

PUBLICATIONS CONTENT DIGEST



CSS Publications Activities

Vice-President

ANDREA SERRANI *Ohio State University*

<http://ieeecss.org/publications>

Journal Editors

IEEE Transactions on Automatic Control

ALESSANDRO ASTOLFI *Imperial College London and University of Rome “Tor Vergata”*

<http://ieeecss.org/publication/transactions-automatic-control>

IEEE Transactions on Control Systems Technology

ILYA KOLMANOVSKY *University of Michigan*

<http://ieeecss.org/publication/transactions-control-systems-technology>

IEEE Transactions on Control of Network Systems

LACRA PAVEL *University of Toronto*

<http://ieeecss.org/publication/transactions-control-network-systems>

IEEE Control Systems Letters

LAURA MENINI *University of Rome “Tor Vergata”*

<http://ieeecss.org/publication/control-systems-letters>

IEEE Control Systems Magazine

ANURADHA ANNASWAMY *Massachusetts Institute of Technology*

<http://ieeecss.org/publication/ieee-control-systems-magazine>

IEEE Open Journal of Control Systems

SONIA MARTINEZ *University of California, San Diego*

<http://ieeecss.org/publication/open-journal-control-systems>

Electronic Information

CSS State-Space Forum

FABIO PASQUALETTI *University of California, Riverside*

<https://state-space.ieeecss.org>

***Submission and editorial instructions can be found on each publication’s homepage**

IEEE TRANSACTIONS ON AUTOMATIC CONTROL

A PUBLICATION OF THE IEEE CONTROL SYSTEMS SOCIETY



FEBRUARY 2025

VOLUME 70

NUMBER 2

IETAA9

(ISSN 1558-2523)

REGULAR PAPERS

Analysis of Indistinguishable Trajectories of a Nonholonomic Vehicle Subject to Range Measurements	<i>F. Riz, L. Palopoli, and D. Fontanelli</i>	708
Stabilization and Decay Rate Estimation of Nonlinear Flexible Marine Riser System With the Rotational Inertia Under Nonlinear Boundary Controls	<i>Y. Cheng, Y. Zhang, Y. Wu, and B.-Z. Guo</i>	720
Online Constraint Tightening in Stochastic Model Predictive Control: A Regression Approach	<i>A. Capone, T. Brüdigam, and S. Hirche</i>	736
Optimizing Shifted Stabilizers With Asymmetric Input Saturation	<i>P. Braun, G. Giordano, C. M. Kellett, I. Shames, and L. Zaccarian</i>	751
Output Feedback-Based Adaptive Optimal Output Regulation for Continuous-Time Strict-Feedback Nonlinear Systems	<i>Y. Jiang, T. Chai, and G. Chen</i>	767
Model-Free False Data Injection Attack in Networked Control Systems: A Feedback Optimization Approach	<i>X. Luo, C. Fang, J. He, C. Zhao, and D. Paccagnan</i>	783
Event-Triggered Basis Augmentation for Multiagent Collaborative Adaptive Estimation	<i>J. Guo and F. Zhang</i>	799
Pursuit Winning Strategies for Reach-Avoid Games With Polygonal Obstacles	<i>R. Yan, S. Mi, X. Duan, J. Chen, and X. Ji</i>	814
Decay Rate Assignment Through Multiple Spectral Values in Delay Systems	<i>I. Boussaada, G. Mazanti, S.-I. Niculescu, and W. Michiels</i>	830
Minimal Entropy Production in the Presence of Anisotropic Fluctuations	<i>O. Movilla Miangolarra, A. Taghvaei, and T. T. Georgiou</i>	845
Risk-Aware Stability of Linear Systems	<i>M. P. Chapman and D. Kalogerias</i>	861
Convergence of the Heterogeneous Deffuant–Weisbuch Model: A Complete Proof and Some Extensions	<i>G. Chen, W. Su, W. Mei, and F. Bullo</i>	877
Tradeoffs Between Convergence Rate and Noise Amplification for Momentum-Based Accelerated Optimization Algorithms	<i>H. Mohammadi, M. Razaviyayn, and M. R. Jovanović</i>	889
Ensembles of Hyperbolic PDEs: Stabilization by Backstepping	<i>V. Alleaume and M. Krstic</i>	905
Reachability-Guaranteed Sliding-Mode Control for Asynchronously Switched Uncertain Systems	<i>Z. Fei, Z. Wu, X. Zhao, G. Zong, and X. Lin-Shi</i>	921
Robust Online Learning Over Networks	<i>N. Bastianello, D. Deplano, M. Franceschelli, and K. H. Johansson</i>	933
Robust Data-Driven Control of Discrete-Time Linear Systems With Errors in Variables	<i>J. Miller, T. Dai, and M. Sznaier</i>	947
Distributed Momentum-Based Multiagent Optimization With Different Constraint Sets	<i>X. Zhou, Z. Ma, S. Zou, and K. Margellos</i>	963

(Contents Continued on Page 707)



A Finite-Time Consensus Continuous-Time Algorithm for Distributed Pseudoconvex Optimization With Local Constraints	<i>S. Wang and X. Yu</i>	979
Multiagent Coordination With Relative Measurement via Cooperative and Individual Control	<i>K. Sakurama, R. Asai, and M. Yamazumi</i>	992
Feedback Stability Under Mixed Gain and Phase Uncertainty	<i>J. Liang, D. Zhao, and L. Qiu</i>	1008
Approximate Dynamic Programming for Trajectory Tracking of Switched Systems	<i>M. L. Greene, M. S. Sakha, R. Kamalapurkar, and W. E. Dixon</i>	1024
Krasovskii Passivity for Sampled-Data Stabilization and Output Consensus	<i>Y. Kawano, A. Moreschini, and M. Cucuzzella</i>	1038
Jointly Optimal Local and Remote Controls for Networked Multiple Systems With Multiplicative Noises and Unreliable Uplink Channels	<i>Q. Qi, L. Xie, H. Zhang, and X. Liang</i>	1054
Cooperation Detection and Tracking of Underwater Target via Aerial–Surface–Underwater Vehicles	<i>J. Yan, J. Lin, X. Yang, C. Chen, and X. Guan</i>	1068
Distributed Optimization With Asynchronous Computation and Event-Triggered Communication	<i>Z. Dong, Y. Jin, S. Mao, W. Ren, W. Du, and Y. Tang</i>	1084
Iterative Thresholding and Projection Algorithms and Model-Based Deep Neural Networks for Sparse LQR Control Design	<i>M. Cho</i>	1100
Decentralized and Distributed Control of Large-Scale Interconnected Multiagent Systems in Prescribed Time	<i>H. Ye, C. Wen, and Y. Song</i>	1115
Almost Sure Asymptotic Stabilization of Stochastic Nonlinear Systems by Sampled-Data State and Output Feedback	<i>X. Yu and W. Lin</i>	1131
On Globalized Robust Kalman Filter Under Model Uncertainty	<i>Y. Xu, W. Xue, C. Shang, and H. Fang</i>	1147

TECHNICAL NOTES

Secrecy Codes for State Estimation of General Linear Systems	<i>D. Marelli, T. Sui, M. Fu, and Q. Cai</i>	1161
Coarse-Graining Complex Networks for Control Equivalence	<i>D. Toller, M. Tribastone, M. Tschaikowski, and A. Vandin</i>	1169
Event-Triggered Sampling Problem for Exponential Stability of Stochastic Nonlinear Delay Systems Driven by Lévy Processes	<i>Q. Zhu</i>	1176
Sparsity Promoting Observer Design for Wireless Sensor-Estimator Networks	<i>N. Yang, Y. Li, T. Chen, and L. Shi</i>	1184
A Distributed Primal–Dual Push-Sum Algorithm on Open Multiagent Networks	<i>R. Sawamura, N. Hayashi, and M. Inuiguchi</i>	1192
Monotonicity and Contraction on Polyhedral Cones	<i>S. Jafarpour and S. Coogan</i>	1200
Global Asymptotic Stabilization of the Double Integrator System With Output Saturation	<i>Y. Li, Y. Li, and Z. Lin</i>	1208
Cooperative Global \mathcal{K} -Exponential Tracking Control of Multiple Mobile Robots	<i>L. Xu, Y. Su, and H. Cai</i>	1214
Observer Error Reduction via Direct State Reconstruction	<i>F. Meiners and J. Adamy</i>	1222
Feedback Stability Analysis via Frequency Dependent Constraints	<i>S. Z. Khong and A. Lanzon</i>	1228
Generalized Policy Improvement Algorithms With Theoretically Supported Sample Reuse	<i>J. Queeney, I. Ch. Paschalidis, and C. G. Cassandras</i>	1236
Optimal Security Investment Problem for Secure State Estimation on Cyber-Physical Systems	<i>T. Shinohara and T. Namerikawa</i>	1244
A Novel Mixture Least Squares Approach for Simultaneous Parameter/State and Unknown Input Estimation	<i>B. Ding, Y. Wei, Y. Zhang, and W. Yang</i>	1252
Parameter-Dependent Robust Control Invariant Sets for LPV Systems With Bounded Parameter-Variation Rate	<i>S. K. Mulgaleti, M. Mejari, and A. Bemporad</i>	1259
Complexity Reduction for Resilient State Estimation of Uniformly Observable Nonlinear Systems	<i>J. Kim, J. G. Lee, H. Sandberg, and K. H. Johansson</i>	1267
Consensus Protocols in Networks With 1-to- n Joint-Agent Interactions	<i>D. Angeli and S. Manfredi</i>	1273
Adaptive Zero-Order-Hold Triggered Control of a Chain of Integrators With Unknown Input Delay and Interexecution Time by Output Feedback	<i>S.-Y. Oh and H.-L. Choi</i>	1281
On Recursive Feasibility and Stability of Constrained Output Regulation	<i>J. Liu, J. Yang, Y. Yan, Y. Tan, X. Wang, and S. Li</i>	1289
Once Upon a Time Step: A Closed-Loop Approach to Robust MPC Design	<i>A. Parsi, M. Bartos, A. Srivastava, S. Gros, and R. S. Smith</i>	1297

Master–Slave Safe Cooperative Tracking via Game and Learning-Based Shared Control	1304
. <i>M. Li, J. Qin, Q. Ma, Y. Shi, and W. X. Zheng</i>	
Adaptive Robust Optimal Control of Constrained Continuous-Time Linear Systems: A Functional Constraint Generation Approach	1312
. <i>Y. Song, T. Liu, and G. Li</i>	
Instrumental Variables Based DREM for Online Asymptotic Identification of Perturbed Linear Systems	1320
. <i>A. Glushchenko and K. Lastochkin</i>	
Averaging-Based Stability of Discrete-Time Delayed Systems via a Novel Delay-Free Transformation	1328
. <i>A. Jbara, R. Katz, and E. Fridman</i>	
Nonlinear Cooperative Output Regulation With Input Delay Compensation	1336
. <i>S. Zheng, C. K. Ahn, X. Jiang, H. Yan, and P. Shi</i>	
Robustness of Strictly Positive Real Matrix Transfer Functions Under Small Perturbations	1344
. <i>L. Falconi and A. Ferrante</i>	
Control Law Learning Based on LQR Reconstruction With Inverse Optimal Control	1350
. <i>C. Qu, J. He, and X. Duan</i>	
A Zonotope-Based Interval Estimation Method for Systems With Nonlinear Equality Constraints	1358
. <i>Y. Ma, Z. Wang, M. Kinnaert, and Y. Shen</i>	
A Direct Optimization Algorithm for Input-Constrained MPC	1366
. <i>L. Wu and R. D. Braatz</i>	
Exponential Stability and Design of Sensor Feedback Amplifiers for Fast Stabilization of Magnetizable Piezoelectric Beam Equations	1374
. <i>A. Ö. Özer, A. K. Aydın, and R. Emran</i>	
Unidentifiability of System Dynamics: Conditions and Controller Design	1380
. <i>X. Mao and J. He</i>	
A Simple Finite-Time Analysis of TD Learning With Linear Function Approximation	1388
. <i>A. Mitra</i>	
Robust and Bayesian Subspace Identification	1395
. <i>A. R. Mesquita</i>	
Leader-Following Consensus With Prescribed Performance for Linear Multiagent Systems	1402
. <i>J. Luo and W. Liu</i>	

IEEE TRANSACTIONS ON CONTROL OF NETWORK SYSTEMS

A PUBLICATION OF THE IEEE CONTROL SYSTEMS SOCIETY



COSPONSORED BY
IEEE CIRCUITS AND SYSTEMS SOCIETY
IEEE COMMUNICATIONS SOCIETY
IEEE COMPUTER SOCIETY
IEEE ROBOTICS AND AUTOMATION SOCIETY



DECEMBER 2024

VOLUME 11

NUMBER 4

ITCNAV

(ISSN 2325-5870)

REGULAR PAPERS

Distributed No-Regret Learning in Aggregative Games With Residual Bandit Feedback	<i>W. Liu and P. Yi</i>	1734
Fully Distributed Bipartite Formation Control for Stochastic Heterogeneous Multiagent Systems Under Signed Markovian Switching Topology	<i>G. Wen, D. Jiang, Z. Peng, T. Huang, and A. Rahmani</i>	1746
Maximally Permissive Robustness Discovery in Automated Manufacturing Systems With an Unreliable Resource	<i>B. Yang and H. Hu</i>	1756
PDE-Based Consensus Control for Multiagent Systems With Event-Triggered Mechanism	<i>Z. Liu, X. Cui, Z. Zhao, and K.-S. Hong</i>	1768
Genetic-Algorithm-Based Sliding-Mode Stabilization for Networked Switched Systems With Unreliable Channels	<i>W. Qi, N. Zhang, C. K. Ahn, and G. Zong</i>	1778
Payoff-Based Learning of Nash Equilibria in Merely Monotone Games	<i>T. Tatarenko and M. Kamgarpour</i>	1790
Data Informativity and Parameter Sloppiness of an LFT-Parameterized System	<i>Y. Zhou and T. Zhou</i>	1800
Linear Attacks Against Remote State Estimation: Performance Analysis Under an Encryption Scheme	<i>H. Liu, Y. Ni, X. Wang, and L. Xie</i>	1812
Strategic Information Transmission Against Malicious Eavesdropper and Semihonest Estimator: A Tripartite Game Analysis	<i>Y. Chen, F. Qu, Y. Ni, and Y. Li</i>	1825
Distributed State Estimation for Linear Time-Invariant Systems With Aperiodic Sampled Measurement	<i>S. Wang, Y.-J. Pan, and M. Guay</i>	1835
Event-Triggered Model-Free Adaptive Containment Control for Nonlinear Multiagent Systems Under DoS Attacks	<i>X. Bu, J. Guo, L. Cui, and Z. Hou</i>	1845
A BDD-Based Approach to Model Reduction of Boolean Networks	<i>F. Motoyama, K. Kobayashi, and Y. Yamashita</i>	1858
Simultaneous Distributed Localization, Formation, and Group Motion Control: A Distributed Filter Approach	<i>M. Guo and B. Jayawardhana</i>	1867

(Contents Continued on Page 1732)



A Unified Filtering Framework of Networked Control Systems Subject to Variations in Quantization Density ..	<i>T. Liu, Y. Xiao, and M. J. Er</i>	1879
Consensus Control for High-Order Multiagent Systems With Multiple Nonconvex State Constraints	<i>Y. Lin, P. Lin, and H. Dong</i>	1891
Network Topology-Aware Mitigation of Undetectable PMU Time Synchronization Attacks	<i>E. Shereen and G. Dán</i>	1899
Velocity-Free Distributed Optimization Algorithms for Second-Order Multiagent Systems	<i>Y. Zou, Y. Huang, K. Xia, B. Huang, X. Dong, and Z. Meng</i>	1911
Protection Against Graph-Based False Data Injection Attacks on Power Systems	<i>G. Morgenstern, J. Kim, J. Anderson, G. Zussman, and T. Rautenberg</i>	1924
Cooperative Control of Multichannel Linear Systems With Self-Organizing Private Agents	<i>P. Duan, T. Liu, Y. Lv, and G. Wen</i>	1937
Distributed Differential Graphical Game for Control of Double-Integrator Multi-Agent Systems With Input Delay	<i>H. B. Jond</i>	1949
Distributed Fixed-Time Output Regulation for a Class of Nonlinear Multiagent Systems With Unity Relative Degree	<i>Q. Liang, D. Huang, L. Ma, J. Hu, Y. Wu, and S. Wu</i>	1962
Distributed Bipartite Containment Tracking Over Signed Networks With Multiple Leaders	<i>P. Şekercioğlu, E. Panteley, I. Sarras, A. Loría, and J. Marzat</i>	1975
Formation–Circumnavigation Switching Control of Multiple ODIN Systems via Finite-Time Intermittent Control Strategies	<i>J. Hu, B. Chen, and B. K. Ghosh</i>	1986
Gradient-Based Distributed Controller Design Over Directed Networks	<i>Y. Watanabe, K. Sakurama, and H.-S. Ahn</i>	1998
Safe Pricing Mechanisms for Distributed Resource Allocation With Bandit Feedback	<i>S. Hutchinson, B. Turan, and M. Alizadeh</i>	2010
Optimal DoS Attack Strategy for Cyber-Physical Systems via Energy Allocation	<i>Z. Wang, S. Gao, H. Zhang, H. Yan, and T. Li</i>	2022
Generalized Nash Equilibrium Seeking for Directed Nonsmooth Multicluseter Games via a Distributed Lipschitz Algorithm	<i>Y. Wei, X. Zeng, H. Fang, Y. Ding, and S. Ding</i>	2033
Bipartite Consensus for Nonlinear Networked Systems Based on General Lyapunov Functions	<i>S. Zhang, L. Wang, B. Xue, K. Liu, and W. Wang</i>	2043
Input State Stability of Gated Graph Neural Networks	<i>A. Marino, C. Pacchierotti, and P. R. Giordano</i>	2052
Consensus of Heterogeneous Multiagent Networks Under Sparse Attacks by Integral-Type Observer	<i>W. Zhao, J. Lu, and F. Ren</i>	2064
Steering and Formation Control of Unicycles Under Single-Rate Sampling	<i>M. Mattioni, A. Moreschini, S. Monaco, and D. Normand-Cyrot</i>	2075
Structural Controllability of Multiplex Networks With the Minimum Number of Driver Nodes	<i>X. Li, G. Li, L. Gao, L. Y. Chew, and G. Xiao</i>	2088
Distributed Algorithm for Constrained Social Cost Minimization Problem of Heterogeneous Linear Multiagent Systems Against DoS Attacks	<i>X. Nian, F. Li, and D. Liu</i>	2101
Low-Computation-Based Adaptive Self-Triggered Bipartite Consensus Control for Nonlinear Multiagent Systems Subject to Sensor Faults	<i>Y. Wu, H. Liang, N. Zhao, and B. Niu</i>	2114
Tracking Control of Cooperative Marine Vehicles Under Hard and Soft Constraints	<i>E. Restrepo, J. Matouš, and K. Y. Pettersen</i>	2126
Protocol-Based Distributed Security Fusion Estimation for Networked Systems With Unknown Bounded Noise Under Quantization	<i>L. Zha, Y. Guo, J. Liu, X. Xie, E. Tian, and J. Cao</i>	2139
Deadbeat Consensus Prediction for Multiagent Systems Using Intermittent Local Information	<i>F. Hu, H.-T. Zhang, and Y. Tang</i>	2151
FSOC: Flexible Subgrouping and Ordering of Multirobot Coordination for Convoying Multiple Scattered Targets	<i>B.-B. Hu, W. Yao, H. Wei, and C. Lv</i>	2160
Combined Carbon Capture and Utilization With Peer-to-Peer Energy Trading for Multimicrogrids Using Multiagent Proximal Policy Optimization	<i>M. Chen, Z. Shen, L. Wang, and G. Zhang</i>	2173
Distributed Consensus Algorithm for Decision-Making in Multiagent Multiarmed Bandit	<i>X. Cheng and S. Maghsudi</i>	2187
The END: Estimation Network Design for Games Under Partial-Decision Information	<i>M. Bianchi and S. Grammatico</i>	2200

An Invariant Set Construction Method, Applied to Safe Coordination of Thermostatic Loads	<i>S. Jang, N. Ozay, and J. L. Mathieu</i>	2213
Yet Another Self-Stabilizing Minimum Vertex Cover of a Network With Stochastic Stability	<i>J. Chen and R. Zhou</i>	2226
Distributed Nonconvex Optimization: Gradient-Free Iterations and ϵ -Globally Optimal Solution	<i>Z. He, J. He, C. Chen, and X. Guan</i>	2239
Leaderless Consensus Control of Fractional-Order Nonlinear Multiagent Systems With Measurement Sensitivity and Actuator Attacks	<i>Y. Liu, X. Xie, M. Chadli, and J. Sun</i>	2252
Adaptive Optimal Bipartite Consensus Control for Heterogeneous Multiagent Systems	<i>B. Liang, Y. Wei, and W. Yu</i>	2263

IEEE

CONTROL SYSTEMS LETTERS

A PUBLICATION OF THE IEEE CONTROL SYSTEMS SOCIETY



2024

VOLUME 8

NUMBER 12bis (PAPERS from 525 to 557)

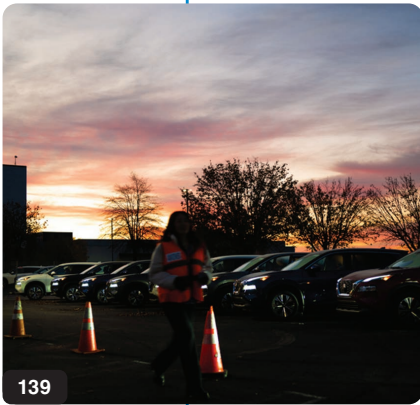
Papers published in 2024

PAPERS

- Optimal Gait Design for Nonlinear Soft Robotic Crawlers, *Y. Shen, N. E. Leonard, B. Bamieh and J. Arbelaz* pp. 3141-3146
- Active Perception With Initial-State Uncertainty: A Policy Gradient Method, *C. Shi, S. Han, M. Dorothy and J. Fu* pp. 3147-3152
- Projected Forward Gradient-Guided Frank-Wolfe Algorithm via Variance Reduction, *M. Rostami and S. S. Kia*..... pp. 3153-3158
- Parameter Identifiability and Reduction for Smooth and Nonsmooth Differential-Algebraic Equation Systems, *H. Abdelfattah, P. Stechliniski and S. A. Eisa* pp. 3159-3164
- Probabilistic Data-Driven Invariance for Constrained Control of Nonlinear Systems, *A. Kashani, A. K. Strong, L. J. Bridgeman and C. Danielson*..... pp. 3165-3170
- Design of Distributed Controller for Discrete-Time Systems via the Integration of Extended LMI and Clique-Wise Decomposition, *S. Fushimi, Y. Watanabe and K. Sakurama* pp. 3171-3176
- Orthogonal Modal Representation in Long-Term Risk Quantification for Dynamic Multi-Agent Systems, *R. Yasunaga, Y. Nakahira and Y. Hori* pp. 3177-3182
- Safety Verification of Discrete-Time Systems via Interpolation-Inspired Barrier Certificates, *M. A. Oumer, V. Murali, A. Trivedi and M. Zamani* pp. 3183-3188
- Online Data-Driven Control of Nonlinear Systems Using Semidefinite Programming, *A. Bozza, T. Martin, G. Cavone, R. Carli, M. Dotoli and F. Allgöwer*..... pp. 3189-3194
- Closed-Loop Analysis of ADMM-Based Suboptimal Linear Model Predictive Control, *A. Srikanthan, A. Karapetyan, V. Kumar and N. Matni* pp. 3195-3200
- Fitted Q-Iteration via Max-Plus-Linear Approximation, *Y. Liu and M. Amin Sharifi Kolarijani*..... pp. 3201-3206
- Scenario-Based Risk-Sensitive Computations of Equilibria for Two-Person Zero-Sum Games, *F. -H. O. Rajab and J. S. Shamma* pp. 3207-3212
- PID Control of MIMO Nonlinear Uncertain Systems With Low Relative Degrees, *J. Zhu and C. Zhao*..... pp. 3213-3218
- Constraint-Aware Refinement for Safety Verification of Neural Feedback Loops, *N. Rober and J. P. How*..... pp. 3219-3224
- Data-Driven Composite Nonlinear Feedback Control for Semi-Global Output Regulation of Unknown Linear Systems With Input Saturation, *H. Cai, W. Lan and X. Yu* pp. 3225-3230
- Spatially-Invariant Opinion Dynamics on the Circle, *G. Amorim, A. Bizyaeva, A. Franci and N. E. Leonard*..... pp. 3231-3236
- Robust NMPC for Uncalibrated IBVS Control of AUVs, *H. Gu and C. Shen*..... pp. 3237-3242
- Mittag-Leffler Stability of Homogeneous Fractional-Order Systems With Delay, *N. T. Lien, L. V. Hien and N. N. Thang*..... pp. 3243-3248

Stochastic Data-Driven Predictive Control: Chance-Constraint Satisfaction With Identified Multi-Step Predictors, <i>H. Balim, A. Carron, M. N. Zeilinger and J. Köhler</i>	pp. 3249-3254
Safe Vehicle Motion Planning Using Constraint Admissible Positive Invariant Sets on $SE(3)$, <i>T. Brandt, R. Fierro and C. Danielson</i>	pp. 3255-3260
Contraction Analysis of Continuation Method for Suboptimal Model Predictive Control, <i>R. Shima, Y. Ito and T. Miyano</i>	pp. 3261-3266
Spiking Nonlinear Opinion Dynamics (S-NOD) for Agile Decision-Making, <i>C. Cathcart, I. X. Belaustegui, A. Franci and N. E. Leonard</i>	pp. 3267-3272
On the Stability of Consensus Control Under Rotational Ambiguities, <i>Z. Li, C. Li and R. T. Rajan</i>	pp. 3273-3278
Robust and Exponential Stability in Barrier-Certified Systems via Contracting Piecewise Smooth Dynamics, <i>Z. Marvi, F. Bullo and A. G. Alleyne</i>	pp. 3279-3284
On the Stability of a Nonlinear MPC Scheme for Avoidance, <i>M. Alves Dos Santos, A. Ferramosca and G. V. Raffo</i>	pp. 3285-3290
Tutorial Problems for Nonsmooth Dynamics and Optimal Control: Ski Jumping and Accelerating a Bike Without Pedaling, <i>J. Golembiewski and T. Faulwasser</i>	pp. 3291-3296
Active Learning-Based Control for Resiliency of Uncertain Systems Under DoS Attacks, <i>S. Chakraborty, W. Gao, K. G. Vamvoudakis and Z. -P. Jiang</i>	pp. 3297-3302
Control of a Noncooperative Positive Nonlinear System by Augmented Positive Linear System Regulation, <i>G. Liu and A. A. Menezes</i>	pp. 3303-3308
Distributed Thompson Sampling Under Constrained Communication, <i>S. Zerefa, Z. Ren, H. Ma and N. Li</i>	pp. 3309-3314
Robust Linear Quadratic Regulation Over Polytopic Time-Inhomogeneous Markovian Channels Under Generalized Packet Dropout Compensation, <i>Y. Zacchia Lun, F. Santucci and A. D’Innocenzo</i>	pp. 3315-3320
Cooperative Target Defense Under Communication and Sensing Constraints, <i>D. Maity and A. Pourghorban</i>	pp. 3321-3326
Two-Agent Noncooperative Dynamical Systems With Quadratic Vector-Valued Payoff Functions and Weak Pareto Improvement, <i>Z. Guo and T. Hayakawa</i>	pp. 3327-3332
Fast-and-Flexible Decision-Making With Modulatory Interactions, <i>R. Moreno-Morton, A. Bizyaeva, N. Ehrich Leonard and A. Franci</i>	pp. 3333-3338
Robust Controller Synthesis Under Markovian Mode Switching With Periodic LTV Dynamics, <i>S. Shrivastava and K. Oguri</i>	pp. 3339-3344

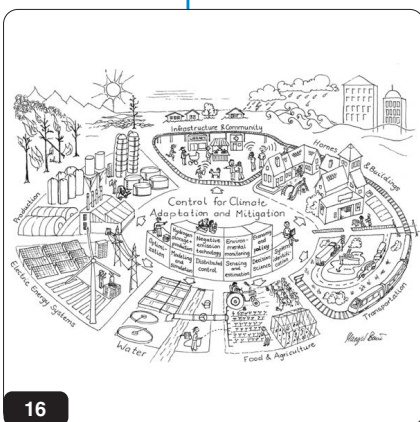
» FEATURES



139

Cover credit:
JACK SPRINKLE (OVERALL COVER DRAFT),
REGAN WILLIAMS (INSIDE THE CAR AND CAR 55
 LAYERS),
DEREK GLOUDEMANS, **GERGELY ZACHÁR** (TIME-
 SPACE DIAGRAM IMAGE IN THE REARVIEW MIRROR),
ALEX RICHARDSON (LIVE VIEW MAP OF THE
 100 CARS ON THE ROAD)

» DEPARTMENTS



16

28 Traffic Control via Connected and Automated Vehicles (CAVs)

An Open-Road Field Experiment With 100 CAVs

JONATHAN W. LEE, **HAN WANG**, **KATHY JANG**, **NATHAN LICHTLÉ**, **AMAURY HAYAT**, **MATTHEW BUNTING**, **ARWA ALANQARY**, **WILLIAM BARBOUR**, **ZHE FU**, **XIAOQIAN GONG**, **GEORGE GUNTER**, **SHARON HORNSTEIN**, **ABDUL RAHMAN KREIDIEH**, **MATTHEW W. NICE**, **WILLIAM A. RICHARDSON**, **ADIT SHAH**, **EUGENE VINITSKY**, **FANGYU WU**, **SHENGQUAN XIANG**, **SULAIMAN ALMATRUDI**, **FAHD ALTHUKAIR**, **RAHUL BHADANI**, **JOY CARPIO**, **RAPHAËL CHEKROUN**, **ERIC CHENG**, **MARIA TERESA CHIRI**, **FANG-CHIEH CHOU**, **RYAN DELORENZO**, **MARSALIS GIBSON**, **DEREK GLOUDEMANS**, **ANISH GOLLAKOTA**, **JUNYI JI**, **ALEXANDER KEIMER**, **NOUR KHOUDARI**, **MALAIKA MAHMOOD**, **MIKAIL MAHMOOD**, **HOSSEIN NICK ZINAT MATIN**, **SEAN MCQUADE**, **RABIE RAMADAN**, **DANIEL URIELI**, **XIA WANG**, **YANBING WANG**, **RITA XU**, **MENGSHA YAO**, **YILING YOU**, **GERGELY ZACHÁR**, **YIBO ZHAO**, **MOSTAFA AMELI**, **MIRZA NAJAMUDDIN BAIG**, **SARAH BHASKARAN**, **KENNETH BUTTS**, **MANASI GOWDA**, **CAROLINE JANSSEN**, **JOHN LEE**, **LIAM PEDERSEN**, **RILEY WAGNER**, **ZIMO ZHANG**, **CHANG ZHOU**, **DANIEL B. WORK**, **BENJAMIN SEIBOLD**, **JONATHAN SPRINKLE**, **BENEDETTO PICCOLI**, **MARIA LAURA DELLE MONACHE**, and **ALEXANDRE M. BAYEN**

61 Reinforcement Learning-Based Oscillation Dampening

Scaling Up Single-Agent Reinforcement Learning Algorithms to a 100-Autonomous-Vehicle Highway Field Operational Test

KATHY JANG, **NATHAN LICHTLÉ**, **EUGENE VINITSKY**, **ADIT SHAH**, **MATTHEW BUNTING**, **MATTHEW NICE**, **BENEDETTO PICCOLI**, **BENJAMIN SEIBOLD**, **DANIEL B. WORK**, **MARIA LAURA DELLE MONACHE**, **JONATHAN SPRINKLE**, **JONATHAN W. LEE**, and **ALEXANDRE M. BAYEN**

95 Traffic Smoothing Using Explicit Local Controllers

Experimental Evidence for Dissipating Stop-and-Go Waves With a Single Automated Vehicle in Dense Traffic

AMAURY HAYAT, **ARWA ALANQARY**, **RAHUL BHADANI**, **CHRISTOPHER DENARO**, **RYAN J. WEIGHTMAN**, **SHENGQUAN XIANG**, **JONATHAN W. LEE**, **MATTHEW BUNTING**, **ANISH GOLLAKOTA**, **MATTHEW W. NICE**, **DEREK GLOUDEMANS**, **GERGELY ZACHÁR**, **JON F. DAVIS**, **MARIA LAURA DELLE MONACHE**, **BENJAMIN SEIBOLD**, **ALEXANDRE M. BAYEN**, **JONATHAN SPRINKLE**, **DANIEL B. WORK**, and **BENEDETTO PICCOLI**

111 Hierarchical Speed Planner for Automated Vehicles

A Framework for Lagrangian Variable Speed Limit in Mixed-Autonomy Traffic

HAN WANG, **ZHE FU**, **JONATHAN W. LEE**, **HOSSEIN NICK ZINAT MATIN**, **ARWA ALANQARY**, **DANIEL URIELI**, **SHARON HORNSTEIN**, **ABDUL RAHMAN KREIDIEH**, **RAPHAEL CHEKROUN**, **WILLIAM BARBOUR**, **WILLIAM A. RICHARDSON**, **DAN WORK**, **BENEDETTO PICCOLI**, **BENJAMIN SEIBOLD**, **JONATHAN SPRINKLE**, **ALEXANDRE M. BAYEN**, and **MARIA LAURA DELLE MONACHE**

139 Design, Preparation, and Execution of the 100-AV Field Test for the CIRCLES Consortium

Methodology and Implementation of the Largest Mobile Traffic Control Experiment to Date

MOSTAFA AMELI, **SEAN T. MCQUADE**, **JONATHAN W. LEE**, **MATT BUNTING**, **MATTHEW W. NICE**, **HAN WANG**, **WILLIAM BARBOUR**, **RYAN WEIGHTMAN**, **CHRIS DENARO**, **RYAN DELORENZO**, **SHARON HORNSTEIN**, **JON F. DAVIS**, **DAN TIMSIT**, **RILEY WAGNER**, **RUOTONG XU**, **MALAIKA MAHMOOD**, **MIKAIL MAHMOOD**, **MARIA LAURA DELLE MONACHE**, **BENJAMIN SEIBOLD**, **DANIEL WORK**, **JONATHAN SPRINKLE**, **BENEDETTO PICCOLI**, and **ALEXANDRE M. BAYEN**

- 3 FROM THE EDITOR**
What's in a Name?
- 5 ABOUT THIS ISSUE**
Mixed Autonomy at Scale
- 10 PRESIDENT'S MESSAGE**
In Control in Control
- 13 25 YEARS AGO**
Control of Constrained Nonlinear Systems: A Case Study
- 16 TECHNICAL ACTIVITIES**
Energy Systems Are A-Changing and so Is Its Technical Committee
Technical Committee on Variable Structure and Sliding Mode Control
- 21 PEOPLE IN CONTROL**
Benedetto Piccoli
Maria Laura Delle Monache
- 156 Ph.D.s IN CONTROL**
Fangyu Wu
Yanbing Wang
- 161 INSTITUTES IN CONTROL**
The CIRCLES Consortium
- 174 CONFERENCE REPORTS**
American Control Conference in Toronto, 8–12 July 2024
- 176 CONFERENCE CALENDAR**

IEEE PUBLISHING OPERATIONS

445 Hoes Lane, Piscataway, NJ 08854 USA

IEEE OFFICERS

Thomas M. Coughlin, *IEEE President and CEO*
 Kathleen A. Kramer, *IEEE President-Elect*
 Saifur Rahman, *IEEE Past President*
 Forrest D. Wright, *Director & Secretary*
 Gerardo Barbosa, *Director & Treasurer*
 Rabab Kreidieh Ward, *Director & Vice President, Educational Activities*
 Deepak Mathur, *Director & Vice President, Member & Geographic Activities*
 Sergio Benedetto, *Director & Vice President, Publication Services and Products*
 James E. Matthews III, *Director & President, Standards Association*
 Manfred J. Schindler, *Director & Vice President, Technical Activities*
 Keith A. Moore, *Director & President IEEE-USA*

IEEE EXECUTIVE STAFF

Sophia Muirhead, *Executive Director and COO*
 Ahsaki E. Benion, *Interim General Counsel and Chief Compliance Officer*
 Ken Gilbert, *Interim Managing Director, Technical Activities*
 Russell Harrison, *Managing Director, IEEE-USA*
 Karen L. Hawkins, *Chief Marketing Officer*
 Steven Heffner, *Managing Director, Publications*
 Donna Hourican, *Staff Executive, Corporate Activities*
 Marie Hunter, *Managing Director, Conferences, Events and Experiences*
 Cecelia Jankowski, *Managing Director, Member and Geographic Activities*
 Kelly Lorne, *Chief of Staff to the Executive Director*
 Jamie Moesch, *Managing Director, Educational Activities*
 Alpesh Shah, *IEEE Standards Association Managing Director*
 Thomas Siegert, *Chief Financial Officer*
 Jeff Strohschein, *Chief Information Digital Officer*
 Cheri N. Wideman, *Chief Human Resources Officer*

IEEE PUBLISHING OPERATIONS

Dawn Melley, *Senior Director, Publishing Operations*
 Kevin Lisankie, *Director, Editorial Services*
 Peter M. Tuohy, *Director, Production Services*
 Neelam Khinvasara, *Associate Director, Digital Assets & Editorial Support*
 Felicia Spagnoli, *Advertising Production Manager*
 Katie Sullivan, *Senior Manager, Periodicals Production*
 Shannon Campos, *Senior Journals Production Manager*

ADVERTISING SALES

Timothy Warder
Director of New Product and Audience Development

IEEE prohibits discrimination, harassment, and bullying. For more information, visit <https://www.ieee.org/nondiscrimination>.

MISSION STATEMENT AND SCOPE: As the official means of communication for the IEEE Control Systems Society, *IEEE Control Systems* publishes interesting, useful, and informative material on all aspects of control system technology for the benefit of control educators, practitioners, and researchers. With this mission statement in mind, *IEEE Control Systems* encourages submissions, both feature articles and columns, on all aspects of control system technology.

SUBMISSION OF MANUSCRIPTS: A feature article typically provides an in-depth treatment of either an application of control technology, a tutorial on some area of control theory, or an innovation in control education.

IEEE Control Systems publishes a variety of columns. "Applications of Control" columns are industrially oriented summaries of innovations in control technology. "Focus on Education" typically describes some aspect of education such as novel control experiments. "Lecture Notes" can be theoretical in nature as long as they have clear tutorial value and intent. See recent issues for examples of these and other types of columns. Authors are encouraged to contact the editor-in-chief about the suitability of potential columns.

A detailed Author's Guide, a sample formatted manuscript, and LATEX template can be found at <http://ieeecs.org/publication/ieee-control-systems-magazine>. The specifications in this guide should be followed by all submissions.

All manuscripts should be submitted electronically to the *IEEE Control Systems* website, <https://css.paperplaza.net/conferences/scripts/start.pl>, with inquiries on appropriateness of content e-mailed to r.sepulchre@eng.cam.ac.uk.

SPECIAL ISSUES: *IEEE Control Systems* encourages proposals for special issues. Proposers are encouraged to contact the editor-in-chief to discuss potential topics.

BOOKS AND CONFERENCES: Submit information about recently published books to the associate editor for book reviews. Submit information about past and future conferences to the corresponding editor for conferences.

ADVERTISING: *IEEE Control Systems* accepts advertising for educational products, books, software, conferences, employment, and control-related technology. For information about advertising, contact Timothy Warder, t.warder@ieee.org, +1 732-562-6596.

IEEE CONTROL SYSTEMS—(ISSN 1066-033X) (ISMAD7) is published bi-monthly by The Institute of Electrical and Electronics Engineers, Inc. Headquarters: 3 Park Avenue, 17th Floor, New York, NY 10016, U.S.A. +1 212 419 7900. Responsibility for the contents rests upon the authors and not upon the IEEE, the Society, or its members. To order individual copies for members and nonmembers, please e-mail the IEEE Contact Center at contactcenter@ieee.org. Member and nonmember subscription prices available on request. Copyright and Reprint Permissions: Abstracting is permitted with credit to the source. Libraries are permitted to photocopy beyond the limits of the U.S. Copyright law for private use of patrons: 1) those post-1977 articles that carry a code at the bottom of the first page, provided the per-copy fee indicated in the code is paid through the Copyright Clearance Center, 222 Rosewood Drive, Danvers, MA 01970, U.S.A.; and 2) pre-1978 articles without fee. For other copying, reprint, or republication permission, write to: Copyrights and Permissions Department, IEEE Service Center, 445 Hoes Lane, Piscataway NJ 08854, U.S.A. Copyright © 2025 by The Institute of Electrical and Electronics Engineers, Inc. All rights reserved. Periodicals postage paid at New York, NY, and at additional mailing offices. Postmaster: Send address changes to *IEEE Control Systems*, IEEE, 445 Hoes Lane, Piscataway, NJ 08854 U.S.A. Canadian GST #125634188
 Printed in U.S.A

UPCOMING CONFERENCES



American Control Conference **ACC 2025**

July 8–10, Denver, CO, USA

L-CSS option Submission

~~September 13, 2024 (Passed)~~

ACC Manuscript Submission

~~September 27, 2024 (Passed)~~

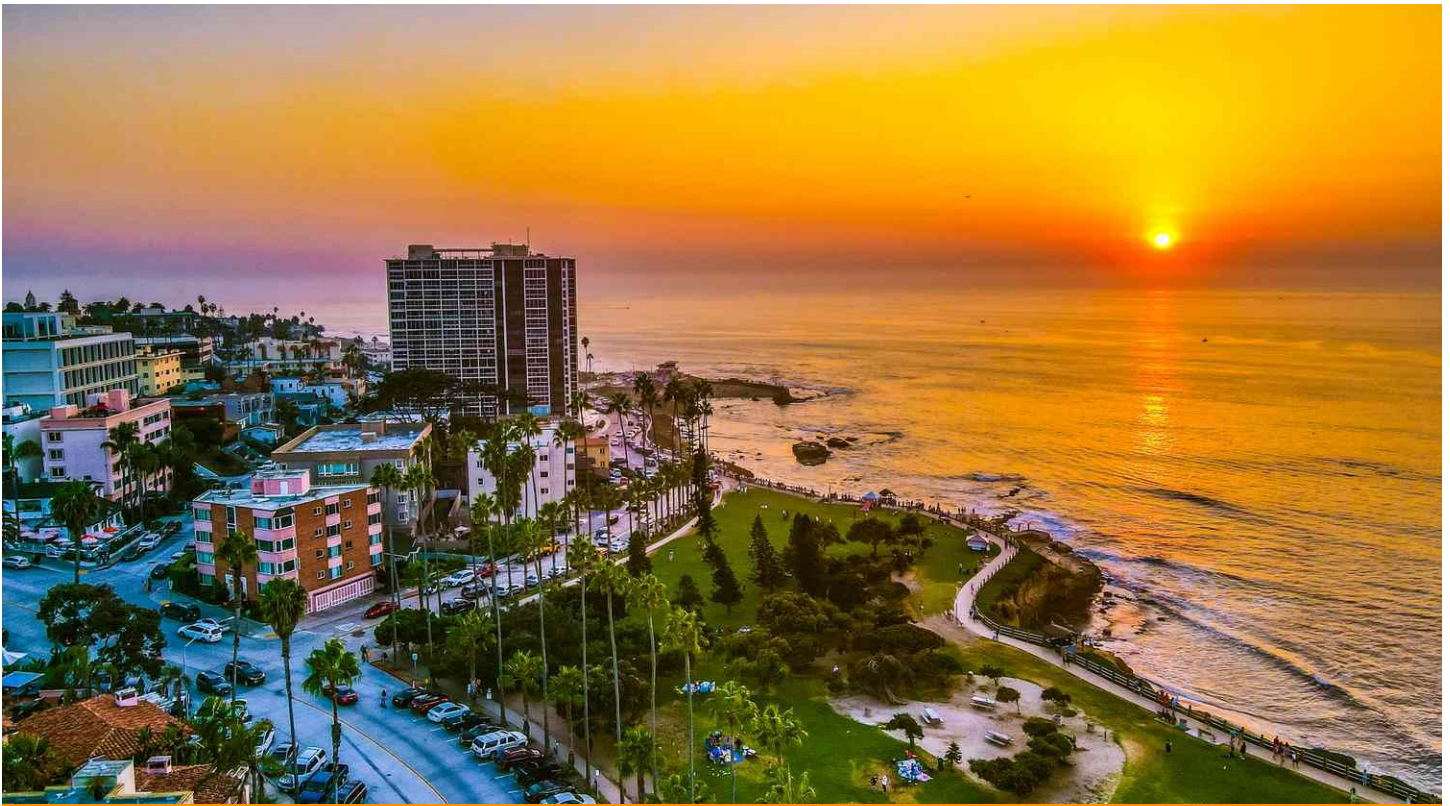
Acceptance/Rejection Notice

January 24, 2025

Final Manuscript Submission

March 14, 2025

<https://acc2025.a2c2.org/>



Conference on
Control Technology and Applications
CCTA 2025

August 25–27, San Diego, USA

Tutorial Session Proposals Due

~~29 January, 2025~~ (Passed)

Invited Session Proposals Due

24 February, 2025

Paper Submissions Due

~~5 February, 2025~~ (Passed)

Registration Opens

mid May, 2025

Notification of Acceptance

mid May, 2025

Final Paper Uploads

30 June, 2025

<https://ccta2025.ieeecss.org/>



Conference on Decision and Control CDC 2025

December 10–12, Rio de Janeiro, Brazil

Initial Paper Submissions to L-CSS with CDC Option Due

March 17, 2025

Invited Session Proposals Due

March 24, 2025

Initial Paper Submissions Due

March 31, 2025

Workshop Proposals Due

May 2, 2025

Decision Notification

Mid-July, 2025

Final Submissions and Advance Registration Due

September 3, 2025

<https://cdc2025.ieeeccs.org/>



American Control Conference **ACC 2026**

May 26–29, New Orleans, LA, USA

L-CSS option Submission

September 12, 2025

ACC Manuscript Submission

September 26, 2025

Acceptance/Rejection Notice

January 23, 2026

Final Manuscript Submission

March 13, 2026

<https://acc2026.a2c2.org/>