

Yang Zheng

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Research Overview

My research lies broadly in control theory, convex and nonconvex optimization, and their applications to autonomous vehicles and traffic systems. At UC San Diego, I lead the Scalable Optimization and Control (SOC) Lab, where we develop foundational theory and principled algorithms for data-driven and learning-based control, scalable convex optimization, and structured nonconvex optimization. Our work also advances applications in sustainable urban mobility and intelligent transportation systems.

Appointments

- 07/2021 - present Assistant Professor
Department of Electrical and Computer Engineering
Department of Computer Science & Engineering (by Courtesy)
UC San Diego
- 09/2020 - 06/2021 Research associate, Department of Computing, Imperial College London
- 03/2019 - 08/2020 Postdoctoral fellow, School of Engineering and Applied Sciences,
Harvard Center for Green Buildings and Cities, Harvard University

Education

- 09/2015 - 03/2019 DPhil (Ph.D.) in Engineering Science, University of Oxford
Thesis: Chordal sparsity in control and optimization of large-scale systems
Advisor: Prof. Antonis Papachristodoulou
- 09/2013 - 07/2015 M.S. in Mechanical Engineering, Tsinghua University
- 09/2010 - 07/2013 B.A. in Economics (double degree), Tsinghua University
- 09/2009 - 07/2013 B.E. in Automotive Engineering, Tsinghua University

Teaching Experience

- ECE 101: *Linear Systems Fundamentals*, Instructor** Fall 2024, 2025
Core undergraduate-level course on signals and systems in continuous and discrete time. UC San Diego
- ECE 171A: *Linear Control System Theory*, Instructor** Spring 2022, 2023, 2024, 2025
Core undergraduate-level course on classical control theory. UC San Diego
Lectures, homework, exams, and course materials substantially updated using a new textbook: “Feedback Systems: An introduction for Scientists and Engineers”.
Website: <https://zhengy09.github.io/ECE171A/ece171a.html>
- ECE 285: *Semidefinite and Sum-of-squares Optimization*, Instructor** Winter 2022, 2023, 2024, 2025
Course created from scratch. Graduate-level course on conic optimization, sum-of-squares optimization, and applications in control and machine learning. UC San Diego
Best Graduate Teacher Award in 2023.
Website: <https://zhengy09.github.io/ECE285/ece285.html>

Selected Honors & Awards

- 2026 Best Student Paper Award Finalist, 2026 American Control Conference (as adviser).

- 2025 **Donald P. Eckman Award**, American Automatic Control Council.
The Eckman Award recognizes an outstanding young engineer in the field of automatic control. Citation: *For fundamental contributions to convex and nonconvex optimization in optimal and distributed control, scalable computational techniques, and transformative applications in traffic systems.*
- 2024 **NSF CAREER Award**, National Science Foundation.
- 2023 Jacobs School of Engineering Early Career Faculty Development Award, UC San Diego.
- 2023 **Best Graduate Teacher Award**, ECE Department, UC San Diego.
- 2023 2017–2020 Outstanding Survey Paper Award, IEEE INTELLIGENT TRANSPORTATION SYSTEMS MAGAZINE.
- 2022 Best Paper Award, IEEE TRANSACTIONS ON CONTROL OF NETWORK SYSTEMS.
- 2020 EECI PhD Award on Control. Granted annually in recognition of the best Ph.D. thesis in Europe in the field of Systems and Control.
- 2020 Award of Distinction in Teaching, Harvard University.
- 2019 Best Student Paper Award Finalist, 18th European Control Conference.
- 2019 Chinese Government Award for Outstanding Self-financed Students Abroad.
- 2018 Outstanding Contribution in Reviewing, *Journal of the Franklin Institute*.
- 2015 Clarendon Scholarship, University of Oxford.
- 2015 Excellent Graduate of Beijing.
- 2015 Best Paper Award, 14th Intelligent Transportation Systems Asia-Pacific Forum.
- 2014 Best Student Paper Award, IEEE 17th Conference on Intelligent Transportation Systems.
- 2014 National Scholarship for Graduates.
- 2013 Excellent Graduate, Tsinghua University.
- 2010 National Scholarship for Undergraduates.
- 2009 1st Prize, National **Chemistry** Olympiad Competition, Guangxi, China.
- 2008 1st Prize, National **Physics** Olympiad Competition, Guangxi, China.
- 2008 1st Prize, National **Mathematical** Olympiad Competition, Guangxi, China.

Funding

External funding

- 03/2026 “Sample-Efficient Data-Driven Control,” gift from Mitsubishi Electric Research Laboratories (MERL), sole PI, \$20,000.
- 05/2024–04/2029 “CAREER: Interplay between Convex and Nonconvex Optimization for Control,” National Science Foundation, sole PI, \$550,000.
- 09/2023–08/2026 “Collaborative Research: Scalable Data-Enabled Predictive Control for Heterogeneous Mixed Traffic Systems,” National Science Foundation, lead PI, \$405,000 (my share: \$203,000; collaborative research with Michigan State University, PI: Zhaojian Li).
- 08/2022–07/2025 “Matrix Decomposition for Scalable Conic Optimization with Applications to Distributed Control and Machine Learning,” National Science Foundation, sole PI, \$350,000.

Internal funding

- 2024–2025 “Projection-Free Augmented Lagrangian Methods for Scalable Semidefinite Optimization with Applications in Signal Processing,” ECE Mentored Early Career Multiplier Program, lead PI, \$40,000 (collaborative research with Prof. Piya Pal).

01/2024–06/2024 “Principled Data-Driven Control for Societal Nonlinear Systems via Koopman Operator and Behavioral Theory,” Jacobs School of Engineering Early Career Faculty Development Award, UC San Diego, lead PI, approximately \$100,000 (my share: \$50,000; collaborative research with Prof. Jorge Cortes).

Selected Student Honors & Awards

- 2026 Yuto Watanabe, Ph.D. student, was named a **Best Student Paper Award Finalist** at the 2026 American Control Conference for the paper “*Policy Optimization in Robust Control: Weak Convexity and Subgradient Methods.*”
- 2023 Feng-Yi Liao, Ph.D. student, received the **Poster Presentation Award** in Operations Research and Optimization Methodologies at the 2023 INFORMS Annual Conference for his poster “*Spectral Bundle Methods for Primal and Dual Semidefinite Programs.*”
- 2023 Dehao Dai received the Spring 2022 **Best Tutor Award** from the Department of Electrical and Computer Engineering for his outstanding work as a Teaching Assistant in my course, ECE 171A: Linear System Control Theory.
- 2023 Jonathan Mi, undergraduate student, received the **NSF Graduate Research Fellowship**. He is currently a Ph.D. student at the University of Michigan.

Student Advising

Current Members

- 10/2024 – present Jiachen Qian, postdoctoral scholar.
- 09/2021 – present Chih-Fan (Rich) Pai, Ph.D. student; expected to graduate in Fall 2026.
- 09/2023 – present Feng-Yi Liao, Ph.D. student
- 09/2023 – present Xu Shang, Ph.D. student.
- 09/2024 – present Yuto Watanabe, Ph.D. student.
- 02/2025 – present Tianhao Wu, undergraduate student; SRIP Program, 2025.
- 05/2025 – present Thomas Madden, undergraduate student.
- 02/2026 – present Kornpholkrit Weraarchakul, undergraduate student; SRIP Program, 2026.
- 02/2026 – present Brayn Fu, undergraduate student.
- 02/2026 – present Shiven Hu, undergraduate student.
- 05/2026 – present Shoju Enami, visiting Ph.D. student from Kyoto University.

Alumni

- 02/2025 – Fall 2025 Andrew Yuan, undergraduate student; SRIP Program, 2025.
- 02/2024 – Fall 2025 Chengkai Yao, undergraduate student; SRIP Program, 2024.
- 02/2024 – Spring 2026 Nicole Li, undergraduate student → M.S., Princeton University;
- Fall 2024 Chendi Qu, visiting Ph.D. student from Shanghai Jiao Tong University.
- 06/2023 – 06/2025 Pranav Reddy, undergraduate student → Ph.D., Princeton University; SRIP Program, 2024.
- 06/2023 – 06/2024 Yue (Melody) Yin, undergraduate student → M.S., Carnegie Mellon University.
- Spring 2024 Hamad Alajeel, undergraduate student.
- 06/2023 – 05/2024 Guanbo Shao, M.S. student → Ph.D., Columbia University.
- 02/2023 – 06/2024 Yunzhou Yan, M.S. student.
- 02/2023 – 12/2023 Meihui Liu, undergraduate student → M.S., Carnegie Mellon University; SRIP Program, 2023.
- 02/2023 – 08/2023 Haoxing Du, M.S. student; SRIP Program, 2023.

Spring 2023	Mingqing Xu, M.S. student.
Fall 2022	Elham Abolfazli, visiting Ph.D. student from Aalto University, Finland.
Summer 2022	Jonathan Mi, undergraduate student → Ph.D., University of Michigan; 2023 NSF GRFP awardee.
Summer 2022	Yichen Yang, undergraduate student → M.S., UCLA.
Summer 2022	Chenhao (Jason) Zhu, undergraduate student → M.S., UC Berkeley.
Summer 2022	Xiao Ding, M.S. student.
07/2022 – 12/2022	Laiwei Wei, M.S. student → Sungrow, USA.
02/2022 – 08/2022	Yanzhi Yao, M.S. student; SRIP Program, 2022.
02/2022 – 08/2022	Anish Kulkarni, undergraduate student; SRIP Program, 2022.
02/2021 – 08/2021	Stuart Boynton, undergraduate student; SRIP Program, 2021.
02/2021 – 08/2021	Haozhe Liu, undergraduate student; SRIP Program, 2021.

Open-source Packages

See our group Github page for a list of the packages developed at the SOC lab.

1. CDCS: Cone Decomposition Conic Solver.
An open-source first-order solver for sparse conic optimization by exploiting chordal sparsity.
<https://github.com/oxfordcontrol/CDCS>
2. SOSADMM.
An open-source first-order MATLAB solver for conic programs with row sparsity.
<https://github.com/oxfordcontrol/SOSADMM>
3. Mixed-traffic.
Open-source modeling, control, and demos of mixed traffic flow.
<https://github.com/soc-ucsd/mixed-traffic>
4. DeeP-LCC.
Open-source demos for Data-Enabled Predictive Leading Cruise Control (DeeP-LCC).
<https://github.com/soc-ucsd/DeeP-LCC>

Invited Talks

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| 03/2026 | <i>Extended Convex Lifting for Policy Optimization in Control.</i> Department Colloquium, Department of Mathematics and Statistics, Queen's University. |
| 03/2026 | <i>Benign Nonconvex Landscapes in Optimal and Robust Control.</i> Systems Control Group, University of Toronto. |
| 02/2026 | <i>Extended Convex Lifting for Policy Optimization in Control.</i> Optimization for ML and AI Seminar, UC San Diego. |
| 05/2025 | <i>Benign Nonconvex Landscapes in Optimal and Robust Control.</i> MAE Dynamic Systems & Controls Seminar, UC San Diego. |
| 03/2025 | <i>Benign Nonconvex Landscapes in Optimal and Robust Control.</i> Optimization and Data Science Seminar, UC San Diego. |
| 04/2024 | <i>Principled Data-Driven Control for Societal Nonlinear Systems via Koopman Operator and Behavioral Theory.</i> 42nd Annual Jacobs School Research Expo, UC San Diego. |
| 12/2023 | <i>Nonconvex Optimization for Linear Quadratic Gaussian Control.</i> Department of Electrical and Computer Engineering, National University of Singapore. |
| 10/2023 | <i>Chordal Graphs, Semidefinite Optimization, and Sum-of-Squares Matrices.</i> Department of Mechanical and Aerospace Engineering, Arizona State University. |
| 07/2023 | <i>Nonconvex Optimization for Linear Quadratic Gaussian Control.</i> Department of Engineering Science, University of Oxford. |

- 11/2022 *Scalable Learning, Optimization, and Control for Autonomous Systems*. Tsinghua Berkeley Shenzhen Institute.
- 09/2022 *Nonconvex Optimization for Linear Quadratic Gaussian Control*. TILOS Talk, UC San Diego.
- 03/2022 *Scalable Semidefinite and Polynomial Optimization via Matrix Decomposition*. LANS Seminar Series, Argonne National Laboratory.
- 03/2022 *Analysis of the Optimization Landscape of Linear Quadratic Gaussian Control*. Control Seminar, University of Michigan.
- 03/2022 *Analysis of the Optimization Landscape of Linear Quadratic Gaussian Control*. ISE Graduate Seminar Series, University of Illinois Urbana-Champaign.
- 12/2021 *Landscape Analysis and Sample Complexity of Linear Quadratic Gaussian Control*. Northeastern University.
- 11/2021 *Integrating Autonomy into Traffic Systems: Scalable Control and Optimization*. INTR 6800 Seminar, Hong Kong University of Science and Technology.
- 10/2021 *Chordal Graphs, Semidefinite Optimization, and Sum-of-Squares Matrices*. Optimization and Data Science Seminar, UC San Diego.
- 10/2021 *Landscape Analysis and Sample Complexity of Linear Quadratic Gaussian Control*. Department of Automation, Tsinghua University.
- 01/2021 *Distributed Control and Scalable Optimization for Large-Scale Autonomy*. EECI Annual Seminar / EECI Annual General Assembly.
- 10/2020 *Integrating Autonomy into Traffic Systems: Scalable Control and Optimization*. IEEE IV 2020 Workshop on IoT in ITS: Opportunities and Challenges.
- 02/2020 *Distributed Control and Scalable Optimization for Large-Scale Autonomy*. Department of Mechanical and Industrial Engineering, Northeastern University.
- 02/2020 *Distributed Control and Scalable Optimization for Large-Scale Autonomy*. Department of Electrical and Computer Engineering, UC San Diego.
- 02/2020 *Distributed Control and Scalable Optimization for Large-Scale Autonomy*. AE Chair's Distinguished Seminar Series, University of Michigan, Ann Arbor.
- 02/2020 *Integrating Autonomy into Traffic Systems: Scalable Control and Optimization*. ENAC Seminar Series, EPFL.
- 12/2019 *Scalable Semidefinite and Sum-of-Squares Optimization via Matrix Decomposition*. School of EECS, KTH Royal Institute of Technology.
- 12/2019 *Smoothing Traffic Flow via Control of Autonomous Vehicles*. Center of Innovation Automation, Volkswagen, Wolfsburg.
- 11/2018 *Chordal Decomposition in Sparse Semidefinite Optimization and Sum-of-Squares Optimization*. Institute for Computational Engineering and Sciences, UT Austin.
- 07/2018 *Chordal Decomposition in Sparse Semidefinite Optimization and Sum-of-Squares Optimization*. LIDS Seminar, MIT.
- 07/2018 *Chordal Decomposition in Sparse Semidefinite Optimization and Sum-of-Squares Optimization*. Department of Electrical and Computer Engineering, Northeastern University.
- 06/2017 *Fast ADMM for Semidefinite Programs with Chordal Sparsity*. LCCC Workshop on Large-Scale and Distributed Optimization, Lund University.
- 05/2017 *Distributed Control of Connected Vehicles and Fast ADMM for Sparse SDPs*. Advanced Vehicle Engineering Centre, Cranfield University.
- 02/2017 *Fast ADMM for Semidefinite Programs with Chordal Sparsity*. School of Mathematics, University of Birmingham.

Professional Activities and Service

Conference Committees

- Associate Editor, American Control Conference (ACC), 2025 and 2026; IEEE Conference on Decision and Control (CDC), 2026.
- Program Committee Member, IEEE Conference on Decision and Control (CDC), 2025.
- Member, IEEE Control Systems Society Conference Editorial Board, since 2024.

Reviewing Experience

- **Journal Reviewer:** ACM Transactions on Cyber-Physical Systems (TCPS); Accident Analysis & Prevention; Annual Reviews in Control; Automatica; Control & Systems Letters; Computational Optimization and Applications (COAP); IEEE Control Systems Letters (L-CSS); IEEE Internet of Things Journal (IoT-J); IEEE Intelligent Transportation Systems Magazine; IEEE Transactions on Automatic Control (TAC); IEEE Transactions on Control Systems Technology (TCST); IEEE Transactions on Control of Network Systems (TCNS); IEEE Transactions on Intelligent Transportation Systems (T-ITS); IEEE Transactions on Mobile Computing (TMC); IEEE Transactions on Vehicular Technology (TVT); International Journal of Control (IJC); Journal of Global Optimization (JOGO); Journal of the Franklin Institute; Mathematical Programming; SIAM Journal on Control and Optimization (SICON); SIAM Journal on Matrix Analysis and Applications (SIMAX); Transportation Research Part B: Methodological; Transportation Research Part C: Emerging Technologies.
- **Conference Reviewer:** Annual Conference on Neural Information Processing Systems (NeurIPS); American Control Conference (ACC); European Control Conference (ECC); Learning for Dynamics and Control Conference (L4DC); IEEE Conference on Decision and Control (CDC); IEEE Conference on Control Technology and Applications (CCTA); IEEE Intelligent Transportation Systems Conference (ITSC); IEEE International Conference on Vehicular Electronics and Safety (ICVES); IEEE Intelligent Vehicles Symposium (IV); IFAC World Congress; International Conference on Machine Learning (ICML); International Symposium on Symbolic and Algebraic Computation (ISSAC).
- **Grant Reviewer:** Research Grants Council (RGC) of Hong Kong, 2026; National Science Foundation (NSF) panelist, 2021, 2023, and 2025; Veni Research Proposal, Dutch Research Council, 2024.

Ph.D. Committees

1. Ke Ma, ECE Qualifying Exam (March 2026), SDSU & UCSD.
2. Madison Lee, ECE Qualifying Exam (Dec. 2025), UCSD.
3. Xixin Zhang, ECE Ph.D. Preliminary Exam (Oct. 2025), UCSD
4. Xuting Gao, MAE Department Qualification Exam (Sep. 2025), UCSD.
5. Hanwen Cao, ECE Qualifying Exam (May 2025), UCSD.
6. Jiajia Wang, Math Ph.D. Qualifying Exam (May 2025), UCSD
7. Yizhan Gu, MC75 MAE Department Qualifying Exam (Sep. 2024) UCSD
8. Chinmay Talegaonkar, ECE PhD Preliminary Exam (Nov. 2023), UCSD
9. Yuexin Bian, ECE Ph.D. Preliminary Exam (Jun. 2023), Qualifying Exam (May 2025) UCSD
10. Zhirui Dai, ECE Ph.D. Preliminary Exam (Jun. 2023), UCSD
11. Daniel Ochoa Tamayo, ECE Ph.D. Qualifying Exam (Jun. 2023), and Thesis Defense (Sep. 2024) UCSD
12. Xiaomeng Hu, Math Ph.D. Qualifying Exam (May 2023), and Thesis Defense (May 2025) UCSD
13. Yan Yan, Doctor of Philosophy thesis examination (Mar. 2023), the University of Wollongong
14. Ashwin Verma, ECE Ph.D. Qualifying Exam (Jun. 2022), and Thesis Defense (June 2024) UCSD
15. Zhichao Li, ECE Ph.D. Qualifying Exam (Nov. 2021), and Thesis Defense (Nov. 2023) UCSD

Publications

Citations: 8400+; H-index: 41 (Data from Google Scholar, May 2026)

Preprint

- P1 C.-F. Pai and **Y. Zheng**. Online nonstochastic prediction: Logarithmic regret via predictive online least squares. *arXiv preprint arXiv:2605.04364*, 2026
- P2 C.-F. Pai, Y. Watanabe, Y. Tang, and **Y. Zheng**. Policy optimization of mixed h2/h-infinity control: Benign nonconvexity and global optimality. *arXiv preprint arXiv:2603.04843*, 2026
- P3 Y. Watanabe and **Y. Zheng**. Gradient dominance in the linear quadratic regulator: A unified analysis for continuous-time and discrete-time systems. *arXiv preprint arXiv:2602.22577*, 2026
- P4 X. Shang, M. Haseli, J. Cortés, and **Y. Zheng**. On the existence of koopman linear embeddings for controlled nonlinear systems. *arXiv preprint arXiv:2602.14537*, 2026
- P5 X. Shang and **Y. Zheng**. Regularization in data-driven predictive control: A convex relaxation perspective. *arXiv preprint arXiv:2509.09027*, 2025
- P6 F.-Y. Liao and **Y. Zheng**. A proximal descent method for minimizing weakly convex optimization. *arXiv preprint arXiv:2509.02804*, 2025
- P7 F.-Y. Liao and **Y. Zheng**. A bundle-based augmented lagrangian framework: Algorithm, convergence, and primal-dual principles. *arXiv preprint arXiv:2502.08835*, 2025
- P8 J. Qian and **Y. Zheng**. Model-free online learning for the kalman filter: Forgetting factor and logarithmic regret. *arXiv preprint arXiv:2505.08982*, 2025

Journal

- J1 Y. Watanabe and **Y. Zheng**. Revisiting strong duality, hidden convexity, and gradient dominance in the linear quadratic regulator. *SIAM Journal on Control and Optimization*, 2026
- J2 **Y. Zheng**, C.-F. R. Pai, and Y. Tang. Benign nonconvex landscapes in optimal and robust control, part ii: Extended convex lifting. *IEEE Transactions on Automatic Control*, pages 1–16, 2026
- J3 **Y. Zheng**, C.-F. R. Pai, and Y. Tang. Benign nonconvex landscapes in optimal and robust control, part i: Global optimality. *IEEE Transactions on Automatic Control*, pages 1–16, 2026
- J4 J. Qian and **Y. Zheng**. Logarithmic regret and polynomial scaling in online multi-step-ahead prediction. *IEEE Control Systems Letters*, 9:2981–2986, 2025
- J5 F.-Y. Liao, L. Ding, and **Y. Zheng**. Error bounds, PL condition, and quadratic growth for weakly convex functions, and linear convergences of proximal point methods. *Journal of Global Optimization*, pages 1–29, 2026
- J6 F.-Y. Liao, L. Ding, and **Y. Zheng**. An overview and comparison of spectral bundle methods for primal and dual semidefinite programs. *Computational Optimization and Applications*, pages 1–44, 2025
- J7 X. Shang, J. Wang, and **Y. Zheng**. Decentralized robust data-driven predictive control for smoothing mixed traffic flow. *IEEE Transactions on Intelligent Transportation Systems*, 26(2):2075–2090, 2025
- J8 X. Shang, J. Cortés, and **Y. Zheng**. Willems’ fundamental lemma for nonlinear systems with koopman linear embedding. *IEEE Control Systems Letters*, 8:3135–3140, 2024
- J9 J. Wang, **Y. Zheng**, J. Dong, C. Chen, M. Cai, K. Li, and Q. Xu. Implementation and experimental validation of data-driven predictive control for dissipating stop-and-go waves in mixed traffic. *IEEE Internet of Things Journal*, 11(3):4570–4585, 2024
- J10 Y. Bian, N. Zheng, **Y. Zheng**, B. Xu, and Y. Shi. Predicting strategic energy storage behaviors. *IEEE Transactions on Smart Grid*, 15(2):1608–1619, 2024
- J11 J. Duan, W. Cao, **Y. Zheng**, and L. Zhao. On the optimization landscape of dynamic output feedback linear quadratic control. *IEEE Transactions on Automatic Control*, 69(2):920–935, 2024
- J12 K. Zhang, K. Chen, Z. Li, J. Chen, and **Y. Zheng**. Privacy-preserving data-enabled predictive leading cruise control in mixed traffic. *IEEE Transactions on Intelligent Transportation Systems*, 25(5):3467–3482, 2024
- J13 K. Zhang, **Y. Zheng**, C. Shang, and Z. Li. Dimension reduction for efficient data-enabled predictive control. *IEEE Control Systems Letters*, 7:3277–3282, 2023

- J14 J. Wang, **Y. Zheng**, K. Li, and Q. Xu. Deep-LCC: Data-enabled predictive leading cruise control in mixed traffic flow. *IEEE Transactions on Control Systems Technology*, 31(6):2760–2776, 2023
- J15 **Y. Zheng** and G. Fantuzzi. Sum-of-squares chordal decomposition of polynomial matrix inequalities. *Mathematical Programming*, 197(1):71–108, 2023
- J16 **Y. Zheng**, A. Sootla, and A. Papachristodoulou. Block factor-width-two matrices and their applications to semidefinite and sum-of-squares optimization. *IEEE Transactions on Automatic Control*, 68(2):943–958, 2023
- J17 Y. Tang, **Y. Zheng**, and N. Li. Analysis of the optimization landscape of Linear Quadratic Gaussian (LQG) control. *Mathematical Programming*, pages 399–444, 2023
- J18 B. Hu and **Y. Zheng**. Connectivity of the feasible and sublevel sets of dynamic output feedback control with robustness constraints. *IEEE Control Systems Letters*, 7:442–447, 2022
- J19 **Y. Zheng**, L. Furieri, M. Kamgarpour, and N. Li. System-level, input–output and new parameterizations of stabilizing controllers, and their numerical computation. *Automatica*, 140:110211, 2022
- J20 J. Miller, **Y. Zheng**, M. Sznaier, and A. Papachristodoulou. Decomposed structured subsets for semidefinite and sum-of-squares optimization. *Automatica*, 137:110125, 2022
- J21 K. Li, J. Wang, and **Y. Zheng**. Cooperative formation of autonomous vehicles in mixed traffic flow: Beyond platooning. *IEEE Transactions on Intelligent Transportation Systems*, 23(9):15951–15966, 2022
- J22 J. Wang, **Y. Zheng**, C. Chen, Q. Xu, and K. Li. Leading cruise control in mixed traffic flow: System modeling, controllability, and string stability. *IEEE Transactions on Intelligent Transportation Systems*, 23(8):12861–12876, 2022
- J23 **Y. Zheng**, G. Fantuzzi, and A. Papachristodoulou. Chordal and factor-width decompositions for scalable semidefinite and polynomial optimization. *Annual Reviews in Control*, 52:243–279, 2021
- J24 J. Wang, **Y. Zheng**, Q. Xu, J. Wang, and K. Li. Controllability Analysis and Optimal Control of Mixed Traffic Flow With Human-Driven and Autonomous Vehicles. *IEEE Transactions on Intelligent Transportation Systems*, 22(12):7445–7459, 2021
- J25 **Y. Zheng**, Y. Bian, S. Li, and S. E. Li. Cooperative Control of Heterogeneous Connected Vehicles with Directed Acyclic Interactions. *IEEE Intelligent Transportation Systems Magazine*, 13(2):127–141, 2021
- J26 Y. Li, **Y. Zheng**, B. Morys, S. Pan, J. Wang, and K. Li. Threat Assessment Techniques in Intelligent Vehicles: A Comparative Survey. *IEEE Intelligent Transportation Systems Magazine*, 13(4):71–91, 2021
- J27 **Y. Zheng** and N. Li. Non-asymptotic identification of linear dynamical systems using multiple trajectories. *IEEE Control Systems Letters*, 5(5):1693–1698, 2021
- J28 **Y. Zheng**, L. Furieri, A. Papachristodoulou, N. Li, and M. Kamgarpour. On the Equivalence of Youla, System-Level, and Input–Output Parameterizations. *IEEE Transactions on Automatic Control*, 66(1):413–420, 2020
- J29 Y. Chen, Z. Tong, **Y. Zheng**, H. Samuelson, and L. Norford. Transfer learning with deep neural networks for model predictive control of HVAC and natural ventilation in smart buildings. *Journal of Cleaner Production*, 254:119866, 2020
- J30 S. E. Li, Z. Wang, **Y. Zheng**, Q. Sun, J. Gao, F. Ma, and K. Li. Synchronous and asynchronous parallel computation for large-scale optimal control of connected vehicles. *Transportation research part C: emerging technologies*, 121:102842, 2020
- J31 L. Furieri, **Y. Zheng**, A. Papachristodoulou, and M. Kamgarpour. Sparsity Invariance for Convex Design of Distributed Controllers. *IEEE Transactions on Control of Network Systems*, 7(4):1836–1847, 2020. **Best Paper Award**
- J32 **Y. Zheng**, G. Fantuzzi, A. Papachristodoulou, P. Goulart, and A. Wynn. Chordal decomposition in operator-splitting methods for sparse semidefinite programs. *Mathematical Programming*, 180(1):489–532, 2020
- J33 **Y. Zheng**, J. Wang, and K. Li. Smoothing Traffic Flow via Control of Autonomous Vehicles. *IEEE Internet of Things Journal*, 7(5):3882–3896, 2020

- J34 **Y. Zheng**, M. Kamgarpour, A. Sootla, and A. Papachristodoulou. Distributed Design for Decentralized Control using Chordal Decomposition and ADMM. *IEEE Transactions on Control of Network Systems*, 7(2):614–626, 2020
- J35 A. Sootla, **Y. Zheng**, and A. Papachristodoulou. On the Existence of Block-Diagonal Solutions to Lyapunov and \mathcal{H}_∞ Riccati Inequalities. *IEEE Transactions on Automatic Control*, 65(7):3170–3175, 2019
- J36 **Y. Zheng**, G. Fantuzzi, and A. Papachristodoulou. Fast ADMM for Sum-of-Squares Programs Using Partial Orthogonality. *IEEE Transactions on Automatic Control*, 64(9):3869–3876, Sep. 2019
- J37 L. Furieri, **Y. Zheng**, A. Papachristodoulou, and M. Kamgarpour. An Input-Output Parametrization of Stabilizing Controllers: Amidst Youla and System Level Synthesis. *IEEE Control Systems Letters*, 3(4):1014–1019, Oct 2019
- J38 Y. Bian, **Y. Zheng**, W. Ren, S. E. Li, J. Wang, and K. Li. Reducing time headway for platooning of connected vehicles via V2V communication. *Transportation Research Part C: Emerging Technologies*, 102:87–105, 2019
- J39 **Y. Zheng**, R. P. Mason, and A. Papachristodoulou. Scalable design of structured controllers using chordal decomposition. *IEEE Transactions on Automatic Control*, 63(3):752–767, 2018
- J40 **Y. Zheng**, S. E. Li, K. Li, and W. Ren. Platooning of connected vehicles with undirected topologies: Robustness analysis and distributed h-infinity controller synthesis. *IEEE Transactions on Intelligent Transportation Systems*, 19(5):1353–1364, 2018
- J41 **Y. Zheng**, G. Fantuzzi, and A. Papachristodoulou. Exploiting Sparsity in the Coefficient Matching Conditions in Sum-of-Squares Programming using ADMM. *IEEE Control Systems Letters*, 1(1):80–85, 2017
- J42 **Y. Zheng**, S. E. Li, K. Li, F. Borrelli, and J. K. Hedrick. Distributed model predictive control for heterogeneous vehicle platoons under unidirectional topologies. *IEEE Transactions on Control Systems Technology*, 25(3), 2017
- J43 S. E. Li, **Y. Zheng**, K. Li, Y. Wu, J. K. Hedrick, F. Gao, and H. Zhang. Dynamical Modeling and Distributed Control of Connected and Automated Vehicles: Challenges and Opportunities. *IEEE Intelligent Transportation Systems Magazine*, 9(3):46–58, 2017.
- J44 Y. Li, **Y. Zheng**, J. Wang, K. Kodaka, and K. Li. Crash probability estimation via quantifying driver hazard perception. *Accident Analysis & Prevention*, 2017
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