Andreas A. Malikopoulos

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Education

- University of Michigan, Ann Arbor, MI
  Ph.D. in Mechanical Engineering 2008
- University of Michigan, Ann Arbor, MI
  M.S. in Mechanical Engineering 2004
- National Technical University of Athens (NTUA), Greece
  Diploma in Mechanical Engineering 2000

Honors and Awards

- Keynote Speaker 2023
  International Symposium on Transportation Data & Modelling (ISTDM2023)
- Best Paper Award 2022
  IEEE 2nd Annual International Conference on Digital Twins and Parallel Intelligence
- Outstanding Student Paper Prize (as advisor) 2022
  IEEE Control Systems Society Technical Committee on Smart Cities
- Elected to Board of Governors for 2022-2025, IEEE Intelligent Transportation Systems Society 2021
- Best Student Paper Award – finalist (as advisor) 2020
  16th IEEE International Conference on Control & Automation
- College of Engineering Outstanding Junior Faculty Award 2020
- IEEE Intelligent Transportation Systems Young Researcher Award 2019
- Invited participant, Global Grand Challenges Summit – National Academy of Engineering 2019
- Terri Connor Kelly and John Kelly Career Development Endowed Chair 2018
- ASME Fellow 2017
- 1st most cited author in IEEE Transactions on Intelligent Transportation Systems 2017
- IEEE Senior Member 2017
- NAE EU-US Frontiers of Engineering session organizer 2016
- Best presentation in session, American Control Conference 2013
- NAS Kavli Frontiers of Science Scholar 2012
- Best poster, Oak Ridge National Laboratory Directed R&D program 2012
- Alvin M. Weinberg Fellowship 2010
- NAE GE-US Frontiers of Engineering participant 2010
- Author of one of the top 10 most downloaded articles in *ASME J. Eng. Gas Turbines Power* 2010
- Michigan Teaching Fellow, University of Michigan 2007
- Dare to Dream Opportunity Grant from the Samuel Zell & Robert H. Lurie Institute of University of Michigan Ross School of Business 2007
- Engineering and Science Academic Scholar, University of Michigan 2006
- First place Award in Poster, Engineering Symposium, University of Michigan 2006

- Second place Award in Presentation, Engineering Symposium, University of Michigan 2006
- First place Award in Presentation, Engineering Symposium, University of Michigan 2005
- Second place Award in Poster, Engineering Symposium, University of Michigan 2005
- Gerondelis Foundation Fellowship 2004
- Graduate Student Fellowship, University of Michigan 2003
- Admitted 1st in the Department of Mechanical Engineering at NTUA 1995

Academic Appointments

- Cornell University — Ithaca, DE
  Professor — Sep. 2023 – present
- University of Delaware — Newark, DE
  Director, Sociotecchnical Systems Center — Sep. 2020 – Aug. 2023
- Boston University — Boston, MA
  Resident Scholar, Center for Information and Systems Engineering — Sep. 2020 – Dec. 2020
- University of California — Los Angeles, CA
  Senior Fellow, NSF Institute of Pure and Applied Mathematics — Sep. 2020 – Dec. 2020
- University of Delaware — Newark, DE
  Associate Professor (with tenure) — Sep. 2020 – Aug. 2023
- University of Delaware — Newark, DE
  Terri Connor Kelly and John Kelly Career Development Associate Professor — Sep. 2018 – Aug. 2023
- University of Delaware — Newark, DE
  Associate Professor (on tenure track) — Feb. 2017 – Aug. 2020
- University of California — Los Angeles, CA
  Senior Fellow, NSF Institute of Pure and Applied Mathematics — Aug. 2015 – Dec. 2015
- University of Michigan — Ann Arbor, MI
  Postdoctoral Research Associate — Jan. 2008 – May 2008
- University of Michigan — Ann Arbor, MI
  Graduate Student Research Assistant — Jan. 2003 – Dec. 2007
- National Technical University of Athens — Athens, Greece
  Research Assistant — May 2002 – Dec. 2002
- University of Delaware — Newark, DE
  Research Assistant — Sep. 2001 – Apr. 2002

Government Experience

- Oak Ridge National Laboratory — Oak Ridge, TN
  Deputy Director, Urban Dynamics Institute — Jan. 2014 – Jan. 2017
  - Led several projects on connected and automated vehicles funded by the Systems and Modeling for Accelerated Research in Transportation (SMART) Mobility consortium of the Department of Energy.
- Oak Ridge National Laboratory — Oak Ridge, TN
  Lead Sustainable Theme, Urban Dynamics Institute — Jan. 2014 – Jan. 2017
  - Developed various initiatives with the goal to investigate the use of scalable data and informatics to enhance understanding of the environmental implications of connected and automated vehicles and improve transportation sustainability and accessibility.
- Oak Ridge National Laboratory — Oak Ridge, TN
  R &D Staff, Energy & Transportation Science Division — Nov. 2012 – Dec. 2013

- Developed the theory and algorithms for optimization and control of connected and automated vehicles with the aim of (1) becoming eco-friendly and operating at zero-based emissions, (2) realizing the optimum performance and efficiency based on consumers' needs and preferences, and (3) learning how traffic information can positively impact on the environment.

Oak Ridge National Laboratory — Oak Ridge, TN
Alvin M. Weinberg Fellow, Energy & Transportation Science Division — Nov. 2010 – Oct. 2012

- Established a rigorous mathematical framework; formulated numerical algorithms; and conducted a qualitative assessment on deriving an optimal solution for the analysis and stochastic optimization of large-scale complex systems in applications related to energy and transportation.

Hellenic Navy, Fleet Headquarters — Salamina, Greece
Analyst — Jul. 1998 – Apr. 2000

- Developed software applications and provided computer support of the Hellenic ministry system hardware; system administrator and responsible of network maintenance of the fleet headquarters.

Industry Experience

General Motors, Global Research & Development — Warren, MI
Senior Researcher — Feb. 2010 – Aug. 2010

- Developed computational mathematical models in optimization and control towards making highly energy-efficient and eco-friendly vehicles.

General Motors, Global Research & Development — Warren, MI
Researcher — Jun. 2008 – Jan. 2010

- Conducted research in the area of optimization and stochastic control with an emphasis on applications to advanced propulsion systems.

General Motors, Global Research & Development — Warren, MI
Graduate Student Intern — Jun. 2005 – Aug. 2005

- Worked on propulsion modeling and control design; supported simulation-based and model-based analysis of various control algorithms for advanced propulsion systems.

Intracom SA — Athens, Greece
Product Designer — May 2000 – Aug. 2001

- Conducted industrial design and performed optimization of the assembly process.

Publications

Underlined names are students, postdoctoral research associates, or staff working under my supervision.

Books and Book Chapters

1. **Malikopoulos, A.A.**, and Petros Ioannou (Eds.) "Transportation Mobility for Smart Cities," Springer, 2023.
2. **Malikopoulos, A.A.**, "A Control Framework for Socially-Optimal Emerging Mobility Systems," in Transportation Mobility for Smart Cities, Malikopoulos, A.A., and Petros Ioannou (Eds.), Springer, 2023.
3. Di Cairano, S., Guardiola, C., **Malikopoulos, A.A.**, Seigel, J. "Future Impact and Challenges of Automotive Control," in The Impact of Automatic Control Research on Industrial Innovation: Enabling a Sustainable Future, Wiley, 2023.
4. **Malikopoulos, A.A.**, "On Separation Between Learning and Control in Partially Observed Markov Decision Processes," in Smarter Cyber-Physical Systems: Enabling Methodologies and Applications, Y. Wan, K. G. Vamvoudakis, Y. Chen, F. L. Lewis (Eds.), CRC Press, 2023.
5. Chremos, I.V., and **Malikopoulos, A.A.**, "Socioeconomic Impact of Emerging Mobility Markets and Implementation Strategies," in AI-enabled Technologies for Autonomous and Connected Vehicles, Y. Murphhey, I. Kolmanovsky, and P. Watta (Eds.), pp. 481 – 510, Springer, 2022.

6. **Malikopoulos, A.A.** *Real-Time, Self-Learning Identification and Stochastic Optimal Control of Advanced Powertrain Systems*, ProQuest, September 2011.

Journal Articles (Submitted or in Review)

1. Faros, I., Dave, A., and **Malikopoulos, A.A.**, "A Q-learning Approach for Adherence-Aware Recommendationsy," 2024.
2. Bang, H., Dave, A., and **Malikopoulos, A.A.**, "Routing in Mixed Transportation Systems for Mobility Equity," 2024.
3. Tzortzoglou, F. N., Theodosis, D., Dave, A., and **Malikopoulos, A.A.**, "Performance-Aware Potential Functions to Improve the Efficiency of Connected and Automated Vehicles," 2024.
4. Valencia, A., **Malikopoulos, A.A.**, and Das, S., "On path-planning for Magnetically Actuated Microrobots: An Analytical Geometry-based Approach," 2023.
5. Dave, A., Venkatesh, N., and **Malikopoulos, A.A.**, "Approximate Information States for Worst-Case Control and Learning in Uncertain Systems," 2023.
6. Beaver, L. E., and **Malikopoulos, A.A.**, "Optimal Control of Differentially Flat Systems is Surprisingly Easy," 2023.
7. Chremos, I.V. and **Malikopoulos, A.A.**, "Mechanism Design Theory in Control Engineering: A Tutorial and Overview of Applications in Communication, Power Grid, Transportation, and Security Systems," 2023.
8. Beaver, L. E., Kroninger, C., Dorothy, M., and **Malikopoulos, A.A.**, "A Constraint-Driven Approach to Line Flocking: The V Formation as an Energy-Saving Strategy," 2023.

Journal Articles (Published or in press)

9. **Malikopoulos, A.A.**, "On Team Decision Problems with Nonclassical Information Structures," *IEEE Trans. Autom. Control*, Vol. 68, 7, pp. 3915–3930, 2023.
10. Mahbub, A M. I., Le, V.-A., and **Malikopoulos, A.A.**, "A Safety-Prioritized Receding Horizon Control Framework for Platoon Formation in a Mixed Traffic Environment," *Automatica*, 155, 111115, 2023.
11. Chremos, I.V. and **Malikopoulos, A.A.**, "A Traveler-centric Mobility Game: Efficiency and Stability Under Rationality and Prospect Theory," *PLoS ONE*, 18 (5), 2023.
12. **Malikopoulos, A.A.**, "Separation of Learning and Control for Cyber-Physical Systems," *Automatica*, 151, 110912, 2023.
13. Mahbub, A M. I., Chalaki, B., and **Malikopoulos, A.A.**, "A Constrained Optimal Control Framework for Vehicle Platoons with Delayed Communication," *Networks & Heterogeneous Media, Special Issue: Traffic and Autonomy,* 18(3), 982–1005, 2023.
14. Chalaki, B., Beaver, L. E., Mahbub, A M. I., Bang, H., and **Malikopoulos, A.A.**, "A Research and Educational Robotic Testbed for Real-time Control of Emerging Mobility Systems: From Theory to Scaled Experiments," *IEEE Control Systems Magazine*, Vol. 42, 6, pp. 20–34, 2022.
15. Chalaki, B., and **Malikopoulos, A.A.**, "Time-Optimal Coordination for Connected and Automated Vehicles at Adjacent Intersections," *IEEE Trans. Intell. Transp. Syst.*, Vol. 23, 8, pp. 13330–13345, 2022.
16. Kumaravel, S.D., **Malikopoulos, A. A.**, and Ayyagari, R., "Optimal Coordination of Platoons of Connected and Automated Vehicles at Signal-Free Intersections," *IEEE Trans. Intell. Veh.*, Vol. 7, 2, pp. 186–197, 2022.
17. Bang, H., Chalaki, B., and **Malikopoulos, A.A.**, "Combined Optimal Routing and Coordination of Connected and Automated Vehicles," *IEEE Control Systems Letters (L-CSS)*, 6, pp. 2749 – 2754, 2022.
18. Dave, A., Chremos, I.V., and **Malikopoulos, A.A.**, "Social Media and Misleading Information in a Democracy: A Mechanism Design Approach," *IEEE Trans. Autom. Control*, Vol. 67, 5, pp. 2633–2639, 2022.
19. Chalaki, B., and **Malikopoulos, A.A.**, "A Priority-Aware Replanning and Resequencing Framework for Coordination of Connected and Automated Vehicles," *IEEE Control Systems Letters (L-CSS),* 6, pp. 1772–1777, 2022.
20. Beaver, L. E., and **Malikopoulos, A.A.**, "Constraint-Driven Optimal Control of Multi-Agent Systems: A Highway Platooning Case Study," *IEEE Control Systems Letters (L-CSS),* 6, pp. 1754–1759, 2022.
21. Zhao, L., and **Malikopoulos, A.A.**, "Enhanced Mobility with Connectivity and Automation: A Review of Shared Autonomous Vehicle Systems," *IEEE Intelligent Transportation Systems Magazine*, 14, 1, pp. 87–102, 2022.
22. Mahbub, A M. I., and **Malikopoulos, A.A.**, "A Platoon Formation Framework in a Mixed Traffic

Environment," *IEEE Control Systems Letters (L-CSS),* 6, pp. 1370–1375, 2022 – **IEEE Control Systems Society TC-SC Outstanding Student Paper Prize.**

23. Chalaki, B., and **Malikopoulos, A.A.**, "Optimal Control of Connected and Automated Vehicles at Multiple Adjacent Intersections," *IEEE Trans. on Control Systems Tech.*, Vol. 30, 3, pp. 972–984, 2022.
24. Mahbub, A M. I., and **Malikopoulos, A.A.**, "Conditions to Provable System-Wide Optimal Coordination of Connected and Automated Vehicles," *Automatica*, 131, 109751, 2021.
25. Beaver, L. E., and **Malikopoulos, A.A.**, "An Overview on Optimal Flocking," *Annual Reviews in Control,* 51, pp. 88–99, 2021.
26. **Malikopoulos, A.A.**, Beaver, L.E., and Chremos, I.V., "Optimal Time Trajectory and Coordination for Connected and Automated Vehicles," *Automatica*, 125, 109469, 2021.
27. Connor, W.D., Wang, Y., **Malikopoulos, A.A.**, Advani, S.G., and Prasad, A. K., "Impact of Connectivity on Energy Consumption and Battery Life for Electric Vehicles," *IEEE Trans. Intell. Veh.*, 6, 1, pp. 14–23, 2021.
28. Beaver, L. E., and **Malikopoulos, A.A.**, "An Energy-Optimal Framework for Assignment and Trajectory Generation in Teams of Autonomous Agents," *Systems & Control Letters,* 138, 104670, 2020.
29. Mahbub, A M. I., **Malikopoulos, A.A.**, and Zhao, L., "Decentralized Optimal Coordination of Connected and Automated Vehicles for Multiple Traffic Scenarios," *Automatica*, 117, 108958, 2020.
30. Beaver, L. E., Chalaki, B., Mahbub, A M. I., Zhao, L., Zayas, R., and **Malikopoulos, A.A.**, "Demonstration of a Time-Efficient Mobility System Using a Scaled Smart City," *Vehicle System Dynamics*, 58, 5, pp. 787–804, 2020.
31. **Malikopoulos, A.A.**, Hong, S., Park, B., Lee, J., and Ryu, S., "Optimal Control for Speed Harmonization of Automated Vehicles," *IEEE Trans. Intell. Transp. Syst.*, 20, 7, pp. 2405–2417, 2019.
32. **Malikopoulos, A.A.**, Charalambous, C.D., and Tzortzis, I., "The Average Cost of Markov Chains Subject to Total Variation Distance Uncertainty," *Systems & Control Letters,* 120, pp. 29–35, 2018.
33. Rios-Torres, J., and **Malikopoulos, A.A.**, "Impact of Partial Penetrations of Connected and Automated Vehicles on Fuel Consumption and Traffic Flow," *IEEE Trans. Intell. Veh.*, Vol. 3, 4, pp. 453–462, 2018.
34. **Malikopoulos, A.A.**, Cassandras, C.G., and Zhang, Y.Z, "A Decentralized Energy-Optimal Control Framework for Connected Automated Vehicles at Signalized-Free Intersections," *Automatica*, 93, 244–256, 2018.
35. Rios-Torres, J., and **Malikopoulos, A.A.**, "A Survey on the Coordination of Connected and Automated Vehicles at Intersections and Merging at Highway On-Ramps," *IEEE Trans. Intell. Transp. Syst.*, Vol. 18, 5, pp. 1066–1077, 2017.
36. Rios-Torres, J., and **Malikopoulos, A.A.**, "Automated and Cooperative Vehicle Merging at Highway On-Ramps," *IEEE Trans. Intell. Transp. Syst.*, Vol. 18, 4, pp. 780–789, 2017.
37. **Malikopoulos, A.A.**, "A Duality Framework for Stochastic Optimal Control of Complex Systems," *IEEE Trans. Autom. Control*, Vol. 61, 10, pp. 2756–2765, 2016.
38. Sharma, I., Dong, J., **Malikopoulos, A.A.**, Street, M., Ostrowski, J., Kuruganti, T., and Jackson, R., "A Modeling Framework for Optimal Energy Management in a Residential Building," *Journal of Energy and Buildings*, Vol. 130, pp. 55–63, 2016.
39. **Malikopoulos, A.A.**, "A Multiobjective Optimization Framework for Online Stochastic Optimal Control in Hybrid Electric Vehicles," *IEEE Trans. on Control Systems Tech.*, Vol. 24, 2, pp. 440– 450, 2016.
40. Shaltout, M., **Malikopoulos, A.A.**, Pannala, S., and Chen, D., "A Consumer-Oriented Control Framework for Performance Analysis in Hybrid Electric Vehicles," *IEEE Trans. on Control Systems Tech.*, Vol. 23, 4, pp. 1451–1464, 2015.
41. **Malikopoulos, A.A.**, "Supervisory Power Management Control for Hybrid Electric Vehicles: A Survey," *IEEE Trans. Intell. Transp. Syst.*, Vol. 15, 5, pp. 1869–1885, 2014.
42. **Malikopoulos, A.A.** and Aguilar, J.P., "An Optimization Framework for Driver Feedback Systems," *IEEE Trans. Intell. Transp. Syst.*, Vol. 14, 2, pp.955–964, 2013.
43. **Malikopoulos, A.A.**, "Impact of Component Sizing in Plug-In Hybrid Electric Vehicles for Energy Resource and Greenhouse Emissions Reduction," *J. Energy Resour. Technol.*, 135, 4, pp. 041201–9, 2013.
44. Park, S., **Malikopoulos, A.A.**, Kokkolaras, M., and Jung, D., "Thermal Management System Modeling and Component Sizing for Heavy Duty Series Hybrid Electric Vehicles," *Int. J. Heavy Vehicle Systems*, Vol. 18, 3, pp. 272–287, 2011.
45. **Malikopoulos, A.A.**, Papalambros, P.Y., and Assanis, D.N., "Online Self-Learning Identification and Stochastic Control for Autonomous Internal Combustion Engines," *J. Dyn. Sys., Meas., Control*, Vol.132, 2, pp.024504–9, 2010.
46. **Malikopoulos, A.A.**, "Convergence Properties of a Computational Learning Model for Unknown Markov Chains," *J. Dyn. Sys., Meas., Control*, Vol.131, 4, pp. 041011–7, 2009.

47. **Malikopoulos, A.A.**, Papalambros, P.Y., and Assanis, D.N., "A Real-Time Computational Learning Model for Sequential Decision-Making Problems Under Uncertainty," *J. Dyn. Sys., Meas., Control*, Vol. 131, 4, pp.041010–8, 2009.
48. **Malikopoulos, A.A.**, Assanis, D.N., and Papalambros, P.Y., "Real-Time, Self-Learning Optimization of Diesel Engine Calibration," *J. Eng. Gas Turbines Power*, Vol. 131, 2, pp. 022803–9, 2009.

Peer-Reviewed Conference Publications

1. Dave, A., Venkatesh, N., Faros, I., and **Malikopoulos, A.A.**, "Worst-Case Control and Learning Using Partial Observations Over an Infinite Time Horizon," *Proceedings of 62nd IEEE Conference on Decision and Control*, 2023 (to appear).
2. Venkatesh, N., Dave, A., and **Malikopoulos, A.A.**, "Connected and Automated Vehicles in Mixed-Traffic: Learning Human Driver Behavior for Effective On-Ramp Merging," *Proceedings of 62nd IEEE Conference on Decision and Control*, 2023 (to appear).
3. Bang, H., and **Malikopoulos, A.A.**, "A Hierarchical Approach to Optimal Flow-Based Routing and Coordination of Connected and Automated Vehicles," *Proceedings of 62nd IEEE Conference on Decision and Control*, 2023 (to appear).
4. Le, V., Wang, H., Orosz, G., and **Malikopoulos, A.A.**, "Coordination for Connected and Automated Vehicles at Merging Roadways in Mixed Traffic Environment," *Proceedings of 62nd IEEE Conference on Decision and Control*, 2023 (to appear).
5. Cherukumilli, S., Kirmizitas, F. C., Sokolich, M., Valencia, A., Karakan, M., White, A. E., **Malikopoulos, A.A.**, Das, S., "Programmable Modular Acoustic Microrobots," *Proceedings of the International Conference on Manipulation, Automation and Robotics at Small Scales*, 2023 (to appear).
6. Yang, Y., Kirmizitas, F. C., Sokolich, M., Valencia, A., Rivas, D., Karakan, M., White, A. E., **Malikopoulos, A.A.**, Das, S., "Rolling Helical Microrobots for Cell Patterning," *Proceedings of the International Conference on Manipulation, Automation and Robotics at Small Scales*, 2023 (to appear).
7. Valencia, A., and **Malikopoulos, A.A.**, "On Safety of Passengers Entering a Bus Rapid Transit System from Scheduled Stops" *Proceedings of 7th IEEE Conference on Control Technology and Applications (CCTA)*, 2023 (to appear).
8. Chremos, I.V., and **Malikopoulos, A.A.**, "Mobility Equity and Economic Sustainability Using Game Theory," *Proceedings of 2023 American Control Conference*, pp. 1698-1703, 2023.
9. Bang, H., and **Malikopoulos, A.A.**, "Re-Routing Strategy of Connected and Automated Vehicles Considering Coordination at Intersections,"*Proceedings of 2023 American Control Conference*, pp. 4419-4424, 2023.
10. Le, V.-A., and **Malikopoulos, A.A.**, "Optimal Weight Adaptation for Model Predictive Control of Connected and Automated Vehicles in Mixed Traffic with Bayesian Optimization," *Proceedings of 2023 American Control Conference*, pp. 1183-1188, 2023.
11. Dave, A., Venkatesh, N., and **Malikopoulos, A.A.**, "On Robust Control of Partially Observed Uncertain Systems with Additive Costs," *Proceedings of 2023 American Control Conference*, pp. 4639-4644, 2023.
12. Beaver, L.E., and **Malikopoulos, A.A.**, "Constraint-Driven Optimal Control for Emergent Swarming and Predator Avoidance," *Proceedings of 2023 American Control Conference*, pp. 399-404, 2023.
13. Zayas, R., Beaver, L. E., Chalaki, B., Bang, H., and **Malikopoulos, A.A.**, "A Digital Smart City for Emerging Mobility Systems," *Proceedings of the 2nd IEEE conference on Digital Twin and Parallel Intelligence*, 2022 – **Best Paper Award.**
14. Le, V.-A., and **Malikopoulos, A.A.**, "A Cooperative Optimal Control Framework for Connected and Automated Vehicles in Mixed Traffic Using Social Value Orientation," *Proceedings of 61st IEEE Conference on Decision and Control*, pp. 6272-6277, 2022.
15. Bang, H., Chalaki, B., and **Malikopoulos, A.A.**, "Combined Optimal Routing and Coordination of Connected and Automated Vehicles," *Proceedings of 61st IEEE Conference on Decision and Control*, 2022 — see IEEE Control Systems Letters, 6, pp. 2749–2754, 2022.
16. Chalaki, B., and **Malikopoulos, A.A.**, "A Barrier-Certified Optimal Coordination Framework for Connected and Automated Vehicles," *Proceedings of 61st IEEE Conference on Decision and Control*, pp. 2264-2269, 2022.
17. Dave, A., Venkatesh, N., and **Malikopoulos, A.A.**, "Approximate Information States for Worst-case Control of Uncertain Systems," *Proceedings of 61st IEEE Conference on Decision and Control*, pp. 4945-4950, 2022.
18. Ratnagiri, M., O'Dwyer, C., Beaver, L. E., Bang, H., Chalaki, B., and **Malikopoulos, A.A.**, "A Scalable Last-Mile Delivery Service: From Simulation to Scaled Experiment," *Proceedings of the 25th IEEE International Conference on Intelligent Transportation Systems*, pp. 4163-4168, 2022.

19. Mahbub, A M. I., Le, V.-A., and **Malikopoulos, A.A.**, "Safety-Aware and Data-Driven Predictive Control for Connected Automated Vehicles at a Mixed Traffic Signalized Intersection," *Proceedings of the 10th IFAC Symposium: Advances In Automotive Control,* pp. 51-56, 2022.
20. Beaver, L.E., Wu, B., Das, S., and **Malikopoulos, A.A.**, "A First-Order Approach to Model Simultaneous Control of Multiple Microrobots," *Proceedings of the International Conference on Manipulation, Automation and Robotics at Small Scales*, 2022.
21. Valencia, A., Mahbub, A M. I., and **Malikopoulos, A.A.**, "Performance Analysis of Optimally Coordinated Connected Automated Vehicles in a Mixed Traffic Environment," *Proceedings of the 30th Mediterranean Conference on Control and Automation*, pp. 1053-1058, 2022.
22. Nakka, S. K S., Chalaki, B., and **Malikopoulos, A.A.**, "A Multi-Agent Deep Reinforcement Learning Coordination Framework for Connected and Automated Vehicles at Merging Roadways," *Proceedings of 2022 American Control Conference*, pp. 3297-3302, 2022.
23. Chalaki, B., and **Malikopoulos, A.A.**, "Robust Learning-Based Trajectory Planning for Emerging Mobility Systems," *Proceedings of 2022 American Control Conference*, pp. 2154-2159, 2022.
24. Bang, H., and **Malikopoulos, A.A.**, "Congestion-Aware Routing, Rebalancing, and Charging for Shared Autonomous Electric Vehicles," *Proceedings of 2022 American Control Conference*, pp. 3152-3157, 2022.
25. Chremos, I.V., and **Malikopoulos, A.A.**, "An Analytical Study of a Two-Sided Mobility Game," *Proceedings of 2022 American Control Conference*, pp. 1254-1259, 2022.
26. Mahbub, A M. I., and **Malikopoulos, A.A.**, "Platoon Formation in a Mixed Traffic Environment: A Model-Agnostic Optimal Control Approach," *Proceedings of 2022 American Control Conference*, pp. 4746-4751, 2022.
27. Dave, A., Venkatesh, N., and **Malikopoulos, A.A.**, "Decentralized Control of Two Agents with Nested Accessible Information," *Proceedings of 2022 American Control Conference*, pp. 3423-3430, 2022.
28. Dave, A., Venkatesh, N., and **Malikopoulos, A.A.**, "On Decentralized Minimax Control with Nested Subsystems," *Proceedings of 2022 American Control Conference*, pp. 3437-3444, 2022.
29. Beaver, L. E., and **Malikopoulos, A.A.**, "Constraint-Driven Optimal Control of Multi-Agent Systems: A Highway Platooning Case Study," *Proceedings of 2022 American Control Conference*, pp. 4701-4706, 2022 — see IEEE Control Systems Letters, 6, pp. 1754-1759, 2022.
30. Chalaki, B., and **Malikopoulos, A.A.**, "A Priority-Aware Replanning and Resequencing Framework for Coordination of Connected and Automated Vehicles," *Proceedings of 2022 American Control Conference*, pp. 2533-2538, 2022 — see IEEE Control Systems Letters, 6, pp. 1772-1777, 2022.
31. Dave, A., and **Malikopoulos, A.A.**, "A Dynamic Program for a Team of Two Agents with Nested Information" *Proceedings of the 60th IEEE Conference on Decision and Control*, pp. 3768–3773, 2021.
32. Mahbub, A M. I., and **Malikopoulos, A.A.**, "A Platoon Formation Framework in a Mixed Traffic Environment," *Proceedings of the 60th IEEE Conference on Decision and Control*, pp. 1935–1940, 2021 — see IEEE Control Systems Letters, 6, 1370-1375, 2022 – **IEEE Control Systems Society TC-SC Outstanding Student Paper Prize.**
33. Chremos, I.V., and **Malikopoulos, A.A.**, "Design and Stability Analysis of a Shared Mobility Market," *Proceedings of the 2021 European Control Conference*, pp. 374–379, 2021.
34. Chalaki, B., and **Malikopoulos, A.A.**, "A Hysteretic Q-learning Coordination Framework for Emerging Mobility Systems in Smart Cities," *Proceedings of the 2021 European Control Conference*, pp. 16–21, 2021.
35. Bang, H., Beaver, L. E., and **Malikopoulos, A.A.**, "Energy-Optimal Goal Assignment of Multi-Agent Systemwith Goal Trajectories in Polynomials," *Proceedings of the 29th Mediterranean Conference on Control and Automation*, pp. 1228–1233, 2021.
36. Beaver, L. E., Dorothy, M., Kroninger, C., and **Malikopoulos, A.A.**, "Energy-Optimal Motion Planning for Agents: Barycentric Motion and Collision Avoidance Constraints," *Proceedings of 2021 American Control Conference*, pp. 1037–1042, 2021.
37. Kumaravel, S.D., **Malikopoulos, A. A.**, and Ayyagari, R., "Decentralized Cooperative Merging of Platoons of Connected and Automated Vehicles at Highway On-Ramps," *Proceedings of 2021 American Control Conference*, pp. 2051–2056, 2021.
38. Chremos, I.V., and **Malikopoulos, A.A.**, "Social Resource Allocation in a Mobility System with Connected and Automated Vehicles: A Mechanism Design Problem," *Proceedings of the 59th IEEE Conference on Decision and Control*, pp. 2642–2647, 2020.
39. Beaver, L. E., and **Malikopoulos, A.A.**, "Beyond Reynolds: A Constraint-Driven Approach to Cluster Flocking," *Proceedings of the 59th IEEE Conference on Decision and Control*, pp. 208–213, 2020.
40. Chalaki, B., Beaver, L. E., Remer, B., Jang, K., Vinitsky, E., Bayen, A., and **Malikopoulos, A.A.**, "Zero-Shot

Autonomous Vehicle Policy Transfer: From Simulation to Real-World via Adversarial Learning," *16th IEEE International Conference on Control & Automation (IEEE ICCA 2020)*, pp. 35–40, 2020 – **Best Student Paper (finalist).**

41. Chalaki, B., Beaver, L. E., and **Malikopoulos, A.A.**, "Experimental Validation of a Real-Time Optimal Controller for Coordination of CAVs in a Multi-Lane Roundabout," *Proceedings of IEEE Intelligent Vehicles Symposium– IV2020*, pp. 504–509, 2020.
42. Chremos, I.V., Beaver, L. E., and **Malikopoulos, A.A.**, "A Game-Theoretic Analysis of the Social Impact of Connected and Automated Vehicles," *Proceedings of 2020 IEEE 23rd International Conference on Intelligent Transportation Systems*, pp. 2214–2219, 2020.
43. Dave, A., and **Malikopoulos, A.A.**, "Structural Results for Decentralized Stochastic Control with a Word-of-Mouth Communication" *Proceedings of 2020 American Control Conference*, pp. 2796–2801, 2020.
44. Mahbub, A M., I., and **Malikopoulos, A.A.**, "Conditions for State and Control Constraint Activation in Coordination of Connected and Automated Vehicles," *Proceedings of 2020 American Control Conference*, pp. 436–441, 2020.
45. Mahbub, A M. I., **Malikopoulos, A.A.**, and Zhao, L., "Impact of Connected and Automated Vehicles in a Corridor," *Proceedings of 2020 American Control Conference*, pp. 1185–1190, 2020.
46. Beaver, L. E., Kroninger, C., **Malikopoulos, A.A.**, "An Optimal Control Approach to Flocking," *Proceedings of 2020 American Control Conference*, pp. 683–688, 2020.
47. Mahbub, A M. I., **Malikopoulos, A. A.,** "Concurrent Optimization of Vehicle Dynamics and Powertrain Operation Using Connectivity and Automation," *SAE Technical Paper* 2020-01-0580, 2020.
48. Mahbub, A M. I., Karri, V., Parikh, D., Jade, S., **Malikopoulos, A. A.,** "A Decentralized Time- and Energy-Optimal Control Framework for Connected Automated Vehicles: From Simulation to Field Test," *SAE Technical Paper* 2020-01-0579, 2020.
49. Beaver, L. E., and **Malikopoulos, A.A.**, "A Decentralized Control Framework for Energy-Optimal Goal Assignment and Trajectory Generation," *Proceedings of the 58th IEEE Conference on Decision and Control*, 2019 pp. 879–884, 2019.
50. **Malikopoulos, A.A.**, and Zhao, L., "Optimal Path Planning for Connected and Automated Vehicles at Urban Intersections," *Proceedings of the 58th IEEE Conference on Decision and Control*, 2019, pp. 1261–1266, 2019.
51. Dave, A., and **Malikopoulos, A.A.**, "Decentralized Stochastic Control in Partially Nested Information Structures" *Proceedings of the 8th IFAC Workshop on Distributed Estimation and Control in Networked Systems*, 52, 20, pp. 97–102, 2019.
52. Chalaki, B., and **Malikopoulos, A.A.**, "An Optimal Coordination Framework for Connected and Automated Vehicles in two Interconnected intersections," *Proceedings of 2019 IEEE Conference on Control Technology and Applications*, pp. 888–893, 2019.
53. Zhao, L., **Malikopoulos, A.A.**, and Rios-Torres, J., "On the Traffic Impacts of Optimally Controlled Connected and Automated Vehicles," *Proceedings of 2019 IEEE Conference on Control Technology and Applications*, pp. 882–887, 2019.
54. Zhao, L., Mahbub, A M., I., and **Malikopoulos, A.A.**, "Optimal Vehicle Dynamics and Powertrain Control for Connected and Automated Vehicles," *Proceedings of 2019 IEEE Conference on Control Technology and Applications*, pp. 33–38, 2019.
55. Remer, B., and **Malikopoulos, A.A.**, "The Multi-objective Dynamic Traveling Salesman Problem: Last Mile Delivery with Unmanned Aerial Vehicles Assistance," *Proceedings of 2019 American Control Conference*, pp. 5304–5309, 2019.
56. **Malikopoulos, A.A.**, and Zhao, L., "A Closed-Form Analytical Solution for Optimal Coordination of Connected and Automated Vehicles," *Proceedings of 2019 American Control Conference*, pp. 3599–3604, 2019.
57. Mahbub, A M., I., Zhao, L., Assanis, D, D., and **Malikopoulos, A.A.**, "Energy-Optimal Coordination of Connected and Automated Vehicles at Multiple Intersections," *Proceedings of 2019 American Control Conference*, pp. 2664–2669, 2019.
58. Jang, K., Vinitsky, E., Chalaki, B., Remer, B., Beaver, L. E., **Malikopoulos, A.A.**, and Bayen, A., "Simulation to Scaled City: Zero-Shot Policy Transfer for Traffic Control via Autonomous Vehicles," *Proceedings of the 10th ACM/IEEE International Conference on Cyber-Physical Systems*, pp. 291–300, 2019. https://sites.google.com/view/iccps-policy-transfer
59. Zhao, L., and **Malikopoulos, A.A.**, "Decentralized Optimal Control of Connected and Automated Vehicles in a Corridor," *Proceedings of 2018 IEEE 21th International Conference on Intelligent Transportation Systems*, pp. 1252–1257, 2018.
60. Assanis, D, D., Zhao, L., and **Malikopoulos, A.A.**, "Characterization of the new Class of Driving Cycles for

Connected and Automated Vehicles," *Proceedings of 2018 IEEE 21th International Conference on Intelligent Transportation Systems*, pp. 3668–3673, 2018.

61. Zhao, L., **Malikopoulos, A.A.**, Rios-Torres, J., "Optimal Control of Connected and Automated Vehicles at Roundabouts: An Investigation in a Mixed-Traffic Environment," *Proceedings of the 15th IFAC Symposium on Control in Transportation Systems (CTS 2018)*, pp. 73–78, 2018.
62. Stager, A., Bhan, L., **Malikopoulos, A.A.**, Zhao, L., "A Scaled Smart City for Experimental Validation of Connected and Automated Vehicles," *Proceedings of the 15th IFAC Symposium on Control in Transportation Systems (CTS 2018)*, pp. 130–135, 2018.
63. Zhang, Y.Z, **Malikopoulos, A.A.**, and Cassandras, C.G., "Decentralized Optimal Control for Connected and Automated Vehicles at Intersections Including Left and Right Turns," *Proceedings of the 56th IEEE Conference on Decision and Control*, pp. 4428-4433, 2017.
64. Rios-Torres, J., and **Malikopoulos, A.A.**, "Impact of Connected and Automated Vehicles on Traffic Flow," *Proceedings of 2017 IEEE 20th International Conference on Intelligent Transportation Systems*, pp. 1-6, 2017.
65. Zhang, Y.Z, Cassandras, C.G., **Malikopoulos, A.A.**, "Optimal Control of Connected Automated Vehicles at Urban Traffic Intersections: A Feasibility Enforcement Analysis," *Proceedings of the 2017 American Control Conference*, pp. 3548–3553, 2017.
66. Dong, J, Kuruganti, T., **Malikopoulos, A.A.**, Djouadi, S.M., and Want, L., "Home Energy Management based on Optimal Production Control Scheduling with Unknown Regime Switching," *Proceedings of the 2017 American Control Conference*, pp. 2054–2059, 2017.
67. Rios-Torres, J., and **Malikopoulos, A.A.**, "An Overview of Driver Feedback Systems for Efficiency and Safety," *Proceedings of 2016 IEEE 19th International Conference on Intelligent Transportation Systems*, pp. 667–674, 2016.
68. Rios-Torres, J., and **Malikopoulos, A.A.**, "Energy Impact of Different Penetrations of Connected and Automated Vehicles: A Preliminary Assessment," *Proceedings of the 9th ACM SIGSPATIAL International Workshop on Computational Transportation Science*, 2016.
69. Zhang, Y.Z, **Malikopoulos, A.A.**, and Cassandras, C.G., "Optimal Control and Coordination of Connected and Automated Vehicles at Urban Traffic Intersections," *Proceedings of the 2016 American Control Conference*, pp. 6227–6232, 2016.
70. Dong, J, **Malikopoulos, A.A.**, Djouadi, S.M., and Kuruganti, T., "Application of Optimal Production Control Theory for Home Energy Management in a Micro Grid," *Proceedings of the 2016 American Control Conference*, pp. 5014–5019, 2016.
71. Rios-Torres, J., **Malikopoulos, A.A.**, and Pisu, P, "Online Optimal Control of Connected Vehicles for Efficient Traffic Flow at Merging Roads," *Proceedings of 2015 IEEE 18th International Conference on Intelligent Transportation Systems*, pp. 2432–2437, 2015.
72. **Malikopoulos, A.A.**, "Pareto Efficient Policy for Supervisory Power Management Control," *Proceedings of 2015 IEEE 18th International Conference on Intelligent Transportation Systems*, pp. 2443–2448, 2015.
73. **Malikopoulos, A.A.**, "Centralized Stochastic Optimal Control of Complex Systems," *Proceedings of the 2015 European Control Conference*, pp. 721–726, 2015.
74. **Malikopoulos, A.A.**, Maroulas, V., and Xiong, J. "A Multiobjective Optimization Framework for Stochastic Control of Complex Systems," *Proceedings of the 2015 American Control Conference*, pp.4263–4268, 2015.
75. Pourazarm, S., Cassandras, C.G., and **Malikopoulos, A.A.**, "Optimal Routing of Electric Vehicles in Networks with Charging Nodes: A Dynamic Programming Approach," *Proceedings of the IEEE International Electric Vehicle Conference*, 2014.
76. Shaltout, M., **Malikopoulos, A.A.**, Pannala, S., and Chen, D., "Multi-Disciplinary Decision Making and Optimization for Hybrid Electric Propulsion Systems," *Proceedings of the IEEE International Electric Vehicle Conference*, 2014.
77. **Malikopoulos, A.A.**, "Online Identification of Power Required for Self-Sustainability of the Battery in Hybrid Electric Vehicles," *Proceedings of the 2014 Technical Conference of the ASME Internal Combustion Engine Division*, ICEF2014-5401, 2014.
78. **Malikopoulos, A.A.**, "Stochastic Optimal Control for Series Hybrid Electric Vehicles," *Proceedings of 2013 American Control Conference*, pp. 1191–1196, 2013.
79. **Malikopoulos, A.A.** and Aguilar, J.P., "Optimization of Driving Styles for Fuel Economy Improvement," *Proceedings of 2012 15th International IEEE Conference on Intelligent Transportation Systems*, pp. 194–199, 2012.
80. **Malikopoulos, A.A.**, "Equilibrium Control Policies for Markov Chains," *Proceedings of the 50th IEEE Conference on Decision and Control and European Control Conference*, pp. 7093–7098, 2011.

81. **Malikopoulos, A.A.** and Smith, D.E., "An Optimization Model for Plug-in Hybrid Electric Vehicles," *Proceedings of the 2011 Technical Conference of the ASME Internal Combustion Engine Division*, ICEF2011-60028, 2011.
82. **Malikopoulos, A.A.**, "A rollout control algorithm for discrete-time stochastic systems," *Proceedings of the 2010 ASME Dynamic Systems and Control Conference (DSCC)*, 2010.
83. **Malikopoulos, A.A.**, "Convergence Properties of a Computational Learning Model for Unknown Markov Chains," *Proceedings of the 2008 ASME Dynamic Systems and Control Conference (DSCC)*, DSCC2008-2174, 2008.
84. **Malikopoulos, A.A.**, Assanis, D.N. and Papalambros, P.Y., "Optimal Engine Calibration for Individual Driving Styles," *Proceedings of the Society of Automotive Engineers World Congress*, SAE 2008-01-1367, 2008.
85. **Malikopoulos, A.A.**, Papalambros, P.Y. and Assanis, D.N., "A State-Space Representation Model and Learning Algorithm for Real-Time Decision-Making Under Uncertainty," *Proceedings of the 2007 ASME International Mechanical Engineering Congress and Exposition*, IMECE2007-41258, 2007.
86. **Malikopoulos, A.A.**, Assanis, D.N. and Papalambros, P.Y., "Real-Time, Self-Learning Optimization of Diesel Engine Calibration," *Proceedings of the 2007 Technical Conference of the ASME Internal Combustion Engine Division*, ICEF2007-1603, 2007.
87. **Malikopoulos, A.A.**, Papalambros, P.Y. and Assanis, D.N., "A Learning Algorithm for Optimal Internal Combustion Engine Calibration in Real Time," *Proceedings of the 2007 ASME International Design Engineering Technical Conferences & Computers and Information In Engineering Conference*, DETC2007/DAC-34718, 2007.
88. **Malikopoulos, A.A.**, Filipi, Z. and Assanis, D.N., "Simulation of an Integrated Starter Alternator (ISA) for the HMMWV," *Proceedings of the Society of Automotive Engineers World Congress*, SAE 2006-01-0442, 2006.
89. Shevchenko, N. B., Krauthauser, C., Heider, D., Kim, H. J., **Malikopoulos, A.A.**, Gillespie, Jr., J. W. and Florence, J., "Manufacturing Technology to Sustain the Army's Wheeled Vehicle Fleet: Reengineering of a Composite HMMWV Hood," *Proceedings of the 34th ISTC-2002.*
90. Pantelelis, N.G., **Malikopoulos, A.A.**, Kanarachos, A. and Efentakis, N., "Simulation, Implementation and Evaluation of the Production of a Gas-Assisted Long Part," *Proceedings of the 56th SPE Annual Technical Conference- ANTEC 2001.*

Dissertation

1. **Malikopoulos, A.A.**, *Real-Time, Self-Learning Identification and Stochastic Optimal Control of Advanced Powertrain Systems*, Ph.D. Dissertation, Department of Mechanical Engineering, University of Michigan, Dec. 2007.

Patents

1. **Malikopoulos, A.A.**, *Driver Feedback for Fuel Efficiency*, United States Patent Application, No. 14/323,875.
   - Technology was licensed in SanTed Project Management LLC.
2. **Malikopoulos, A.A.**, *Method, Control Apparatus and Powertrain System Controller for Real- Time, Self-Learning Control Based on Individual Operating Style*, United States Patent, US 8,612,107 B2, December 17, 2013.
3. **Malikopoulos, A.A.**, *Method for Real-time, Self-Learning Identification of Fuel Injectors During Engine Operation*, United States Patent, US 2011/0137541 A1, June 9, 2011.

List of Graduate Field Memberships

1. Systems Engineering
2. Civil and Environmental Engineering

Teaching

Courses with asterisk indicate new courses created and introduced at Cornell University for a first time.

- **SysEn 6000 – [3 credits]** SF3
  Foundations of Complex Systems Teaching Evaluation: TBD

Courses with asterisk indicate new courses created and introduced at the University of Delaware (UD) for a first time. In parenthesis, the Mean of teaching evaluation at the UD's College of Engineering in the corresponding year.

- **MEEG 667 – [3 credits]** S23
  Convex Optimization (11 students) Teaching Evaluation: 4.7/5.0 (4.3/5.0)
- **MEEG 311 – [3 credits]** F22
  Control Systems (74 students) Teaching Evaluation: 4.7/5.0 (4.3/5.0)
- **MEEG 698 – [3 credits]** S22
  Stochastic Optimal Control (13 students) Teaching Evaluation: 4.8/5.0 (4.3/5.0)
- **MEEG 895 – [3 credits]** F21
  Game Theory and Mechanism Design (11 students) Teaching Evaluation: 4.9/5.0 (4.2/5.0)
- **MEEG 667* – [3 credits]** S21
  Convex Optimization (12 students) [Converted online due to COVID-19] Teaching Evaluation: N/A
- **MEEG 698 – [3 credits]** S20
  Stochastic Optimal Control (10 students) [Converted online due to COVID-19] Teaching Evaluation: N/A
- **MEEG 895 – [3 credits]** F19
  Game Theory and Mechanism Design (5 students) Teaching Evaluation: 4.9/5.0 (4.3/5.0)
- **MEEG 890* – [3 credits]** S19
  Nonlinear Programming (14 students) Teaching Evaluation: 4.7/5.0 (4.3/5.0)
- **MEEG 895* – [3 credits]** F18
  Game Theory and Mechanism Design (19 students) Teaching Evaluation: 4.7/5.0 (4.3/5.0)
- **MEEG STAGE867 – [3 credits]** F18
  Game Theory and Mechanism Design [online course] Teaching Evaluation: N/A
- **MEEG 401–019L – [6 credits]** F18
  Senior Design (6 students) Teaching Evaluation: 5.0/5.0 (4.3/5.0)
- **MEEG 698* – [3 credits]** S18
  Stochastic Optimal Control (16 students) Teaching Evaluation: 4.5/5.0 (4.2/5.0)
- **MEEG 311 – [3 credits]** F17
  Control Systems (72 students) Teaching Evaluation: 4.8/5.0 (4.2/5.0)

Research Supervision

Past Postdoctoral Research Associates

- Dr. Liuhui Zhao Jun. 2017 – May 2019
  Ph.D., Department of Civil & Environmental Engineering, New Jersey Institute of Technology

- Research topic: Optimal control of connected and automated vehicles, and shared mobility with next generation transportation systems.
- Position shortly after: Senior Transportation Scientist, New Jersey Institute of Technology

– Dr. Dimitris Assanis — Oct. 2017 – Oct. 2018
Ph.D., Department of Mechanical Engineering, University of Michigan

- Research topic: Analysis of the new class of driving cycles by connected and automated vehicles.
- Position shortly after: Assistant Professor, Stony Brook University

– Dr. Jackeline Rios-Torres — Sep. 2015 – Mar. 2016
Ph.D., Department of Automotive Engineering, Clemson University

- Research topic: Driver feedback systems and optimal control of connected and automated vehicles.
- Position shortly after: Eugene P. Wigner Fellow, Oak Ridge National Laboratory

Past PhD Students

Behdad Chalaki — May 2022
– Dissertation: A Real-time Motion Planning Framework for Connected and Automated Vehicles: From Theory to Scaled Experiments

- Position shortly after: Honda Research Institute

Logan Beaver — May 2022
– Dissertation: Emergence via Constrained Optimization: Analysis and Experiments with Constraint-Driven Flocking

- Position shortly after: Assistant Professor, Old Dominion University

Ishtiaque (Ishti) Mahbub — May 2022
– Dissertation: Optimal Control and Coordination of Connected and Automated Vehicles in a Mixed Traffic Environment

- Position shortly after: Aptiv - Global Technology Company

Ioannis Vasileios Chremos — April 2023
– Dissertation: Traveler-Centric Mobility Systems - Analysis and Perspectives Using Game-Theoretic Frameworks

- Position shortly after: Career & Prof. Develop. Program Manager, University of Michigan

Aditya Dave — May 2023
– Dissertation: On Centralized and Decentralized Decision-Making Problems with Partial Information

- Position shortly after: Postdoctoral Research Associate, Cornell University

Current PhD Students

Heeseung Bang — Expected: Spring 2024
– Dissertation: Traffic-Aware Routing and Coordination of Connected and Automated Vehicles

Ioannis Faros — Expected: Spring 2027
– Dissertation: On Team Decision Problems with Nonclassical Information Structures

Viet-Anh Le — Expected: Spring 2025
– Dissertation: Separation Between Learning and Control for Cyber-Physical Systems

Filippos Tzortzoglou — Expected: Spring 2028
- Dissertation: Integration of Human Risk Preferences in Control Algorithms of Connected and Automated Vehicles

Nishanth Venkatesh — Expected: Spring 2027
- Dissertation: At the Intersection of Learning and Control in Cyber-physical Systems

Current and Past M.S. Students

- Raymond Zayas — Spring 2022
  M.S. thesis/project title: A digital smart city for emerging mobility system
- Amanda Kelly — Spring 2022
  M.S. thesis/project title: Optimal design of robotic connected and automated vehicles
- Sai Krishna Sumanth Nakka — Fall 2021
  M.S. thesis/project title: Multi-agent deep reinforcement learning for emerging mobility systems
- Nishanth Senthil Kumar — Spring 2021
  M.S. thesis/project title: Designing incentives for social media platforms
- Sumeet Gupta — Spring 2020
  M.S. thesis/project title: A user interface framework for scaled city testbeds
- Apoorva Patil — Spring 2020
  M.S. thesis/project title: A user interface framework for robotic connected and automated vehicles
- Songzhen (Jason) Gui — Spring 2020
  M.S. thesis/project title: Optimal control for unmanned aerial vehicles
- Yiming Wan — Spring 2020
  M.S. thesis/project title: Coordination of connected and automated vehicles
- Harshavardhan Desai — Spring 2019
  M.S. thesis/project title: Optimization of last mile delivery
- Lavanya Jakka — Spring 2019
  M.S. thesis/project title: Routing optimization in a scaled smart city
- Ryan Montgomery — Spring 2019
  M.S. thesis/project title: Car-following models for emerging mobility systems
- Benjamin Remer — Spring 2019
  M.S. thesis/project title: Optimization of last mile delivery with unmanned aerial vehicle Assistance

Serving PhD Committees

- Maryam Shaygan; Academic Advisor: Dr. Mark Nejad — 2023
  Dissertation: Equilibrium Analysis in Urban Traffic: Impact of Electric, Autonomous, and Shared Vehicles
- Zheng Huai; Academic Advisor: Dr. Guoquan Huang — 2023
  Dissertation: Robocentric Visual-Inertial Localization and Mapping
- Michael Sebok; Academic Advisor: Dr. Bert Tanner — 2023
  Ph.D. thesis: A generalized hybrid systems model for heterogeneous robotic systems with physical interaction

- Ashkan Zehfroosh; Academic Advisor: Dr. Bert Tanner 2022
  Dissertation: Decision-Making and Control of an Autonomous Agent in Interaction with Partially-Known Agents
- Cong Wei; Academic Advisor: Dr. Bert Tanner 2021
  Dissertation: Synchronization for Large Network of Marine Active Drifting Sensors Through Periodic Intermittent Rendezvous
- Sharmila Devi Kumaravel; Academic Advisor: Dr. Ramakalyan Ayyagari, National Institute of Technology 2021
  Dissertation: Graph Theoretic Modeling and Control for Decongesting Transportation Networks
- Yongqiang Wang; Academic Advisor: Dr. Ajay Prasad 2020
  Dissertation: Health Conscious Energy Management Strategies For Fuel Cell/Battery Hybrid Vehicles
- Adam Stager; Academic Advisor: Dr. Bert Tanner 2020
  Dissertation: Novel Designs and Motion Behaviors for Small and Low-Cost Mobile Robots

Supervised Research Projects of Undergraduate Students and K12 Interns

- Anish Dudeja – K12 2021
- Clare O'Dwyer – K12 2021
- Ojas Purandare – K12 2020-21
- Meera Ratnagiri – K12 2021
- Ethan Stoecker – K12 2021
- Frank Doyle 2020-21
- Juan Manuel Nunez Bastidas 2020-21
- Joel Diaz Goenaga 2020-21
- Nikki Pilla 2020-21
- Jenny Ziegler 2020-21
- Elizabeth Amy Santoso 2019-20
- Kristina Kowal 2019-21
- Michael Lashner 2017-19
- Kunzheng Li 2017-19
- Sophia Loewenguth 2017-19
- Melody Cerro 2017-19
- Taylor Coleman 2017-19
- Bryce Cushing 2017-19
- Dean D' Souza 2017-19
- Haley Lloyd 2017-19
- John Naphier 2017-19
- Thomas Patterson 2017-19
- Phillip Penn 2017-19
- Yue Feng 2017-19
- Nikhil Kanamarla 2018-19
- Lucas Ramsey – K12 (shortly after at the University of Michigan) 2018-20
- Christophoros Kontomaris – K12 (shortly after at Georgia Institute of Technology) 2018-20
- Brennan Scheffler 2017-19
- Rachel Silverman 2017-19
- Yiming Wan 2017-19
- Rebecca (Becky) Williams 2017-19
- Raymond Zayas 2017-20
- Luke Bhan – K12 (shortly after at Vanderbilt University) 2017-18

Past Graduate/Undergraduate Students Supervised Internship at ORNL

– Yue Joyce Zhang — May 2015 – Aug. 2015
Ph.D. student, Electrical & Computer Engineering, Boston University, Boston

– Jackeline Rios-Torres — Sep. 2014 – Aug. 2015
Ph.D. student, Automotive Engineering, Clemson University,Clemson

– Erik Miehling — Jun. 2013 – Aug. 2013
Ph.D. student, Electrical & Computer Engineering, University of Michigan, Ann Arbor

– Mohamed L. Shaltout — Jun. 2013 – Aug. 2013
Ph.D. student, Mechanical Engineering, University of Texas, Austin

– Yang Shen — May 2012 – Aug. 2012
M.S. student, Mathematics, University of Tennessee, Knoxville

– Sherrill Toran — Jun. 2012 – Aug. 2012
M.S. student, Mathematics, Tennessee State University, Nashville

– Zachary A. Henderson — Jun. 2012 – Aug. 2012
Undergraduate student, Mechanical Engineering, Tennessee Tech University, Cookeville

– Michael E. Cholette — May 2011 – Aug. 2011
Ph.D. student, Mechanical Engineering, University of Texas, Austin

– Juan P . Aguilar — May 2011 – Aug. 2011
M.S. student, Mechanical Engineering, Georgia Institute of Technology

Student Awards and Honors

– Ioannis Vasileios Chremos, University of Delaware COE Diversity and Inclusion Award — 2023
– Behdad Chalaki, Allan P. Colburn Prize in Mathematical Sciences and Engineering Nominee — 2023
– Behdad Chalaki, Tsu-Wei & Mei-Sheng Lo Chou Best Dissertation Award — 2023
– Behdad Chalaki, Iranian American Academics and Professionals (IAAP) Scholarship — 2022
– Ioannis Vasileios Chremos, University of Delaware Doctoral Fellowship Award — 2022
– Ioannis Vasileios Chremos, College of Engineering Graduate Student Service Award — 2021
– Logan Beaver, University of Delaware Graduate Scholar Award — 2020-21
– Behdad Chalaki, Graduate Student Achievement Award — 2020-21
– Ioannis Vasileios Chremos, Graduate Student Government Outstanding Senator Award — 2020-21
– Behdad Chalaki and Logan Beaver, Best Student Paper Award Finalist, IEEE ICCA — 2020
– Logan Beaver, Graduate Student Achievement Award — 2020
– Ishtiaque (Ishti) Mahbub, University of Delaware Research Grant — 2019
– Ishtiaque (Ishti) Mahbub, University of Delaware Professional Development Award — 2019
– Ishtiaque (Ishti) Mahbub, Outstanding Presentation Award, Annual Graduate Students' Forum — 2019
– Logan Beaver, Summer Doctoral Fellowship Award — 2018
– Logan Beaver, Helwig Fellowship — 2017-21
– Jackeline Rios-Torres, Eugene P. Wigner Fellowship – Oak Ridge National Laboratory — 2016

Research Grants

Principal Investigator

- Delaware Department of Transportation — September 2023 – August 2024
  Total Budget: $99,843
  - Project title: Online Travel Demand Distribution for Socially Optimal Mobility Systems.
- National Science Foundation – National Robotics Initiative 3.0 Program — October 2022 – September 2026
  Total Budget: $475,787
  - Project title: NRI: Addressing Safe Interaction Between Autonomous and Human-driven Vehicles.
- National Science Foundation – Cyber-physical Systems Program — July 2022 – June 2025
  Total Budget: $1,179,554
  - Project title: Collaborative Research: CPS: Medium: An Online Learning Framework for Socially Emerging Mixed Mobility.
  - Co-Investigators: (1) Christos Cassandras, Boston University and (2) Cathy Wu, MIT
- National Renewable Energy Laboratory — Feb. 2021 – Aug. 2022
  Total Budget: $92,670
  - Project title: Incorporation of Connected and Automated Vehicles Energy Impacts into RouteE
- Delaware Energy Institute — Feb. 2019 – May. 2021
  Total Budget: $208,171
  - Project title: Establishment of Sociotechnical Systems Center
- UT Battelle — Jun. 2017 – May 2020
  Total Budget: $210,000
  - Project title: System Optimization Opportunities due to Vehicle Connectivity and Automation.
- ARPA-E NEXTCAR Program — Apr. 2017 – Dec. 2020
  Total Budget: $4,196,481
  - Project title: Simultaneous optimization of vehicle and powertrain operation using connectivity and automation.
  - Co-Investigators: (1) Christos Cassandras, Boston University, (2) Huei Peng, University of Michigan, (3) Shyam Jade, Bosch, and (4) Jackeline Rios-Torres, Oak Ridge National Laboratory.
- US Department of Energy, Vehicle Technology Office — Oct. 2016 – Sep. 2017
  Total Budget: $880,000
  - Project title: Decentralized optimal control for connected and automated vehicles.
- US Department of Energy, Vehicle Technology Office — Oct. 2015 – Sep. 2016
  Total Budget: $225,000
  - Project title: An optimization framework for improving the efficiency of connected and automated vehicles.
- LDRD Program, Oak Ridge National Laboratory — Oct. 2014 – Sep. 2016
  Total Budget: $889,987
  - Project title: Scalable data and informatics for connected vehicles leveraged to enhance efficiency.
- US Department of Energy, Vehicle Technology Office — Oct. 2013 – Sep. 2014
  Total Budget: $109,997
  - Project title: Analysis for improving efficiency with connected vehicles.
- US Department of Energy, Vehicle Technology Office — Oct. 2013 – Sep. 2015
  Total Budget: $302,883
  - Project title: Gas turbine heavy hybrid powertrain variants: opportunities and potential for systems optimization.
- LDRD Program, Oak Ridge National Laboratory — Oct. 2013 – Sep. 2015
  Total Budget: $185,000
  - Project title: Optimal supervisory power management control in plug-in hybrid electric vehicles.

– US Department of Energy, Vehicle Technology Office Oct. 2011 – Sep. 2013
Total Budget: $412,582
  - Project title: An optimal control framework for autonomous intelligent hybrid propulsion systems.

– Alvin M. Weinberg Award, Oak Ridge National Laboratory Nov. 2010 – Sep. 2012
Total Budget: $199,455
  - Project title: Stochastic control for intelligent advanced propulsion systems.

Co- Investigator

– LDRD Program, Oak Ridge National Laboratory Oct. 2014 – Sep. 2016
Total Budget: $2,659,850; received: $775,832
  - Optimal control for an off-grid building management system.

Invited Seminars, Honorary Lectures, Named Lectures

1. University of Minessota, *Distinguished Warren Seminar Series,* Host: Professor Raphael Stern, "Separation of Learning and Control for Cyber-Physical Systems," October 27, 2023.
2. Cornell University, Systems Engineering, Host: Professor Francesca Parise, "Learning and Control for Emerging Mobility Systems," October 20, 2023.
3. Boston University, *Center for Information and Systems Engineering,* Host: Professor Christos Cassandras, "A Traveler-Centric Mobility Game Under Rationality and Prospect Theory," October 6, 2023.
4. Keynote Talk, 2023 International Symposium on Transportation Data and Modeling, "Learning and Control for Emerging Mobility Systems," June 21, 2023.
5. University of Delaware, Mobility Forum Seminar Series, Host: Professor Weisong Shi, "Combining Learning and Control in Cyber-Physical Systems with Emphasis on Emerging Mobility Systems," May 12, 2023.
6. Cornell University, Department of Civil & Environmental Engineering, Host: Professor Samitha Samaranayake, "Learning and Control in Cyber-Physical Systems: Challenges and Opportunities," March 9, 2023.
7. University of Michigan, Department of Civil & Environmental Engineering, Host: Professor Jeff Scruggs, "Learning and Control in Cyber-Physical Systems: Challenges and Opportunities," February 23, 2023.
8. Georgia Institute of Technology, IRIM Seminar Series, Host: Professor Kyriakos G. Vamvoudakis, "Combining Learning and Control in Cyber-Physical Systems," January 25, 2023.
9. University of California at Berkeley, *Semiautonomous Seminar Series,* Host: Professor Shankar Sastry, "The Design and Analysis of a Mobility Game," Oct. 7, 2022.
10. RWTH Aachen University, Germany, Host: Professor Bassam Alrifaee, "Separation of Learning and Control for Cyber-Physical Systems," February 3, 2022.
11. University of Pennsylvania, General Robotics, Automation, Sensing and Perception (GRASP) Lab, Host: Professor Rahul Mangharam, "Separation of Learning and Control for Cyber-Physical Systems," January 28, 2022.
12. ETH Zurich, Autonomy Talks, Host: Professor Emilio Frazzoli, "Separation of Learning and Control for Cyber-Physical Systems," January 25, 2022.
13. Massachusetts Institute of Technology, *Henry L. Pierce Laboratory Seminar Series,* Department of Civil and Environmental Engineering, Host: Professor Cathy Wu, "Learning and Control for Emerging Mobility Systems," December 8, 2021.
14. University of Delaware, Department of Electrical & Computer Engineering, Host: Professor Abhyudai Singh, "Separation of Learning and Control for Cyber-Physical Systems," December 6, 2021.

15. Stanford University, Department of Electrical Engineering and Computer Science, Host: Professor Marco Pavone, "Separation of Learning and Control for Cyber-Physical Systems," December 3, 2021.

16. Boston University, *Center for Information and Systems Engineering,* Host: Professor Christos Cassandras, "Separation of Learning and Control for Cyber-Physical Systems," November 19, 2021.

17. Rutgers University, Host: Professor Benedetto Piccoli, "Learning and Control for Emerging Mobility Systems," October 22, 2021.

18. University of Michigan, *Control Seminar Series,* Host: Professor Huei Peng, "Optimal Time Trajectory with Provable Safety for Connected and Automated Vehicles," February 5, 2021.

19. Google, Mountain View, Host: Dr. Rick Bukowski, "Optimal Path Planning and Coordination for Connected and Automated Vehicles," January 27, 2021.

20. University of Massachusetts Amherst, Department of Civil and Environmental Engineering, Host: Professor Eleni Christofa, "Optimal Path Planning and Coordination for Connected and Automated Vehicles," October 15, 2020.

21. Boston University, *Center for Information and Systems Engineering,* Host: Professor Christos Cassandras, "Optimal Path Planning and Coordination for Connected and Automated Vehicles," October 9, 2020.

22. Carnegie Mellon University, Department of Systems Engineering, Host: Professor Jeremy J. Michalek, "A Decentralized Optimal Control Framework for Energy-Efficient Mobility Systems," March 29, 2019.

23. Cornell University, Ezra's Round Table Systems Seminar series, Host: Professor Samitha Samaranayake, "Decentralized Optimal Control for Energy-Efficient Mobility Systems," February 22, 2019.

24. University of Pennsylvania, Department of Electrical and Systems Engineering, Host: Professor Rahul Mangharam, "A Decentralized Optimal Control Framework for Coordination of Connected and Automated Vehicles," October 5, 2018.

25. Penn State University, Department of Department of Mechanical & Nuclear Engineering, Host: Professor Hosam Fathy, "A Decentralized Energy-Optimal Control Framework for Connected and Automated Vehicles," May 24, 2018.

26. University of Delaware, Department of Civil & Environmental Engineering, Host: Professor Christopher Meehan, "An Optimal Control Framework for Energy-Efficient Mobility Systems," Feb. 13, 2018.

27. Ohio State University, *Center of Automotive Research Seminar,* Host: Professor Giorgio Rizzoni, "Optimal Control of Vehicle and Powertrain Operation Using Connectivity and Automation," Dec. 5, 2017.

28. University of Maryland, Baltimore, MD, Department of Mathematics and Statistics, Applied Mathematics Colloquium, Host: Professor Jinglai Shen, "Optimal Control for Vehicle Coordination Using Connectivity and Automation," Oct. 13, 2017.

29. Temple University, Department of Applied Mathematics and Scientific Computing, Host: Professor Benjamin Seibold, "A Decentralized Optimal Control Framework for Improving Energy Consumption of Connected and Automated Vehicles," Apr. 12, 2017.

30. University of California at Berkeley, *Institute of Transportation Studies Seminar,* Host: Professor Alexandre Bayen, "Coordinated Decentralized Optimal Control for Connected and Automated Vehicles," Feb. 10, 2017.

31. University of Delaware, Department of Mechanical Engineering, Host: Professor Suresh Advani, "Decentralized Optimal Control for Connected and Automated Vehicles," Dec. 5, 2016.

32. Massachusetts Institute of Technology, *Pierce Lab Seminar Series*, Department of Civil and Environmental Engineering, Host: Professor Carolina Osorio, "Decentralized Optimal Control for Online Coordination of Connected and Automated Vehicles," Sep. 21, 2016.

33. Massachusetts Institute of Technology, *Guest Lecture*, Department of Civil and Environmental Engineering, Host: Professor Carolina Osorio, "The Role of Optimization and Control in Transportation," Sep. 20, 2016, Cambridge, MA.

34. University of Maryland, College Park, Department of Mechanical Engineering, Host: Professor Patrick F. McCluskey, "A Decentralized Optimal Control Framework for Connected and Automated Vehicles," Sep. 1, 2016.

35. University of Michigan, Department of Civil and Environmental Engineering, Host: Professor Henry Liu, "Decentralized Optimal Control for Online Coordination of Connected and Automated Vehicles," Mar. 7, 2016.

36. University of California at Berkeley, *Institute of Transportation Studies Seminar,* Host: Professor Pravin Varaiya, "Decentralized Optimal Control for Online Coordination of Connected and Automated Vehicles," Feb. 17, 2016.

37. University of Wisconsin, Madison, WI, Department of Mechanical Engineering, Host: Professor Dan Negrut, "Decentralized Optimal Control for Online Coordination of Connected and Automated Vehicles," Jan. 20, 2016.

38. University of South California, Viterbi, Department of Electrical Engineering, Host: Professor Petros Ioannou, "Decentralized Online Optimal Control for Coordination of Connected and Automated Vehicles," Nov. 19, 2015.

39. University of Tennessee, Department of Civil and Environmental Engineering, Host: Professor Asad Khattak, "Decentralized Optimal Control of Connected and Automated Vehicles," Sep. 24, 2015.

40. McGill University, Montreal, Canada, *Group for Research in Decision Analysis (GERAD) Seminar*, Host: Professor Michael Kokkolaras, "Complex systems in Transportation," May 21, 2015.

41. University of Tennessee, Department of Mathematics, Host: Professor Vasileios Alexiadis, "Optimal Control for Complex Systems in Energy and Transportation," Mar. 11, 2015.

42. University of Virginia, Department of Civil and Environmental Engineering, Host: Professor Brian Park, "System-Wide Optimal Control for Complex Systems in Transportation," Feb. 20, 2015.

43. Boston University, Boston, MA, Center of Information & Systems Engineering, Host: Professor Christos Cassandras, "A Multiobjective Optimization Framework for Stochastic Optimal Control in Complex Transportation Systems," Dec. 19, 2013.

44. University of Tennessee, Department of Industrial and Systems Engineering, Host: Professor Mingzhou Jin, "A Duality Framework for Online Optimal Control in Transportation Systems," Nov. 8, 2013.

45. University of Minnesota, Department of Mechanical Engineering, Host: Professor Zongxuan Sun "A Multiobjective Optimization Framework for Online Optimal Control of Hybrid Electric Vehicles," Oct. 30, 2013.

46. Georgia Institute of Technology, School of Aerospace Engineering, Host: Professor Panos Tsiotras, "A Multiobjective Optimization Framework for Stochastic Optimal Control in Complex Systems," May 23, 2013.

47. Massachusetts Institute of Technology, *Seminar in the Aerospace Robotics and Embedded Systems Laboratory*, Host: Professor Emilio Frazzoli, "Average Cost Criterion in Controlled Markov Chains: Enabling Theoretical Framework for Optimal Solution Characterization," Jun. 18, 2012.

48. University of Michigan, Department of Aerospace, Host: Professor Ilya Kolmanovsky, "Dual Constrained Optimization of the Average Cost in Markov Chain," Apr. 30, 2012.

49. University of Tennessee, Department of Mathematics, Host: Professor Vasileios Maroulas, "Equilibrium Control Policies for Markov Chains," Feb. 24, 2012.

50. University of Texas, Austin, Department of Electrical Engineering, Host: Professor Dragan Djurdjanovic, "Stochastic Control and Optimization for Eco-Driving Feedback Technologies," Oct. 24, 2011.

51. University of Tennessee, Department of Mathematics, Host: Professor Vasileios Alexiadis, "Self-Learning Identification and Stochastic Control for Autonomous Intelligent Propulsion Systems," Apr. 27, 2011.

Invited Talks in Industry, Workshops, Panels

1. Invited talk in the Workshop on *Cooperative Decision-making for Connected and Automated Vehicles in Intelligent Transportation Systems,* at 26th IEEE International Conference on Intelligent Transportation Systems, Bilbao, Spain, "Combining Learning and Control in Emerging Mobility Systems," Sep 29, 2023.

2. Invited talk in the Workshop on Adaptive Control to Intelligent Transportation Systems – In Celebration of Prof. Petros Ioannou's 70th Birthday – Host: Dr. Marios Polycarpou and Jing Sun, "Self-learning control for advanced powertrain systems," June 29, 2023.

3. Invited talk in Mathworks, Host: Dr. Anastasia Mavromati, "Optimal Control of Vehicle and Powertrain Operation Using Connectivity and Automation," May 16, 2023.

4. Invited talk at the *CPS-IoT 2023 Workshop,* on *Bridging Learning and Algorithmic Fairness in the Operation of Urban Infrastructure and Network Systems,* San Antonio, Texas, "Combining Learning and Control in Cyber-Physical Systems," May 9, 2023.

5. Invited talk at the *CDC workshop: Combining Learning and Control in Cyber-Physical Systems,* Cancún, Mexico, "Separation of Learning and Control for Cyber-Physical Systems," Dec. 5, 2022.

6. Invited talk at the *NSF workshop: The Frontiers of Artificial Intelligence-Empowered Methods and Solutions to Urban Transportation Challenges,* Seattle, WA, "At the Intersection of Learning and Control for Emerging Mobility Systems," Jun. 4, 2022.

7. Invited talk at the *US Department of Energy, Energy-Efficient Mobility Systems Program*, Washington, D.C., "Simultaneous Optimization of Vehicle and Powertrain Operation Using Connectivity and Automation," Dec. 7, 2021.

8. Invited talk at *ExxonMobil*, Clinton, NJ, "Emerging Mobility Systems in Smart Cities," Oct. 28, 2021.

9. 1*st CIRCLES Workshop on Traffic and Autonomy*, "Learning and Control for Emerging Mobility Systems," Sep. 23, 2021.

10. Workshop on *Autonomous, Connected and Electrified Mobility Systems: Modeling, Control, and Deployment* at the 24th IEEE International Conference on Intelligent Transportation Systems, Indianapolis, Indiana, "At the Intersection of Learning and Control for Connected and Automated Vehicles," Sep. 19, 2021.

11. *2nd Workshop on Internet of Things in Intelligent Transportation Systems: Opportunities and Challenges* at the 24th IEEE International Conference on Intelligent Transportation Systems, Indianapolis, Indiana, "Optimal Time Trajectory with Provable Safety for Connected and Automated Vehicles," Sep. 19, 2021.

12. Workshop on *Motion Planning, Control, and Learning for Autonomous Driving Systems* at the 2021 IEEE Conference on Control Technology and Applications (CCTA), San Diego, California, "An Efficient Emerging Mobility System for Smart Cities," Aug. 8, 2021.

13. *SIAM Conference on Control and Its Applications,* Spokane, Washington, "Optimal Time Trajectory and Coordination for Connected and Automated Vehicles," Jul. 21, 2021.

14. Workshop on *Modeling and Control Tools for Sustainable and Connected Mobility in Smart Cities* at the 29th Mediterranean Conference on Control and Automation (MED 2021), Puglia, Italy, "A Socially-Efficient Emerging Mobility Market," Jun. 22, 2021.

15. Workshop on *Control, Optimization, and Learning Methods for Emerging Mobility Systems,* at the 59th Conference on Decision and Control (CDC 2020), Jeju Island, Republic of Korea, "Optimal Path Planning with Provable Safety for Connected and Automated Vehicles," Dec. 13, 2020.

16. *IEEE Delaware Bay Section and ASME Delaware Section Joint Meeting,* "Optimal Time Trajectory and Coordination for Connected and Automated Vehicles," Nov. 19, 2020.

17. *IPAM, NSF Mathematical Sciences Institute,* Workshop on *Safe Operation of Connected and Autonomous Vehicle Fleets*, Los Angeles, CA, "Optimal Path Planning and Coordination for Connected and Automated Vehicles," Oct. 29, 2020.

18. *IEEE Delaware Bay Section,* "Optimal Path Planning and Coordination for Emerging Mobility Systems," Mar. 10, 2020.

19. *INFORMS Annual Meeting,* Methods and Results for the Costs and Environmental Impacts of Ride-Hailing, "Socially Adoptable Energy-efficient Mobility Systems," Oct. 23, 2019.

20. *3rd IAVSD Workshop on Dynamics of Road Vehicles: Connected and Automated Vehicles,* University of Michigan, "A Sociotechnical Systems Approach for Energy-Efficient Mobility in Smart Cities," Apr. 29, 2019.

21. Workshop on Risk Analysis for Autonomous Vehicles: Issues and Future Directions, University of Maryland, "A Decentralized Energy-Optimal Control Framework for Connected and Automated Vehicles," Apr. 26, 2019.

22. International Workshop on Cyberphysical Systems and Cyber-resilience, "A Sociotechnical Systems Approach for Energy- Efficient Mobility of Smart Cities," Mar. 20, 2019.

23. Symposium on Societal and Technological Research Challenges for Highly Automated Road Transportation Systems in Germany and the US: Diversities and Synergy Potentials, "A Sociotechnical Systems Approach for Energy- Efficient Mobility of Smart Cities," Oct. 30, 2018.

24. *ASME Dynamic Systems and Control Conference, Connected and Autonomous Vehicles Workshop,* "Decentralized Optimal Control for Connected and Automated Vehicles," Sept. 30, 2018.

25. *Office of Naval Research,* "A Decentralized Optimal Control Framework for Coordination of Connected and Automated Vehicles," Sept. 19, 2018.

26. *2018 Automated Vehicle Symposium,* San Francisco, CA, "Simultaneous Optimization of Vehicle and Powertrain Operation Using Connectivity and Automation," Jul. 10, 2018.

27. *2018 Automated Vehicle Symposium,* San Francisco, CA, "Decentralized Optimal Control for Connected and Automated Vehicles at Signal-free Intersections," Jul. 9, 2018.

28. *Ford Motor Company,* Dearborn, MI, "Optimal Control of Vehicle and Powertrain Operation Using Connectivity and Automation," Feb. 16, 2018.

29. *US ARMY Research Laboratory,* Aberdeen Proving Ground, MD, "Decentralized Optimal Control for Vehicle Coordination Using Connectivity and Automation," Feb. 8, 2018.

30. *ASME Delaware Section,* Mendenhall, PA, "Decentralized Optimal Control for Connected and Automated Vehicles," Jan. 16, 2018.

31. 2017 Automated Vehicle Symposium, San Francisco, CA, "Coordinated Decentralized Optimal Control for Connected and Automated Vehicles," Jul. 11, 2017.

32. *VOLPE Center (US DOT),* Boston, MA, "Online Coordination of Connected and Automated Vehicles to Improve Traffic Flow," Sep. 20, 2016.

33. *Mobility Advisory Committee*, City-County Building, "Online Coordination of Connected and Automated Vehicles to Improve Traffic Flow," Oct. 27, 2016.

34. *Low Voltage Vehicle Electrification Summit,* Detroit, MI, "Reviewing Optimal Power Management Control of Hybrid Electric Vehicles Allowing for Optimized Power Distribution," Apr. 27, 2016.

35. *Urban Autonomous Vehicles Roundtable* at FedEx Institute of Technology, Mephis, TN, "Online Coordination of Connected and Automated Vehicles," Apr. 21, 2016.

36. *IPAM, NSF Mathematical Sciences Institute, Workshop on Traffic Estimation*, Los Angeles, CA, "Decentralized Optimal Control for Online Coordination of Connected and Automated Vehicles," Oct. 12-16, 2015.

37. 2015 Automated Vehicle Symposium, Ann Arbor, MI, "Decentralized Optimal Control of Connected Vehicles at Intersections," Jul. 21-23, 2015.

38. *iTEC2015,* Dearborn, MI, "System-Wide Optimal Control for Connected Vehicles," Jun. 15, 2015.

39. *iTEC2015,* Dearborn, MI, "Optimal Control for Hybrid Electric Vehicles," Jun. 15, 2015.

40. *Big Data for Connected Cars and Internet of Things Conference,* Novi, MI, "System-Wide Optimal Control for Connected Vehicles," Jun. 2, 2015.

41. Advanced Hybrid division at Cummins Corporate Research & Technology, Columbus, IN, "A Consumer-Oriented Control Framework for Performance Analysis in Hybrid Electric Vehicles," Oct. 21, 2014.

42. *3rd Midwest Workshop on Control and Game Theory,* Columbus, OH, "A Duality Framework for Stochastic Optimal Control of Complex Systems," Apr. 20, 2014.

43. *2013 IEEE Workshop on Open Problems and Challenges in Automotive Control,* Washington, D.C., "A Multiobjective Optimization Framework for Stochastic Optimal Control of Advanced Propulsion Systems," Jun. 20, 2013.

44. *2012 DOE Crosscut Workshop on Lean Emissions Reduction Simulation Workshop,* University of Michigan, Dearborn, MI, "Stochastic Optimal Control for Advanced Propulsion Systems," Apr. 30 – May 2, 2012.

45. *2011 DOE Crosscut Workshop on Lean Emissions Reduction Simulation Workshop,* University of Michigan, Dearborn, Michigan, "Self-Learning Identification and Stochastic Control for Autonomous Intelligent Propulsion Systems," Apr. 19-21, 2011.

46. *2010 National Academy of Engineering (NAE) German-American Frontiers of Engineering Symposium,* Oak Ridge National Laboratory, "Self-Learning Identification and Stochastic Control for Autonomous Intelligent Propulsion Systems," Apr. 23 – 25, 2010, Oak Ridge, TN.

Academic Service

– Department Chair's search committee in Mechanical Engineering, Member	2022 – 2023
– Department's Graduate Admissions Committee, Member	2021 – 2023
– Lead for Automotive Concentration	2017 – 2023
– Member of the guiding coalition group for CoE strategic and implementation plan	2020
– Department's Graduate Curriculum Committee, Member	2017 – 2021
– ASME Faculty Advisor	2017 – 2021
– Senior Design Faculty Advisor and Sponsor	Fall 2018
– Faculty search committee in Robotics, Member	2017 – 2019
– Department's Distinguished Seminar Committee, Chair	2017 – 2019
– UD Organizing committee, Symposium on Smart Cities & Sustainable Energy	2017

Professional Affiliations

– AAAS, Member, American Association for the Advancement of Science	2017 – present
– IEEE, Senior Member, Institute of Electrical & Electronics Engineers	2017 – present
– ASME, Fellow, American Society of Mechanical Engineers	2017 – present

Professional Service

National Science Foundation (NSF) Panel

– Dynamics, Control and System Diagnostics (DCSD) program	2022
– Cyber-Physical Systems (CPS) program	2021
– Dynamics, Control and System Diagnostics (DCSD) program	2021
– Civil Infrastructure Systems (CIS) Program	2018

Department of Energy (DOE) Reviewer

- Energy-Efficient Mobility Systems (EEMS) Program – National Labs 2010 – 2021
- Energy-Efficient Mobility Systems (EEMS) Program – FOA 2010 – 2021

Editorial Board

- Editor-in-Chief, Frontiers in Sustainable Cities – Urban Transport. Syst. and Mobility 2021 – 2022
- Associate Editor, IEEE Transactions on Automatic Control 2020 – present
- Associate Editor, Automatica 2020 – present
- Guest IEEE Transactions on Intelligent Transportation Systems, 2020 – 2021
  Special Issue: Big Data and AI for Computational Transportation in the Cyber-Physical-Social Space
- Member, Control Systems Society Conference Editorial Board 2018 – present
- Associate Editor, IEEE Transactions on Intelligent Transportation Systems 2017 – 2020
- Associate Editor, IEEE Transactions on Intelligent Vehicles 2017 – 2020
- Associate Editor, 2022 Conference on Decision and Control, Cancún, Mexico 2022
- Associate Editor, 2022 American Control Conference, Atlanta, Georgia 2022
- Associate Editor, 2021 Conference on Decision and Control, Austin, Texas 2021
- Associate Editor, 2021 American Control Conference, New Orleans, Louisiana 2021
- Associate Editor, 2020 Conference on Decision and Control, Jeju Island, Republic of Korea 2020
- Associate Editor, 2020 American Control Conference, Denver, CO 2020
- Associate Editor, 2019 Conference on Decision and Control, Nice, France 2019
- Associate Editor, 2019 American Control Conference, Philadelphia, PA 2019
- Associate Editor, 21st IEEE Intern. Conf. on Intelligent Transportation Systems, Maui, Hawaii 2018
- Associate Editor, IEEE 14th Conference on Automation Science Engineering, Munich, Germany 2018
- Associate Editor, IFAC 2017 World Congress, Toulouse, France 2017
- Associate Editor, IEEE 13th Conference on Automation Science Engineering, Xi'an, China 2017

Reviewer

- IEEE Transactions on Automatic Control
- Automatica
- IEEE Transactions on Control Systems Technology
- IEEE Transactions on Intelligent Transportation Systems
- Transportation Research Part B: Methodological
- Transportation Research Part C: Emerging Technologies
- IEEE Conference on Decision and Control Conference (CDC)
- American Control Conference (ACC)
- European Control Conference (ECC)
- IEEE Conference on Intelligent Transportation Systems (ITSC)

Conference and Workshop Organizer

- Workshop and Panel Co-chair 2023
  The 62th Conference on Decision and Control
- Invited Sessions Chair 2023
  2023 IEEE International Automated Vehicle Validation Conference (IAVVC)
- Organizer 2023
  IEEE ITSS-Sponsered Workshop entitled "The Road to Emerging Mobility Systems for Smart Cities"
- Publicity Chair 2022
  The 61th Conference on Decision and Control

- Organizer: Combining Learning and Control in Cyber-Physical Systems 2022
  Workshop at the 61st IEEE Conference on Decision and Control
- Co-Organizer: Motion Planning, Control, and Learning for Autonomous Driving Systems 2021
  Workshop at the 2021 5th IEEE Conference on Control Technology and Applications
- Co-Organizer: Modeling and Control Tools for Sustainable and Connected Mobility in Smart Cities 2021
  Workshop at the 29th Mediterranean Conference on Control and Automation
- Co-Organizer: Control, Optimization, and Learning Methods for Emerging Mobility Systems 2020
  Workshop at the 59th Conference on Decision and Control
- Co-Organizer: Traffic Management for Future Mobility – CAVs in a Mixed Traffic Environment 2020
  Workshop at the 23rd IEEE International Conference on Intelligent Transportation Systems
- Organizer: Inaugural Symposium of the Sociotechnical Systems Center 2020
  University of Delaware
- Organizer: Sociotechnical Systems Approach for Energy-Efficient Mobility in Smart Cities 2019
  Workshop at the 2019 American Control Conference
- Organizer: Next Generation Mobility Systems: Implications on Energy and Social Aspects 2018
  Workshop at the 21st IEEE International Conference on Intelligent Transportation Systems
- Chair, Session: The Road to Future Urban Mobility 2016
  NAE EU-US Frontiers of Engineering
- Co-organizer 2015
  NSF workshop on Smart Cities
- Organizer and Chair 2015
  ORNL workshop on connected and automated vehicles

Technical Committees

- Chair, IEEE Technical Committee on Smart Cities 2020 – present
- Vice Chair, IFAC Technical Committee on Smart Cities 2015 – present
- Member, IEEE Technical Committee on Automotive Control 2011 – present
- Member, IFAC Technical Committee on Stochastic Systems 2011 – present
- Member, IFAC Technical Committee on Automotive Control 2011 – present
- Member, IFAC Technical Committee on Intelligent Autonomous Vehicles 2011 – present
- Member, SAE Dynamical Modeling and Simulation Committee 2010 – 2014
- Secretary, ASME Technical Committee on Model Identification and Intelligent Systems (MIIS) 2008 – 2010

Press Releases, Interviews, Media Articles

Press Releases

- University of Delaware's College of Engineering news, "College of Engineering Announces 2020 Dean's Awards: Malikopoulos receives the Outstanding Junior Faculty award," Jul. 31, 2020.
- University of Delaware, "UD Engineering's best of 2017," Dec. 20, 2017.
- University of Delaware, "Andreas Malikopoulos on connected and automated vehicles," Dec. 4, 2017.

TV Interviews

- NBC-10 "Growing Greater Philadelphia," Mar. 26, 2019, interview by John Lewis.
  https://sites.udel.edu/ids-lab/news/nbc-featured-the-research-conducted-in-the-ids-lab/

- NBC-10 News, "UDel Students Use "Mini World" to Tackle Real World Problems," Dec. 10, 2018, interview by Tim Furlong.
  https://sites.udel.edu/ids-lab/news/ids-nbc-10/
- WHYY TV, "Delaware preps for driverless cars," April 16, 2018, interview by M. Eichmann.
  https://whyy.org/segments/delaware-preparing-for-driverless-cars/
- WBIR TV news, "Plans to test self-driving cars underway," Oct. 26, 2016, interview by M. Wade.
  https://www.wbir.com/article/news/local/plans-for-knoxville-to-test-self-driving-cars-underway/51-341350591

Media Outlets

- UDaily, "The futute of testing self-learning cars," by Erica K. Brockmeier, Jan. 26, 2023.
- SIAM News Online, "Coordination of connected and automated vehicles at adjacent intersections can improve safety and travel time," October 29, 2021.
- UDaily, "When cars talk," by Jordan Howell, Apr. 9, 2021.
- UDaily, "Exploring the Intersection of Communities and Technology," by Julie Stewart, Apr. 7, 2020.
- UDaily, "Jump Starting Energy Research: Delaware Energy Institute announces grant for multidisciplinary research projects at the University of Delaware," by JKevin Liedel, April 24, 2019.
- UDaily, "Smarter, safer, more efficient vehicles," by Julie Stewart, Oct. 23, 2018.
- UDaily, "Transport in UD's Scaled Smart City," by Karen B. Roberts, Aug., 2018.
- Delaware Public Media, "UD Researchers Look at Creating Smart Cities for Driverless Cars," by L. Nagengast, May 11, 2018.
- Frontiers of Engineering, National Academy of Engineering, "Testbed for Connected and Automated Vehicles," May 2, 2018.
- Delaware Business Times, "Driverless Cars: UD's Scaled Smart City project could help pave the way," Mar. 20, 2018.
- TechBit, "Check out a University of Delaware's little intelligent city," Dec. 6, 2017.
- Statescoop, "Mini smart city drives research on fuel efficiency for connected autonomous vehicles," by J. Shueh, Dec. 6, 2017.
- Technically Delaware, "Check out the University of Delaware?s tiny smart city," by H. Quinn, Dec. 5, 2017.
- Green Car Congress, "ORNL study finds even low penetration of CAVs delivers significant fuel economy benefits, but increases travel time slightly," by M. Millikin, Dec. 1, 2016.
- Green Car Congress, "ORNL team presents solution for coordinating connected and automated vehicles at merging roadways; reduced fuel consumption and travel time," by M. Millikin, Aug. 29, 2016.
- Green Car Congress, "ORNL researcher proposes solution for online optimization of power management in HEVs/PHEVs and for different drivers, Oct. 12, 2014.
- Network World, "How connected cars will optimize traffic flow," by P. Nelson, Apr. 21, 2015.
- Green Car Congress, "ORNL study finds even low penetration of CAVs delivers significant fuel economy benefits, but increases travel time slightly," by M. Millikin, Dec. 1, 2016.
- Road Traffic Technology, "US scientists to develop computational framework to optimize road traffic," Apr. 7, 2015.
- Design Products & Applications, "Connected vehicle technology aims to improve travel time," Apr. 4, 2015.
- PhyOrg, "Computational framework for optimizing traffic flow could be the beginning of a road revolution," by M. McCorkle, Apr. 3, 2015.
- Informed Infrastructure, "Developing a Framework for Connected Vehicle Technologies," Apr. 3, 2015.
- Science Daily, "Road revolution by connecting vehicles: Computational framework for optimizing traffic flow," by K.E. Jones, Apr. 2, 2015.
- R&D Magazine, "Connecting Vehicles," by M. McCorkle, Apr. 2, 2015.
- Green Car Congress, "ORNL, UT Austin team proposes optimization framework for hybrids; balancing fuel consumption, motor efficiency, battery capacity and life," by M. Millikin, Dec. 22, 2014.
- Scientific American, "Self-driving cars could cut greenhouse gas pollution," by J. Pyper, Sep. 15, 2014.
- EurekAlert, "Vehicles Connected to savings," by R. Walli, Sep. 3, 2014.
- Green Car Congress, "Survey of power management control technologies for HEVs and PHEVs suggests future need to consider vehicle as part of larger system," by M. Millikin, Apr. 11, 2014.
- Green Car Congress, "ORNL researcher proposes more efficient control strategy for series hybrids," by M. Millikin, Jul. 9, 2013.
- Green Car Congress, "ORNL researcher explores impact of motor/generator and battery pack sizing on medium-duty PHEV; optimization framework," by M. Millikin, Jan. 4, 2013.

– Green Car Congress, "ORNL researchers propose optimization framework for use in real-time feedback systems to improve driving styles with reduced fuel consumption," by M. Millikin, Oct. 3, 2012.
– Green Car Congress, "Oak Ridge researcher developing autonomous intelligent engines capable of real-time calibration based on driver behavior," by M. Millikin, May 24, 2012.