong, and **C. Wu**, "Formalizing and Estimating Task-Space Complexity for Zero-shot Generalization," in *IEEE TAC*, In review.

7. Z. He, J. Laval, Y. Han, A. Hegyi, R. Nishi, and **C. Wu**, "A Review of Stop-and-Go Traffic Wave Suppression Strategies: Variable Speed Limit vs. Jam-Absorption Driving," In review, arXiv. DOI: 10.48550/arXiv.2504.11372. arXiv: 2504.11372 [physics].

6. V. Jayawardana, S. Li, Y. Farid, and **C. Wu**, "Multi-residual Mixture of Experts Learning for Cooperative Control in Multi-vehicle Systems," In review, arXiv. DOI: 10.48550/arXiv.2507.09836. arXiv: 2507.09836 [cs].

5. V. Jayawardana, C. Tang, J. Ji, J. Philion, X. B. Peng, and **C. Wu**, "Noise-Aware Generative Microscopic Traffic Simulation," In review, arXiv. DOI: 10.7910/DVN/DQOWQI. arXiv: 2508.07453 [eess].

4. W. Ouyang, S. Li, Y. Ma, and **C. Wu**, "Learning to Segment for Vehicle Routing Problems," In review, arXiv. DOI: 10.48550/arXiv.2507.01037. arXiv: 2507.01037 [cs].

3. A. Papalia, C. Dawson, L. L. Anton, N. M. Bayomi, B. Champenois, J.-H. Cho, L. Cai, J. DelPreto, K. Edwards, B.-C. Githinji, C. Hickert, V. Jayawardana, M. Kramer, S. Raghavan, D. Russell, S. Salimi, J. Shi, S. Sudhakar, Y. Wang, S. Wang, L. Carlone, V. Kumar, D. Rus, J. E. Fernandez, **C. Wu**, G. Kantor, D. Young, and H. Singh, "A Roadmap for Climate-Relevant Robotics Research," In review, arXiv. DOI: 10.48550/arXiv.2507.11623. arXiv: 2507.11623 [cs].

2. Z. Yan, H. Zheng, and **C. Wu**, "Multi-agent Scheduling of Intersection Crossings for Cooperative Autonomous Driving," in *IEEE Transactions on Intelligent Vehicles (T-IV)*, In review.

1. C. Zhang, **C. Wu**, and L. Sun, "Markov Regime-Switching Intelligent Driver Model for Interpretable Car-Following Behavior," In review, arXiv. DOI: 10.48550/arXiv.2506.14762. arXiv: 2506.14762 [stat].

Selective journal and conference publications

40. C. Hickert, S. Li, Z. He, and **C. Wu**, "Probability-Aware Parking Selection," *IEEE Transactions on Intelligent Transportation Systems (T-ITS)*, Jan. 2026.

39. E. R. Sanchez, C. Tang, Y. Xu, N. Renganathan, V. Jayawardana, Z. He, and **C. Wu**, "NeuralMOVES: Extracting and Learning Surrogates for Diverse Vehicle Emission Models," *Transportation Research Part C: Emerging Technologies*, 2026. DOI: 10.48550/arXiv.2502.04417.

38. C. Zhang, Z. He, **C. Wu**, and L. Sun, "When Context Is Not Enough: Modeling Unexplained Variability in Car-Following Behavior," in *International Symposium on Transportation and Traffic Theory (ISTTT)*, Jul. 2026.

37. H. Zheng, Y. Ma, B. Araki, J. Chen, and **C. Wu**, "Learning-guided Prioritized Planning for Lifelong Multi-Agent Path Finding in Warehouse Automation," *Journal of Artificial Intelligence Research (JAIR)*, Jan. 2026.

36. T. Zhou, J.-H. Cho, and **C. Wu**, "Structure Detection for Contextual Reinforcement Learning," in *Proceedings of the AAAI Conference on Artificial Intelligence (AAAI)*, [17.6% acceptance rate], Jan. 2026.

35. F. Berto, C. Hua, J. Park, L. Luttmann, Y. Ma, F. Bu, J. Wang, H. Ye, M. Kim, S. Choi, N. G. Zepeda, A. Hottung, J. Zhou, J. Bi, Y. Hu, F. Liu, H. Kim, J. Son, H. Kim, D. Angioni, W. Kool, Z. Cao, Q. Zhang, J. Kim, J. Zhang, K. Shin, **C. Wu**, S. Ahn, G. Song, C. Kwon, K. Tierney, L. Xie, and J. Park, "RL4CO: An Extensive Reinforcement Learning for Combinatorial Optimization Benchmark," in *ACM SIGKDD Conference on Knowledge Discovery and Data Mining (KDD)*, [22% acceptance rate] **Oral**, Aug. 2025. DOI: 10.1145/3711896.3737433.

34 J.-H. Cho, S. Li, J. Kim, and **C. Wu**, "Temporal Transfer Learning for Traffic Optimization with Coarse-grained Advisory Autonomy," *IEEE Transactions on Robotics (T-RO)*, 2025.

33 A. Hasan, N. Chakraborty, H. Chen, **C. Wu**, and K. Driggs-Campbell, "Lessons in Cooperation: Driver Sentiments towards Real-Time Advisory Systems," *IEEE Intelligent Transportation Systems Magazine (ITSM)*, 2025, ISSN: 1939-1390. DOI: 10.1109/MITS.2025.3555564.

32 V. Jayawardana, B. Freydt, A. Qu, C. Hickert, Z. Yan, and **C. Wu**, "IntersectionZoo: Eco-driving for Benchmarking Multi-Agent Contextual Reinforcement Learning," in *International Conference on Learning Representations (ICLR)*, [32% acceptance rate], Apr. 2025.

31 V. Jayawardana, B. Freydt, A. Qu, C. Hickert, E. R. Sanchez, C. Tang, M. Taylor, B. Leonard, and **C. Wu**, "Mitigating Metropolitan Carbon Emissions with Dynamic Eco-driving at Scale," *Transportation Research Part C: Emerging Technologies (TRC)*, Apr. 2025. DOI: 10.1016/j.trc.2025.105146.

30 J. Kim, J.-H. Cho, and **C. Wu**, "Reinforcement Learning for Robust Advisories under Driving Compliance Errors," *IEEE Transactions on Intelligent Transportation Systems (T-ITS)*, 2025, ISSN: 1524-9050. DOI: 10.1109/TITS.2025.3550418.

29 S. Li, J. Kulkarni, I. Menache, **C. Wu**, and B. Li, "Towards Foundation Models for Mixed Integer Linear Programming," in *International Conference on Learning Representations (ICLR)*, [32% acceptance rate], Apr. 2025.

28 S. Li, W. Ouyang, Y. Ma, and **C. Wu**, "Learning-Guided Rolling Horizon Optimization for Long-Horizon Flexible Job Shop Scheduling," in *International Conference on Learning Representations (ICLR)*, [32% acceptance rate] **MIT Home Page Feature**, Apr. 2025.

27 M. U. B. Niazi, J.-H. Cho, M. A. Dahleh, R. Dong, and **C. Wu**, "Eco-driving Incentive Mechanisms for Mitigating Emissions in Urban Transportation," *IEEE Transactions on Control of Network Systems (T-CNS)*, Oct. 2025. DOI: 10.1109/TCNS.2025.3623943.

26 A. Qu and **C. Wu**, "Revisiting the Correlation Between Simulated and Field-observed Conflicts Using Large-scale Traffic Reconstruction," *Accident Analysis & Prevention (AAP)*, vol. 210, p. 107 808, Feb. 2025, ISSN: 0001-4575. DOI: 10.1016/j.aap.2024.107808.

25 T. Zhou, J.-H. Cho, and **C. Wu**, "The Nah Bandit: Modeling User Non-Compliance in Recommendation Systems," *IEEE Transactions on Control of Network Systems (T-CNS)*, 2025.

24 Y. Zhu, S. Wang, W. Zhong, N. Shen, Y. Li, S. Wang, Z. Li, **C. Wu**, Z. He, and L. Li, "A Survey on Large Language Model-empowered Autonomous Driving," *Engineering*, 2025. DOI: 10.48550/arXiv.2409.14165.

23 S.-H. Chan, Z. Chen, T. Guo, H. Zhang, Y. Zhang, D. Harabor, S. Koenig, **C. Wu**, and J. Yu, "The League of Robot Runners Competition: Goals, Designs, and Implementation," in *International Conference on Automated Planning and Scheduling (ICAPS) Demonstration Track*, [21.6% acceptance rate], Jun. 2024.

22 J.-H. Cho, V. Jayawardana, S. Li, and **C. Wu**, "Model-Based Transfer Learning for Contextual Reinforcement Learning," in *Advances in Neural Information Processing Systems (NeurIPS)*, [26% acceptance rate], vol. 37, Dec. 2024, pp. 88 279–88 319.

21 A. Hasan, N. Chakraborty, H. Chen, **C. Wu**, and K. Driggs-Campbell, "Cooperative Advisory Residual Policies for Congestion Mitigation," *ACM Journal on Autonomous Transportation Systems (JATS)*, vol. 2, no. 2, pp. 1–31, Dec. 2024. DOI: 10.1145/3699519.

20 V. Jayawardana, S. Li, **C. Wu**, Y. Farid, and K. Oguchi, "Generalizing Cooperative Eco-driving via Multi-residual Task Learning," in *2024 IEEE International Conference on Robotics and Automation (ICRA)*, Yokohama, Japan: IEEE, May 2024, pp. 6836–6842, ISBN: 979-8-3503-8457-4. DOI: 10.1109/ICRA57147.2024.10610586.

19 S. Li, R. Dong, and **C. Wu**, "Hybrid System Stability Analysis of Multi-Lane Mixed-Autonomy Traffic," *IEEE Transactions on Robotics (T-RO)*, vol. 40, pp. 4469–4489, Aug. 2024. DOI: 10.1109/TRO.2024.3443504.

18 D. Suo*, V. Jayawardana*, and **C. Wu**, "Model-free Learning of Corridor Clearance: A Near-term Deployment Perspective," *IEEE Transactions on Intelligent Transportation Systems (T-ITS)*, 2024, ISSN: 1524-9050. DOI: 10.1109/TITS.2023.3344473.

17 Y. Tang, A. Qu, X. Jiang, B. Mo, S. Cao, J. Rodriguez, H. N. Koutsopoulos, **C. Wu**, and J. Zhao, "Robust Reinforcement Learning Strategies with Evolving Curriculum for Efficient Bus Operations in Smart Cities," *Smart Cities*, vol. 7, no. 6, pp. 3658–3677, Nov. 2024, ISSN: 2624-6511. DOI: 10.3390/smartcities7060141.

16 Z. Yan, H. Zheng, and **C. Wu**, "Multi-agent Path Finding for Cooperative Autonomous Driving," in *2024 IEEE International Conference on Robotics and Automation (ICRA)*, Yokohama, Japan: IEEE, May 2024, pp. 12 361–12 367, ISBN: 979-8-3503-8457-4. DOI: 10.1109/ICRA57147.2024.10611649.

15 Z. Yan and **C. Wu**, "Neural Neighborhood Search for Multi-agent Path Finding," in *International Conference on Learning Representations (ICLR)*, [31% acceptance rate] **MIT Home Page Feature**, 2024.

14 C. Hickert, S. Li, and **C. Wu**, "Cooperation for Scalable Supervision of Autonomy in Mixed Traffic," *IEEE Transactions on Robotics (T-RO)*, vol. 39, no. 4, pp. 2751–2769, Dec. 2023, ISSN: 1552-3098. DOI: 10.1109/TRO.2023.3262120.

13 S. Li, R. Dong, and **C. Wu**, "Integrated Analysis of Coarse-grained Control for Traffic Flow Stability," *IEEE Transactions on Control of Network Systems (T-CNS)*, Dec. 2023. DOI: 10.1109/TCNS.2023.3338234.

12 S. Li*, W. Ouyang*, M. Paulus, and **C. Wu**, "Learning to Configure Separators in Branch-and-Cut," in *Advances in Neural Information Processing Systems (NeurIPS)*, [26% acceptance rate] **MIT Home Page Feature**, Dec. 2023.

11 V. Jayawardana, C. H. Tang, S. Li, D. Suo, and **C. Wu**, "The Impact of Task Underspecification in Evaluating Deep Reinforcement Learning," in *Advances in Neural Information Processing Systems (NeurIPS)*, [26% acceptance rate], Oct. 2022. DOI: 10.48550/arxiv.2210.08607.

10 Z. Yan, A. R. Kreidieh, E. Vinitsky, A. M. Bayen, and **C. Wu**, "Unified Automatic Control of Vehicular Systems with Reinforcement Learning," *IEEE Transactions on Automation Science and Engineering (T-ASE)*, vol. 20, no. 2, pp. 789–804, Apr. 2022, ISSN: 1558-3783. DOI: 10.1109/TASE.2022.3168621.

9 S. Li*, Z. Yan*, and **C. Wu**, "Learning to Delegate for Large-scale Vehicle Routing," in *Advances in Neural Information Processing Systems (NeurIPS)*, [26% acceptance rate] **Spotlight (3%)**, vol. 34, Dec. 2021, pp. 26 198–26 211.

8 **C. Wu**, A. R. Kreidieh, K. Parvate, E. Vinitsky, and A. M. Bayen, "Flow: A Modular Learning Framework for Mixed Autonomy Traffic," *IEEE Transactions on Robotics (T-RO)*, vol. 38, no. 2, pp. 1270–1286, Jul. 2021, ISSN: 1941-0468. DOI: 10.1109/TRO.2021.3087314.

7 **C. Wu**, A. Pozdnukhov, and A. M. Bayen, "Block Simplex Signal Recovery: Methods, Trade-offs, and an Application to Routing," *IEEE Transactions on Intelligent Transportation Systems (T-ITS)*, vol. 21, no. 4, pp. 1547–1559, May 2019. DOI: 10.1109/TITS.2019.2914174.

6 E. Vinitsky, A. Kreidieh, L. Le Flem, N. Kheterpal, K. Jang, **C. Wu**, F. Wu, R. Liaw, E. Liang, and A. M. Bayen, "Benchmarks for Reinforcement Learning in Mixed-autonomy Traffic," in *2nd Annual Conference on Robot Learning (CoRL)*, PMLR, Oct. 2018, pp. 399–409.

5 **C. Wu**, A. M. Bayen, and A. Mehta, "Stabilizing Traffic with Autonomous Vehicles," in *2018 IEEE International Conference on Robotics and Automation (ICRA)*, IEEE, IEEE, May 2018, pp. 6012–6018. DOI: 10.1109/ICRA.2018.8460567.

4 **C. Wu**, A. Rajeswaran, Y. Duan, V. Kumar, A. M. Bayen, S. Kakade, I. Mordatch, and P. Abbeel, "Variance Reduction for Policy Gradient with Action-dependent Factorized Baselines," in *International Conference on Learning Representations (ICLR)*, [25% acceptance rate] **Oral (2%)**, 2018.

3 **C. Wu**, A. Kreidieh, E. Vinitsky, and A. M. Bayen, "Emergent Behaviors in Mixed-autonomy Traffic," in *1st Annual Conference on Robot Learning (CoRL)*, [29% acceptance rate], vol. 78, PMLR, 2017, pp. 398–407.

2 **C. Wu**, J. Thai, S. Yadlowsky, A. Pozdnoukhov, and A. Bayen, "Cellpath: Fusion of Cellular and Traffic Sensor Data for Route Flow Estimation via Convex Optimization," in *International Symposium on Transportation and Traffic Theory (ISTTT)*, ser. 21st International Symposium on Transportation and Traffic Theory Kobe, Japan, 5-7 August, 2015, vol. 7, Jan. 2015, pp. 212–232. DOI: 10.1016/j.trpro.2015.06.012.

1 **C. Wu**, J. Thai, S. Yadlowsky, A. Pozdnoukhov, and A. Bayen, "Cellpath: Fusion of Cellular and Traffic Sensor Data for Route Flow Estimation via Convex Optimization," *Transportation Research Part C: Emerging Technologies (TR-C)*, vol. 59, pp. 111–128, Oct. 2015, ISSN: 0968090X. DOI: 10.1016/j.trc.2015.05.004.

Additional conference publications

25 C. Hickert, Z. Yan, and **C. Wu**, "A Data-Informed Analysis of Scalable Supervision for Safety in Autonomous Vehicle Fleets," in *IEEE/RSJ International Conference on Intelligent Robots and Systems (IROS)*, 2024. DOI: 10.1109/IROS58592.2024.10801392.

24 M. U. B. Niazi, J.-H. Cho, M. A. Dahleh, R. Dong, and **C. Wu**, "Incentive Design for Eco-driving in Urban Transportation Networks," in *2024 European Control Conference (ECC)*, Stockholm, Sweden: IEEE, Jun. 2024, pp. 986–991, ISBN: 978-3-907144-10-7. DOI: 10.23919/ECC64448.2024.10591068.

23 Z. Yan and **C. Wu**, "Scalability of Platoon-based Coordination for Mixed Autonomy Intersections," in *IEEE/RSJ International Conference on Intelligent Robots and Systems (IROS)*, 2024. DOI: 10.1109/IROS58592.2024.10801701.

22 H. Zheng, Z. Yan, and **C. Wu**, "Multi-agent Path Finding for Mixed Autonomy Traffic Coordination," in *IEEE/RSJ International Conference on Intelligent Robots and Systems (IROS)*, 2024. DOI: 10.1109/IROS58592.2024.10802051.

21 T. Zhou, J.-H. Cho, B. R. Ardabili, H. Tabkhi, and **C. Wu**, "Expert with clustering: Hierarchical online preference learning framework," in *Proceedings of the 6th Annual Learning for Dynamics & Control Conference (L4DC)*, A. Abate, M. Cannon, K. Margellos, and A. Papachristodoulou, Eds., ser. Proceedings of Machine Learning Research, vol. 242, PMLR, Jul. 2024, pp. 707–718.

20 A. Hasan, N. Chakraborty, H. Chen, J.-H. Cho, **C. Wu**, and K. Driggs-Campbell, "PeRP: Personalized Residual Policies For Congestion Mitigation Through Co-operative Advisory Autonomy," in *International Conference on Intelligent Transportation Systems (ITSC)*, Sep. 2023.

19 S. Jayawardana, V. Jayawardana, K. Vidanage, and **C. Wu**, "Multi-behavior Learning for Socially Compatible Autonomous Driving," in *International Conference on Intelligent Transportation Systems (ITSC)*, Sep. 2023.

18 S. Li, R. Dong, and **C. Wu**, "Stabilization Guarantees of Human-Compatible Control via Lyapunov Analysis," in *European Control Conference (ECC)*, 2023, pp. 1–8. DOI: 10.23919/ECC57647.2023.10178170.

17 A. Qu, A. Valiveru, C. Tang, V. Jayawardana, B. Freydt, and **C. Wu**, "What is a Typical Signalized Intersection in a City? A Pipeline for Intersection Data Imputation from OpenStreetMap," in *Transportation Research Board (TRB) Annual Meeting*, Jan. 2023.

16 D. A. Abbink, P. Hao, J. Laval, S. Shalev-Shwartz, **C. Wu**, T. Yang, S. Hamdar, D. Chen, Y. Xie, X. Li, and M. Haque, "Artificial Intelligence for Automated Vehicle Control and Traffic Operations: Challenges and Opportunities," in *Road Vehicle Automation 8*, G. Meyer and S. Beiker, Eds., ser. Lecture Notes in

Mobility, Cham: Springer International Publishing, 2022, pp. 60–72, ISBN: 978-3-030-80063-5. DOI: 10.1007/978-3-030-80063-5_6.

15 V. Jayawardana and **C. Wu**, "Learning Eco-Driving Strategies at Signalized Intersections," in *2022 European Control Conference (ECC)*, **MIT Home Page Feature**, London, United Kingdom: IEEE, Jul. 2022, pp. 383–390, ISBN: 978-3-907144-07-7. DOI: 10.23919/ECC55457.2022.9838000.

14 H. Wei, G. Sheron, **C. Wu**, S. Chawla, and Z. Li, "The Third Workshop on Data-driven Intelligent Transportation," in *Proceedings of the 31st ACM International Conference on Information & Knowledge Management*, Atlanta GA USA: ACM, Oct. 2022, pp. 5177–5178, ISBN: 978-1-4503-9236-5. DOI: 10.1145/3511808.3557496. (visited on 07/14/2023).

13 D. Zhuang, Y. Huang, V. Jayawardana, J. Zhao, D. Suo, and **C. Wu**, "The Braess's Paradox in Dynamic Traffic," in *2022 IEEE 25th International Conference on Intelligent Transportation Systems (ITSC)*, Macau, China: IEEE, Oct. 2022, pp. 1018–1023, ISBN: 978-1-6654-6880-0. DOI: 10.1109/ITSC55140.2022.9921998.

12 V. Jayawardana, A. Landler, and **C. Wu**, "Mixed autonomous supervision in traffic signal control," in *2021 IEEE International Intelligent Transportation Systems Conference (ITSC)*, IEEE, Sep. 2021, pp. 1767–1773. DOI: 10.1109/ITSC48978.2021.9565053.

11 M. Sridhar and **C. Wu**, "Piecewise constant policies for human-compatible congestion mitigation," in *2021 IEEE International Intelligent Transportation Systems Conference (ITSC)*, IEEE, Sep. 2021, pp. 2499–2505. DOI: 10.1109/ITSC48978.2021.9564789.

10 Z. Yan and **C. Wu**, "Reinforcement learning for mixed autonomy intersections," in *2021 IEEE International Intelligent Transportation Systems Conference (ITSC)*, Nov. 2021, pp. 2089–2094. DOI: 10.1109/ITSC48978.2021.9565000.

9 N. Kheterpal, K. Parvate, **C. Wu**, A. Kreidieh, E. Vinitsky, and A. M. Bayen, "Flow: Deep Reinforcement Learning for Control in SUMO," in *SUMO 2018- Simulating Autonomous and Intermodal Transport Systems*, ser. EPiC Series in Engineering, vol. 2, Jun. 2018, pp. 134–151. DOI: 10.29007/dkzb.

8 A. R. Kreidieh, **C. Wu**, and A. M. Bayen, "Dissipating stop-and-go waves in closed and open networks via deep reinforcement learning," in *2018 21st International Conference on Intelligent Transportation Systems (ITSC)*, IEEE, 2018, pp. 1475–1480. DOI: 10.1109/ITSC.2018.8569485.

7 E. Vinitsky, K. Parvate, A. Kreidieh, **C. Wu**, and A. Bayen, "Lagrangian control through deep-RL: Applications to bottleneck decongestion," in *2018 21st International Conference on Intelligent Transportation Systems (ITSC)*, IEEE, Nov. 2018, pp. 759–765. DOI: 10.1109/ITSC.2018.8569615.

6 **C. Wu**, K. Parvate, N. Kheterpal, L. Dickstein, A. Mehta, E. Vinitsky, and A. M. Bayen, "Framework for control and deep reinforcement learning in traffic," in *2017 IEEE 20th International Conference on Intelligent Transportation Systems (ITSC)*, IEEE, Oct. 2017, pp. 1–8. DOI: 10.1109/ITSC.2017.8317694.

5 **C. Wu**, E. Vinitsky, A. Kreidieh, and A. Bayen, "Multi-lane reduction: A stochastic single-lane model for lane changing," in *2017 IEEE 20th International Conference on Intelligent Transportation Systems (ITSC)*, IEEE, Oct. 2017, pp. 1–8. DOI: 10.1109/ITSC.2017.8317733.

4 **C. Wu**, E. Kamar, and E. Horvitz, "Clustering for set partitioning with a case study in ridesharing," in *2016 IEEE 19th International Conference on Intelligent Transportation Systems (ITSC)*, **Best paper award honorable mention**, IEEE, Nov. 2016, pp. 1384–1388. DOI: 10.1109/ITSC.2016.7795738.

3 **C. Wu**, K. Shankari, E. Kamar, R. Katz, D. Culler, C. Papadimitriou, E. Horvitz, and A. Bayen, "Optimizing the diamond lane: A more tractable carpool problem and algorithms," in *2016 IEEE 19th International Conference on Intelligent Transportation Systems (ITSC)*, IEEE, Nov. 2016, pp. 1389–1396. DOI: 10.1109/ITSC.2016.7795739.

2 J. Thai, **C. Wu**, A. Pozdnukhov, and A. Bayen, "Projected sub-gradient with ℓ_1 or simplex constraints via isotonic regression," in *2015 54th IEEE Conference on Decision and Control (CDC)*, Dec. 2015, pp. 2031–2036. DOI: 10.1109/CDC.2015.7402505.

1 S. Yadlowsky, J. Thai, **C. Wu**, A. Pozdnukhov, and A. Bayen, "Link density inference from cellular infrastructure," in *Transportation Research Board (TRB) 94th Annual Meeting*, 2014.

Other writing

7 **C. Wu**, B. Ghosh, Z. Zheng, and I. Martínez, *Reproducibility in transportation research: A hands-on tutorial*, 2024.

6 T. K. Gilbert, **C. Wu**, and M. Dennis, *Steering Innovation for Autonomous Vehicles Towards Societally Beneficial Outcomes*, Jun. 2021.

5 B. Hecht, L. Wilcox, J. P. Bigham, J. Schöning, E. Hoque, J. Ernst, Y. Bisk, L. D. Russis, L. Yarosh, B. Anjum, D. Contractor, and **C. Wu**, *It's Time to Do Something: Mitigating the Negative Impacts of Computing Through a Change to the Peer Review Process*, Mar. 2018.

4 **C. Wu**, E. Vinitsky, A. Kreidieh, F. Wu, K. Jang, K. Parvate, M. Gibson, Y. Z. Farid, and A. Bayen, *Tutorial on Deep Reinforcement Learning and Transportation*, 2018.

3 **C. Wu**, *Traffic Jammin': Making automated transportation a reality*, May 2016.

2 D. Aranki*, R. Dobbe*, J. F. Fisac*, and C. Wu*, *Automating us: The entanglement of people and machines*, Nov. 2015.

1 **C. Wu**, *How to Lead a Technical Reading Group*, 2012.

Professional service

Professional Society Service

2025-2028 REproducible Research In Transportation Engineering (RERITE) Working Group, *Chair of Steering Committee* Link: https://www.rerite.org/

2024–... REproducible Research In Transportation Engineering (RERITE) Working Group, *Co-founder* Link: https://www.rerite.org/

2024-2026 IEEE Intelligent Transportation Systems Society (ITSS), *Board of Governors* Link: https://ieee-itss.org/about/bog

2025 TRB Standing Committee on Traffic Flow Theory and Characteristics (ACP50), *Committee Member*

NSF Cyber-Physical Systems (CPS) PI Meeting, *Technical Program Committee* Link: https://cps-vo.org/group/cps-pimtg25

2024 National Academy of Engineering (NAE), China-America Frontiers of Engineering (CAFOE), *Organizer, Session on AI for Transportation* CAFOE hosts a biennial symposium of 60 outstanding, early-career Chinese and American engineers, with the aim of building collaborative networks of engineers from the two countries.

2024–... IEEE ITSS Conferences and Meetings Committee, *Appointed Member*

2021–... *Early Career Editorial Advisory Board (EAB) Member*, Transportation Research: Part C (TR-C) Link: https://www.sciencedirect.com/journal/transportation-research-part-c-emerging-technologies

2017–2019 ACM Future of Computing Academy, *Chair of Interdisciplinary Research Working Group*

2009–2012 MIT IEEE/ACM Student Chapter, *Special Projects Chair, Treasurer, and Webmaster*

Professional service (continued)

Editorial and Conference Service

2025-2028 — *Associate Editor*, Transportation Research: Part C (TR-C) Link: https://www.sciencedirect.com/journal/transportation-research-part-c-emerging-technologies

2025 — *Program Chair*, Reinforcement Learning Conference (RLC)

Associate Editor, IEEE International Conference on Robotics and Automation (ICRA)

2024 — *Area Chair*, Conference on Neural Information Processing Systems (NeurIPS)

Area Chair, International Conference on Machine Learning (ICML)

2024– . . . — *Guest Editor*, European Transport Research Review, Open Access Topical Collection on Reproducible Research in Transportation

2024 — *Program Committee*, Conference in Emerging Technologies in Transportation Systems (TRC-30), in commemoration of the 30th Anniversary of the Transportation Research: Part C (TR-C) journal

2020 — *Program Committee*, Learning for Dynamics and Control (L4DC) Conference

Program Committee, TRB Innovations in Travel Modeling (ITM) Conference

2018 — *Program Committee*, Conference on Robot Learning (CoRL)

Session Co-chair, IEEE Intelligent Transportation Systems Conference (ITSC)

Institutional Service

2025– . . . — CEE PhD Admissions, Systems & Transportation Area, *Lead*

LIDS Computing and Sustainability Seminar, *Co-organizer*

2024– . . . — LIDS Building 45 Space Committee, *Member*

2020– . . . — MIT College of Computing (CoC), Common Ground Standing Committee, Subcommittee on ML, AI, DS, and Algorithms in Engineering, Science, and Social Science, *Member*
The mandate of this committee is to help realize a vision of multi-department teaching of computing-related curricula among academic units across MIT, to create a 'bilingual' generation of engineers and scientists who are fluent in computing.

2019– . . . — MIT CEE Graduate Education Committee, *Member*

2025 — Roos Thesis Award, *Awards Committee Member*

CEE Awards Ceremony M.Eng. Best Poster, *Awards Committee Member*

2020, 2023 — MIT CEE Research Day Symposium, *Organizer*

2019–2022 — MIT LIDS Seminar, *Co-organizer*

2017–2018 — UC Berkeley AI Research (BAIR) Undergraduate Mentoring Program, *Graduate Mentor*

2013–2015 — UC Berkeley EECS Graduate Admissions, Diversity Subcommittee (CS), *Member*

UC Berkeley Women in Computer Science and Engineering (WICSE), K12 outreach, *Member*

2013–2017 — UC Berkeley, EECS NSF GRFP Applicant Workshop, *Panelist*

Professional service (continued)

Community Organization

2022– . . . *Competition Chair*, The League of Robot Runners (LoRR)
Available: https://www.leagueofrobotrunners.org/
LoRR, sponsored by Amazon Robotics, is a competition where participants tackle one of the most complex optimization challenges: the coordination of multiple moving robots, which is important for industrial applications such as warehouse logistics, transportation and advanced manufacturing.

2026 *Organizer*, Autonomous Agents and Multiagent Systems (AAMAS), League of Robot Runners Competition
Available: https://sites.google.com/view/diffcoalg2025

Organizer, IV Workshop on Trustworthy and Open Science for Intelligent Vehicles: Datasets, Benchmarks, and Testbeds
Available: https://www.rerite.org/ivs-2026/

Organizer, IV Workshop on Safe and Trustworthy Motion Planning subject to Perception and Sensor Network Uncertainties in ITS

2025 *Organizer*, NeurIPS Workshop on Differentiable Learning of Combinatorial Algorithms: From Theory To Practice
Available: https://sites.google.com/view/diffcoalg2025

Organizer, ITSC Reproducibility in Transportation Research: A Hands-on Tutorial 2.0 – Reproducible Manuscripts
Available: https://zuduozheng.github.io/RERITE_TUTORIAL_2.0/

Organizer, RLC Workshop on Practical Insights into RL for Real Systems (RL4RS)
Available: https://rl4rs.github.io/RL4RS/

Organizer, CPS-IoT Week Workshop on Going Public with Your CPS Code and Data
Available: https://cps-vo.org/group/2025CPSTutorial

2024 *Organizer*, ITSC Reproducibility in Transportation Research: A Hands-on Tutorial
Available: https://www.rerite.org/itsc24-rr-tutorial/
The first tutorial on reproducibility for transportation research, with the goal of arming participants not only with the principles, but also the practical knowledge to make their research reproducible. Participants create a traffic simulation project that someone can reproduce in less than 5 minutes, and learn how to organize the project to make it understandable.

Organizer, RSS Workshop on Autonomous Vehicles Across Scales (AVAS)
Available: https://www.youtube.com/playlist?list=PLVJEb_y9MYLL9q14NDxTjQXOFMwb6uPGz

Organizer, ICML Workshop on Foundation Models in the Wilds

2023 *Organizer*, IEEE CDC Invited Session on Learning and Control for Accessible, Safe, and Equitable Transportation Systems with Mixed Traffic

2022 *Organizer*, CIKM Workshop on Data-driven Intelligent Transportation

2021 *Organizer*, Automated Road Transportation Symposium (ARTS), Session on Environmental, Economic, and Social Impacts of AV Use

2019 *Organizer*, IEEE Conference on Decision and Control (CDC) Workshop on Lagrangian Control for Traffic Flow Smoothing in Mixed Autonomy Settings

Organizer, IEEE ITSC Special Session on Transportation and Reinforcement Learning (TRL)

Organizer, ACM KDD Workshop on Data-Driven Intelligent Transportation (TID)

Professional service (continued)

2018 — *Organizer*, ITSC Tutorial on Deep Reinforcement Learning and Transportation
Available: `https://flow-project.github.io/tutorial.html`
This tutorial provides an introduction to deep reinforcement learning, including formal and algorithmic foundation, state-of-the-art practices, case studies in transportation, and a hands-on tutorial for getting started.

Organizer, ITSC Workshop on Reinforcement Learning for Transportation
Available: `https://sites.google.com/view/itsc18-rl/home`

Proposal Referee

2025 — *Reviewer*, MIT Generative AI Impact Consortium

2019, 2020, 2022 — *Panelist*, NSF Cyber-Physical Systems (CPS)

2020, 2021 — *Reviewer*, C3.ai Digital Transformation Institute (DTI)

Journal Referee

- Transportation Research: Part C (TR-C)
- Journal of Machine Learning Research (JMLR)
- IEEE Transactions on Intelligent Transportation Systems (T-ITS)
- Nature
- Science Advances

Conference Referee

- Conference on Neural Information Processing Systems (NeurIPS)
- International Conference on Machine Learning (ICML)
- IEEE International Conference on Robotics and Automation (ICRA)
- International Symposium on Transportation and Traffic Theory (ISTTT)
- IEEE Conference on Intelligent Transportation Systems (ITSC)
- Conference on Robot Learning (CoRL)
- IEEE Conference on Decision and Control (CDC)

Professional Memberships

2024– . . . — IEEE ITSS Technical Committee on Automated Mobility in Mixed Traffic, *Board Member*

- IEEE ITSS Technical Committee on Cooperative and Connected Vehicles
- IEEE RAS Technical Committee on Multi-Robot Systems
- IEEE RAS Technical Committee on Autonomous Ground Vehicles and Intelligent Transportation Systems

2022– . . . — American Society of Civil Engineers (ASCE)

2021– . . . — IEEE Intelligent Transportation Systems Society (ITSS)

2014– . . . — IEEE Young Professionals

2011– . . . — Institute of Electrical and Electronics Engineers (IEEE)

Selected talks

Keynotes and Distinguished Talks

2025 — **What If We Could Design Societal-Scale Systems That Just Work?** MIT Campus Preview Weekend (CPW). *Keynote.*

Selected talks (continued)

2024 **Learning-guided Optimization for Mobility** Conference in Emerging Technologies in Transportation Systems (TRC-30), 30th year Anniversary of Transportation Research: Part C Journal. *Keynote.* Available: `https://www.youtube.com/watch?v=4XIG-bMH8hI`

Applications of Reinforcement Learning Reinforcement Learning Conference (RLC). *Keynote Panelist.*

2022 **Cities as Robots: Scalability, Variability, and Operations** IFAC Conference on Networked Systems (NecSys). *Plenary speaker.*

2021 **How Cities Can Reshape Cars** TEDxMIT. *Invited speaker.* Available: `https://www.youtube.com/watch?v=mrk8I-9iLs4`

2020 **Future of AI in Transportation** Transportation Research Board (TRB) Executive Committee Policy Session on Artificial Intelligence in Transportation. *Invited expert.*

2019 **Learning and Optimization for Mixed Autonomy Systems - A Mobility Context** IEEE ITSC Awards Session. *ITSS Best Dissertation Award Talk.*

Integrating Autonomy into Transportation Systems Microsoft Research Lab, New England. *Colloquium talk.*

2018 **Simulation and HPC for Mixed-Autonomy Mobility** International Supercomputing Conference (ISC). *Distinguished talk.*

Academic

2026 **Generative Microscopic Traffic Simulation Enabled by I-24 MOTION** I-24 MOTION Open House. *Invited Speaker.*

What If We Could Design Transportation Systems 10x Faster and Cheaper? A moonshot for AI in Transportation 28th COTA Winter Symposium at the TRB Annual Meeting 2026. *Invited Speaker.*

2025 **Towards AI-Assisted Optimization for Transportation System Design** University of Queensland, Australia, Host: Professor Zuduo Zheng. *Invited Speaker.*

Mitigating Metropolitan Carbon Emissions with Dynamic Eco-driving at Scale ITSC 2025 Workshop on Automated Mobility in Mixed Traffic. *Invited Speaker.*

Noise-Aware Generative Microscopic Traffic Simulation ITSC 2025 DriveX: Workshop on Foundation Models for V2X-based Cooperative Autonomous Driving. *Invited Speaker.*

Learning-Guided Rolling Horizon Optimization for Long-Horizon Flexible Job-Shop Scheduling INFORMS 2025. *Invited Speaker.*

Towards AI-Assisted Optimization for Transportation System Design Georgia Tech ISYE Seminar, Host: Professor Pascal Van Hentenryck. *Invited Speaker.*

What If We Could Design Transportation Systems 10x Faster and Cheaper? A moonshot for AI in Transportation MIT CEE Visiting Committee. *Invited Speaker.*

Mitigating Metropolitan Carbon Emissions with Dynamic Eco-driving at Scale ICCV 2025: X-Sense: Ego-Exo Sensing for Smart Mobility Workshop. *Invited Speaker.*

Learning-Guided Optimization for Mobility 29th IEEE High Performance Extreme Computing (HPEC) Virtual Conference. *Invited Speaker.*

Mitigating Metropolitan Carbon Emissions with Dynamic Eco-driving at Scale TRB Conference on Data and AI for Transportation Advancement (TRB DATA). *Invited Speaker.*

Towards Accelerating Transportation Research: Measuring the State of Transparency Practices TRB Conference on Data and AI for Transportation Advancement (TRB DATA). *Invited Speaker.*

Selected talks (continued)

- **Learning-Guided Optimization for Multi-agent Path Finding using Graph Neural Networks** MIT Lincoln Lab Graph Exploitation Symposium (GraphEx). *Invited Speaker.*
- **Learning-Guided Optimization for Mobility** MIT Operations Research Center (ORC) Seminar, Host: Professor Daniel Freund. *Invited Speaker.*
- **Reliable Contextual Reinforcement Learning** MIT IDSS Faculty and Senior Staff Lunch Seminar. *Invited Speaker.*
- **Artificial Intelligence for Designing Next-generation Mobility Systems** NYU Transportation Engineering. *Invited Guest Lecturer.*
- **Sensitivity of Deep Reinforcement Learning to Task Variations** 2025 NSF CPS PI Meeting Workshop on Open Problems for CPS in the Age of AI. *Invited Speaker.*
- **Sustainable Computing: Systems and AI** Women in Data Science (WiDS) Cambridge 2025. *Invited Panelist.*
- **Learning-Guided Optimization for Mobility** Discrete Optimization Talks (DOT). *Invited Speaker.* Available: `https://www.youtube.com/watch?v=8PSb79IhnK8`
- **Model-Based Transfer Learning for Contextual Multi-Agent Traffic** AAAI Workshop on Multi-Agent Reinforcement Learning for Transportation Autonomy (MALTA). *Keynote.*
- **Model-Based Transfer Learning for Contextual Reinforcement Learning** Princeton Alg-ML Seminar, Host: Professor Elad Hazan. *Invited Speaker.*
- **Skeletons in the Reinforcement Learning Closet** AFOSR AI Roadmap Workshop. *Invited Speaker.*
- **Learning-Guided Optimization for Mobility** UC Berkeley CITRIS Autonomy Series, Host: Professor Alexandre Bayen. *Invited Speaker.*
- **Try, Try Again: A Story of Applying Deep RL** NSF Workshop on Reinforcement Learning, Panel on Bridge Theory and Practice. *Invited Panelist.* Available: `https://youtu.be/1ZgLCXJ56Sg?si=HA2vBqJf4ta-zEvG&t=1143`
- **Learning-guided Optimization for Mobility** 8th NYUAD Transportation Symposium, Host: Professor Samer Madanat. *Invited Speaker.*
- **Advancing Highway Microsimulation with I-24 MOTION** I-24 MOTION Open House, co-located with TRB Annual Meeting. Host: Professor Dan Work. *Invited Speaker.*

2024

- **Model-Based Transfer Learning for Contextual Reinforcement Learning** Koenig Lab Seminar, Host: Professor Sven Koenig. *Invited Speaker.*
- **Artificial Intelligence for Designing Next-generation Mobility Systems** MIT 6.3950 AI, Decision Making, and Society. *Invited Guest Lecturer.*
- **Proximity and Mobility** MIT Senseable Cities Lab Forum on Future Cities. *Invited Panelist.*
- **Cooperation for Scalable Supervision of Autonomy in Mixed Traffic** INFORMS Annual Meeting, Invited Session on Autonomous Vehicle Operations. *Invited Speaker.*
- **Model-Based Transfer Learning for Contextual Reinforcement Learning** University of Alberta Machine Learning Seminar, Host: Professor Adam White. *Invited Speaker.*
- **Model-Based Transfer Learning for Mixed Autonomy Traffic** IEEE International Conference on Intelligent Transportation Systems (ITSC), Workshop on Automated Mobility in Emerging Mixed Traffic. *Invited Speaker.*
- **Learning-guided Optimization for Mobility** Future Intelligence (FI) Talks. *Invited Speaker.* Available: `https://www.youtube.com/watch?v=-R6eNga4roQ`
- **Model-Based Transfer Learning for Multi-agent Systems** Reinforcement Learning Conference (RLC), Workshop on Coordination and Cooperation in Multi-Agent Reinforcement Learning (CoCoMARL). *Invited Speaker.*

Selected talks (continued)

- **Challenges surrounding RL deployment** Reinforcement Learning Conference (RLC), Workshop on Deployable RL (DepRL). *Invited Panelist.*
- **Learning for Generalizability in Multi-agent Mobility Systems** Cambridge University Robotics Seminar, Host: Professor Amanda Prorok. *Invited Speaker.*
- **Reinforcement Learning and Learning-guided Search for Generalizability in Transportation** Georgia Tech AI4OPT Seminar, Host: Professor Vidya Muthukumar. *Invited Speaker.*
- **Learning-guided Search for Generalizability in Transportation** MIT Center for Transportation and Logistics (CTL) Seminar. *Invited Speaker.*
- **Learning-guided Search for Generalizability in Transportation** Institute for Software Integrated Systems (ISIS) Seminar, Vanderbilt University, Host: Professor Jonathan Sprinkle. *Invited Speaker.*
- **Learning-guided Search for Generalization in Transportation** Next Generation Transportation Systems (NGTS) Seminar, University of Michigan, Host: Professor Neda Masoud. *Invited Speaker.*
- **Straddling Model-based and Model-free for Heterogeneity in Transportation** Northwestern University Transportation Center (NUTC) Seminar, Host: Professors Hani Mahmassani and Ying Chen. *Invited Speaker.*
- **Straddling Model-based and Model-free for Multi-agent Coordination in Transportation** MIT MASLAB robotics competition. *Invited Guest lecture.*
- **On Traffic Flow Optimization and the Replicability of Deep Reinforcement Learning** TRB Annual Meeting, Workshop on Reproducible Research: Why, What, and How. *Invited Speaker.*

2023

- **Generative AI for Transportation: Generating data for long-standing challenges** MIT Generative AI Week - Shaping the Future Symposium. *Invited Speaker.* Available: `https://www.youtube.com/watch?v=5mrvWVJm3AU`
- **Learning to Cope with Problem Variations in Mobility** MIT IDSS Visiting Committee. *Invited Speaker.*
- **Learning-guided Methods for Robustness to Problem Variations in Mobility** MIT IDSS Faculty Lunch. *Invited Speaker.*
- **Learning-guided Methods for Robustness to Problem Variations in Mobility** IEEE International Conference on Intelligent Transportation Systems (ITSC), Workshop on Co-Design and Coordination of Future Mobility Systems. *Invited Speaker.*
- **Eco-driving for the Planet** IEEE International Conference on Intelligent Transportation Systems (ITSC), Workshop on Data-driven and empirical research for emerging mixed traffic of automated vehicles and human-driven vehicles. *Invited Speaker.*
- **Intelligent Coordination for Sustainable Roadways: If Autonomous Vehicles are the Answer, then What is the Question?** IEEE Intelligent Vehicles (IV) Symposium, 1st Workshop on Socially Interactive Autonomous Mobility (SIAM). *Invited Speaker.*
- **Intelligent Vehicle Coordination: Eco-driving for the Planet and Hybrid Learning Methods** CSAIL/LIDS Machine Learning Advances Symposium. *Invited Speaker.*
- **Intelligent Coordination for Sustainable Roadways: If Autonomous Vehicles are the Answer, then What is the Question?** ETH Zurich Autonomy Talks (Virtual), Host: Professor Emilio Frazzoli and Gioele Zardini. *Invited Seminar.* Available: `https://www.youtube.com/watch?v=UwK33R1b0MY`
- **Intelligent Coordination for Sustainable Roadways: If Autonomous Vehicles are the Answer, then What is the Question?** Stanford Robotics Seminar, Host: Professor Marco Pavone. *Invited Seminar.* Available: `https://www.youtube.com/watch?v=6FyS2WWw3J0`

Selected talks (continued)

- **Intelligent Coordination for Sustainable Roadways: If Autonomous Vehicles are the Answer, then What is the Question?** Caltech Rigorous Systems Research Group (RSRG) / Foundations of Algorithms, Learning, Control, and Optimization of Networks (FALCON) Tea, Host: Professors Adam Wierman and Eric Mazumdar. *Invited Seminar.*
- **Intelligent Coordination for Sustainable Roadways: If Autonomous Vehicles are the Answer, then What is the Question?** USC CS Ad Hoc Seminar, Host: Professor Bistra Dilkina. *Invited Seminar.*
- **Intelligent Coordination for Sustainable Roadways: If Autonomous Vehicles are the Answer, then What is the Question?** Berkeley CITRIS People and Robots (CPAR) / Design of Robotics and Embedded systems, Analysis, and Modeling Seminar (DREAM), Host: Professor Claire Tomlin. *Invited Seminar.* Available: `https://www.youtube.com/watch?v=F_WwFyjoZ8w`
- **The Curse of Variety and Roadway Autonomy: Learning for Decisions and Control in Multi-vehicle Systems** CMU CEE Advanced Infrastructure Systems Seminar, Host: Professor Chris Hendrickson. *Invited Seminar.*

2022

- **Cities as Robots: Scalability, Operations, and Robustness** Robotics: Science and Systems, Workshop on Learning from Diverse, Offline Data (L-DOD). *Invited Speaker.*
- **Learning to Delegate for Large-scale Vehicle Routing** ASCE ICTD 2022, Session on Data-Driven and AI methods for the Optimization of Multimodal Transportation Systems. *Invited Speaker.*
- **Reinforcement Learning for Guiding Driver Behavior** MIT CEE Research Day: Climate Solutions and Integration of Sustainability at Scale. *Invited Speaker.*

2021

- **Learning for Future Mobility: Uncovering Requirements and Addressing Scalability** MIT CSAIL Embodied Intelligence Seminar (Hybrid). *Invited Speaker.*
- **Towards understanding transfer learning in mixed autonomy traffic** 1st NSF CIRCLES Workshop on Traffic and Autonomy (Virtual). *Invited Speaker.* Available: `https://www.youtube.com/watch?v=0M80IZPXP84`
- **Learning to Delegate for Large-scale Vehicle Routing** MIT Center for Transportation and Logistics Seminar. *Invited Speaker.*
- **Towards scaling deep reinforcement learning for mixed autonomy traffic** ITSC 2021, Workshop on Next Generation Transportation Networks: Emerging Technologies, Data Analytics and Perspectives (Virtual). *Invited Speaker.*
- **ICML Workshop on Tackling Climate Change with Machine Learning** ICML Workshop on Tackling Climate Change with Machine Learning. *Invited Expert Panelist.*
- **Mixed Autonomy Traffic: A Reinforcement Learning Perspective** Automated Road Transportation Symposium (ARTS), Session on Environmental, Economic, and Social Impacts of AV Use (Virtual). *Invited Speaker and Panelist.*
- **Towards scaling and deploying mixed autonomy traffic** Oxford Control Seminar (Virtual). *Invited Speaker.*
- **Towards scaling and deploying mixed autonomy traffic** MIT LIDS PI Faculty Meeting (Virtual). *Invited Speaker.*
- **Mixed Autonomy Traffic: A Reinforcement Learning Perspective** MIT Leaders in Mobility Innovation Series: Building Tomorrow's Traffic Light (Virtual). *Invited Speaker and Panelist.*
- **Mixed Autonomy Traffic: A Reinforcement Learning Perspective** MIT Mobility Initiative: Frontier of Mobility Research (Virtual). *Invited Speaker.*

2020

- **Mixed Autonomy Traffic: A Reinforcement Learning Perspective** Institute for Pure and Applied Mathematics (IPAM), Safe Operation of Connected and Autonomous Vehicle Fleets Workshop (Virtual). *Invited Speaker.* Available: `https://www.youtube.com/watch?v=2iOScqprSUk`

Selected talks (continued)

- **Mixed Autonomy Traffic: A Reinforcement Learning Perspective** Simons Institute Program on Theory of Reinforcement Learning, Workshop on Deep Reinforcement Learning (Virtual). *Invited Speaker.* Available: `https://www.youtube.com/watch?v=nXR16fm6OY8`
- **Towards Reinforcement Learning for Mixed Autonomy Traffic: Transfer Learning Across Networks** Automated Vehicle Symposium, Session on AI for AV Control and Traffic Operations: Challenges and Opportunities (Virtual). *Invited Speaker.* Available: `https://www.youtube.com/watch?v=uX0KzSStYug`
- **Towards Reinforcement Learning for Mixed Autonomy Traffic: Transfer Learning Across Networks** Smart City Summit and Expo (SCSE), SEAIP Smart City Forum, Session on AI Technology, Application and Innovation for Digital Cities (Virtual). *Invited Speaker.*
- **Policy Transfer Across Networks: Towards Understanding AI Impacts in Urban Systems** CSAIL-MSR Trustworthy and Robust AI Collaboration (TRAC) Workshop (Virtual). *Invited Speaker.*
- **Looking ahead: machine learning and urban transportation** International Conference on Learning Representations (ICLR), ML and Climate Change Workshop, Session on Machine Learning for Low-Carbon Urban Mobility (Virtual). *Invited Speaker.*
- **Mixed Autonomy Traffic: A Reinforcement Learning Perspective** Tufts ECE Seminar. *Invited Speaker.*
- **Integrating Autonomy into Urban Systems** Transportation Research Board (TRB) Annual Meeting, AHB45 Workshop on The Advancement of Modeling Connected and Automated Vehicles: Past and Future. *Invited Speaker.*
- **Applications of Reinforcement Learning in Mixed Autonomy Traffic** Transportation Research Board Annual Meeting, ABJ70 Workshop on A Primer on Machine Learning for Transportation. *Invited Speaker.*
- **From LIDS at 80 to LIDS at 100** LIDS Student Conference. *Invited Speaker.*

2019

- **Mixed Autonomy Traffic: A Reinforcement Learning Perspective** NeurIPS 2019 Workshop on Machine Learning for Autonomous Driving. *Invited Speaker.*
- **Mixed Autonomy Traffic: A Reinforcement Learning Perspective** CSAIL-MSR Trustworthy AI Collaboration (TRAC) Workshop. *Invited Speaker.*
- **LIDS@80 from and Urban Systems Lens: A Reinforcement Learning Perspective** LIDS, MIT. *Invited Speaker.*
- **Integrating Autonomy into Urban Systems** INFORMS Conference, Session on Innovative Machine Learning Techniques in Transportation. *Invited Speaker.*
- **Optimization in the Age of Connected and Automated Vehicles** INFORMS Conference, Session on Optimization in the Sharing Economy. *Invited Speaker.*
- **Towards the Discovery of Emergent Behaviors for Transportation Planning** INFORMS Conference, Session on Data Driven Disaster Resilience. *Invited Speaker.*
- **Integrating Autonomy into Urban Systems** Boston University, Center for Information and Systems Engineering (CISE) Seminar. *Invited Seminar.*
- **Integrating Autonomy into Urban Systems: A Reinforcement Learning Perspective** NSF Workshop on Control for Networked Transportation Systems. *Invited Speaker.*
- **Integrating Autonomy into Urban Systems** Learning for Dynamics and Control, Inaugural Conference. *Invited Speaker.* Available: `https://www.youtube.com/watch?v=ZQc2Cmpf3Ok`
- **Integrating Autonomy into Urban Systems: A Reinforcement Learning Perspective** Workshop on AI Technology, Applications and Innovation for Digital Cities, Smart City Summit and Expo (SCSE), Taiwan. *Invited Speaker.*

Selected talks (continued)

- **Integrating Autonomy into Urban Systems** Workshop on Autonomous Vehicles, IPAM (Institute for Pure and Applied Mathematics), Los Angeles. *Invited Speaker.*
- **Integrating Autonomy into Transportation Systems** MIT CEE 9th Annual Research Speed Dating. *Keynote.*
- **Integrating Autonomy into Transportation Systems** CENTRA (Collaborations to Enable Transnational Cyberinfrastructure Applications) Webinar. *Invited Speaker.*

2018

- **Integrating Autonomy into Transportation Systems** MIT IDSS Visiting Committee Meeting. *Junior faculty spotlight.*
- **Mixed-Autonomy Mobility: Scalable Learning and Optimization** MIT Institute for Data Systems and Society (IDSS) and Civil and Environmental Engineering (CEE). *Invited Seminar.*
- **Mixed-Autonomy Mobility: Scalable Learning and Optimization** MIT Computer Science and Artificial Intelligence Laboratory (CSAIL). *Invited Seminar.*
- **Mixed-Autonomy Mobility: Scalable Learning and Optimization** Microsoft Research AI. *Invited Seminar.*
- **Mixed-Autonomy Mobility: Scalable Learning and Optimization** Princeton Electrical Engineering, Princeton Computer Science. *Invited Seminar.*
- **Mixed-Autonomy Mobility: Scalable Learning and Optimization** UIUC Computer Science. *Invited Seminar.*
- **Mixed-Autonomy Mobility: Scalable Learning and Optimization** CMU Robotics Institute (RI), CMU Machine Learning Department (MLD). *Invited Seminar.*
- **Mixed-Autonomy Mobility: Scalable Learning and Optimization** Cornell Operations Research and Information Engineering (ORIE), Cornell Electrical and Computer Engineering (ECE). *Invited Seminar.*
- **Mixed-Autonomy Mobility: Scalable Learning and Optimization** Cornell Tech, and the Jacobs Technion-Cornell Institute. *Invited Seminar.*
- **Mixed-Autonomy Mobility: Scalable Learning and Optimization** BAIR/CPAR/BDD (Berkeley Artificial Intelligence Research, CITRIS People and Robots and Berkeley DeepDrive) Seminar. *Invited Seminar.*
- **Reinforcement Learning for Mixed-Autonomy Traffic** UC Berkeley RISElab Retreat. *Invited Seminar.*

2017

- **Reinforcement Learning for Mixed-Autonomy Traffic** NSF Foundations Of Resilient CybEr-physical Systems (FORCES), Annual Meeting, UC Berkeley. *Invited Speaker.*
- **Reinforcement Learning for Mixed-Autonomy Traffic** IEEE General Meeting, UC Berkeley. *Invited Speaker.*
- **Mixed-Autonomy Traffic** IEEE Leaders Summit, San Francisco. *Invited Speaker.*

2016

- **Towards Energy Minimization of Mixed-Autonomy Traffic via Control Theory and Reinforcement Learning** California Partners for Advanced Transportation Technology (PATH), UC Berkeley. *Invited Speaker.*
- **Cellpath: State Estimation of Traffic Networks via Convex Optimization** Distributed Robotics Lab, CSAIL, MIT, Host: Professor Daniela Rus. *Invited Seminar.*
- **Cellpath: State Estimation of Traffic Networks via Convex Optimization** Resilient Infrastructure Networks Lab, CEE, MIT, Host: Professor Saurabh Amin. *Invited Seminar.*

Industry and Government

2026

- **AI-enabled Optimization for Infrastructure Engineering** Ferrovial - MIT CEE workshop. *Invited Speaker.*

Selected talks (continued)

2025
- **What If We Could Design Transportation Systems 10x Faster and Cheaper? A moonshot for AI in Transportation** American Public Transportation Association (APTA) TRANSform Conference, Mobility Management Committee Meeting. *Invited Speaker.*
- **What If We Could Design Transportation Systems 10x Faster and Cheaper? A moonshot for AI in Transportation** American Public Transportation Association (APTA) TRANSform Conference, Innovation Officers Peer Exchange Group. *Invited Speaker.*
- **What If We Could Design Societal-Scale Systems That Just Work? A moonshot for AI in Transportation** Senior Congressional Staff Seminar on AI @ MIT. *Invited Speaker.*
- **Learning-Guided Optimization for Mobility** Waymo Product Data Science Seminar. *Invited Speaker.*

2024
- **Generalizable Pathfinding for Growing Complexity in Warehousing** Symbotic Research Symposium. *Invited Speaker.*
- **Towards Scalable Learning-based Multi-Robot Coordination** MIT-Amazon Science Hub Seminar. *Invited Speaker.*

2023
- **Hybrid Learning for Generalizable Optimization** MathWorks Research Summit. *Invited Speaker.*
- **Eco-driving for Health and the Planet: Learning, Modeling, and Control** 2023 NSF-MOST Workshop on Cyber Physical Systems and Smart and Connected Communities. *Invited Speaker.*
- **The Curse of Variety: Learning for Decisions and Control in Multi-vehicle Systems** Microsoft Research (MSR) New England Machine Learning Series. Host: Konstantin Klemmer. *Invited Speaker.*

2022
- **Cities as Robots: Learning and Control for Autonomy at Scale** Lyft, Rideshare Seminar Series. *Invited Seminar.*
- **Roadway Safety as a Performance Measure** MIT Mobility Initiative Vision Day. *Invited Speaker.*
- **Cities as Robots Learning for large-scale decisions** Symbotic Symposium at MIT LIDS. *Invited Speaker.*
- **Cities as Robots Learning for large-scale decisions** Oshkosh Symposium at MIT. *Invited Speaker.*
- **Cities as Robots: Sustainability, Scale, and Reliability** APL Intelligent Systems Symposium, Johns Hopkins University Applied Physics Lab. *Invited Speaker.*
- **Reinforcement Learning for Guiding Driver Behavior** MITEI Future Energy System Center Spring Workshop. *Invited Speaker.*
- **Analysis of Mixed Autonomy Traffic with Reinforcement Learning** EV Workshop with Qualcomm and Xiaomi, MIT ILP. *Invited Speaker.*
- **Integrated Autonomy** NSF Virtual Workshop on CPS/SCC with International Collaboration in Taiwan. *Invited Speaker.* Available: `https://www.youtube.com/watch?v=OiFAg84gzP0`

2021
- **Future of Transportation** Clubhouse, Imaginators In Action Show. *Invited Expert.*
- **On the future of our roads** The Robot Brains Podcast, hosted by Pieter Abbeel (Covariant AI). *Invited Guest.* Available: `https://www.youtube.com/watch?v=iMG1Fk-woX4`
- **Towards scaling and operationalizing deep reinforcement learning for mixed autonomy traffic** Amazon Research Talks (Virtual). *Invited Speaker.*

2020
- **Reinforcement Learning** TWIMLfest Office Hours (Virtual). *Invited Panelist.*

2019
- **Mixed Autonomy Traffic: A Reinforcement Learning Perspective** TwiML AI Podcast Interview, NeurIPS series. *Invited Guest.* Available: `https://www.youtube.com/watch?v=KtEi2NOuHK4`

Selected talks (continued)

- **Integrating Autonomy into Urban Systems** Microsoft TechFest Location Summit. *Invited Speaker.*

2018

- **Reinforcement Learning for Mixed Autonomy Traffic** O'Reilly Artificial Intelligence Conference. *Invited Speaker.*
- **Variance reduction for policy gradient and what does this have to do with traffic?** OpenAI. *Invited Speaker.*
- **Mixed-Autonomy Mobility** Tesla. *Invited Speaker.*
- **Mixed-Autonomy Mobility: Scalable Learning and Optimization** Microsoft Research AI. *Invited Speaker.*
- **Variance Reduction for Scalable Learning and Mixed-Autonomy Traffic** Google Brain. *Invited Speaker.*

2017

- **Variance Reduction for Policy Gradient with Action-Dependent Factorized Baselines** OpenAI. *Invited Speaker.*
- **Flow: Computational Framework for Deep RL and Traffic Microsimulation** SidewalkLabs, Alphabet. *Invited Speaker.*
- **Variance Reduction for Policy Gradient in Multi-Agent Reinforcement Learning** OpenAI. *Invited Speaker.*

2015

- **Randomization for Ridesharing** Uber. *Invited Speaker.*

2014

- **Convex optimization for traffic assignment** Verizon. *Invited speaker.*
- **Convex optimization for traffic assignment** AT&T. *Invited speaker.*

Outreach and Professional Development

2025

- **Mentorship Session** IEEE Intelligent Transportation Systems Conference (ITSC) 2025. *Invited Mentor.*
- **Introducing RERITE: REproducible Research In Transportation Engineering (RERITE) Working Group** TRB Annual Meeting, Committee on Traffic Flow Theory and Characteristics (ACP50) Meeting, Host: Professor Ludovic Leclercq. *Invited Speaker.*
- **Traffic Engineering Book Discussion** Co-located with TRB Annual Meeting, in collaboration with David Zipper. *Co-facilitator.*

2024

- **Mentorship Roundtable on ML for Sustainability and Environment** 19th Women in Machine Learning (WiML) workshop at NeurIPS. *Invited Mentor.* Available: `https://sites.google.com/wimlworkshop.org/wiml-2024/program`
- **Writing for Impact: How to Do Research That Matters** IEEE Intelligent Transportation Systems Conference (ITSC), Canadian Adventure: Pioneering the Next Generation of Diverse Innovators in Transportation, Plenary Session. *Invited Speaker.*
- **Optimizing Bluebikes' Operational Strategy to Enhance User Experience and Reduce Costs** 1.041/1.200 Educational Project Videos. *Student lead: Ceci Zhang.* Available: `https://www.youtube.com/watch?v=czw382jGpxg`
- **Speed Limiters for Road Safety** 1.041/1.200 Educational Project Videos. *Student lead: Tiffany Lim.* Available: `https://www.youtube.com/watch?v=D50tL80sTuU`
- **The Traveling Salesman Problem: A Boba Delivery Case Study** 1.041/1.200 Educational Project Videos. *Student leads: Richard Chen, Estafano Reyes, James Shaw, and Eve Siflanus.* Available: `https://www.youtube.com/watch?v=krcnVC3NIr4`
- **Origin-Destination Demand Estimation Under Uncertainty Using Computer Vision** 1.041/1.200 Educational Project Videos. *Student leads: Riccardo Fiorista and Tinus Alsos.* Available: `https://www.youtube.com/watch?v=Ld70Qlw8Jv4`

Selected talks (continued)

- **NSF CAREER Awards** Cyber-Physical Systems (CPS) Principal Investigator (PI) Meeting, NSF Aspiring CPS PIs Workshop. *Panelist.*