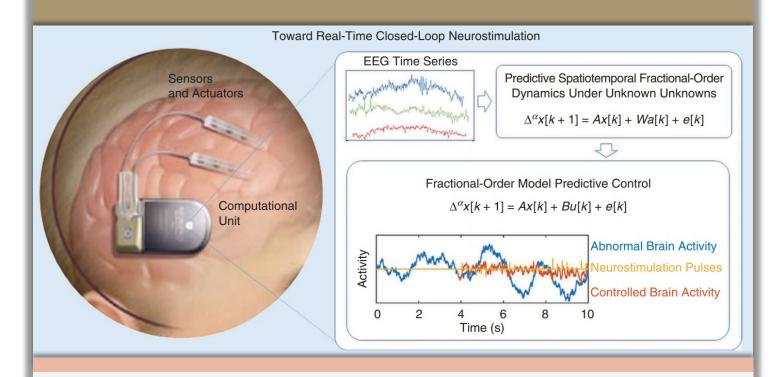


Publications Content Digest



August 2019

CSS Publications Activities

Vice-President

THOMAS PARISINI Imperial College London and University of Trieste

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

ANDREA SERRANI Ohio State University

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

IEEE Transactions on Control of Network Systems

IOANNIS PASCHALIDIS Boston University

JEFF SHAMMA Deputy Editor-in-Chief King Abdullah University of Science and Technology

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

IEEE Control Systems Letters

MARIA ELENA VALCHER University of Padua

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

IEEE Control Systems Magazine

JONATHAN HOW Massachusetts Institute of Technology

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

Electronics Editor

E-letter on Systems, Control and Signal Processing

AHMAD TAHA University of Texas at San Antonio

http://ieeecss.org/publication/e-letter

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

For subscription to the monthly E-Letter, please send an empty email to eletter-css-join@lists.it.utsa.edu

IEEE TRANSACTIONS ON

AUTOMATIC CONTROL

A PUBLICATION OF THE IEEE CONTROL SYSTEMS SOCIETY



AUGUST 2019 VOLUME 64 NUMBER 8 IETAA9 (ISSN 0018-9286)

Scanning the Issue	3083
REGULAR PAPERS	
Generalized Sarymsakov Matrices	3085
	3101
Affine Monotonic and Risk-Sensitive Models in Dynamic Programming	3117
Block Decoupling of Boolean Control Networks	3129
Efficient Simulation Sampling Allocation Using Multifidelity Models	3141
Y. Peng, J. Xu, L. H. Lee, J. Hu, and CH. Chen	3156
Iterative Sequential Action Control for Stable, Model-Based Control of Nonlinear Systems	
E. Tzorakoleftherakis and T. D. Murphey	3170
Smooth Interpolation of Covariance Matrices and Brain Network Estimation	3184
High-Gain Nonlinear Observer With Lower Tuning Parameter A. Zemouche, F. Zhang, F. Mazenc, and R. Rajamani	3194
Multiagent Coordination Via Distributed Pattern Matching	3210
Control of a Driftless Bilinear Vector Field on <i>n</i> -Sphere	3226
YW. Wang, YW. Wei, XK. Liu, N. Zhou, and C. G. Cassandras	3239
The Importance of System-Level Information in Multiagent Systems Design: Cardinality and Covering Problems	
	3253
Submodularity of Storage Placement Optimization in Power Networks	3268
Robustness to In-Domain Viscous Damping of a Collocated Boundary Adaptive Feedback Law for an Antidamped	
Boundary Wave PDE	3284

(Contents Continued on Back Cover)

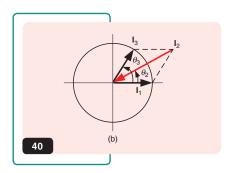


TECHNICAL NOTES	
Dynamic Event-Triggered and Self-Triggered Control for Multi-agent Systems	
X. Yi, K. Liu, D. V. Dimarogonas, and K. H. Johansson	3300
State Measurement Error-to-State Stability Results Based on Approximate Discrete-Time Models	
A. J. Vallarella and H. Haimovich	3308
Distributed Moving-Horizon Estimation With Arrival-Cost Consensus	3316
Shrinking Horizon Model Predictive Control With Signal Temporal Logic Constraints Under Stochastic Disturbances	
	3324
Permissive Supervisor Synthesis for Markov Decision Processes Through Learning	3332
F. Liu, D. Xue, S. Hirche, and M. Buss	3339
Fully Distributed Resilience for Adaptive Exponential Synchronization of Heterogeneous Multiagent Systems Against	22.45
Actuator Faults	3347
Dual Prediction—Correction Methods for Linearly Constrained Time-Varying Convex Programs	3355
\mathcal{L}_2 State Estimation With Guaranteed Convergence Speed in the Presence of Sporadic Measurements	22.62
F. Ferrante, F. Gouaisbaut, R. G. Sanfelice, and S. Tarbouriech	3362
Descriptor Observers Design for Markov Jump Systems With Simultaneous Sensor and Actuator Faults	2270
	3370
Stability and L_2 Synthesis of a Class of Periodic Piecewise Time-Varying Systems	2270
P. Li, J. Lam, R. Lu, and KW. Kwok	3378
Boundary Observers for a Reaction–Diffusion System Under Time-Delayed and Sampled-Data Measurements	3385
$\label{pose} \mbox{ Hybrid Pose and Velocity-Bias Estimation on } SE(3) \mbox{ Using Inertial and Landmark Measurements} \dots \dots$	3391
Nonconservative Lifted Convex Conditions for Stability of Discrete-Time Switched Systems Under Minimum	3399
Dwell-Time Constraint	3407
Convergence Properties for Discrete-Time Nonlinear Systems	3415
H. Yu, F. Hao, and T. Chen	3423
Opinion Propagation Over Signed Networks: Models and Convergence Analysis	3431
S. Al-Abri, W. Wu, and F. Zhang	3439
Block Decoupling of Linear Systems by Static-State Feedback	3447
Traffic Models of Periodic Event-Triggered Control Systems	3453
Stabilization Control for Linear Continuous-Time Mean-Field Systems	3461
	3469
A De Giorgi Iteration-Based Approach for the Establishment of ISS Properties for Burgers' Equation With Boundary and In-domain Disturbances	3476
Stabilization of Uncertain Feedforward Nonlinear Systems With Application to Underactuated Systems	3484
A Further Result on Semi-global Stabilization of Minimum-Phase Input-Output Linearizable Nonlinear Systems by	3404
Linear Partial State Feedback	3492
Finite-Time Adaptive Stabilization of Linear Systems	3498
Consensusability of Multiagent Systems With Delay and Packet Dropout Under Predictor-Like Protocols	
Dimensional-Invariance Principles in Coupled Dynamical Systems: A Unified Analysis and Applications	3506
	3514
Finite-Time Cooperative Engagement	3514
Timic-Timic Cooperative Engagement	3321



August 2019 Volume 39 Number 4
WWW.IEEECSS.ORG/PUBLICATIONS/CSM

>> FEATURES



40 Impulse Vectors for Input-Shaping Control

A mathematical tool to design and analyze input shapers ${\bf CHUL\text{-}GOO\ KANG}$

56 Phasor-Based Adaptive Control of a Test-Feeder Distribution Network

Application of retrospective cost adaptive control to the IEEE 13-node test feeder SYED ASEEM UL ISLAM, ELIZABETH L. RATNAM, ANKIT GOEL, and DENNIS S. BERNSTEIN

DEPARTMENTS



Cover credit: Example impulse vectors. Background image—licensed by ingram publishing

4 FROM THE EDITOR

Control Education

7 ABOUT THIS ISSUE

Mathematical Tools for Control

11 PRESIDENT'S MESSAGE

Does Plan S Serve the IEEE Control Systems Society the Dingo's Breakfast?

- **13** 25 YEARS AGO
- **15** MEMBER ACTIVITIES

IEEE Control Systems Society Outreach Fund

20 TECHNICAL ACTIVITIES

Technical Committee on Control Education Technical Committee on Healthcare and Medical Systems

DEPARTMENTS



26 PEOPLE IN CONTROL

Maurizio Porfiri Keum-Shik Hong Min Wu Cameron Nowzari Erfan Nozari

75 FOCUS ON EDUCATION

Ode to the Complex Numbers a + ib

76 BOOKSHELF

Partially Observed Markov Decision Processes: From Filtering to Controlled Sensing A First Course in Predictive Control, Second Edition Book Announcements

84 CONFERENCE REPORTS

The Second IFAC Conference on Cyber-Physical and Human Systems

86 CONFERENCE CALENDAR

87 CSS BUSINESS

Changes to the Constitution and the Bylaws of the IEEE Control Systems Society



IEEE PERIODICALS

MAGAZINES DEPARTMENT 445 Hoes Lane, Piscataway, NJ 08854 USA

Senior Managing Editor Geraldine Krolin-Taylor

Senior Art Director Janet Dudar

Associate Art Director Gail A. Schnitzer

Production Coordinator Theresa L. Smith

Advertising Production Manager Felicia Spagnoli

Production Director Peter M. Tuohy

Director, Business Development — Media & Advertising Mark David

Editorial Services Director Kevin Lisankie

Staff Director
Publishing Operations
Dawn M. Mellev

IEEE prohibits discrimination, harassment, and bullying. For more information, visit http://www.ieee.org/web/aboutus/whatis/policies/p9-26.html.

MISSION STATEMENT AND SCOPE: As the official means of communication for the IEEE Control Systems Society, IEEE Control Systems Magazine 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 Magazine encourages submissions, both feature articles and columns, on all aspects of control system technology.

ages 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 Magazine 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://www.ieeecss.org/publica-

tions/csm/submissions. The specifications in this guide should be followed by all submissions.

All manuscripts should be submitted electronically to the IEEE Control Systems Magazine website, https://css.paperplaza.net/conferences/scripts/start.pl, with inquiries on appropriateness of content emailed to jhow@mit.edu.

SPECIAL ISSUES: *IEEE Control Systems Magazine* 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 Magazine accepts advertising for educational products, books, software, conferences, employment, and control-related technology. For information about advertising, contact Mark David, m. david@ieee.org, .41 732 465 6473. IEEE CONTROL SYSTEMS MAGAZINE—(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 10016-5997, 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. The is a membership benefit of the IEEE Control Systems Society, and subscriptions are US\$4.00 per member per year (included in Society fee). Replacement copies for members are available for US\$20.00 (one copy only). Nonmembers can purchase individual copies for US\$109.00. Nonmember subscription prices are 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 © 2019 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 Magazine, IEEE, 445 Hoes Lane, Piscataway, NJ 08854 U.S.A. Canadian GST #125634188

UPCOMING CONFERENCES



Conference on Control Technology and Applications CCTA 2019

August 19-21, Hong Kong, China

Invited Session Proposals Due:

January 19, 2019 (Passed)

Contributed and Invited Papers' Submissions Due:

January 19, 2019 (Passed)

Notification of Acceptance/Rejection:

April 19, 2019

Deadline for final submission of all papers:

May 19, 2019 (Passed)

http://ccta2019.ieeecss.org/



Conference on Decision and Control CDC 2019

December 11–13, Nice, France

Invited Session Proposals Due:

March 7, 2019 (Passed)

Initial Paper Submissions Due:

March 15, 2019 (Passed)

Workshop Proposals Due:

May 2, 2019 (Passed)

Paper and Workshop Decision Notification:

Mid-July, 2019

Accepted Papers Due:

September 10, 2019

http://cdc2019.ieeecss.org/



American Control Conference ACC 2020

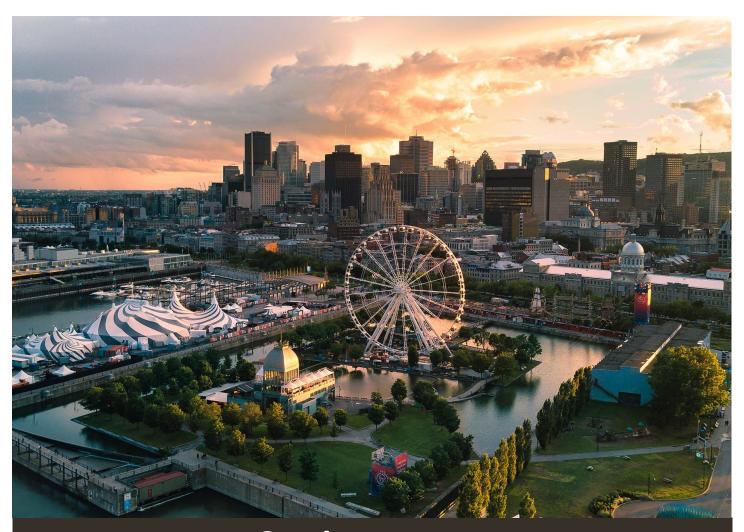
July 1-3, Denver, Colorado, USA

Paper Submission Deadline: September 23, 2019

Acceptance/Rejection Notice: January 31, 2020

Final Manuscript Submission: March 15, 2020

http://acc2020.a2c2.org/



Conference on Control Technology and Applications CCTA 2020

August 24-26, Montreal, Canada

Initial Submission Deadline:

October 27, 2019

Notification of Acceptance/Rejection:

April 26, 2020

Final Submission Due Date:

May 21, 2020

http://ccta2020.ieeecss.org/