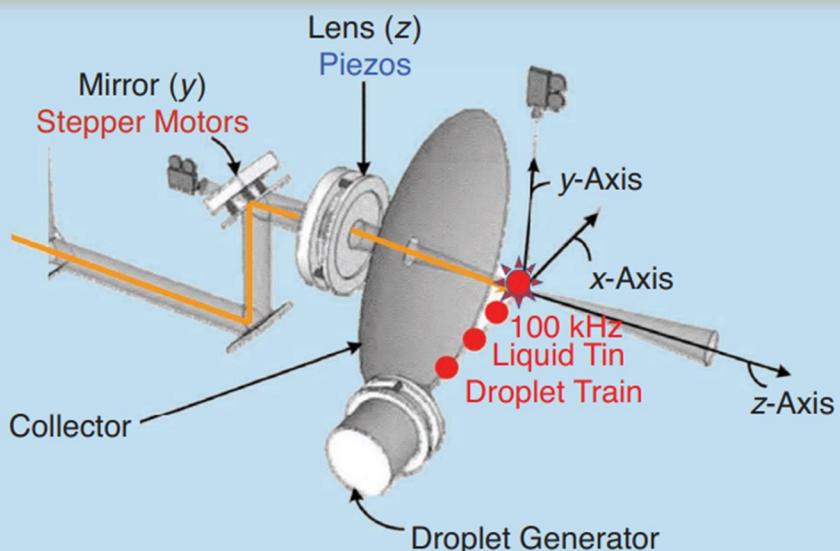


August 2024

PUBLICATIONS CONTENT DIGEST



CSS Publications Activities

Vice-President

ANDREA SERRANI *Ohio State University*
<http://ieeecs.org/publications>

Journal Editors

IEEE Transactions on Automatic Control

ALESSANDRO ASTOLFI *Imperial College London and University of Rome “Tor Vergata”*
<http://ieeecs.org/publication/transactions-automatic-control>

IEEE Transactions on Control Systems Technology

ILYA KOLMANOVSKY *University of Michigan*
<http://ieeecs.org/publication/transactions-control-systems-technology>

IEEE Transactions on Control of Network Systems

JEFF SHAMMA *University of Illinois at Urbana-Champaign*
<http://ieeecs.org/publication/transactions-control-network-systems>

IEEE Control Systems Letters

MARIA ELENA VALCHER *University of Padua*
<http://ieeecs.org/publication/control-systems-letters>

IEEE Control Systems Magazine

RODOLPHE SEPULCHRE *University of Cambridge*
<http://ieeecs.org/publication/ieee-control-systems-magazine>

IEEE Open Journal of Control Systems

SONIA MARTINEZ *University of California, San Diego*
<http://ieeecs.org/publication/open-journal-control-systems>

Electronic Information

CSS State-Space Forum

FABIO PASQUALETTI *University of California, Riverside*
<https://state-space.ieeecs.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



AUGUST 2024

VOLUME 69

NUMBER 8

IETAA9

(ISSN 1558-2523)

REGULAR PAPERS

Approximation by Simple Poles—Part I: Density and Geometric Convergence Rate in Hardy Space	M. W. Fisher, G. Hug, and F. Dörfler	4894
Notions, Stability, Existence, and Robustness of Limit Cycles in Hybrid Dynamical Systems	X. Lou, Y. Li, and R. G. Sanfelice	4910
Networked Control for Nonlinear Plants Subject to Updating Disorder	H. Yu and T. Chen	4926
Synthesis of Distributed Covert Sensor–Actuator Attackers	R. Tai, L. Lin, Y. Zhu, and R. Su	4942
Optimal Synthesis of Opacity-Enforcing Supervisors for Qualitative and Quantitative Specifications	Y. Xie, S. Li, and X. Yin	4958
PI Control for the Cascade Channels Modeled by General Saint-Venant Equations	A. Hayat, Y. Hu, and P. Shang	4974
Active Fault Isolation for Discrete Event Systems	L. Cao, S. Shu, and F. Lin	4988
Asymptotic Security Using Bayesian Defense Mechanism With Application to Cyber Deception	H. Sasahara and H. Sandberg	5004
Adaptive Observers for Biophysical Neuronal Circuits	T. B. Burghi and R. Sepulchre	5020
Forgetting-Factor Regrets for Online Convex Optimization	Y. Liu, W. Zhao, and G. Yin	5034
Provably Stable Learning Control of Linear Dynamics With Multiplicative Noise	P. Coppens and P. Patrinos	5049
Equilibration Analysis and Control of Coordinating Decision-Making Populations	N. Sakhaei, Z. Maleki, and P. Ramazi	5065
Controllability of Networked Sampled-Data Systems	Z. Yang, X. Wang, and L. Wang	5081
Dynamic Gain Adaptation in Linear Quadratic Regulators	A. Komaei	5094
Secure Zonotopic Set-Membership State Estimation for Multirate Complex Networks Under Encryption–Decryption Mechanism	H. Yang, H. Yan, Y. Li, P. Wen, and F. Yang	5109
Analysis of H_∞ Performance for Multiagent Networks	J. Wang, J. Liu, Y. Zheng, and J. Xi	5125
Optimal Control of Multi-Agent Systems With Processing Delays	M. Kashyap and L. Lessard	5141
Distributed Constrained Optimization Over Unbalanced Time-Varying Digraphs: A Randomized Constraint Solving Algorithm	M. Luan, G. Wen, Y. Lv, J. Zhou, and C. L. P. Chen	5154
Differentially Private Distributed Algorithms for Aggregative Games With Guaranteed Convergence	Y. Wang and A. Nedić	5168
Competitive Equilibrium for Dynamic Multiagent Systems: Social Shaping and Price Trajectories	Z. Salehi, Y. Chen, E. L. Ratnam, I. R. Petersen, and G. Shi	5184
Probabilistic Framework of Howard’s Policy Iteration: BML Evaluation and Robust Convergence Analysis	Y. Wang, Y.-H. Ni, Z. Chen, and J.-F. Zhang	5200
Model Predictive Control for Quadcopters With Almost Global Trajectory Tracking Guarantees	A. R. P. Andriën, E. Lefeber, D. J. Antunes, and W. P. M. H. Heemels	5216

(Contents Continued on Page 4893)



Nonlinear Attitude Estimation Using Intermittent and Multirate Vector Measurements.....	<i>M. Wang and A. Tayebi</i>	5231
Resilient Control of Dynamic Flow Networks Subject to Stochastic Cyber-Physical Disruptions.....	<i>Y. Tang and L. Jin</i>	5246
Plug-and-Play Cooperative Navigation: From Single-Agent Navigation Fields to Graph-Maintaining Distributed MAS Controllers.....	<i>D. P. Guralnik, P. F. Stiller, F. M. Zegers, and W. E. Dixon</i>	5262
Optimal Strategies for Pursuit-Evasion Differential Games of Players With Damped Double Integrator Dynamics.....	<i>S. Li, C. Wang, and G. Xie</i>	5278
Data-Driven Models of Monotone Systems.....	<i>A. Makdesi, A. Girard, and L. Fribourg</i>	5294
Neural Operators for Bypassing Gain and Control Computations in PDE Backstepping.....	<i>L. Bhan, Y. Shi, and M. Krstic</i>	5310
Singular Perturbation Analysis for a Coupled KdV-ODE System.....	<i>S. Marx and E. Cerpa</i>	5326
Attainability, Lyapunov Reducibility, and Assignability of Lyapunov Invariants of Linear Discrete-Time Systems.....	<i>A. Czornik, E. K. Makarov, M. Niezabitowski, S. Popova, and V. Zaitsev</i>	5338
Decentralized Gradient Methods With Time-Varying Uncoordinated Stepsizes: Convergence Analysis and Privacy Design.....	<i>Y. Wang and A. Nedić</i>	5352
Input-Constrained Funnel Control of Nonlinear Systems.....	<i>T. Berger</i>	5368
Open-Loop Chance Constrained Stochastic Optimal Control via the One-Sided Vysotskij-Petunin Inequality.....	<i>I. Pacula and M. Oishi</i>	5383
Strategically Revealing Intentions in General Lotto Games.....	<i>K. Paarporn, R. Chandan, D. Kovenock, M. Alizadeh, and J. R. Marden</i>	5396
Distributed Supervision Strategies for Cyber-Physical Systems With Varying Network Topology.....	<i>F. Tedesco and A. Casavola</i>	5408

TECHNICAL NOTES

Optimal Control of Two-Dimensional Roesser Model: Solution Based on Reinforcement Learning.....	<i>L. Ye, Z. Zhao, and F. Liu</i>	5424
Linearly Convergent Second-Order Distributed Optimization Algorithms.....	<i>Z. Qu, X. Li, L. Li, and Y. Hong</i>	5431
A Tractable Truthful Profit Maximization Mechanism Design With Autonomous Agents.....	<i>M. Montazeri, H. Kebriaei, and B. N. Araabi</i>	5439
Consensus Performance of First-Order Agents.....	<i>Y. Ding, H. Peng, T. Qi, and J. Chen</i>	5446
Adaptive Event-Triggered Prescribed-Time Stabilization of Uncertain Nonlinear Systems With Asymmetric Time-Varying Output Constraint.....	<i>Z.-Y. Sun, J.-J. Li, C. Wen, and C.-C. Chen</i>	5454
Event-Triggered Consensus of Multiagent Systems With Prescribed Performance.....	<i>W. Hu, Y. Hou, Z. Chen, C. Yang, and W. Gui</i>	5462
Stochastic Lyapunov-Barrier Functions for Robust Probabilistic Reach-Avoid-Stay Specifications.....	<i>Y. Meng and J. Liu</i>	5470
Ensuring Both Almost Sure Convergence and Differential Privacy in Nash Equilibrium Seeking on Directed Graphs....	<i>Y. Wang and T. Başar</i>	5478
Final Set Adjustment in Barrier Function Adaptation Exploiting Properties of Signed Power-Based Controllers.....	<i>A. González, L. Ovalle, and L. Fridman</i>	5486
Feedback Control for Distributed Ledgers: An Attack Mitigation Policy for DAG-Based DLTs.....	<i>P. Ferraro, A. Penzkofer, C. King, and R. Shorten</i>	5492
Fault-Tolerant Prescribed Performance Control of Wheeled Mobile Robots: A Mixed-Gain Adaption Approach.....	<i>J.-X. Zhang, J. Ding, and T. Chai</i>	5500
Distributed Fault Diagnosis in Discrete Event Systems With Transmission Delay Impairments	<i>J. Wang, S. Baldi, W. Yu, and X. Yin</i>	5508
Fixed-Time Consensus Control of General Linear Multiagent Systems	<i>Y. Liu, Z. Zuo, J. Song, and W. Li</i>	5516
Output Discernibility of Topological Variations in Linear Dynamical Networks	<i>Z. Fan, X. Wu, B. Mao, and J. Lü</i>	5524
Rejection of Sinusoidal Disturbances With Unknown Slowly Time-Varying Frequencies for Linear Time-Invariant Systems	<i>J. Stewart and P. Ioannou</i>	5531
Distributed Model Predictive Consensus of MASs Against False Data Injection Attacks and Denial-of-Service Attacks	<i>Z. Li, Y. Shi, S. Xu, H. Xu, and L. Dong</i>	5538
Hybrid Feedback for Affine Nonlinear Systems With Application to Global Obstacle Avoidance.....	<i>M. Wang and A. Tayebi</i>	5546
Differentially Private Consensus Control for Discrete-Time Multiagent Systems: Encoding-Decoding Schemes.....	<i>C. Gao, Z. Wang, X. He, Y. Liu, and D. Yue</i>	5554

Mixed Populations of Coordinators, Anticoordinators, and Imitators: Stochastic Stability	<i>M. Rajaei and P. Ramazi</i>	5562
New Duality Relations in Linear Systems and Optimal Control Under Bounded Disturbances	<i>A. Peregudin and I. Furtat</i>	5569
Robust Adaptive Average Consensus Over a Time-Varying and Nonbalanced Environment	<i>J. A. Gallegos, C. Schlotterbeck, and F. Núñez</i>	5577
The Non-Strict Projection Lemma	<i>T. J. Meijer, T. Holicki, S. van den Eijnden, C. W. Scherer, and W.P.M.H. (Maurice) Heemels</i>	5584
Log-Linear Dynamic Inversion Control With Provable Safety Guarantees in Lie Groups	<i>L.-Y. Lin, J. Goppert, and I. Hwang</i>	5591
Robust Data-Driven Moving Horizon Estimation for Linear Discrete-Time Systems	<i>T. M. Wolff, V. G. Lopez, and M. A. Müller</i>	5598
Passivity-Based Sliding Mode Control for Mechanical Port-Hamiltonian Systems	<i>N. Sakata, K. Fujimoto, and I. Maruta</i>	5605
Synchronization and Subsynchronization Problems for Switching Max-Plus Systems: Structural Solvability Conditions	<i>D. Animobono, E. Zattoni, D. Scaradozzi, A. M. Perdon, and G. Conte</i>	5613
Modified Implicit Discretization of the Super-Twisting Controller	<i>B. Andritsch, L. Watermann, S. Koch, M. Reichhartinger, J. Reger, and M. Horn</i>	5620
Average Consensus for Expressed and Private Opinions	<i>J. Zhang, J. Lu, and C. N. Hadjicostis</i>	5627
Exponentially Stable Adaptive Observation for Systems Parameterized by Unknown Physical Parameters	<i>A. Glushchenko and K. Lastochkin</i>	5635
Linear Quadratic Path-Following via Online Trajectory Speed Optimization	<i>D. J. Antunes</i>	5643
Event-Triggered Finite-Dimensional Observer-Based Output Feedback Stabilization of Reaction–Diffusion PDEs	<i>H. Lhachemi</i>	5651
Static Output Feedback Sliding Mode Control With Structured Sliding Surface Matrices	<i>J.-L. Wu</i>	5658
On Equivalence of Lyapunov–Razumikhin Conditions and ISS for a Class of Time-Delay Systems	<i>D. Efimov and A. Aleksandrov</i>	5666
Connections Between Integral Quadratic Constraints and Dissipativity	<i>S. Z. Khong and A. Lanzon</i>	5672
Adaptive Event-Triggered Fixed-Time Practical Tracking Control for Uncertain Nonlinear Systems	<i>Q. Ma and Y. Xie</i>	5678
Composite Boundary Structure-Based Tracking Control for Nonlinear State-Dependent Constrained Systems	<i>D. Li, H.-G. Han, and J.-F. Qiao</i>	5686

IEEE

CONTROL SYSTEMS LETTERS

A PUBLICATION OF THE IEEE CONTROL SYSTEMS SOCIETY



2024

VOLUME 8

NUMBER 7 (PAPERS from 161 to 225)

PAPERS

- Data-Driven Controller Synthesis via Co-Büchi Barrier Certificates With Formal Guarantees, *D. Ajeleye and M. Zamani* pp. 958-963
- Approximate Controllability of Continuity Equation of Transformers, *D. O. Adu and B. Gharesifard* pp. 964-969
- Feedback Control Balancing Quadratic Performance and Input Sparsity, *S. Nishida and K. Okano* pp. 970-975
- The Mandalay Derivative for Nonsmooth Systems: Applications to Nonsmooth Control Barrier Functions, *C. Jimenez Cortes, G. Clark, S. Coogan and M. Thitsa* pp. 976-981
- On the Digital Event-Triggered Observer-Based Control of Nonlinear Time-Delay Systems, *M. Di Ferdinando, A. Borri, S. Di Gennaro and P. Pepe* pp. 982-987
- Design of Stabilizing Feedback Controllers for High-Order Nonholonomic Systems, *V. Grushkovskaya and A. Zuyev* pp. 988-993
- Stability-Constrained Learning for Frequency Regulation in Power Grids With Variable Inertia, *J. Feng, M. Muralidharan, R. Henriquez-Auba, P. Hidalgo-Gonzalez and Y. Shi* pp. 994-999
- Randomized Competitive Perimeter Defense on a Line, *S. Bajaj, E. Tornig and S. D. Bopardikar* pp. 1000-1005
- A Robust and Regularized Algorithm for Recursive Total Least Squares Estimation, *H. Koide, J. Vayssettes and G. Mercère* pp. 1006-1011
- Sparse Topology Estimation for Consensus Network Systems via Minimax Concave Penalty, *F. Matsuzaki and T. Ikeda* pp. 1012-1017
- Revealing Decision Conservativeness Through Inverse Distributionally Robust Optimization, *Q. Li, Z. Liang, A. Bernstein and Y. Dvorkin* pp. 1018-1023
- A New Approach to the Energy-to-Peak Performance Analysis of Continuous-Time Markov Jump Linear Systems, *M. G. Todorov* pp. 1024-1029
- Deterministic Safety Guarantees for Learning-Based Control of Monotone Nonlinear Systems Under Uncertainty, *J. Adamek, M. Heinlein, L. Lüken and S. Lucia* pp. 1030-1035
- QSR-Dissipativity-Based Stabilization of Non-Passive Nonlinear Discrete-Time Systems by Linear Static Output Feedback, *T. Alves Lima, D. d. S. Madeira and M. Jungers* pp. 1036-1041
- Safety-Critical Event-Triggered Control for Quasi-Linear Systems on Measure Chains, *S. Dey, M. Defoort, M. Djemai and S. Di Gennaro* pp. 1042-1047
- Multi-Frequency Tracking via Group-Sparse Optimal Transport, *I. Haasler and F. Elvander* pp. 1048-1053
- Multipolar Opinion Evolution in Biased Networks, *L. Baković, D. Ohlin, G. Como and E. Tegling* pp. 1054-1059
- Remote State Estimation of Multi-Output Systems Over Gaussian Channels With Feedback, *S. Jin, J. Li and W. Chen* pp. 1060-1065

- Input Redundancy of Switched Linear Systems via Polynomial Parameter-Dependent Systems, *V. V. Viana, J. Kreiss and M. Jungers* pp. 1066-1071
- Dynamic Population Games: A Tractable Intersection of Mean-Field Games and Population Games, *E. Elokda, S. Bolognani, A. Censi, F. Dörfler and E. Frazzoli* pp. 1072-1077
- On Discrete-Time Polynomial Dynamical Systems on Hypergraphs, *S. Cui, G. Zhang, H. Jardón-Kojakhmetov and M. Cao* pp. 1078-1083
- Output Feedback Stabilization of Polynomial State-Affine Control Systems Using Control Templates, *L. Sacchelli, L. Brivadis, U. Serres and I. Ben Yaacov* pp. 1084-1089
- Frequency Dynamics With Inverters: Proof of Stabilizability and Existence of Nash Equilibrium, *P. Serna-Torre and P. Hidalgo-Gonzalez* pp. 1090-1095
- A Verifiable Computing Scheme for Encrypted Control Systems, *F. Stabile, W. Lucia, A. Youssef and G. Franzè* pp. 1096-1101
- A Lyapunov-Based Method of Reducing Activation Functions of Recurrent Neural Networks for Stability Analysis, *T. Yuno, K. Fukuchi and Y. Ebihara* pp. 1102-1107
- Providing Safety Assurances for Systems With Unknown Dynamics, *H. Wang, J. Borquez and S. Bansal* pp. 1108-1113
- Enhanced Recursive Total Least Squares Method With Subspace Tracking and Noise Covariance Estimation, *M. El-Sherbiny, G. Mercère, V. Arvis and F. Biesse* pp. 1114-1119
- An Approach to Data-Based Linear Quadratic Optimal Control, *Y. Yan, J. Bao and B. Huang* pp. 1120-1125
- LMI-Based Design of a Robust Model Predictive Controller for a Class of Recurrent Neural Networks With Guaranteed Properties, *D. Ravasio, M. Farina and A. Ballarino* pp. 1126-1131
- Convex MPC and Thrust Allocation With Deadband for Spacecraft Rendezvous, *P. Taborda, H. Matias, D. Silvestre and P. Lourenço* pp. 1132-1137
- An Excursion Onto Schrödinger's Bridges: Stochastic Flows With Spatio-Temporal Marginals, *A. Eldesoukey, O. M. Miangolarra and T. T. Georgiou* pp. 1138-1143
- Singularly Perturbed k -Contractive Linear Systems, *P. Lorenzetti, M. Giaccagli, I. -C. Morarescu and R. Postoyan* pp. 1144-1149
- A Deep-Learning Model of Virtual Test Drivers, *T. Pallacci, N. Mimmo, P. Sessa and R. Rabbeni* pp. 1150-1155
- Uncertainty Set Learning for Adaptive Robust Economic Dispatch, *N. Gu, E. Yuan and C. Wu* pp. 1156-1161
- Scenario-Tree Model Predictive Control for Vehicle Interactions in Highway Setting, *E. Gaetan, L. Giarré and P. Falcone* pp. 1162-1167
- Fast Generation of Feasible Trajectories in Direct Optimal Control, *D. Kiessling, K. Baumgärtner, J. Frey, W. Decré, J. Swevers and M. Diehl* pp. 1168-1173
- Configuration-Constrained Tube MPC for Tracking, *F. Badalamenti, S. K. Mulagaleti, A. Bemporad, B. Houska and M. E. Villanueva* pp. 1174-1179
- Exploiting Symmetry in Dynamics for Model-Based Reinforcement Learning With Asymmetric Rewards, *Y. Sonmez, N. Junnarkar and M. Arcak* pp. 1180-1185
- Data-Enabled Predictive Iterative Control, *K. Zhang, R. Zuliani, E. C. Balta and J. Lygeros* pp. 1186-1191
- Exploiting Polar Symmetry in Designing Equivariant Observers for Vision-Based Motion Estimation, *T. Bouazza, R. Mahony and T. Hamel* pp. 1192-1197
- Toward a Systems Theory of Algorithms, *F. Dörfler, Z. He, G. Belgioioso, S. Bolognani, J. Lygeros and M. Muehlebach* pp. 1198-1210
- Layered Control Systems Operating on Multiple Clocks, *I. Incer, N. Csomay-Shanklin, A. D. Ames and R. M. Murray* pp. 1211-1216
- Linear Convergence of Independent Natural Policy Gradient in Games With Entropy Regularization, *Y. Sun, T. Liu, P. R. Kumar and S. Shahrampour* pp. 1217-1222
- A Cutting Plane-Based Distributed Algorithm for Non-Smooth Optimisation With Coupling Constraints, *T. Zhong and D. Angeli* pp. 1223-1228

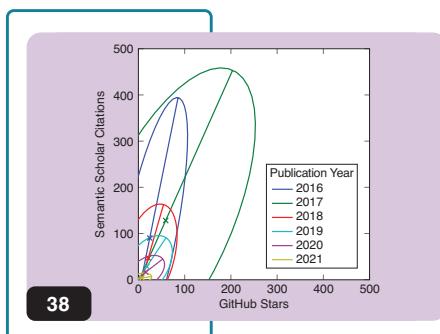
- A General Framework for Approximate and Delayed Gradient Descent for Decomposable Cost Functions, X. *Zheng, T. Javidi and B. Touri* pp. 1229-1234
- Neuromorphic Control of a Pendulum, R. *Schmetterling, F. Forni, A. Franci and R. Sepulchre* ... pp. 1235-1240
- Safe Tracking Control of Nonlinear Systems Based on Optimal Control for Low-Fidelity Models, M. *Castroviejo-Fernandez and I. Kolmanovsky*..... pp. 1241-1246
- Online Parameter Estimation for Continuously Monitored Quantum Systems, H. G. *Clausen, P. Rouchon and R. Wisniewski*..... pp. 1247-1252
- Stabilization of a Limit Cycle for Discrete-Time Switched Nonlinear Systems, G. S. *Deaecto and A. Astolfi*..... pp. 1253-1258
- Stabilizing Nonlinear ODEs With Diffusive Actuator Dynamics, A. *Irscheid, N. Gehring, J. Deutscher and J. Rudolph*..... pp. 1259-1264
- Learning Nash Equilibria in Large Populations With Constrained Strategy Switching, S. *Kara and N. C. Martins*... pp. 1265-1270
- Sensitivity Analysis for Piecewise-Affine Approximations of Nonlinear Programs With Polytopic Constraints, L. *Gharavi, C. Liu, B. De Schutter and S. Baldi*..... pp. 1271-1276
- Exponential Stability of Parametric Optimization-Based Controllers via Lur'e Contractivity, A. *Davydov and F. Bullo*..... pp. 1277-1282
- Low Complexity Convergence Rate Bounds for the Synchronous Gossip Subclass of Push-Sum Algorithms, B. *Gerencsér and M. Kornyik* pp. 1283-1288
- Passive iFIR Filters for Data-Driven Control, Z. *Wang, Y. Huo and F. Forni* pp. 1289-1294
- Structured Reinforcement Learning for Incentivized Stochastic Covert Optimization, A. *Jain and V. Krishnamurthy* pp. 1295-1300
- Ratiometric Control of Two Microbial Populations via a Dual Chamber Bioreactor, S. M. *Brancato, D. Salzano, D. Fiore, G. Russo and M. Di Bernardo* pp. 1301-1306
- Game-Theoretic Learning for Power System Dynamic Ancillary Service Provisions, H. *Xie and J. L. Cremer*.. pp. 1307-1312
- Pinning Control in Networks of Nonidentical Systems With Many-Body Interactions, R. *Rizzello and P. De Lellis*..... pp. 1313-1318
- Learning-Based Quantum Control for Optimal Pure State Manipulation, A. S. *Chen, G. Herrmann, K. G. Vamvoudakis and J. Vijayan* pp. 1319-1324
- Adaptive Model Predictive Controller for Building Thermal Dynamics, S. S. *Tohidi, D. Calì and H. Madsen*..... pp. 1325-1330
- Pearson Coefficient Degradation in a Wasserstein/Gelbrich Ambiguity Set, M. *Borelle, T. Alamo, C. Stoica, S. Bertrand and E. F. Camacho* pp. 1331-1336
- Adaptive Observer From Body-Frame Relative Position Measurements for Cooperative Localization, N. *De Carli, E. Restrepo and P. Robuffo Giordano* pp. 1337-1342
- Elastic Tube Model Predictive Control With Scaled Zonotopic Sets, S. *Diaconescu, F. Stoican, B. D. Ciubotaru and S. Olaru* pp. 1343-1348
- QPALM-OCP: A Newton-Type Proximal Augmented Lagrangian Solver Tailored for Quadratic Programs Arising in Model Predictive Control, K. F. *Løwenstein, D. Bernardini and P. Patrinos* pp. 1349-1354

IEEE Control Systems

August 2024 Volume 44 Number 4

WWW.IEEECSS.ORG/PUBLICATIONS/CSM

» FEATURES



24 Machine Learning: Bane or Boon for Control?

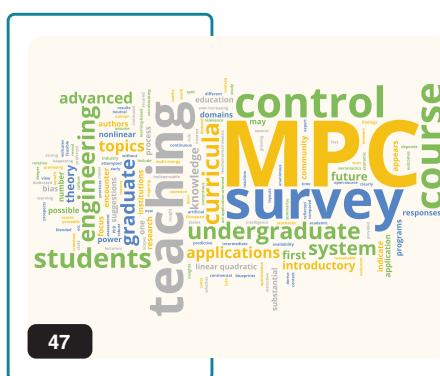
2023 Bode Prize Lecture
MIROSLAV KRSTIC

38 What Is the Impact of Releasing Code With Publications?

Statistics from the Machine Learning, Robotics, and Control Communities
SIQI ZHOU, LUKAS BRUNKE, ALLEN TAO, ADAM W. HALL, FEDERICO PIZARRO BEJARANO, JACOPO PANERATI, and ANGELA P. SCHOELLIG

Cover credit: ©SHUTTERSTOCK/CALLMETAK, FEEDBACK LOOP—©SHUTTERSTOCK/WHALE DESIGN

» DEPARTMENTS



3 FROM THE EDITOR

Reconciling Physics and Algorithmics

4 ABOUT THIS ISSUE

Machine Learning for Control

8 PRESIDENT'S MESSAGE

Survival Rather Than Optimality: Lessons From Ecology

10 25 YEARS AGO

Future Directions in Control Education

12 MEMBER ACTIVITIES

CSS Day: 21 October 2024

13 TECHNICAL ACTIVITIES

Technical Committee on Control Education
Control Systems Society Technical Committee on Stochastic Systems and Control

19 PEOPLE IN CONTROL

Huanshui Zhang
Moritz Mathias Diehl

47 FOCUS ON EDUCATION

Teaching Model Predictive Control

66 Ph.D.s IN CONTROL

Carmen Amo Alonso
Mohammed Rayyan Sheriff

71 INSTITUTES IN CONTROL

The Key Laboratory of Systems and Control at the Chinese Academy of Sciences

76 CONFERENCE REPORTS

2025 American Control Conference Call for Papers

80 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*
Anta Cisse-Green, *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 bimonthly 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 © 2024 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



Conference on Control Technology and Applications **CCTA 2024**

August 21–23, Newcastle upon Tyne, UK

Paper Submission Opens

November 01, 2023

Tutorial Session Proposals Due

February 01, 2024 (Passed)

Paper Submission Due

February 05, 2024 (Passed)

Invited Session Proposals Due

March 01, 2024 (Passed)

Decision Notification

April 08, 2024

Registration Opens

May 01, 2024

Final Camera-Ready Submission

June 15, 2024 (Passed)

<https://ccta2024.ieecss.org/>



Conference on Decision and Control **CDC 2024**

December 17–19, Milan, Italy

Initial Paper Submissions to L-CSS with CDC Option Due

~~March 8, 2024 (Passed)~~

Invited Session Proposals Due

~~March 15, 2024 (Passed)~~

Initial Paper Submissions Due

~~March 22, 2024 (Passed)~~

Workshop Proposals Due

~~April 29, 2024 (Passed)~~

Decision Notification

Mid-July, 2024

Final Submissions Due

September 10, 2024

<https://cdc2024.ieecss.org/>



American Control Conference **ACC 2025**

July 8–10, Denver, CO, USA

L-CSS option Submission

September 13, 2024

ACC Manuscript Submission

September 27, 2024

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

Invited Session Proposals Due

29 February, 2025

Paper Submissions Due

5 February, 2025

Registration Opens

mid May, 2025

Notification of Acceptance

mid May, 2025

Final Paper Uploads

30 June, 2025

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