

E-LETTER on Systems, Control, and Signal Processing

Issue 313

October 2014

Editor:

[Maria Prandini](#)

Dipartimento di Elettronica, Informazione e Bioingegneria

Politecnico di Milano

Piazza Leonardo da Vinci, 32

20133 Milano, Italy

Tel: +39 02 2399 3441

Fax: +39 02 2399 3412

Welcome to the October issue of the Eletter, available electronically [here](#).

To submit new articles, go “[Article Submissions](#)” on the Eletter website

To unsubscribe, please [send an email](#) with the subject line “Eletter Unsubscribe”.

The next Eletter will be mailed out in the beginning of November 2014.

Contents

1. IEEE CSS Headlines

- 1.1 [IEEE Control Systems Society Publications Content Digest](#)
- 1.2 [IEEE Transactions on Automatic Control](#)
- 1.3 [IEEE Transactions on Control of Network Systems](#)
- 1.4 [IEEE CSS Outreach Fund](#)

2. Misc

- 2.1 [Wind turbine and Wind farm FDI and FTC Benchmark models](#)

3. Books

- 3.1 [Numerical Methods and Optimization, A Consumer Guide](#)

4. Journals

- 4.1 [Contents: Mathematics in Engineering, Science and Aerospace](#)
- 4.2 [Contents: Mathematics of Control, Signals, and Systems](#)
- 4.3 [Contents: IMA Journal of Mathematical Control and Information](#)
- 4.4 [Contents: Control Engineering Practice](#)
- 4.5 [Contents: Control Theory and Technology](#)
- 4.6 [Contents: International Journal of Applied Mathematics and Computer Science](#)
- 4.7 [Contents: Journal of Control and Decision](#)
- 4.8 [Contents: Asian Journal of Control](#)
- 4.9 [Contents: Applied and Computational Mathematics an International Journal](#)
- 4.10 [Contents: TWMS Journal of Pure and Applied Mathematics](#)
- 4.11 [CFP: Journal of Communications in Control Science and Engineering](#)
- 4.12 [CFP: IMA Journal of Mathematical Control and Information](#)
- 4.13 [CFP: Computers in Industry](#)

5. Conferences

- 5.1 Conference on Modelling, Identification and Control of Nonlinear Systems
- 5.2 IFAC Symposium on System Identification
- 5.3 European Control Conference
- 5.4 International Conference on Hybrid Systems: Computation and Control
- 5.5 IMA Conference on Mathematics of Robotics
- 5.6 Chinese Control and Decision Conference

6. Workshops

- 6.1 Workshop on Time Delay Systems
- 6.2 Workshop on Advanced Control and Navigation for Autonomous Aerospace Vehicles
- 6.3 Workshop on Security and Privacy for Internet of Things and Cyber-Physical Systems

7. Graduate Schools and Online Courses

- 7.1 Modeling and Control of Complex Physical Systems: The Port-Hamiltonian Approach
- 7.2 Online Seminar Series on Control Systems
- 7.3 Online Seminar on Secure State-Estimation And Control For Dynamical Systems Under Adversarial Attacks
- 7.4 Online Course on Dynamics and Control

8. Positions

- 8.1 PhD: Eindhoven University of Technology, The Netherlands
- 8.2 PhD: Delft University of Technology, The Netherlands
- 8.3 PhD: University of Tennessee, Knoxville, USA
- 8.4 PhD: Missouri University of Science and Technology, USA
- 8.5 PhD: Nanyang Technological University, Singapore
- 8.6 PhD/Post-Doc: Clemson University, USA
- 8.7 Post-Doc: Dalle Molle Institute for Artificial Intelligence, Switzerland
- 8.8 Post-Doc: Georgia Institute of Technology, USA
- 8.9 Post-Doc: University of Texas, USA
- 8.10 Post-Doc: Eindhoven University of Technology, The Netherlands
- 8.11 Post-Doc: Berkeley Education Alliance for Research, Singapore
- 8.12 Post-Doc: CNRS-IRCCyN laboratory, Nantes, France
- 8.13 Post-Doc: Delft University of Technology, The Netherlands
- 8.14 Post-Doc: Nanyang Technological University, Singapore
- 8.15 Research Assistant: National University of Singapore, Singapore
- 8.16 Faculty: University of Rio Grande do Sul, Brazil
- 8.17 Faculty: Harbin Institute of Technology, Shenzhen Graduate School, China
- 8.18 Faculty: University of Waterloo, Canada
- 8.19 Faculty: Polytechnique Montréal, Canada
- 8.20 Faculty: University of California, Santa Barbara, USA
- 8.21 Faculty: Getulio Vargas Foundation, Brazil
- 8.22 Faculty: University of Minnesota, USA
- 8.23 Faculty: University of California, USA
- 8.24 Faculty: National Taiwan University, Taiwan
- 8.25 Faculty: Boston University, USA
- 8.26 Research Scientist/Engineer: Intelligent Fusion Technology, Inc, Maryland, USA
- 8.27 Senior Research Engineer: Lockheed Martin's Advanced Technology Laboratories, USA

1. IEEE CSS Headlines

1.1. IEEE Control Systems Society Publications Content Digest

Contributed by: Elizabeth Kovacs, ekovacs2@nd.edu

The IEEE Control Systems Society Publications Content Digest is a novel and convenient guide that helps readers keep track of the latest published articles.

The CSS Publications Content Digest, available at <http://ieeecs.org/publications-content-digest> provides lists of current tables of contents of the periodicals sponsored by the Control Systems Society. Each issue offers readers a rapid means to survey and access the latest peer-reviewed papers of the IEEE Control Systems Society.

The index in the Digest contains the Table of Contents for our 3 journals (Transactions on Automatic Control (TAC), Transactions on Control Systems Technology (TCST), and Control Systems Magazine (CSM)) with hyperlinks to the abstracts as well as the full articles in Xplore. Since TCST and CSM are published bimonthly, and TAC is published monthly, we will post the corresponding two TOCs in each (monthly) Digest. We also include links to the Society's sponsored Conferences to give readers a preview of upcoming meetings.

[Back to the contents](#)

1.2. IEEE Transactions on Automatic Control

Contributed by: Elizabeth Kovacs, ekovacs2@nd.edu

Please note that the contents of the IEEE Transactions on Automatic Control, together with links to the abstracts of the papers may be found at the TAC web site: <http://www.nd.edu/ieeetac/contents.html>

The IEEE Transactions on Automatic Control Submission and Review Management System

Table of Contents

IEEE Transactions on Automatic Control

Volume 59 (2014), Issue 10 (October)

- Scanning-the-Issue. p. 2613

Papers

- On Hybrid State Estimation for Stochastic Hybrid Systems. W. Liu, I. Hwang p. 2615
- Stabilizing Dynamic Control Design for Hybrid Systems: A Hybrid Control Lyapunov Function Approach S. Di Cairano, W.P.M.H. Heemels, M. Lazar, A. Bemporad p. 2629
- Event-Separation Properties of Event-Triggered Control Systems. D. P. Borgers, W.P.M.H. Heemels p. 2644
- Economic MPC for a Changing Economic Criterion for Linear Systems. A. Ferramosca, D. Limon, E. F. Camacho p. 2657
- Controllability and Observability of Network-of-Networks via Cartesian Products. A. Chapman, M. Nabi-Abdolyousefi, M. Mesbahi p. 2668
- Robust Output Synchronization of a Network of Heterogeneous Nonlinear Agents via Nonlinear Regulation Theory. A. Isidori, L. Marconi, G. Casadei p. 2680
- Generalizing Negative Imaginary Systems Theory to Include Free Body Dynamics: Control of Highly Resonant Structures with Free Body Motion. M. A. Mabrok, A. Kallapur, I. R. Petersen, A. Lanzon p. 2692

- The State Feedback Regulator Problem for Regular Linear Systems. V. Natarajan, D. S. Gilliam, G. Weiss p. 2708
- Kalman Filtering with Intermittent Observations: On the Boundedness of the Expected Error Covariance. E. R. Rohr, D. Marelli, M. Fu p. 2724
- Model Reduction for Nonlinear Systems by Incremental Balanced Truncation. B. Besselink, N. Van De Wouw, J. M.A. Scherpen, H. Nijmeijer p. 2739

Technical Notes and Correspondence

- Subspace Identification of Large-Scale Interconnected Systems. A. Haber, M. Verhaegen p. 2754
- Robust Adaptive Compensation of Periodic Disturbances with Unknown Frequency. R. Marino, P. Tomei p. 2760
- Relaxed persistent Flow/Jump Conditions for Uniform Global Asymptotic Stability. C. Prieur, A. R. Teel, L. Zaccarian p. 2766
- Local Observers on Linear Lie Groups with Linear Estimation Error Dynamics. M. Koldychev, C. Nielsen p. 2772
- Performance Analysis of Nonlinear Sampled-Data Emulated Controllers. Z. Chen, H. Fujioka p. 2778
- Distributed Output Regulation of Nonlinear Multi-Agent Systems via Host Internal Model. D. Xu, Y. Hong, X. Wang p. 2784
- Reference Tracking MPC Using Dynamic Terminal Set Transformation. D. Simon, J. Löfberg, T. Glad p. 2790
- An Argument for the Bayesian Control of Partially Observable Markov Decision Processes. E. Vargo, R. Cogill p. 2796
- A Stochastic Approach to Dubins Vehicle Tracking Problems. R. Anderson, D. Milutinovic p. 2801
- Aggregation of Graph Models and Markov Chains by Deterministic Annealing. Y. Xu, S. Salapaka, C. L. Beck p. 2807
- Efficient Algorithms for Budget-Constrained Markov Decision Processes. C. Caramanis, N. B. Dimitrov, D. P. Morton p. 2813
- Adaptive Estimation for a Class of Nonlinearly Parameterized Dynamical Systems. V. Adetola, M. Guay, D. Lehrer p. 2818
- On the Optimal Solutions of the Infinite-Horizon Linear Sensor Scheduling Problem. L. Zhao, W. Zhang, J. Hu, A. Abate, C. J. Tomlin p. 2825
- Adaptive Control for Regulation of a Quadratic Function of the State. Y. Sharon, A. Annaswamy, A. Motto, A. Chakraborty p. 2831
- Fast Structured Nuclear Norm Minimization with Applications to Set Membership Systems Identification. M. Sznaier, M. Ayazoglu, T. Inanc p. 2837
- How Economic Inequality has Increased by Tax Cuts? Power-Based Modular Supervisory Control of Discrete Event Systems. S-J. Park p. 2843
- Exponential Stabilization of Boundary Controlled Port-Hamiltonian Systems with Dynamic Feedback. H. Ramírez, Y. Le Gorrec, A. Macchelli, H. Zwart p. 2849
- Dynamic Contract Trading in Spectrum Markets. G. Kasbekar, S. Sarkar, K. Kar, P. Muthuswamy, A. Gupta p. 2856
- A Novel Penalty Approach for Nonlinear Dynamic Optimization Problems with Inequality Path Constraints. X. Liu, Y. Hu, J. Feng, K. Liu p. 2863

[Back to the contents](#)

1.3. IEEE Transactions on Control of Network Systems

Contributed by: Denise Joseph, dejoseph@bu.edu

Please note that the contents of the IEEE Transactions on Control of Network Systems, with links to the abstracts of the papers are available on <http://sites.bu.edu/tcns/tcns-sept-2014/>

Table of Contents

IEEE Transactions on Control of Network Systems

Volume 1 (2014), Issue 3 (September)

- Remote Estimation With Noisy Measurements Subject to Packet Loss and Quantization Noise. S. Dey, A. Chiuso, and L. Schenato 204
- To Go or Not to Go: On Energy-Aware and Communication-Aware Robotic Operation. Y. Yan and Y. Mostofi 218
- Formation Control for High-Order Linear Time-Invariant Multiagent Systems With Time Delays. X. Dong, J. Xi, G. Lu, and Y. Zhong 232
- On Endogenous Random Consensus and Averaging Dynamics. B. Touri and C. Langbort 241
- Minimal Controllability Problems. A. Olshevsky 249
- An Optimal Transmission Strategy for Kalman Filtering Over Packet Dropping Links With Imperfect Acknowledgements. M. Nourian, A. S. Leong, S. Dey, and D. E. Quevedo 259
- On the Internal Model Principle in the Coordination of Nonlinear Systems. C. De Persis and B. Jayawardhana 272
- An Asynchronous Consensus-Based Algorithm for Estimation From Noisy Relative Measurements. A. Carron, M. Todescato, R. Carli, and L. Schenato 283

[Back to the contents](#)

1.4. IEEE CSS Outreach Fund

Contributed by: Daniel E. Rivera, daniel.rivera@asu.edu

The IEEE CSS Outreach Task Force is pleased to announce that the next window for submission of proposals to the IEEE CSS Outreach Fund will be held from November 4 to November 25, 2014.

General information regarding the program can be found in: <http://www.ieeecss.org/general/control-systems-society-outreach-fund>

Inquiries, including a request for application forms, should be made directly to Daniel E. Rivera, Outreach Task Force Chair, at daniel.rivera@asu.edu.

[Back to the contents](#)

2. Misc

2.1. Wind turbine and Wind farm FDI and FTC Benchmark models

Contributed by: Peter Fogh Odgaard, pfo@es.aau.dk

During the last years Aalborg University together with other partners have developed a set of benchmark models for test and development of Wind turbine fault detection and isolation (FDI), and fault tolerant control (FTC).

These models have been developed in order to provide realistic models for researcher to develop and compare their FDI and FTC algorithms on the Wind turbine application. Real World data from Wind turbines with

faults are highly confidential, and consequently these benchmark models are useful platforms for comparisons of different algorithms on the Wind turbine application.

The Wind turbine and Wind farm FDI and FTC Benchmark models can now be downloaded from:

<http://www.es.aau.dk/project/wtbenchmarkmodels/>

[Back to the contents](#)

3. Books

3.1. Numerical Methods and Optimization, A Consumer Guide

Contributed by: Eric Walter, eric.walter@lss.supelec.fr

New book: Numerical Methods and Optimization, A Consumer Guide by Eric Walter (Laboratoire des Signaux et Systemes, CNRS, Supélec, Université Paris-Sud), Springer, Cham, 2014, 476 p., 67 illus., 23 illus. in color.

Abstract: Initial training in pure and applied sciences tends to present problem solving as the process of elaborating explicit closed-form solutions from basic principles, and then using these solutions in numerical applications. This approach is only applicable to very limited classes of problems that are simple enough for such closed-form solutions to exist. Unfortunately, most real-life problems are too complex to be amenable to this type of treatment. Numerical Methods and Optimization, A Consumer Guide presents methods for dealing with them. Shifting the paradigm from formal calculus to numerical computation, the text makes it possible for the reader to (1) discover how to escape the dictatorship of those particular cases that are simple enough to receive a closed-form solution, and thus gain the ability to solve complex, real-life problems; (2) understand the principles behind recognized algorithms used in state-of-the-art numerical software; (3) learn the advantages and limitations of these algorithms, to facilitate the choice of which pre-existing bricks to assemble for solving a given problem; and (4) acquire methods that allow a critical assessment of numerical results.

For more information:

<http://www.springer.com/engineering/computational+intelligence+and+complexity/book/978-3-319-07670-6>

Content:

1. From Calculus to Computation
2. Notation and Norms
3. Solving Systems of Linear Equations
4. Solving Other Problems in Linear Algebra
5. Interpolating and Extrapolating
6. Integrating and Differentiating Functions
7. Solving Systems of Nonlinear Equations
8. Introduction to Optimization
9. Optimizing Without Constraint
10. Optimizing Under Constraints
11. Combinatorial Optimization
12. Solving Ordinary Differential Equations

13. Solving Partial Differential Equations
14. Assessing Numerical Errors
15. WEB Resources to Go Further
16. Problems

[Back to the contents](#)

4. Journals

4.1. Contents: Mathematics in Engineering, Science and Aerospace

Contributed by: Seenith Sivasundaram, seenithi@gmail.com

Nonlinear Studies

Mathematics in Engineering, Science and Aerospace (MESA)

Table of Contents

Vol 21, No 3 (2014)

- A kinetic framework for modeling nonequilibrium biological and chemical systems PDF Restricted Access. Carlo Bianca, Annie Lemarchand 367-374
- Global Indeterminacy in a Tourism Sector Model PDF Restricted Access. Oliviero A. Carboni, Paolo Russu 375-385
- Hydromagnetic partial slip flow, heat and mass transfer of a viscoelastic third grade fluid embedded in a porous medium PDF Restricted Access. B.I. Olajuwon, I.G. Baoku 387-403
- A global attractor for a nonlocal parabolic problem PDF Restricted Access. Jacson Simsen, Jorge Ferreira 405-416
- Existence of multiple solutions for a Dirichlet boundary value problem driven by a $\{p\}$ -Laplacian operator PDF Restricted Access. Wen-Wu Pan 417-421
- Cardinal-Type Approximations for Conservation Laws of Mixed Type PDF Restricted Access. Kamel Al-Khaled 423-433
- On Estimates for the Dunkl transform in the space $L_p(\mathbb{R}; |x|^{\{2\alpha+1\}} dx)$ PDF Restricted Access. Mohamed El Hamma, Radoun Daher, Mustafa Boujeddaine 435-441
- Effect of cross-diffusion on the patterns of algal bloom in a lake: A nonlinear analysis PDF Restricted Access. Pankaj Kumar Tiwari, Sourav Rana, Arvind Kumar Misra, Joydev Chattopadhyay 443-462
- Migration influence on malaria propagation: Coupled Ross-Macdonald models PDF Restricted Access. David Blazquez-Sanz, Luz M. Echeverry, Karen R. Pérez 463-474
- Approximate controllability of retarded semilinear systems in Hilbert space PDF Restricted Access. Surendra Kumar, N Sukavanam 475-484
- Relaxed secant-type methods PDF Restricted Access. Ioannis K Argyros, Ángel Alberto Magreñán Ruiz 485-503
- Role of delay in a predator-prey model with prey infected through external source and contact of the species PDF Restricted Access. Krishna Pada Das, Rikhiya Dhar, Sanjay Sen, J. Chattopadhyay 505-529
- Differential rate for non-sequential multi-photon ionization of helium for equal sharing of energy by the electrons in intense laser field PDF Restricted Access. S. Bhattacharyya, J. Chakrabarti 531-550

Table of Contents
Vol 5, No 3 (2014)

- Preface: Applied mathematical techniques in engineering applications and related topics-II PDF Restricted Access. Mangey Ram, Ilia B. Frenkel, Arpan Gupta 239-240
- Review of numerical inversion of Laplace transforms using Fourier analysis, fast Fourier transform and orthogonal polynomials PDF Restricted Access. Vinod Mishra 241-263
- Impact of neighborhood size on median filter based color filter array interpolation PDF Restricted Access. Puneet Goyal, Nitin Khanna, Jyoti Dosad, Medha Gupta 265-274
- Combined effects of heat and mass transfer with thermal radiation, convection and MHD boundary layer flow over a stretching surface PDF Restricted Access. Navneet Joshi, Vimal Singh Bisht, Dheeraj Narang 275-279
- Multi-state k-out-of-n type system analysis PDF Restricted Access. V.V. Singh, Mangey Ram 281-292
- Hydromagnetic shear flow instability of visco-elastic (Oldroydian) fluid in a porous medium : Effect of temperature PDF Restricted Access. Anshu Agarwal, B JaiMala, S.C. Agrawal, Rajendra Kumar 293-300
- Artificial neural networks (ANNs): A new paradigm for the study of drying kinetics and sorption isotherm PDF Restricted Access. Rajesh Joshi, Vasudha Agnihotri 301-311
- Software development life cycle testing analysis: A reliability approach PDF Restricted Access. Nupur Goyal, Mangey Ram 313-329
- An Improved LEACH protocol with reduced data redundancy for wireless sensor networks PDF Restricted Access. Mohd Mursleen, Rajeev Singh 331-341

[Back to the contents](#)

4.2. Contents: Mathematics of Control, Signals, and Systems

Contributed by: Lars Gruene lars.gruene@uni-bayreuth.de

Mathematics of Control, Signals, and Systems (MCSS)

Volume 26, Number 3

<http://link.springer.com/journal/498/26/3>

Table of Contents

- A compendium of comparison function results (open access), Christopher M. Kellett, 339-374
- Null controllability of a linear KdV equation on an interval with special boundary conditions, Jean-Philippe Guilleron, 375-401
- Robustness of stability of time-varying index-1 DAEs, Thomas Berger, 403-433
- Recovering the observable part of the initial data of an infinite-dimensional linear system with skew-adjoint generator, Ghislain Haine, 435-462
- Asymptotic behaviour of infinite chains of coupled kinematic points: second-order equations, Avraham Feintuch, 463-480

[Back to the contents](#)

4.3. Contents: IMA Journal of Mathematical Control and Information

Contributed by: Suzanne Eves, suzie.eves@oup.com

Contents, IMA Journal of Mathematical Control and Information

Volume 31 Issue 3 September 2014

A new issue of IMA Journal of Mathematical Control and Information is now available online.

The Table of Contents below can be viewed at: <http://www.oxfordjournals.org/page/5976/10>

- Yunliang Wei, Junwei Lu, and Ze Li. Robust stabilization of uncertain switched non-linear systems subject to actuator saturation <http://www.oxfordjournals.org/page/5976/11>
- Tarek Garna, Kais Bouzrara, José Ragot, and Hassani Messaoud. Optimal expansions of discrete-time bilinear models using Laguerre functions <http://www.oxfordjournals.org/page/5976/12>
- Manfeng Hu, Jinde Cao, and Aihua Hu. Exponential stability of discrete-time recurrent neural networks with time-varying delays in the leakage terms and linear fractional uncertainties <http://www.oxfordjournals.org/page/5976/13>
- Zhenhai Liu, Jingyun Lv, and R. Sakthivel. Approximate controllability of fractional functional evolution inclusions with delay in Hilbert spaces <http://www.oxfordjournals.org/page/5976/14>
- Sohrab Effati, Alireza Nazemi, and Hassan Shabani. Time optimal control problem of the heat equation with thermal source <http://www.oxfordjournals.org/page/5976/15>
- Shinn-Horng Chen and Jyh-Horng Chou. Controllability robustness of linear interval systems with delay in control and unstructured uncertainties <http://www.oxfordjournals.org/page/5976/16>
- Alexandre Seuret, Christophe Prieur, and Nicolas Marchand. Stability of non-linear systems by means of event-triggered sampling algorithms <http://www.oxfordjournals.org/page/5976/17>
- Adam Kurpisz and Michał Morayne. Inform friends, do not inform enemies <http://www.oxfordjournals.org/page/5976/18>

[Back to the contents](#)

4.4. Contents: Control Engineering Practice

Contributed by: Tobias Glück, cep@acin.tuwien.ac.at

Control Engineering Practice

Volume 30

September 2014

- Yongnan Jia, Long Wang, Experimental implementation of distributed flocking algorithm for multiple robotic fish, Pages 1-11
- Dat Le, Bradley W. Pietrzak, Gregory M. Shaver, Dynamic surface control of a piezoelectric fuel injector during rate shaping, Pages 12-26
- Denis V. Efimov, Vladimir O. Nikiforov, Hossein Javaherian, Supervisory control of air-fuel ratio in spark ignition engines, Pages 27-33
- Jonas Asprion, Oscar Chinellato, Lino Guzzella, Efficient solution of the diesel-engine optimal control problem by time-domain decomposition, Pages 34-44
- Naseem Daher, Monika Ivantysynova, A virtual yaw rate sensor for articulated vehicles featuring novel electro-hydraulic steer-by-wire technology, Pages 45-54
- M. Beschi, S. Dormido, J. Sánchez, A. Visioli, Two degree-of-freedom design for a send-on-delta sampling PI control strategy, Pages 55-66

- Kun Mao, Quan-Ke Pan, Xinfu Pang, Tianyou Chai, An effective Lagrangian relaxation approach for rescheduling a steelmaking-continuous casting process, Pages 67-77
- Dinko Vukadinovic, Mateo Bašić, Cat Ho Nguyen, Nhu Lan Vu, Tien Duy Nguyen, Hedge-algebra-based voltage controller for a self-excited induction generator, Pages 78-90
- István Erlich, CEP special issue on power system control, Pages 91-92
- Bogdan Otomega, Mevludin Glavic, Thierry Van Cutsem, A two-level emergency control scheme against power system voltage instability, Pages 93-104
- Philipp Wolfrum, Martin Kautz, Jochen Schäfer, Optimal control of combined heat and power units under varying thermal loads, Pages 105-111
- Xiao Wu, Jiong Shen, Yiguo Li, Kwang Y. Lee, Hierarchical optimization of boiler-turbine unit using fuzzy stable model predictive control, Pages 112-123
- Jianxing Liu, Salah Laghrouche, Mohamed Harmouche, Maxime Wack, Adaptive-gain second-order sliding mode observer design for switching power converters, Pages 124-131
- Yong Wan, Jun Zhao, Georgi M. Dimirovski, Robust adaptive control for a single-machine infinite-bus power system with an SVC, Pages 132-139
- H. Camblong, I. Vechiu, A. Etxeberria, M.I. Martinez, Wind turbine mechanical stresses reduction and contribution to frequency regulation, Pages 140-149
- Didier Georges, Optimal PMU-based monitoring architecture design for power systems, Pages 150-159
- Damien Faille, Frans Davelaar, Sébastien Murgey, Didier Dumur, Hierarchical hydro power valley control: Validation on simulation platform, Pages 160-168

[Back to the contents](#)

4.5. Contents: Control Theory and Technology

Contributed by: Zou Tiefeng, tfzou@scut.edu.cn

Table of Contents of CONTROL THEORY AND TECHNOLOGY (The original title: JOURNAL OF CONTROL THEORY AND APPLICATIONS)

ISSN: 2095-6983 CODEN: CTTOAM

<http://www.springer.com/engineering/control/journal/11768>

Vol. 12, No. 3, August 2014

- Editorial: Special issue on recent advances in hybrid control theory and applications. C. Xiang P.217
- A learning-based synthesis approach to decentralized supervisory control of discrete event systems with unknown plants. J. Dai, H. Lin P.218
- A noninteracting control strategy for the robust output synchronization of linear heterogeneous networks. S. Khodaverdian, J. Adamy P.234
- On the ℓ_2 -stability of time-varying linear and nonlinear discrete-time MIMO systems. Y. V. Venkatesh P.250
- Design of two-layer switching rule for stabilization of switched linear systems with mismatched switching. D. Ma P.275
- Introducing robustness in model predictive control with multiple models and switching. S. Prabhu, K. George P.284
- Passivity-based consensus for linear multi-agent systems under switching topologies. Z. Feng, G. Hu P.304

- Progressive events in supervisory control and compositional verification. S. Ware, R. Malik P.317

[Back to the contents](#)

4.6. Contents: International Journal of Applied Mathematics and Computer Science

Contributed by: AMCS amcs@uz.zgora.pl

International Journal of Applied Mathematics and Computer Science (AMCS)

2014, Volume 24, Number 3 (September)

Special section: Modelling and Simulation of High Performance Information Systems, Editors: R. Pavel Abaev, Rostislav Razumchik and Joanna Kołodziej

Special section

- Mészáros A., Papp J. and Telek M. Fitting traffic traces with discrete canonical phase type distributions and Markov arrival processes 453
- Atencia I. A discrete-time system with service control and repairs 471
- Kim C., Dudin A., Dudin S. and Dudina O. Analysis of an MMAP/PH1, PH2/N/H ∞ queueing system operating in a random environment 485
- Zeifman A., Satin Y., Korolev V. and Shorgin S. On truncations for weakly ergodic inhomogeneous birth and death processes 503
- Gaidamaka Y., Pechinkin A., Razumchik R., Samouylov K. and Sopin E. Analysis of an M|G|1|R queue with batch arrivals and two hysteretic overload control policies 519
- Zhao J., Mhedheb Y., Tao J., Jrad F., Liu Q. and Streit A. Using a vision cognitive algorithm to schedule virtual machines 535
- Dębski R. High-performance simulation-based algorithms for an alpine ski racer's trajectory optimization in heterogeneous computer systems 551

Regular section

- Yuan L., Liu J. and Tang X. Multiple-instance learning with pairwise instance similarity 567
- Cichosz P. and Pawełczak Ł. Imitation learning of car driving skills with decision trees and random forests 579
- Kowalski M., Kaczmarek P., Kabaciński R., Matuszczak M., Tranbowicz K. and Sobkowiak R. A simultaneous localization and tracking method for a worm tracking system 599
- Chen G. and Yang Z.Z. Methods for estimating vehicle queues at a marine terminal: A computational comparison 611
- Helmi B.H., Rahmani A.T. and Pelikan M. A factor graph based genetic algorithm 621
- Ding D., Ma Q. and Ding X. An unconditionally positive and global stability preserving NSFD scheme for an epidemic model with vaccination 635
- Tran H.L., Pham V.N. and Vuong H.N. Multiple neural network integration using a binary decision tree to improve the ECG signal recognition accuracy 647
- Muszyński M. and Osowski S. Data mining methods for gene selection on the basis of gene expression arrays 657
- Kumar D.T., Soleimani H. and Kannan G. Forecasting return products in an integrated forward/reverse supply chain utilizing an ANFIS 669

- Vukašinović V., Šilc J. and Škrekovski R. Modeling acquaintance networks based on balance theory 683
- Domańska J., Domański A., Augustyn D.R. and Klamka J. A RED modified weighted moving average for soft real-time application 697

Publisher: University of Zielona Góra and Lubuskie Scientific Society, Poland

ISSN: 1641-876X (print), 2083-8492 (online)

Frequency: Quarterly

Editor-in-Chief: Józef Korbicz

Website: www.amcs.uz.zgora.pl

E-mail: amcs@uz.zgora.pl

[Back to the contents](#)

4.7. Contents: Journal of Control and Decision

Contributed by: Changyun Wen, ecywen@ntu.edu.sg

Table of Contents

Journal of Control and Decision

Volume 1, Issue 3, September 2014

<http://www.tandfonline.com/toc/tjcd20/current>

Articles

- Continuous-time proportional-integral distributed optimisation for networked systems. Greg Droge, Hiroaki Kawashima and Magnus B. Egerstedt. pages 191 - 213
- Synchronising second-order multi-agent systems under dynamic topology via reference model-based algorithm. Jiahu Qin, Huijun Gao, Tasawar Hayat and Fuad E. Alsaadi. pages 214 - 225
- Optimal regulation of uncertain dynamic systems using adaptive dynamic programming. Hao Xu, Qiming Zhao and S. Jagannathan. pages 226 - 256

This journal uses ScholarOne Manuscripts (previously Manuscript Central) to peer review manuscript submissions at <http://mc.manuscriptcentral.com/tjcd>

Instructions for authors can be found at <http://www.tandfonline.com/action/authorSubmission?journalCode=tjcd20&page=i>

[Back to the contents](#)

4.8. Contents: Asian Journal of Control

Contributed by: Fu Li-Chen, lichen@ntu.edu.tw

Table of Contents

Asian Journal of Control

Vol.16, No.4 July, 2014

- Almost Passivity and Simple Adaptive Control in Discrete-Time Systems. Itzhak Barkana, Ilan Rusnak and Haim Weiss
- An Adaptive and Optimized Switching Observer for Sensorless Control of an Electromagnetic Valve Actuator in Camless Internal Combustion Engines. Paolo Mercorelli
- Sensor-Based Long Baseline Navigation: Observability Analysis and Filter Design. Pedro Batista, Carlos Silvestre and Paulo Oliveira

- Prediction Error Based Performance Monitoring, Degradation Diagnosis and Remedies in Offset-Free MPC: Theory and Applications. Gabriele Pannocchia, Andrea De Luca, and Michele Bottai
- Robust Unknown Input Observer Design for Linear Uncertain Time-Delay Systems with Application to Fault Detection. Hamid Reza Karimi, Saeed Ahmadzadeh and Jafar Zarei
- Quadratic Stabilizability for Polytopic Uncertain Switched Linear Systems via Switched Observer. Naohisa Otsuka and Takuya Soga
- Robust Control System Design for an Uncertain Nonlinear System Using Minimax LQG Design Method. Obaid Ur Rehman, Baris Fidan and Ian Peter sen
- Sensorless inverter-fed compressor drive system using back-emf estimator with pidnn torque observer. Faa-Jeng Lin, Ying-Chih Hung, Jia-Ming Chen and Zi-Yin Kao
- Adaptive nonlinear actuator fault diagnosis for uncertain nonlinear systems with time-varying delays. Lina Yao, Hong Wang and Vincent Cocquempot
- Controllability of Multi-Agent Dynamical Systems with a Broadcasting Control Signal. Myung-Gon Yoon, Peter Rowlinson, Cvetkovic Dragos and Zoran Stanic
- A Semi-tensor Product Approach to Pseudo-Boolean Functions with Application to Boolean Control Networks. Yuzhen Wang, Haitao Li and Zhenbin Liu
- Homogeneous Feedback Control of Nonlinear Systems Based On Control Lyapunov Functions. Zhang Junfeng, Zhengzhi Han and Jun Huang
- Stability Analysis and Controller Design of Discrete Interval Type-2 Fuzzy Systems. Long Sheng, Xiaoyu Ma
- Consensus Control in Linear Multi-Agent Systems with Current and Sampled Partial Relative States. Zunshui Cheng and Youming Xin
- Finite-Time H_∞ State Estimation for Discrete-Time Switched Control Systems under Asynchronous Switching. Muhammad Iqbal, Jian Xiao, and Weiming Xiang
- Adaptive Parameter Estimation for an Energy Model of Belt Conveyor with DC Motor. Yanjun Shen and Xiaohua Xia
- Parametric Solutions to the Generalized Discrete Yakubovich-Transpose Matrix Equation. Caiqin Song, Jun-e Feng, Xiaodong Wang, and Jianli Zhao
- Flocking Algorithms in Networks with Directed Switching Velocity Interaction Topologies. Mohammad Haeri and Hajar Atrianfar
- Best Tracking Performance of Networked Control Systems Based on Communication Constraints. Zhi-Hong Guan, Zhan Xisheng, Zhang, Xian-He and Fu-Shun Yuan
- Robustness of Exact p -Controllability and Exact p -Observability to q -Type of Perturbations of the Generator. Zhan-Dong Mei and Ji-Gen Peng
- Admissible Consensus of Multi-Agent Singular Systems. Min Li and Qi-Qiang Li
- Optimal Control of Finite-valued Networks. Jiang Liu, Daizhan Cheng and Yin Zhao
- On the Design of Observer for Nonlinear Time-delay Systems. Yazdan Batmani and Hamid Khaloozadeh
- Stability and Stabilization of Networked Control Systems under Limited Communication Capacity and Variable Sampling. Yingying Liu, Weiwei Che and Yunkai Chu

Brief Paper

- Neural Network On-line Modeling and Controlling Method for Multi Variables Control of Wastewater Treatment Processes. Guang Han, Junfei Qiao, Honggui Han and Guiyang Wang

- Finite Time Stability Analysis of Switched Systems with Stable and Unstable Subsystems. Guopei Chen, Ying Yang and Qingnian Pan
- PID Stabilization of retarded-type time-delay system. Xiu-wei Zhao and Jian-yue Ren
- Backward Stochastic H₂/H_∞ Control with Random Jumps. Qixia Zhang
- An improved anti-windup bumpless transfer structure design for controllers switching. Guozheng Qin, Zhisheng Duan, Guanghui Wen, Yingxin Yan and Zhichao Jiang
- IMC-PID Design: Analytical Optimization for Performance/Robustness Tradeoff Tuning for Servo/Regulation Mode. Qie Liu, Qibing Jin, Qi Wang, Sinian Li and Zhu Wang

[Back to the contents](#)

4.9. Contents: Applied and Computational Mathematics an International Journal

Contributed by: Fikret Aliev, chief.ed@acmij.az

Table of Contents

Applied and Computational Mathematics an International Journal

Vol.13, No.3, October 2014

www.acmij.az

- V. Kreinovich, J. Lorkowski. Likert-Scale Fuzzy Uncertainty From a Traditional Decision Making Viewpoint: How Symmetry Helps Explain Human Decision Making (Including Seemingly Irrational Behavior) (Survey)
- E. Babolian, S. Gholami, M. Javidi. A Numerical Solution for One-Dimensional Parabolic Equation Based on Pseudo-Spectral Integration Matrix
- Y. Danisman, M. Fatih Yilmaz, A. Ozkaya, I.T. Comlekçiler. A Comparison of Eigenvalue Methods for Principal Component Analysis
- R. Samet, S. Tural, J. Li, N. Samet. Two-Way Real-Time Meteorological Data Analysis and Mapping Information System
- M. Shahini, H. Adibi. Rational Approximations for Solving Differential Equations of Fractional Order on Semi-Infinite Interval
- H. Demiray. A Note on the Interactions of Nonlinear Waves Governed by Generalised Boussinesq Equation
- M.N. Koleva, L.G. Vulkov. A Splitting Flux Limiter Finite Difference Scheme for the Nonlinear Black-Scholes Equation

[Back to the contents](#)

4.10. Contents: TWMS Journal of Pure and Applied Mathematics

Contributed by: Gamar Mammadova, f.aliev@hotmail.com

Table of Contents

TWMS Journal of Pure and Applied Mathematics

Vol. 5, No.2, 2014

ISSN 2076-2585

1. Special Curves in Three Dimensional Finsler Manifold F3. M. Ergüt, M. Külahci
2. A Solution to the Pole Problem for the Shallow Water Equations on a Sphere. G. Starius

3. Numerical Investigation of Constrained Optimization of Transient Processes in Oil Pipelines. K.R. Ayda-zade, J.A. Asadova
4. Degree Lists of K-Bipartite Hypertournaments. S. Pirzada, G. Zhou
5. Approximation Properties of Some Systems of Root Functions Generated by Well-Posed Solvable Boundary Value Problems. B.E. Kanguzhin, D.B. Nurakhmetov
6. Some Subordination and Superordination Results Associated with a New Operator. M.K. Aouf, A.O. Mostafa, A. Shamandy, E.A. Adwan
7. Numerical Solution of Delay Differential Equations via Haar Wavelets. S. Asadi, A.H. Borzabadi
8. On Some New Sequence Spaces of Non-Absolute Type. S. Zeren, Ç.A. Bektaş
9. Normal Subgroups of Finite Index for the Group Representation of the Cayley Tree. U. A. Rozikov, F.H. Haydarov
10. Application of Multi-Stage HAM-Pad to Solve a Model for the Evolution of Cocaine Consumption in Spain. F. Guerrero, H. Vazquez-Leal
11. Events

[Back to the contents](#)

4.11. CFP: Journal of Communications in Control Science and Engineering

Contributed by: Kyriakos G. Vamvoudakis kyriakos@ece.ucsb.edu

We are introducing the open-access and peer-reviewed Journal of Communications in Control Science and Engineering (CCSE). The journal publishes original papers at the forefront of communications in control science and engineering research and their applications. The contributions are published in both printed and online version.

The goal of this journal is to record the latest findings and promote further research in these areas. Scholars from all relevant academic fields are invited to submit high-quality manuscripts that describe the latest, state-of-the-art research results or innovations.

Please visit the CCSE (<http://www.as-se.org/ccse/Home.aspx>) to learn more.

Dr. Kyriakos G. Vamvoudakis

Editor in Chief of CCSE

Project Research Scientist

Center for Control, Dynamical-Systems, and Computation (CCDC), University of California

Santa Barbara, CA 93106-9560, USA

email: kyriakos@ece.ucsb.edu

web: <http://www.ece.ucsb.edu/kyriakos>

[Back to the contents](#)

4.12. CFP: IMA Journal of Mathematical Control and Information

Contributed by: Nicholas P. Karampetakis, karampet@math.auth.gr

IMA Journal of Mathematical Control and Information

Special Issue on "Structural methods for control of complex systems"

The Theme of the Special Issue

Complex Systems is a term that emerges in many disciplines and domains and has many interpretations, implications and problems associated with it. The specific domain provides dominant features and characterises

the nature of problems to be considered. A major classification of such systems are to those linked with physical processes (physics, biology, genetics etc) and those which are man made (engineering, technology, management, software etc) and deal with the “macro level” technology. Each of the above classes has its own key paradigms, specific problems, concepts and methodologies. There exist however generic common paradigms amongst the different domains which are handled by domain specific methodologies and tools. Amongst the challenging new paradigms are systems with an evolving structure, referred to as Structure Evolving Systems (SES), the new class of Systems of Systems (SoS), Network Systems, Large Scale Systems (LSS) etc. Structural Methodologies have provided powerful conceptual frameworks and related methodologies for traditional control problems and may provide valuable tools for the new system paradigms.

The development of structural methodologies for traditional control problems and for the new system paradigms is the theme of this special issue. We welcome the submission of papers related to Structural Control Methods which aim to extend the traditional algebraic, geometric, algebro-geometric methods to challenging complex systems problems. Papers within the framework of the structural methods will be considered in the usual procedure of the journal (submitted through the Manuscript Central with reference to this Special Issue): <http://mc.manuscriptcentral.com/imamci>

and they will be handled by two special Associate Editors:

- Prof. Nicholas P. Karampetakis, Department of Mathematics, Aristotle University of Thessaloniki Thessaloniki 54123, Greece, karampet@math.auth.gr
- Dr. Michel Malabre, Directeur de recherche CNRS, IRCCyN, UMR CNRS 6597 Michel.Malabre@ircyn.ec-nantes.fr

Submission Deadline: Papers for this special issue will be accepted until 31st January 2015.

http://www.oxfordjournals.org/our_journals/imamci/structural-menthods-special-issue.html

[Back to the contents](#)

4.13. CFP: Computers in Industry

Contributed by: Radu-Emil Precup, radu.precup@aut.upt.ro

CFP: Computers in Industry

Special Issue on Synergy of computers, cognition, communication and control with industrial applications

In nowadays industrial systems, the necessity of computers, cognition, communication, and control (CCCC) becomes more and more essential, for example, when performance specifications, unexpected upcoming system states, changing operating conditions, or environmental influences have to be integrated into the system design. Computers, automation and information technology (IT) are quickly developing, simultaneously the technologies specific to CCCC are increasingly exploited to enhance the efficiency of operating processes.

Several modern industry-related applications such as industrial electronics, business management systems, and public sectors, deal with complex dynamical systems and with signals that are based on large amounts of data. It is expected that this will further increase. The current century is characterized by big data collections, making it more and more important to use and interpret the embedded information in the respective architectures. The synergy of CCCC supports the increasingly demanding performance specifications of these applications and helps to face special situations like unexpected condition adaptations, human interaction

challenges, and goal conflicts.

Practical industrial applications of the synergy of CCCC are networked control systems, online quality control of production items, supervision and failure analysis of dynamically changing machine states, decision support systems, prediction and control in dynamic production processes, welding processes, user profiling, process monitoring, web based control of information management flows, and resilient control architectures.

The debate on these important issues will support the further progress of this area.

The objective of this Special Issue is to provide papers about the recent advances of CCCC techniques in modern industrial applications. These papers should contain both practical or experimental results and theoretical ones pointing out the role of IT and of the architecture. The use of the combination of at least two of the four C's (computers, cognition, communication, and control) should be demonstrated by validation and efficiency measured in production.

The combination of more than two C's is strongly encouraged. Furthermore, it should be illustrated by implementation and not by strong theoretical details and simulations. A paper that is concerned with a single technique and does not invoke other CCCC techniques is not suitable.

Only papers with practical proofs (industry application and validation) should be submitted. Pure theoretical papers are not published in this journal. Papers that do not match the topics of the special issue are considered as out of scope, and they are not accepted.

Regular papers to this special issue will include the following topics:

- Knowledge-based, fuzzy, neuro-fuzzy, neural systems and nature-inspired evolutionary-based algorithms relevant to application driven control and communication.
- Evolving soft computing techniques for online fault detection and decision support systems, smart systems and robotics.
- Computer-based control systems for real-time computing, communications and discrete-event systems.
- Embedded control systems in manufacturing.
- Cyber-physical systems, mechatronics systems and networked control systems.
- Plant-wide optimization, prognosis and process monitoring.
- Solutions for supply chain and risk management systems.
- Comparisons, limitations and validations of CCCC in transportation and automotive systems.

Important dates:

Paper submission deadline: December 31, 2014

The first review notification: March 15, 2015

Deadline for submission of revised manuscripts: April 30, 2015

The final review notification: June 15, 2015

Planned publication date: December 15, 2015

Guest editors:

- Prof. Radu-Emil Precup, Politehnica University of Timisoara, Romania, radu.precup@aut.upt.ro.

- Prof. Hans Hellendoorn, Delft University of Technology, The Netherlands, J.Hellendoorn@tudelft.nl.
- Prof. Plamen Angelov, Lancaster University, UK, p.angelov@lancaster.ac.uk

Please find details about the journal at the following link: <http://www.journals.elsevier.com/computers-in-industry/>

and about the CFP at the following link: <http://www.journals.elsevier.com/computers-in-industry/call-for-papers/special-issue-on-synergy-of-computers-cognition/>

[Back to the contents](#)

5. Conferences

5.1. Conference on Modelling, Identification and Control of Nonlinear Systems

Contributed by: Frank Allgöwer, frank.allgower@ist.uni-stuttgart.de

1st IFAC Conference on Modelling, Identification and Control of Nonlinear Systems (MICNON-2015)

June 24-26, 2015

Saint Petersburg, Russia

<http://micnon2015.org>

Deadline for electronic submission of full papers and invited session proposals: December 20, 2014

MICNON 2015 is the first event of a new conference series that is organized by the IFAC Technical Committee on Nonlinear Systems.

The scope of the conference will cover all areas of nonlinear systems theory and applications in science and engineering, including control of nonlinear systems, analysis of nonlinear systems, modeling and identification of nonlinear systems and all types of applications in connection to nonlinear systems.

The first MICNON is dedicated to the memory of Vladimir Andreevich Yakubovich, one of the founders of modern control theory and will take place in beautiful St. Petersburg during the famous white nights season.

For the upcoming first MICNON conference, contributed papers, invited sessions and workshops are solicited in all areas of nonlinear systems and control.

See the webpage at <http://micnon2015.org> for more details.

[Back to the contents](#)

5.2. IFAC Symposium on System Identification

Contributed by: Tyrone Vincent, tvincent@mines.edu

Call for invited session proposals: 17th IFAC Symposium on System Identification, SYSID 2015 to be held in Beijing, China, October 19-21 2015. <http://sysid2015.info>

The IFAC Symposium on System Identification is a triennial conference that provides a unique opportunity for researchers and practitioners to meet and share the latest developments in all major aspects of system identification and the related areas of experimental modeling, signal processing, and adaptive control. Areas of interest include

* Identifiability;

* Identification of linear, nonlinear, time-varying, multivariable, hybrid and distributed systems;

- * Black-box modeling (neural networks, support vector machines, Kriging...);
- * Linear and nonlinear time series analysis;
- * Estimation from spatio-temporal data;
- * State estimation and parameter tracking;
- * Robustness issues in identification;
- * Sequential Monte Carlo methods, including particle filtering;
- * Learning, data mining and Bayesian approaches;
- * Parameter estimation and inverse modeling;
- * Modeling and identification of quantized systems;
- * Identification for control, adaptive control and data-based controller tuning;
- * Statistical analysis and uncertainty characterization;
- * Experiment design;
- * Model validation;
- * Monitoring and fault detection;
- * Applications (including but not limited to physical measurements, transportation, telecommunications, aerospace, automotive, process control, motion control, robotics, econometrics, modal analysis and structural health monitoring, bioengineering and medical systems, ecosystems, energy and information networks);
- * Teaching identification.

The program committee encourages the submission of invited sessions with sets of six invited papers on a well-defined subject of current interest. These papers must present original, unpublished work and must not be currently under consideration for publication elsewhere.

An invited session should present a cohesive and comprehensive focus on a topic relevant to the scope of the symposium. It may start with a tutorial presentation which can be allotted a double time slot. In this case five papers are sufficient to compose a session.

A complete invited session submission includes a four page session proposal along with the session papers. The proposal should describe the theme and content, demonstrate its coherence, and argue its significance and relevance. The deadline for submissions is January 15, 2015.

Authors interested in organizing an invited session are encouraged to contact one of the invited session chairs listed below. The chairs are available for assistance in the development and completion of invited sessions.

Diego Regruto diego.regruto@polito.it

Tyrone Vincent tvincent@mines.edu

Erik Weyer ewey@unimelb.edu.au

Tong Zhou tzhou@mail.tsinghua.edu.cn

[Back to the contents](#)

5.3. European Control Conference

Contributed by: Mazen Alamir, mazen.alamir@grenoble-inp.fr

Call for papers

European Control Conference ECC15, July 15-17 2015 Linz Austria.

<http://www.ecc15.at>

Regular and invited papers: October 20, 2014

Proposals for Tutorial and Workshops: November 3, 2014

Contribution for the student competition: December 7th

(constrained control on nonlinear systems)

see www.ecc15.at/competition.html for more details

Notification of acceptance February 2015

Immerse yourself in the field of systems and control and engage with academic and industrial professionals at the 14th annual European Control Conference, to be held in Linz, Austria, July 15-17, 2015:

Learn about the latest controls research from top professionals in the field.

Network with colleagues from across Europe and around the world.

Enjoy the hospitality of JKU and Linz, the European Capital of Culture 2009.

ECC has traditionally been organized every two years ever since its first edition in 1991 in Grenoble up until 2013 in Zürich. Since then, the conference is to be held every year.

[Back to the contents](#)

5.4. International Conference on Hybrid Systems: Computation and Control

Contributed by: Antoine Girard, antoine.girard@imag.fr

18th International Conference on Hybrid Systems: Computation and Control

April 14-16, 2015

Seattle, USA.

URL: <http://2015.hscconference.org/>

Important dates:

Abstract Submission deadline: October 13, 2014.

Full Paper Submission deadline: October 20, 2014. (no extensions possible).

Rebuttal phase: December 4 to December 7, 2014.

Author notification: December 17, 2014.

Camera-ready submission: February 3, 2015.

Conference dates: April 14-16, 2015.

Conference Scope:

Hybrid Systems: Computation and Control (HSCC) has long been a leading, single-track conference on foundations, techniques, and tools for analysis, control, synthesis, implementation, and applications of dynamical systems that exhibit continuous and discrete (hybrid)dynamics. Applications include cyber-physical systems (CPS), mixed signal circuits, robotics, large-scale infrastructure networks, as well as natural systems such as biochemical and physiological models. In particular, we solicit theoretical as well as applied research papers that present original work combining ideas from computer science and control systems.

Topics of interest include, but are not limited to:

- Design, synthesis and control
- Analysis and verification
- Computability and complexity
- Programming languages, specification formalisms
- Software tool engineering and experimentation
- Real-time and resource-aware control for embedded systems
- Network science and control over networks
- Applications in automotive, avionics, energy, mobile robotics, medical devices, manufacturing, systems biology, transportation, and other areas

HSCC 2015 will be part of the 8th CPSWeek (Cyber-Physical Systems Week) to be held in Seattle, USA, collocating 4 conferences:

- HSCC,
- the International Conference on Cyber-Physical Systems (ICCPS),
- the International Conference on Information Processing in Sensor Networks (IPSN), and
- the Real-Time and Embedded Technology and Applications Symposium (RTAS).

Special Issue: Authors of distinguished papers will be invited to submit an extended version of their work for possible publication in a special issue of the journal *Nonlinear Analysis: Hybrid Systems*.

Best Student Paper Award: As established in the previous years, a best student paper award will be given to a contribution which has been primarily authored by a student. Each paper nominated for this award should be co-authored primarily by a student (as certified by the student's faculty advisor).

Repeatability Evaluation: HSCC has a history of publishing strong papers emphasizing computational contributions; however, recreating these computational elements is hard, because details of the implementation are unavoidably absent in the paper. Following a successful inaugural run in 2014, authors of papers accepted to HSCC (in any track) that contain a computational component will be invited to participate in an optional repeatability evaluation process after final submission of the paper in February. Papers that pass will be highlighted at the conference, and all submissions will receive confidential feedback from independent reviewers on any challenges faced in recreating the computational results. Review criteria and suggestions on how to get started on reproducible research are posted at the conference web page (<http://2015.hscconference.org>).

Submission Guidelines:

Submitted papers should present original research that is unpublished and not submitted elsewhere.

Regular papers: maximum 10 pages in the 10pt, two-column ACM format. Submission by October 20, 2014 through the EasyChair system. Regular papers should present original research or industrial applications of techniques for design and/or analysis of hybrid systems, or their integration into industrial design flows.

Tool and Case-Study papers: maximum 6 pages in the 10pt, two-column ACM format. Submission by October 20, 2014 through the EasyChair system. Tool Papers should describe an implemented tool and its novel features. Case studies should present hybrid systems tools or techniques.

Submissions of Regular, Tool and Case-Study papers should be made through the HSCC 2015 EasyChair submission website: <https://www.easychair.org/conferences/?conf=hsc2015>

Demo/poster abstracts: Approximately 2 pages. Submission by January 10, 2015 through email to hsc2015@easychair.org with “HSCC demo/poster submission” in the subject line.

Questions should be directed to the same address. Demo/poster abstracts serve the sole purpose of selecting contributions for the demo and poster session and will not be published in the conference proceedings.

Program Chairs:

Antoine Girard, University of Grenoble, France.

Sriram Sankaranarayanan, University of Colorado, Boulder, USA.

Publicity Chair:

Sayan Mitra, University of Illinois, Urbana-Champaign, USA.

Repeatability Evaluation Chair:

Ian Mitchell, University of British Columbia, Vancouver, Canada.

Steering Committee:

Rajeev Alur, University of Pennsylvania, USA

Bruce Krogh, Carnegie-Mellon University, USA

Oded Maler, Verimag, France

Claire Tomlin, University of California Berkeley, USA

Werner Damm, OFFIS, Germany

[Back to the contents](#)

5.5. IMA Conference on Mathematics of Robotics

Contributed by: Victor Becerra, v.m.becerra@reading.ac.uk

IMA CONFERENCE ON MATHEMATICS OF ROBOTICS

9 - 11 September 2015

St Anne’s College, University of Oxford

CALL FOR PAPERS

The IMA Conference on the Mathematics of Robotics aims to bring together researchers working on all areas of robotics which have a significant Mathematical content. The idea is to highlight the Mathematical depth and sophistication of techniques applicable to Robotics and to foster cooperation between researchers working in different areas of Robotics. Areas of interest include, but are not limited to:

Topology. Kinematics. Algebraic topology of configuration spaces of robot mechanisms. Topological aspects of path planning and sensor networks. Differential topology and singularity theory of robot mechanism and moduli spaces. Algebraic Geometry. Varieties generated by linkages and constraints. Geometry of stiffness and inertia matrices. Rigid-body motions. Computational approaches to algebraic geometry. Dynamical Systems and Control. Dynamics of robots and mechanisms. Simulation of multi-body systems, e.g. swarm robots. Geometric control of robots. Optimal control and other optimisation problems. Combinatorial and Stochastic Methods. Rigidity of structures. Path planning algorithms. Modular robots. Statistics. Stochastic control. Localisation. Navigation with uncertainty. Statistical learning theory. Cognitive Robotics. Mathematical aspects of Artificial Intelligence, Developmental Robotics and other Neuroscience based approaches

Invited Speakers:

Professor Roger Brockett, Harvard University

Dr Josef Schicho, University Linz

Professor Gregory Chirikjian, John Hopkins University

Instructions to authors:

Researchers are invited to submit original technical contributions in the form of full papers of at most 8 pages. All contributions will be peer reviewed and acceptance will be based on the results of the review process. Papers should be submitted by 15 March 2015 to conferences@ima.org.uk

Details will be made available on the conference webpage in due course (below).

Conference Proceedings:

A selection of papers from the conference will be published in a special edition Journal, to be confirmed. All other contributions will be made available at the conference and via the IMA conference webpage.

Important Dates:

Submission deadline: 15 March 2015

Notification of acceptance: 1 June 2015

Final version due: 1 August 2015

Conference Dates: 9 - 11 September 2015

Organising Committee:

W. Holderbaum, University of Reading (Chair)

V. M. Becerra, University of Reading

J. Biggs, University of Strathclyde

S. Cameron, University of Oxford

W. S. Harwin, University of Reading

J. M. Selig, London South Bank University

[Back to the contents](#)

5.6. Chinese Control and Decision Conference

Contributed by: Changyun Wen, ecywen@ntu.edu.sg

Call for Papers

The 27th Chinese Control and Decision Conference(2015CCDC)

<http://www.ccdc.neu.edu.cn>

Chinese Control and Decision Conference (CCDC) is an annual international conference. The 27th Chinese Control and Decision Conference (2015CCDC) will be held in Qingdao, China, during May 23 - 25, 2015. Its purpose is to create a forum for scientists, engineers and practitioners from all over the world to present the latest advancement in Control, Decision, Automation, Robotics and Emerging Technologies. A special session on Intelligent Building Control and Management is also organized with details available in the conference website.

Conference content will be submitted for inclusion into IEEE Xplore as well as other Abstracting and Indexing (A&I) databases. High-quality papers in 2015 CCDC will be recommended for submission to the Journal of Control and Decision published quarterly by TAYLOR & FRANCIS GROUP.

There will be KEYNOTE ADDRESSES and DISTINGUISHED LECTURES covering the State-of-the-Art in both theory and applications of Systems, Control and Decision.

Invited Keynote Addresses will be delivered by

- Prof. Weihua Gui, Central South University, China;
- Prof. K. J. Ray Liu, University of Maryland, USA;
- Prof. Iven Mareels, University of Melbourne, Australia;
- Prof. Maria Elena Valcher, Universita' di Padova, Italy

Invited Distinguished Lectures will be delivered by

- Prof. Zhisheng Duan, Peking University, China;
- Prof. Huijun Gao, Harbin Institute of Technology, China;
- Prof. Xiaoming Hu, Royal Institute of Technology, Sweden;
- Prof. Derong Liu, University of Illinois at Chicago, USA;
- Prof. Xinzhi Liu, University of Waterloo, Canada;
- Prof. Max Meng, Chinese University of Hong Kong, Hong Kong, China

Important Dates:

Deadline for Full Paper Submission 31 October 2014

Deadline for Invited Session Proposals 31 October 2014

Notification of Acceptance/Rejection 10 February 2015

Deadline for Camera Ready Manuscript Submission 10 March 2015

Deadline for Advance Registration 10 March 2015

Highlight of Qingdao Attractions:

Apart from participating in 2015 CCDC, you may also visit the numerous attractions of Qingdao, Shandong Province, China. Qingdao is changing every minute. The former Germany colony has developed to a charming seafront metropolis. Qingdao is called as "China's Switzerland" because of its Bavarian appearance. With its cool sea breezes, clear air and excellent sea food. Qingdao is where china's rich businessmen come to build sand villas. Qingdao is to hold the sailing events of the 2008 Olympic, which will allow more west people to learn this picturesque city. The most noted sights in Qingdao are various sea beachings, ocean park and the colonial-era buildings dotted around the urban landscape.

For further information, please refer to Website - <http://www.ccdc.neu.edu.cn>

E-mail secretary_ccdc@ise.neu.edu.cn .

[Back to the contents](#)

6. Workshops

6.1. Workshop on Time Delay Systems

Contributed by: A. Galip Ulsoy, ulsoy@umich.edu

The 12th IFAC Workshop on Time Delay Systems will be held in Ann Arbor, Michigan during June 28-30, 2015. Invited session proposals are due by 11/14/14 and contributed manuscripts are due by 1/16/15.

Please see the web site for further details: <http://me.engin.umich.edu/dirifac/index.html>

[Back to the contents](#)

6.2. Workshop on Advanced Control and Navigation for Autonomous Aerospace Vehicles

Contributed by: Rafael Vazquez, rvazquez1@us.es

ACNAAV'15 - IFAC Workshop on Advanced Control and Navigation for Autonomous Aerospace Vehicles
Seville, Spain, June 10-12, 2014

Organized by

- Rafael Vazquez, University of Seville
- Eduardo F. Camacho, University of Seville

Technical sponsorship by IFAC Technical Committee 7.3 on Aerospace; co-sponsored by IFAC TC 2.6 Distributed Parameters Systems and IFAC TC 2.3. Non-Linear Control Systems.

The aim of this workshop is to bring together engineers, academicians, scientists, professionals, and students, to discuss and share the ideas about the recent developments in the area of autonomous aerospace vehicle guidance, navigation and control. A huge number of applications for autonomous vehicles are arising both in the civil and military fields which present many challenges in the area of control. The workshop will consider all kinds of aerospace vehicles, suchs UAVs, aircraft, helicopters, missiles, or spacecraft, and applications related to them. In addition to advance guidance, navigation and flight control designs, other related topics within the domain of the workshop include advanced air traffic management and trajectory optimization algorithms, multi-agent systems, spacecraft rendezvous and formation flying, advanced attitude control of spacecraft, flexible structures, decision making and autonomy, flight dynamics identification, nonlinear dynamics of flight control systems, avionics and onboard control algorithms implementation. Emphasis will also be placed on forthcoming trends. Perspectives and future research projects are welcome, as well as lessons learned in current projects and technologies. This workshop also encourages students to present results of Aerospace control projects.

Particular attention will be devoted to the following topics:

UAV, Aircraft/Helicopter, missile, and spacecraft guidance, navigation and flight control; Advanced air traffic management and trajectory optimization algorithms; Spacecraft rendezvous and formation flying; Advanced attitude control of spacecraft; Flight dynamics identification; Nonlinear dynamics of flight control systems; Avionics and onboard control algorithms implementation; Flexible structure control; Health monitoring, diagnosis and reconfiguration; Decision making and autonomy; Mission control and operations.

Invited talks (confirmed):

- Miroslav Krstic (Mechanical and Aerospace Engineering, University of California San Diego)
- S. N. Balakrishnan (Mechanical and Aerospace Engineering, Missouri Univ. of Science and Technology)
- Antonios Tsourdos (Engineering Sciences Division, Cranfield University)
- Luisella Giulicchi (Directorate of Earth Observation Programmes, European Space Agency)

Important Dates:

- Submission of draft papers: November 1, 2014
- Notification of acceptance: February 15, 2015
- Submission of final paper: March 15, 2015
- Workshop: June 10-12, 2015

More information on the workshop website: <http://www.aero.us.es/acnaav15/>

[Back to the contents](#)

6.3. Workshop on Security and Privacy for Internet of Things and Cyber-Physical Systems

Contributed by: Heath LeBlanc, h-leblanc@onu.edu

The First IEEE International Workshop on
Security and Privacy for Internet of Things and Cyber-Physical Systems (SPIC 2015)

Organized in conjunction with
IEEE International Conference on Communications (ICC 2015)
8-12 June 2015, London, UK

Call for Papers
<http://conta.uom.gr/SPIC2015/index.html>

Scope

Recent advances in networking, communications, computation, software, and hardware technologies have revolutionized the way humans, smart things, and engineered systems interact and exchange information. The Internet of Things (IoT) and Cyber-Physical Systems (CPS), which are the major contributors in this area, will fuel the realization of this new, globally interconnected cyber-world. Yet, the success, prosperity, and advancement of IoT and CPS strongly depend on the security, privacy, and trust of the IoT and cyber-physical devices as well as the sensitive data being exchanged. While these technologies offer a lot of new possibilities, the increasing complexity of hardware and software as well as the worldwide access increase the vulnerability to security attacks. Successful attacks targeted to IoT devices and CPS have in common that not only a single computer is affected, but also interconnected technical systems allowing interaction with the physical world are influenced, leading to malfunction of devices and control systems with severe financial, environmental, and health losses. This fact highlights the need to develop novel tools that will constitute the heart of a much-needed science of security for IoT & CPS. The goal of the SPIC workshop is to bring together internationally leading academic and industrial researchers in an effort to identify and discuss the major technical challenges and recent results aimed at addressing all aspects of security and privacy for IoT and CPS.

Topics of interest

To ensure complete coverage of the advances in this field, the SPIC Workshop solicits original contributions in, but not limited to, the following topical areas:

Security, Privacy, and Trust for IoT and CPS

Secure IoT and CPS architectures

Secure Network Control Systems for CPS applications

Detecting and preventing attacks in IoT devices and CPS

Evaluation of Threats, Attacks, and Risks in IoT and cyber-physical devices

Data Security and Privacy in the IoT

Game Theory for IoT and CPS Security

Security and Privacy in IoT RFID, sensors, actuator technologies, applications and services

Security in Smart Grids and Smart Spaces

Network-distributed sensor processing for security solutions in CPS

Joint security and privacy aware protocol design

Test-bed and performance metrics of security solutions in CPS
Deployment and performance studies of secure CPS
Architectures for secure hardware/software CPS

Submission procedure

The workshop accepts only novel, previously unpublished papers. All submissions should be written in English with a maximum paper length of six (6) printed pages (10-point font) including figures without incurring additional charges (maximum 1 additional page with over-length page charge if accepted), and must be formatted in strict accordance with the IEEE Communication Society author guidelines. For more information please visit the following URL:

<http://icc2015.ieee-icc.org>. The EDAS link for submission is (TBD).

Important dates

Paper submission deadline: 8 December, 2014

Author Notification: 12 January, 2015

Camera-ready due: 23 February, 2015

Workshop date: 8 June, 2015

Organizing committee

General Co-Chairs:

Anastasios A. Economides (Univ. of Macedonia, Greece)

Minho Jo (Korea University, South Korea)

Houbing Song (West Virginia University, USA)

Daqiang Zhang (Tongji University, China)

Technical Program Co-Chairs:

Eirini Karapistoli (Univ. of Western Macedonia, Greece)

Vasilis Friderikos (King's College London, UK)

Joao Paulo Miranda (CPqD, Brazil)

Dev Audsin (Orange, UK)

Krishna Kumar Venkatasubramanian (Worcester Polytechnic Institute, USA)

Jianguo Ding (University of Skovde, Sweden)

Publicity Co-Chairs:

Nick Bone (Vodafone Group, UK)

Qinghe Du (Xi'an Jiaotong Univ., China)

Heath LeBlanc (Ohio Northern University, USA)

[Back to the contents](#)

7. Graduate Schools and Online Courses

7.1. Modeling and Control of Complex Physical Systems: The Port-Hamiltonian Approach

Contributed by: Juan I. Yuz, juan.yuz@usm.cl

Spring School UTFSM 2014

Modeling and Control of Complex Physical Systems: The Port-Hamiltonian Approach

http://profesores.elo.utfsm.cl/jyuz/course_oct2014/

The course will be held between the 27-29 of October 2014 at the Department of Electronic Engineering, Universidad Técnica Federico Santa María (UTFSM) at the main campus in Valparaíso, Chile.

Speakers:

Bernhard Maschke, University Claude Bernard of Lyon, France

Hector Ramirez, University of Franche-Comté, France

Yann Le Gorrec, National Engineering Institute in Mechanics and Microtechnologies, France

Daniel Sbarbaro, University of Concepción, Chile

The course will be divided into 4 modules at an introductory level aimed to undergraduate and postgraduate students in engineering, physics and applied mathematics with interest in control:

- M1: Port Hamiltonian models of open and dissipative physical systems (B. Maschke)
- M2: Passivity based control of PHS and IPHS (H. Ramirez and D. Sbarbaro)
- M3: Control of distributed port-Hamiltonian system (Y. Le Gorrec and H. Ramirez)
- M4: PHS associated with discrete conservation laws (B. Maschke)

The school is open to students, academics and the industry at no cost. However, registration is required. There are no specific prerequisites, the modules may be followed independently and supporting notes will be provided. Lectures will be given in English.

Organizers:

Eduardo Cerpa, Department of Mathematics, UTFSM

Juan I. Yuz, Department of Electronic Engineering, UTFSM

Hector Ramirez, University of Franche-Comté, France

For more information, please send us an email to Juan Yuz, juan.yuz@usm.cl

Yo may also have a look at the course webpage:

http://profesores.elo.utfsm.cl/jyuz/course_oct2014/

Registration: Ms. Sabrina Rodriguez, sabrina.rodriguez@usm.cl

Additional links:

UTFSM: <http://www.usm.cl/en/>

Valparaíso: https://www.youtube.com/watch?feature=player_embedded&v=kKwH6HIJ.jA

7.2. Online Seminar Series on Control Systems

Contributed by: Tansel Yucelen, yucelen@mst.edu

Started in April 2014, we have initiated a novel online forum, Control Systems Forum (<http://consys.forum.mst.edu/>), which is dedicated to the dissemination of cutting-edge research results and education perspectives of control systems. This nonprofit forum enables individuals from academia, government, and industry to follow the state of the art approaches being developed by experts. The audience of these seminars have a chance not

only to watch speakers' talks but also to ask "live" questions to them.

The upcoming online seminars include:

- * Dr. Paulo Tabuada (University of California, Los Angeles): Secure state-estimation and control for dynamical systems under adversarial attacks (October 23, 2014, 2:00 pm CDT)
- * Dr. Andrew Teel (University of California, Santa Barbara): On the modeling power of stochastic hybrid inclusions (November 13, 2014, 12:00 pm CDT)
- * Dr. Rifat Sipahi (Northeastern University): Interplay between delays, network graphs, and stability/performance in coupled dynamical systems (November 20, 2014, 2:00 pm CDT)

To register for free (and learn more about these talks), please visit the Control Systems Forum:

<http://consys.forum.mst.edu/upcomingwebinars/>

Dr. Tansel Yucelen

Program Director of the Control Systems Forum

Director of the Advanced Systems Research Laboratory

Assistant Professor of the Mechanical and Aerospace Engineering Department

Missouri University of Science and Technology

email: yucelen@mst.edu

<http://www.asrl.us/> (Research Webpage)

<http://consys.forum.mst.edu/>(Control Systems Forum Webpage)

[Back to the contents](#)

7.3. Online Seminar on Secure State-Estimation And Control For Dynamical Systems Under Adversarial Attacks

Contributed by: Tansel Yucelen, yucelen@mst.edu

Online Seminar of Dr. Paulo Tabuada at the Control Systems Forum

Title: Secure State-Estimation And Control For Dynamical Systems Under Adversarial Attacks

When: Thursday, Oct. 23, 2014 - 2:00 PM CDT

Where: Control Systems Forum (visit <http://consys.forum.mst.edu/tabuadabio/> to register at no cost).

Abstract: Control systems work silently in the background to support much of the critical infrastructure we have grown used to. Water distribution networks, sewer networks, gas and oil networks, and the power grid are just a few examples of critical infrastructure that rely on control systems for its normal operation. These systems are becoming increasingly networked both for distributed control and sensing, as well as for remote monitoring and reconfiguration. Unfortunately, once these systems become connected to the internet they become vulnerable to attacks that, although launched in the cyber domain, have for objective the manipulation of the physical domain. In this talk I will discuss the problem of state-estimation and control for linear dynamical systems when some of the sensor measurements are subject to an adversarial attack. I will show that a separation result holds so that controlling physical systems under active adversaries can be reduced to a state-estimation problem under active adversaries. I will characterize the maximal number of attacked sensors under which state estimation is possible and propose computationally feasible estimation algorithms. For this, I will use ideas from compressed sensing and error correction over the reals while exploiting the dynamical nature of the problem.

Speaker's biography: Paulo Tabuada was born in Lisbon, Portugal, one year after the Carnation Revolution. He received his "Licenciatura" degree in Aerospace Engineering from Instituto Superior Tecnico, Lisbon,

Portugal in 1998 and his Ph.D. degree in Electrical and Computer Engineering in 2002 from the Institute for Systems and Robotics, a private research institute associated with Instituto Superior Tecnico. Between January 2002 and July 2003 he was a postdoctoral researcher at the University of Pennsylvania. After spending three years at the University of Notre Dame, as an Assistant Professor, he joined the Electrical Engineering Department at the University of California, Los Angeles, where he established and directs the Cyber-Physical Systems Laboratory. Paulo Tabuada's contributions to cyber-physical systems have been recognized by multiple awards including the NSF CAREER award in 2005, the Donald P. Eckman award in 2009 and the George S. Axelby award in 2011. In 2009 he co-chaired the International Conference Hybrid Systems: Computation and Control (HSCC'09) and in 2012 he was program co-chair for the 3rd IFAC Workshop on Distributed Estimation and Control in Networked Systems (NecSys'12). He also served on the editorial board of the IEEE Embedded Systems Letters and the IEEE Transactions on Automatic Control. His latest book, on verification and control of hybrid systems, was published by Springer in 2009.

Dr. Tansel Yucelen

Assistant Professor of the Mechanical and Aerospace Engineering Department
Director of the Advanced Systems Research Lab. (<http://www.asrl.us>)
Missouri University of Science and Engineering

[Back to the contents](#)

7.4. Online Course on Dynamics and Control

Contributed by: Pedro Albertos, pedro@aii.upv.es

A new edition of the Massive Open Online Course (MOOC) on Dynamics and Control:

“An interactive course about the basic concepts of Systems, Control and their impact in all the human activities” is going to be launched

The URL access is: <http://courseondynamicsandcontrol.upvx.es/>

The basic characteristics of the course are:

- It is free
- Math background is not required
- It Provides a conceptual overview of the systems dynamic behavior and control problems
- It is appropriate for non specialist in control
- The course is taught in English
- It lasts for six weeks, although
- As any Open Course, each attendee may follow it at his/her own rithm
- It will start on October 7th
- Registration is easy and free
- During the teachinf period, there is an open forum to pose questions (and get answers)
- To get attendance credits, two questionnaires should be fullfilled

It can be a useful tool to motivate new students as well as non-expert in control collaborators.

Please, do not hesitate to ask me any question, Pedro Albertos, pedro@aii.upv.es

[Back to the contents](#)

8. Positions

8.1. PhD: Eindhoven University of Technology, The Netherlands

Contributed by: Roland Toth, r.toth@tue.nl

Data-driven modeling and control of nanometer-accurate planar models

Level: PhD position

Description:

Faculty/department: Control Systems group ,Electrical Engineering department, TU/e

Maximum employment: Maximum of 38 hours per week (1 FTE)

Duration of contract: 4 years

Starting date: as soon as possible

Salary scale: 2083 Euros gross (with annual increase)

Nanometer-accurate motion systems in lithography are nowadays realized by a combination of a micrometer-accurate long-stroke positioning system (large movement range) and a nanometer-accurate short-stroke positioning system (>1mm movement range). These dual-stage positioning systems are complex, heavy and expensive. Furthermore, it will be increasingly more difficult to use such design layouts to satisfy future performance specifications. Magnetically levitated, single-stage planar motors are the most promising alternative technology that can replace and simplify previous generations of positioning systems. However, accuracy of these motors is limited by the intrinsic position-dependent electromagnetic interaction between the coil and magnet plates and deformation of the translator due to the position-dependent force and temperature distributions.

The PhD position is within the scope of the Nanometer-accurate planar actuation system (NAPAS) initiative, which aims to overcome the fundamental limits of the dynamic accuracy of moving-magnet planar motors by developing a highly accurate and experimentally verified understanding of the dynamics of the coil-magnet interactions together with the development of a control system that, by exploiting this knowledge, is capable of significantly improving high-speed positioning. This objective is aimed to be realized by a scientific team involving researchers from the CS and EPE groups and supported by the companies: ASML, Philips, Prodrive, Tecnotion, SKF and TNO. The NAPAS project utilizes an existing infrastructure for planar motors at the Eindhoven University of Technology which comprises a state-of-art magnetically levitated planar motor allowing 5 g acceleration and a sensor and control environment (9-DOF laser interferometer system with 0.16 nm resolution, DSP platform, and 40 dedicated power amplifiers with switching matrix allowing activation of coil sets).

The PhD project focuses on data-driven modeling and control design for reference tracking, deformation attenuation and optimal commutation for moving-magnet planar motors. These objectives are planned to be realized by applying and further improving state-of-the-art approaches of Machine Learning (ML) and Linear Parameter-Varying (LPV) identification and control.

Send your CV to vacancies.CS@tue.nl, put in the subject line the identifier: 2014vacCS4

[Back to the contents](#)

8.2. PhD: Delft University of Technology, The Netherlands

Contributed by: Rudy Negenborn, r.r.negenborn@tudelft.nl

PhD position in the ShipDrive Program on: “Distributed Control for Hybrid Ship Systems” at Delft University of Technology (Maritime & Transport Technology), The Netherlands

Job description:

We seek a talented and ambitious PhD candidate for a challenging multidisciplinary research project on control of a new generation of ships. The PhD position is defined within the framework of the recently approved NWO/STW Maritime program “ShipDrive: A Novel Methodology for Dynamic Integrated Modelling, Control and Optimization of Hybrid Ship Systems”.

The overall objectives of this program are:

- to propose a novel design and optimization methodology for integrating hybrid propulsion and energy systems on board of ships;
- to propose control strategies based on functional criteria for hybrid ship systems on several control layers.

The current vacancy focuses on the control aspect. The control criteria will include running cost of the ship asset, fuel consumption and influence on environment in terms of emissions and radiated (underwater) noise. In your research you will work together with 2 PhD candidates working on other challenges of the program.

In the project, the potential of the proposed approaches will be assessed in the specific and demanding maritime environment. This makes the research involved both innovative and highly applicable to actual issues in the maritime industry, the government and society.

The researcher working on this project will have the opportunity to work in a multidisciplinary team of academic experts, as well as with leading industrial (ship building) partners. This will allow both the realization of new, innovative, fundamental control contributions as well as the opportunity to demonstrate their practical relevance via state-of-the-art demonstrators.

Within the framework of the project there will be 3 PhD projects. One PhD project will focus more on the vessel design aspect, taking particular maritime characteristics into account; the second PhD project (this vacancy) will focus on the operational control, aiming for maximizing the performance of a given vessel design. The third PhD project focuses on taking specific industrial developments into account in an integrated control and design framework.

Requirements:

We are seeking an outstanding and enthusiastic researcher with a strong interest in the development of novel control algorithms and their application in ship systems and who has expertise and interest in at least 2 of the following areas:

(distributed) control, multi-agent systems, (mathematical) optimization, model-based predictive control, dynamical systems, simulation, vessels, ship systems, power/energy systems, smart grids

You have obtained an MSc or equivalent degree or expect to obtain a MSc very soon related to these areas. Well spoken and written English is mandatory.

Conditions of employment:

TU Delft offers an attractive benefits package, including a flexible work week, free high-speed Internet access from home and the option of assembling a customized compensation and benefits package (the ‘IKA’). Salary

and benefits are in accordance with the Collective Labour Agreement for Dutch Universities. You will get a contract for four years with a go/no evaluation after 1 year. As a PhD candidate you will be enrolled in the TU Delft Graduate School. TU Delft Graduate School provides an inspiring research environment; an excellent team of supervisors, academic staff and a mentor; and a Doctoral Education Programme aimed at developing your transferable, discipline related and research skills. Please visit <http://www.phd.tudelft.nl/> for more information.

For more information about these positions, please contact Dr. Rudy Negenborn, phone: +31 (0)15-2786718, e-mail: r.r.negenborn@tudelft.nl, Prof. Hans Hopman, phone: +31 (0)15-2785605, e-mail: j.j.hopman@tudelft.nl.

To apply, please e-mail to Dr. Rudy Negenborn:

- an up-to-date curriculum vitae,
- a letter of application,
- a transcript of grades obtained during MSc studies,
- the names and contact information (telephone number and e-mail address) of two references

The letter of application should summarize: 1) why the project is of interest to the applicant and 2) a brief description of the applicant's prior experience in the areas of interest (e.g., a description of the research performed in the context of the applicant's MSc thesis).

Vacancy is open for applications now.

Recruiting will continue until suitable candidates have been selected.

[Back to the contents](#)

8.3. PhD: University of Tennessee, Knoxville, USA

Contributed by: Donatello Materassi, dmateras@utk.edu

PhD student position (network identification)

The interest in networks of dynamical systems has found significant impetus fueled by the all advantages provided by networked systems. These advantages include a modular approach to design, the possibility of directly introducing redundancy, and the possibility of using of parallel and distributed control strategies.

In many application scenarios the network is given or it is the objective of design.

In other cases, such as of sensor networks or distributed control systems, the design process is partially or completely shifted to the communication level: the communication protocol needs to be accurately devised in order to guarantee the desired behavior. However, there are also many situations where the link structure is not directly manipulable, it may change dynamically and its identification becomes the very objective of investigation. Indeed, the underlying connectivity structure of simple systems is often the key for understanding the emergence of complicated phenomena as in the process of self-organization.

Furthermore, network systems have provided novel modeling approaches in many fields, such as Economics, Biology, Cognitive Sciences, Ecology, Geology, and in general in the investigation of phenomena characterized by spatial distributions. It is thus evident that unraveling the interconnectedness of a set of processes has become a problem of significant and widespread interest and the necessity for general tools is rapidly increasing.

Prof. Donatello Materassi (U of Tennessee Knoxville) is considering applications from students with background in Automatic Control, Signal Processing, Computer Science and related areas to advance his research program in the area of network identification.

PhD student position (emerging behavior in networks)

Complex systems (systems that are made up of many multiple interacting particles, subsystems or agents) have become ubiquitous in science.

Statistical mechanics has been an extremely successful approach to model complex systems when the number of components is extremely large, the underlying dynamics is hamiltonian and no feedback action is present. On the other hand, system theoretic methods are capable of describing the behavior of a networked system under more general assumptions on the dynamics, but only when the number components is relatively small. Bridging the gap between these two different approaches is a challenging and formidable task.

One possible approach would be to try to reformulate the most fundamental results of statistical mechanics in the language of systems theory and investigate how these results could be extended and generalized. Extensive work has already been done in this area, but a single unified framework has not been formalized, yet.

Prof. Donatello Materassi (U of Tennessee Knoxville) is considering applications from students with background in Electrical Engineering, Physics, Statistics and related areas with the goal of studying the emerging behavior of complex systems (especially economic ones) from a variety of perspectives: self-organization and adaptive properties, presence phase-transitions, behavior of ensembles etc.

PhD student position (real time energy markets)

It is envisioned that in future smart grids, consumers (or 'smart loads' on their behalf) will adjust their consumption in real-time to help mitigate the effects of the intermittencies of renewable resources.

Indeed, it has been argued that at any given time, a considerable amount of the total generated power is supplied to flexible loads that are shiftable in time by a few minutes to a few hours at little or no cost to the final user. Examples abound and can be found in the areas of material processing, electric vehicle (EV) charging, heating, ventilation, air conditioning, refrigeration, and agricultural irrigation.

Dynamic pricing mechanisms can incentivize smart loads with flexible demand to backlog their consumption when prices are high, thereby relieving the grid of congestion or other strenuous situations related to shortage of supply. By the same token, smart loads will tend to consume when prices are low and the grid is underutilized.

Mathematical model to investigate the optimal response of smart loads to exogenous and stochastic electricity prices have already been developed.

However, real-time pricing creates a feedback loop between the wholesale market and the consumers.

Thus, the characteristics of the new equilibria in energy markets with real-time pricing will depend on the consumer behavior, i.e., the consumer response to real-time prices. This in turn, depends on many factors such as the information structure of the system and the assumptions that the consumers make about current and future prices. In this paper, our main goal it to examine *consistency*, i.e., existence of equilibrium price distributions that are consistent with both the market outcome, which is influenced by the demand process, and the assumptions that the consumers make about the price process in order to determine their optimal responses. Prof. Donatello Materassi (U of Tennessee Knoxville) is considering applications from students with background in Electrical Engineering, Statistics and related areas with the

goal of designing market policies for the reliable and efficient distribution of energy under a regime of dynamic prices.

Inquiries to this position can be directed to Donatello Materassi (dmateras@utk.edu).

[Back to the contents](#)

8.4. PhD: Missouri University of Science and Technology, USA

Contributed by: Tansel Yucelen, yucelen@mst.edu

Advanced Systems Research Laboratory (<http://www.asrl.us>)

Missouri University of Science and Technology (<http://www.mst.edu>)

We are searching for exceptional PhD students with a strong background in systems, controls, and robotics. These students are expected to perform research on (1) safety-critical autonomous systems, (2) multiagent systems and robotics, and (3) modular large-scale systems. Our intention is to give our strong guidance in order to maximize the chances of our students of building a rewarding research career. If you are interested, please send an email to Prof. Tansel Yucelen at yucelen@mst.edu including your background, your interests and strengths (theoretical and experimental), your resume, and a publication of yours. You can visit <http://www.asrl.us/> for our webpage.

The work performed by our laboratory is focused on the creation of new information, control, and decision algorithms that reveal advanced systems such as highly capable autonomous vehicles and networked multi-vehicle systems. These systems are envisioned to elevate human society as well as to perform safety-critical operations with more robots and less humans. We place a strong emphasis both on theoretic research and experimentation for addressing fundamental and open real-world technological problems. Our aim is to be recognized as one of the top research laboratories in the nation by significantly advancing the knowledge and training science-based engineers and professionals to shape the future of our society.

Dr. Tansel Yucelen

Assistant Professor of the Mechanical and Aerospace Engineering Department

Director of the Advanced Systems Research Lab. (<http://www.asrl.us>)

Missouri University of Science and Engineering

[Back to the contents](#)

8.5. PhD: Nanyang Technological University, Singapore

Contributed by: Erdal Kayacan, erdal@ntu.edu.sg

Fully funded PhD position in the Unmanned Aerial Vehicles Laboratory in the School of Mechanical and Aerospace Engineering at NTU (Singapore) is available.

<http://www.mae.ntu.edu.sg/AboutMAE/Divisions/UAVLab/Pages/Home.aspx>

Research topic: Design, production and control of flying wing UAV. The project involves:

- Mechanical design and optimization along with stress analysis
- Aerodynamic design and optimization
- State estimation and control

Requirements:

- Prospective candidates should hold a M.Sc. degree in electrical engineering, aerospace engineering, mechanical engineering, automatic control, mechatronics, applied mathematics, or other related disciplines from reputable universities.
- She/He should have a strong background and interest in the general areas of systems and control along with a very good experience and background on mechanical design and analysis. Applicants with experience on power electronics will be given priority.
- The candidate should also have excellent verbal and writing skills in English. (A TOEFL score of >570 paper-based, >230 computer-based, >88 internet-based or a minimum IELTS score of 6.0 is required.
- A Bachelor's degree with honors of at least a Second Class Upper Level or equivalent (min GPA: 3.2/4.0)
- International applicants are also required to have a Graduate Aptitude Test in Engineering (GATE) score of at least 90% or Total GRE score of >310/3.5 where score for verbal section must be min 146, score for quantitative section must be min 155 and analytical writing score is at least 3.5.

The application should consist of:

- . A motivation letter (explaining the reason that you are interested in the project, background and motivations),
- . A CV with a full publication list,
- . The contact details of three referees.

These documents must be compiled as a single pdf file, and named as “<Name>.<Surname>.pdf”.

Then, the single file should be sent to “erdal@ntu.edu.sg” with a subject line of “PhD application of <Name> <Surname>”.

The positions will be available from Jan, 2015.

The deadline for the applications is 5th of October 2014.

[Back to the contents](#)

8.6. PhD/Post-Doc: Clemson University, USA

Contributed by: Yongqiang Wang, yongqiw@clemson.edu

PhD/Post-Doc Positions, The Holcombe Department of Electrical and Computer Engineering, Clemson University.

Applications are invited for doctoral and/or post-doctoral positions in the general area of dynamics and control of network systems.

Competitive financial supports will be provided.

Students with a strong background in systems and control and a clear interest in the general area of network systems are encouraged to apply.

Specific areas of research include: analysis of dynamical engineered or biochemical networks, hybrid systems, oscillator networks or synchronization.

Clemson University is ranked 20st among national public universities by U.S. News & World Report (tie with Purdue University-West Lafayette and University of Maryland-College Park).

It is described by students and faculty as an inclusive, student-centered community characterized by high academic standards, a culture of collaboration, school spirit, and a competitive drive to excel.

Clemson is located on Lake Hartwell in the foothills of the Blue Ridge Mountains, an area of outstanding natural beauty and temperate climate. It is 30 miles from Greenville, SC, a vibrant and growing city which provides many opportunities for entertainment, culture, and fine dining. Strong mathematical and analytic skills are desired. Candidates with a demonstrated track record in one or more of the previous area(s) will be preferred. Interested students should send a short resume, along with representative relevant publications, if applicable, to yongqi@clmson.edu

[Back to the contents](#)

8.7. Post-Doc: Dalle Molle Institute for Artificial Intelligence, Switzerland

Contributed by: Andrea Emilio Rizzoli, andrea@idsia.ch

IDSIA, the Dalle Molle Institute for Artificial Intelligence <http://www.idsia.ch> is looking for a post-doc researcher on Intelligent Systems. The candidate will be involved in research projects related to intelligent systems, in particular smart grids and networks, for the optimized management of resources such as electricity and water. The duties will include the design, development and implementation of optimization algorithms and simulation models for the study and management of complex networked systems.

We require:

- PhD degree in Engineering, Computer Science, or other strongly quantitative areas.
- Strong knowledge of Control Engineering and Systems Theory or Operations Research.
- Operational knowledge on various simulation paradigms, with a particular focus on agent based simulation and modeling.
- Proven experience in writing peer reviewed scientific work and publications.
- Good background in software development. The knowledge of one or more programming languages (such as Java, Python, C++ or C#) is requested and familiarity with Matlab and other scientific development environments is appreciated.

We offer:

- A three-year contract, with the opportunity to renew it at its term, with a salary based on qualifications (degree of occupancy 100%).
- International working environment: English is the official language at IDSIA.
- Opportunity to work on international and national projects in a collaborative environment with colleagues and international experts.
- Possibility of development of own professional and scientific skills.
- Funded travels in case of papers accepted by well-known international conferences

The full call for this position is available at:

http://www.supsi.ch/home/dms/supsi/docs/supsi/offerte-lavoro/2014/20141015_DTI_Ricercatore.bando180.pdf

Applications should be submitted online before the 15th of October 2014 at the following address:

<http://www.form-ru.app.supsi.ch/view.php?id=90244>

For further information please contact:

Andrea Emilio Rizzoli

andrea@supsi.ch

[Back to the contents](#)

8.8. Post-Doc: Georgia Institute of Technology, USA

Contributed by: Panagiotis Tsiotras, tsiotras@gatech.edu

Applicants are sought for a post-doc position with the School of Aerospace Engineering and the Institute for Robotics and Intelligent Machines (IRIM) at the Georgia Institute of Technology in the general area of stochastic optimal control and information theory.

The successful candidate should have a solid background and excellent analytical skills in at least one (or all) of the following areas: stochastic calculus, information theory, control and statistical inference.

Interested candidates should submit their application by email in a single pdf file to Prof. Panagiotis Tsiotras (email: tsiotras@gatech.edu) or Prof. Evangelos A. Theodorou (email: evangelos.theodorou@ae.gatech.edu).

The application should include the following documents:

1. A complete curriculum vitae.
2. A list with the names of at least 3 references.
3. A one-page summary of past research accomplishments and current research interests.
4. A selection of (no more than five) publications (published, accepted, or in-preparation).

The Daniel Guggenheim School of Aerospace Engineering at the Georgia Institute of Technology is one of the oldest and largest educational programs of its kind in the country. It ranks among the top aerospace programs in the US, and enjoys a worldwide reputation. The School has currently 43 faculty members and about 50 professional staff members. Approximately 800 undergraduate and 500 graduate students are currently enrolled in the program. The Institute of Robotics and Intelligent Machines at Georgia Tech (IRIM) involves more than 70 faculty and staff from the College of Engineering, the College of Computing and the Georgia Tech Research Institute working on interdisciplinary problems in robotics and autonomous systems. For more information on IRIM please see <http://robotics.gatech.edu>

[Back to the contents](#)

8.9. Post-Doc: University of Texas, USA

Contributed by: M. Vidyasagar, m.vidyasagar@utdallas.edu

Post-Doctoral Fellowship Opportunity with M. Vidyasagar, UT Dallas

The Systems Engineering Department at the University of Texas at Dallas invites applications for a Post-Doctoral Fellowship position with Prof. M. Vidyasagar, to work in the development and applications of methods from machine learning and optimization including compressed sensing to cancer biology. The position provides full funding at a competitive salary for up to three years, under a research grant from CPRIT (Cancer Prevention and Research Institute of Texas). The starting date is negotiable.

The research involves collaboration with Prof. Michael A. White of the UT Southwestern Medical Center in Dallas, and members of his research group. The focus of the research is on the development of novel algorithms in machine learning and optimization, including compressed sensing, that are applicable to problems of computational cancer biology, and the validation of these algorithms on both public as well as proprietary data sets.

The successful candidate should have a Ph.D in a mathematically rigorous discipline such as statistics, machine learning, optimization, control theory, information theory, or some combination thereof. Excellent communication skills, both oral and written, are mandatory. Prior familiarity with cancer biology is not

required. However, the successful candidate must make a commitment to come up to speed quickly in cancer biology with assistance of other members of the group, including senior researchers. This is an excellent opportunity for a dynamic young researcher to work at the intersection of the latest algorithms and their applications to cancer.

Candidates must apply on-line. The procedure is a bit complicated. Go to: <https://www.utdallasjobs.com/> Click on “Search Postings” (second tab from top on the left side). Then type “103913” in the box “Req ID” and then hit “Search” That takes the user to the correct web page to apply on-line.

The position will remain open until it is filled. Women and members of under-represented groups are encouraged to apply. UT Dallas is an equal opportunity, affirmative action employer.

[Back to the contents](#)

8.10. Post-Doc: Eindhoven University of Technology, The Netherlands

Contributed by: Roland Toth, r.toth@tue.nl

Position: 1 year postdoc

Title: Data-Driven Linear Parameter-Varying Model Learning and Control of Complex Process Systems

Location: Control Systems Group, Eindhoven University of Technology

Project description:

The proposed research aims to develop a synergy between Linear Parameter-Varying (LPV) control synthesis tools and Machine Learning (ML) based modeling focusing on the challenging dynamics of process systems such as nonlinearities, spatial dynamics, and unmeasured disturbances. This is to be realized by devising a novel process-control/modeling framework that is capable of providing cost-effective and high-performance solutions for the current and future challenges of the process industry.

The aimed data-driven modeling and control methodology will be validated using various benchmark models and on-site applications, including high-purity distillation columns, selective catalytic reduction systems, and a novel crystallization-based separation process. The proposed research, which is an endeavour of the Eindhoven University of Technology, the University of Qatar and the University of Georgia (USA), intends not only to result in a theoretical improvement of the state-of-the-art of process control, but also a significant technological innovation for sustainable development of the process industry.

Research group:

The Control Systems group has a long tradition in modeling, system identification and control of dynamical systems. The group aims to be an internationally acknowledged center in mastering the complexity of dynamic systems. Currently, the Control Systems group focuses its fundamental research around model approximation and identification, networked systems, model predictive control and spatial-temporal systems. The group covers a wide variety of applications in modeling and control system design. These include power networks, electromechanical systems, automotive systems, chemical production processes, and various applications in the process industry. We disseminate our expertise and knowledge to students, the scientific community and to the industry. Currently about 30 people work at the Control Systems group, including postdocs and PhD students. If you are interested in this position, please send (1) a detailed curriculum vitae, (2) an application letter motivating your interest in the offered position and research topic, and summarizing your views on the research area, (3) a publication list, (4) a copy of your best publication in English, (5) course lists of your Masters and Phd programs (incl. grades) and proof of your Phd degree, (6) results of a recent English language test (like IELTS) and the (7) names of two professional references to r.toth@tue.nl.

[Back to the contents](#)

8.11. Post-Doc: Berkeley Education Alliance for Research, Singapore

Contributed by: Guoqiang Hu, gqhu@ntu.edu.sg

Post-doc: Berkeley Education Alliance for Research in Singapore (BEARS)

We currently have one post-doc position for the area of Control and Optimization for Energy Efficiency at the Berkeley Education Alliance for Research in Singapore (BEARS). The post-doc research fellow will be co-supervised by Prof. Guoqiang Hu at Nanyang Technological University (NTU) and Prof. Costas Spanos at University of California, Berkeley (UCB).

Applicants are expected to have expertise in at least one of the following topics: 1) Control and optimization of power/energy networks; 2) Control and optimization of large-scale air conditioning systems; 3) Demand response and energy consumption scheduling; 4) Security and reliability of power grid or building energy systems; 5) Energy economics and energy policy analysis. Applicants should hold a Ph.D degree in relevant areas, and have a track record of competitive research experience in terms of journal and conference publications.

Application Procedure:

Interested applicants can email your full CV and supporting documents, if any, to Prof. Guoqiang Hu at gqhu@ntu.edu.sg. Short-listed candidates will be notified for interview. Application closes when the position is filled.

About BEARS:

The Berkeley Education Alliance for Research in Singapore (BEARS) is a center for research excellence, graduate education, and innovation with the goal of achieving an international reputation. BEARS serves as a vehicle and as an intellectual hub for collaboration between UCB researchers and researchers in Singapore and Asia. BEARS is a not-for-profit company limited by guarantee and incorporated in Singapore. BEARS is owned by the Regents of the University of California and operated by the University of California, Berkeley (UCB).

[Back to the contents](#)

8.12. Post-Doc: CNRS-IRCCyN laboratory, Nantes, France

Contributed by: Fabien Claveau, fabien.claveau@mines-nantes.fr

Postdoctoral position: CNRS-IRCCyN laboratory, Nantes, France

Sails Control and Power Management System Design for a Sail Cruise Ship of Next Generation

Project SILENSEAS:

This work will take place within the project SILENSEAS, supported by ADEME, the French Agency for the Environment and the Energy Management.

The main objective of the global project is to develop and build an industrial and research demonstrator (scale 1:1) of a new generation of hybrid power-sailer cruise ship. Innovative, energy efficient and clean, this sail cruise ship has the objective to reduce by 25% its fossil fuel consumption and air pollution compared to standard cruise ships. This project is driven by the shipbuilding company STX France, and involves some other representative industries in this domain.

Research Topics:

Several technological innovations have to be developed to make the project successful. The post-holder will be involved in two main tasks concerning control laws design;

1. Automatic Control of the sails (6 months): the main objective is to pilot the sails to reach the desired longitudinal thrust, taking into consideration the desired trajectory, the sea current, the thrust contribution of the propellers. Few results are available in the literature, especially for large sailing ships. The main difficult points lie in the non-linear behavior of the system that should be taken into account in the proposed control strategies.

2. Energy Management System (EMS) of the embedded (hybrid) power plant (12 months): in addition to the sails, the liner will be also equipped with electric driven propellers, supplied by several diesel-electric generators of varying power characteristics, potentially through several storage batteries. The whole power plant should supply the propulsion motors, but also the electric equipments on board, with different voltage values. Equipping a large-scale cruise liner with such a hybrid sail-diesel-electric propulsion is a breakthrough innovation. The main motivation is to entrust the energy management to an automatic EMS in the same spirit as for hybrid cars.

The conception of this EMS will be the second task for the post-holder. The developed algorithms should drive in real-time the different power-based diesel-electric generators, to optimize the fuel consumption. It should take into consideration the contribution of the sails, the sea current, and the possibility to make some hydroelectricity regeneration thanks to dedicated propellers. The EMS will have to take benefits of previewed information such as the ship itinerary, wind or current maps.

The EMS could be based on predictive control algorithms and Finite-State Machine. Validation criteria will be the resulting energy consumption, but also the modularity of the algorithms.

Applicant profile:

The post-holder will have to design different control strategies, dedicated to the control of the sails and to the conception of the EMS. Both tasks will involve the manipulation of some models with the right balance of details between precision and simplicity, as they will be used to develop the embedded control algorithms.

The position is open to research fellows in control theory (see key-words). The research fellow should have the competence and the motivation to work in a collaborative context, with industrial purposes. A first experience in energy system modeling will be appreciated.

Key-words: Robust (linear, non-linear) Control, Optimal Control, Predictive Control, Discrete Event and Hybrid Systems Control

Starting date: January 2015

Duration: 18 months

Applications must be received by November 30, 2014

Application Procedure: Please, send

- your curriculum Vitae
- electronic links to your most important publications and/or your PhD thesis
- an intent letter
- possibly a recommendation letter

Contact persons:

Philippe Chevrel: philippe.chevrel@irccyn.ec-nantes.fr

Franck Plestan: franck.plestan@irccyn.ec-nantes.fr

Links: Lab website: <http://www.irccyn.ec-nantes.fr/>

[Back to the contents](#)

8.13. Post-Doc: Delft University of Technology, The Netherlands

Contributed by: Bart de Schutter, b.deschutter@tudelft.nl

Postdoc position: “Information fusion and data mining for large-scale railway data sets” (Delft University of Technology)

The Delft Center for Systems and Control (<http://www.dcsc.tudelft.nl>) and the Railway Engineering group of Delft University of Technology, The Netherlands have a vacancy for a postdoc position on “Information fusion and data mining for large-scale railway data sets”.

In state-of-the-art railway networks a huge amount of measurement and management data are available from many different sources. Our aim is to make these data suitable for use in intelligent decision support systems, by developing systematic, robust, efficient, and real-time data mining and information fusion methods for large-scale railway data sets.

This project focuses on the integration of data originating from different data sources with various characteristics: data are collected using different sensors and at different sampling rates, data pertain to multiple temporal and spatial scales, some data are collected on-line and in real-time, while others should be extracted from databases, some data are available in a central location, while others are collected or stored decentrally, etc. These data have to be integrated in such a way that all the relevant information for control, management, and maintenance of the railway infrastructure is available. So information fusion and data mining methods have to be developed, where the specific characteristics and features of railway data have to be included. In addition, some types of information may not be directly available or may be missing and/or inconsistent due to sensor failures.

To address these challenges we will combine state-of-the-art data mining and information fusion methods and/or develop new methods with new (possibly probabilistic) models for the dynamics and evolution of tracks and trains, for degradation, and for faults, as well as advanced fault diagnosis and detection methods, statistical analysis, and risk management methods.

We are looking for a candidate with an PhD degree and with a strong background in systems and control, applied mathematics, or data mining, optimization, and/or sensor fusion, as well as a strong interest in railway operations. Additional experience in the use of deep learning neural networks is an asset. A good command of the English language is required.

We offer the opportunity to do fundamental and scientifically challenging research. The postdoc will work with PhD students and other researchers in a multi-disciplinary research group. The appointment will be for 1 year. As an employee of the university you will receive a competitive salary, as well as excellent secondary benefits. Assistance with accommodation can be arranged.

More information on this position and on how to apply can be found at http://www.dcsc.tudelft.nl/bdeschutter/vac/vacancy_postdoc_admire.pdf or by contacting Bart De Schutter (b.deschutter@tudelft.nl).

[Back to the contents](#)

8.14. Post-Doc: Nanyang Technological University, Singapore

Contributed by: Lihua Xie, elhxie@ntu.edu.sg

Nanyang Technological University (NTU) of Singapore and KTH Royal Institute of Technology of Sweden have established a joint research programme on smart buildings. Under the programme, we are looking for one-two postdoctoral fellows to work on distributed and cooperative sensing and control with application to building automation. The postdoctoral fellows will be jointly supervised by Prof. Lihua Xie of NTU and Prof. Karl H. Johansson of KTH. They will be based in Singapore but can have opportunities to visit KTH for joint research from time to time. We are looking for excellent researchers with the potential to be converted to faculty members at NTU after the completion of the postdoc.

Candidates should have a PhD degree in electrical engineering in the area of distributed control and optimization of networked systems with a strong publication record. It would be an advantage if the candidates have experiences in modeling, control and optimization of building systems. The salary will be competitive and determined based on the actual qualification of the candidate. The initial offer is one year, but can be renewed.

Interested applicants are required to send to Prof. Lihua Xie at elhxie@ntu.edu.sg a detailed CV, a description of previous related experiences and achievements, a complete list of publications, and a list of at least two referees, who are available to comment on the applicant's capabilities.

If you have any question regarding the positions, please, do not hesitate to contact Prof. Lihua Xie or Prof. Karl H. Johansson at kallej@kth.se.

[Back to the contents](#)

8.15. Research Assistant: National University of Singapore, Singapore

Contributed by: Tan Kok Kiong, kktan@nus.edu.sg

The Department of Electrical and Computer Engineering in National University of Singapore is planning to recruit a research assistant in the area of surgical device/instrument for 1 year from Sep. 2014. The appointment is made under a grant for the project funded by Biomedical Engineering Programme (BEP), ASTAR, Singapore.

The successful applicant is responsible for ensuring the quality systems and regulatory compliance of a medical device to applicable Singapore/US medical device regulations from agencies in Singapore. The successful applicant will work together with regulatory lead and under the guidance of a QMS (Quality Management System) consultant to implement quality systems for the medical device. This includes Design control, Risk management, Software validation and IEC 60601-1 medical device. The final goal is to go for clinical trial in 2015 and the successful applicant will also need to support the technical team during the clinical trial.

The applicants must have a degree level education or equivalent in engineering; with the experiences in Regulatory and Quality in a technical oriented environment within the healthcare industry is preferred. The applicants should have the demonstrated abilities to take initiative, communicate with others, get results by convincing and perform thorough investigations. The applicants who have the working knowledge of relevant international ISO/device Regulations, namely IEC 60601 or ISO 13485, or FDA regulations are preferred.

Interested applicants should send a resume with evidence of work done related to the area to:

Associate Prof. Kok Kiong Tan
Department of Electrical and Computer Engineering
National University of Singapore
Singapore

Email: kktan@nus.edu.sg

Additional information about the position may be obtained by contacting Prof. Tan.

[Back to the contents](#)

8.16. Faculty: University of Rio Grande do Sul, Brazil

Contributed by: Letícia Poehls, leticia.poehls@pucrs.br

Faculty Position in Systems and Control

Organization/Institution: Pontifical Catholic University of Rio Grande do Sul (PUCRS), Porto Alegre, Brazil

Department: School of Engineering

The Graduate School of Electric Engineering at PUCRS, Brazil, invites applications for a faculty position in the area of systems, control and identification. We are seeking candidates with a Ph.D. in the related areas and a strong research potential. At the moment the graduate program has over 60 master students and is preparing its PhD program.

PUCRS is one of the top Universities in Brazil, with over 25,000 students where 4,000 of these are in Engineering. It offers a competitive salary of over US\$ 57,000.00

dollars per year. A teaching load of 2 undergrad courses and 1 graduate course per semester is expected (about 9 ours in class per week). Classes are taught in Portuguese.

Interested candidates can send detailed CV, list of publications, short statement of research, teaching interests and a cover letter including contact information of references to leticia.poehls@pucrs.br or leticia@poehls.com.

[Back to the contents](#)

8.17. Faculty: Harbin Institute of Technology, Shenzhen Graduate School, China

Contributed by: Ms. Zhao, scc.hitsz@gmail.com

Faculty Positions in Systems and Control

Organization/Institution: Harbin Institute of Technology, Shenzhen Graduate School, Shenzhen, China

Department: School of Mechanical Engineering and Automation

The Division of Control and Mechatronics Engineering at Harbin Institute of Technology, Shenzhen Graduate School (HITSZ) invites applications for several faculty positions at all ranks. We are seeking candidates with excellent credentials in the areas of systems and control, wind energy, power systems and smart grids. Applicants must have a Ph.D. or equivalent in electrical, mechanical and power systems engineering and need to show strong research record and potential.

Successful candidates will be received a joint appointment in the Center of Systems and Control. The Division currently has 11 full-time faculty members, and is expected to grow to 20 faculties in the next few years.

HITSZ offers a competitive salary and the salary levels at HITSG for these positions are substantially higher than those provided by most universities in China, with full professor in the range of RMB 170K to 230K per year, associate professor in the range of RMB130K to 160K per year, and assistant professor in the range of RMB 90K to 110K per year. Bonus is a plus for all levels, subject to faculty's performance.

Interested candidates can send detailed CV, list of publications, statement of research (no more than 3 pages), teaching interests (no more than 2 pages), and a cover letter including contact information of three references to:

Ms. Zhao
School of Mechanical Engineering and Automation
HIT Campus Shenzhen University Town
Xili, Shenzhen
Guangdong
P. R. China 518055
or email the documents to scc.hitsz@gmail.com

[Back to the contents](#)

8.18. Faculty: University of Waterloo, Canada

Contributed by: Kirsten Morris, kmorris@uwaterloo.ca

The Department of Applied Mathematics at the University of Waterloo invites applications for a Tier II Canada Research Chair. This position is at the level of a tenure-track Assistant or tenured Associate Professor. The priority areas for this position are Control Theory and Differential Equations. Exceptional candidates in other areas of research excellence in the department may be considered. The successful candidate will have an outstanding research program with the potential to become a leader in their field. We are looking for applicants with an enthusiasm for teaching at both the undergraduate and graduate level, and for the supervision of graduate students.

The Department of Applied Mathematics has 22 regular faculty and two lecturers. Research interests include scientific computing, control theory, differential equations and dynamical systems, fluid dynamics, mathematical biology and medicine, and mathematical physics. The department has a substantial graduate program with over 80 graduate students pursuing Masters or PhD degrees, and strong undergraduate programs in applied mathematics and mathematical physics. More information about the department can be found at <http://math.uwaterloo.ca/applied-mathematics/>.

Candidates should have a PhD or equivalent in Applied Mathematics, or a related field, normally obtained in the last ten years. The salary range for this position is Can\$100K-Can\$150K. Rank and salary of the appointment will be commensurate with qualifications, experience and research record. This appointment is expected to commence during the 2015 calendar year. Applicants are strongly encouraged to apply on-line as described at: <http://www.mathjobs.org/> Alternatively, applications may be sent via email to amdept@uwaterloo.ca. Applicants should submit a curriculum vitae, a research statement summarizing past work and future plans, a statement of teaching philosophy and arrange for three letters of reference to be sent directly. The deadline for receiving applications is October 15, 2014. Applications received after this date will be considered only if the position has not been filled. All Chairs are subject to review and final approval by the CRC Secretariat. More information on the Canada Research Chair program can be found at <http://www.chairs.gc.ca>. All qualified candidates are encouraged to apply; however Canadians and permanent residents will be given priority. The University of Waterloo encourages applications from all qualified individuals, members of visible minorities, native peoples, and persons with disabilities. Three reasons to apply: <https://uwaterloo.ca/watport/why-waterloo>.

[Back to the contents](#)

8.19. Faculty: Polytechnique Montréal, Canada

Contributed by: Guchuan Zhu, guchuan.zhu@polymtl.ca

The Department of Electrical Engineering at Polytechnique Montréal invites applicants for a tenure-track position at the rank of Assistant or Associate Professor. The areas of interest are:

Power systems: electromagnetic and electromechanical transients, load-flow, numerical methods for simulation and analysis of power systems from steady-state to electromagnetic transients, wideband models, real-time and off-line simulation methods, computer hardware, and architectures for accelerated computations; applications to large scale power transmission and distribution systems, the Smart Grid, power system protection, and integration of renewable energies.

Power electronics, rotating machines and transformers: advanced wideband modeling, numerical methods for the simulation of varying topology systems, real-time and off-line simulation; applications to wind turbine generators, renewable energies, the Smart Grid, FACTS, HVDC links, and electromagnetic transients in general.

Polytechnique Montréal is a French speaking institution. Candidates should have a working knowledge of that language. For further information, please see <http://www.polymtl.ca/rengen/en/offresem/index.php>

[Back to the contents](#)

8.20. Faculty: University of California, Santa Barbara, USA

Contributed by: Kelsey Ibach, kelsey.ibach@ece.ucsb.edu

The Electrical and Computer Engineering Department in the College of Engineering at the University of California, Santa Barbara invites applications for a tenure-track faculty position in control and dynamical systems, with an effective appointment date of July 1, 2015. Expertise is sought to complement existing strengths in the College's Center for Control, Dynamical Systems, and Computation.

Responsibilities include teaching at both the undergraduate and graduate levels, recruitment and supervision of graduate students, and the development of an actively funded research program of the highest quality.

A Ph.D. or equivalent degree and a demonstrated potential for excellence in teaching and research are required. Screening will begin December 15, 2014 and will continue until the position is filled.

The department is especially interested in candidates who can contribute to the diversity and excellence of the academic community through research, teaching and service.

Applicants should send a resume containing teaching and research accomplishments and contact information for three references to: <http://www.ece.ucsb.edu/employment/>

The University of California is an Equal Opportunity/Affirmative Action Employer. All qualified applicants will receive consideration for employment without regard to race, color, religion, sex, national origin, or any other characteristic protected by law including protected Veterans and individuals with disabilities.

[Back to the contents](#)

8.21. Faculty: Getulio Vargas Foundation, Brazil

Contributed by: Pierre-Alexandre Bliman, pierre.bliman@fgv.br

Faculty Positions at FGV/EMAp, Rio de Janeiro, Brazil

The School of Applied Mathematics of Getulio Vargas Foundation (FGV/EMAp) seeks candidates for full-time faculty positions, at the Assistant, Associate and Full Professor levels, which entail teaching in its Undergraduate and Graduate programs and engaging in research. Fluency in Portuguese is desired, but not essential at the outstart.

Initial monthly salaries range from R\$ 12846 to R\$ 20666 (US\$ 5660 to US\$ 9104), depending on the candidate's qualifications. Candidates from all areas of research in Applied Mathematics, Applied Computing and Data Science are welcome to apply. Themes of interest include (but are not confined to): Complex Systems, Stochastic Modelling, Probability and Statistics, Optimal Control, Optimization, Network Science, Epidemiology, Algorithmics, Artificial Intelligence, Machine Learning, Natural Language Processing, Cryptography and Computer Vision.

Applications should be sent to positions.emap@fgv.br by November 15, 2014 and should include:

- . Detailed CV
- . List of publications
- . Research plan
- . Two recommendation letters, to be sent directly to positions.emap@fgv.br (The above documents may be written either in English or in Portuguese.)

Selected candidates will be interviewed either in person or by teleconference. The final decision will be announced by December 13, 2014. Getulio Vargas Foundation is a distinguished and internationally renowned Brazilian higher-learning institution dedicated to the intellectual development of the nation.

The School of Applied Mathematics (EMAp), located in Rio de Janeiro, has as its main goal to contribute with the effort of FGV towards innovation through the use of Mathematics in its numerous areas of application, especially the Applied Social Sciences. Please write to positions.emap@fgv.br for details.

[Back to the contents](#)

8.22. Faculty: University of Minnesota, USA

Contributed by: Tryphon T. Georgiou, tryphon@umn.edu

The Department of Electrical and Computer Engineering at the University of Minnesota invites applicants for faculty positions in Control and dynamical systems; robotics and automation; image processing and computer vision; and novel sensing and actuation devices, circuits and systems. For more information please see:

<http://www.ece.umn.edu/ECEFACULTYJOBS.html>

[Back to the contents](#)

8.23. Faculty: University of California, USA

Contributed by: Qi Gong, qigong@soe.ucsc.edu

The Department of Applied Mathematics and Statistics (AMS) at the University of California, Santa Cruz (UCSC) invites applications for a tenure-track position in Applied Mathematics at the Assistant Professor level, based on a 9 month academic year. We seek outstanding applicants whose work begins with important problems in science or engineering and features the development, use and analysis of mathematical models with a strong emphasis on Nonlinear Dynamics. We seek colleagues who will interact in productive ways with the faculty in our department (especially in the focus areas of fluid dynamics, control theory, high-performance computing, mathematical biology or statistics), as well as with other researchers in the wider Baskin School of Engineering and across the whole UCSC campus.

Visit <http://www.soe.ucsc.edu/jobs/> for full description and application instructions. To ensure full consideration, the deadline for applications is December 12, 2014.

Apply at <https://recruit.ucsc.edu/apply/JPF00172>

[Back to the contents](#)

8.24. Faculty: National Taiwan University, Taiwan

Contributed by: Min-Shin Chen, mschen@ntu.edu.tw

Faculty Positions Open

The Department of Mechanical Engineering at National Taiwan University is seeking faculty members at all levels. Applicants with the following backgrounds are preferred: Energy, Control, Robotics, Mechatronics. Those who can offer the course Electronics Laboratory will have high priority. A PhD Degree (or equivalent) in ME, EE, or any other popular areas is required.

All applicants should provide

1. curriculum vitae
2. Xerox copy of Ph.D diploma
3. research plan
4. teaching plan
5. reprints of selected publications
6. undergraduate and graduate transcripts
7. contact information of three references.
8. For non-residents or foreigners, please indicate your citizenship and describe the visa status

Please send the application materials to:

Dr. Yao-Joe Yang,

Professor and Chair,

Department of Mechanical Engineering,

National Taiwan University,

No.1, Roosevelt Road, Sec.4

Taipei 10617, Taiwan.

Additional information is available on <http://www.me.ntu.edu.tw>

Questions can be emailed to Ms. Lin at yanlin@ntu.edu.tw

[Back to the contents](#)

8.25. Faculty: Boston University, USA

Contributed by: Denise Joseph, dejoseph@bu.edu

Boston University: Department of Mechanical Engineering, Open Faculty Position

The Department of Mechanical Engineering, in conjunction with the Division of Systems Engineering, invites applications for a tenure track position at the Assistant Professor level beginning Fall 2015 in the area of Robotics and Cyber-Physical Systems. The ME department is multi-disciplinary with strong expertise in systems and control, nanotechnology, materials characterization, fluid dynamics, modeling, and acoustics. In addition to robotics, application areas of interest include health, energy and sustainability, and manufacturing. The department and the division are further strengthened by their affiliations with the Center for Information and Systems Engineering (CISE) and the Division of Materials Science and Engineering. Both the Department and the College of Engineering are implementing ambitious ten-year plans, in line with Boston University's commitment as a top tier research university engaged in substantial growth in the

coming years.

Interested candidates should have a Ph.D. degree in a relevant field of engineering or applied science, and should be able to show strong potential for attracting external research funding. The applicant should be able to contribute to the graduate and undergraduate programs in Mechanical Engineering and the graduate programs in Systems Engineering. Salary is competitive and commensurate with experience.

For additional information, please go to: <http://www.bu.edu/me>

To apply, please go to: <https://academicjobsonline.org/ajo/jobs/4701>

Application deadline is December 31, 2014; however, review of applications will begin immediately so applicants are encouraged to apply early.

We are an equal opportunity employer and all qualified applicants will receive consideration for employment without regard to race, color, religion, sex, national origin, disability status, protected veteran status, or any other characteristic protected by law. We are a VEVRAA Federal Contractor.

[Back to the contents](#)

8.26. Research Scientist/Engineer: Intelligent Fusion Technology, Inc, Maryland, USA

Contributed by: Genshe Chen, gchen@intfusiontech.com

Intelligent Fusion Technology (IFT) is a Research and Development (R&D) company focused on information fusion technologies from basic research to industry transition and product development and support. IFT is located in Germantown, Maryland. We are working on modeling, control, communication, signal/image/speech/text processing, security, autonomy, and decision making in networked systems. We are looking for talented developers majoring in engineering (e.g., EE, ME, AE), computer science, applied mathematics, and/or physics to join our multidisciplinary team as full-time employees or interns. In particular, we are looking for candidates having direct experience in one or several areas as follows:

Engineering Design

- Pattern recognition, image processing, video analysis;
- Full motion video/wide area motion imagery (WAMI) exploitation;
- Wireless communication;
- Cognitive radio network;
- Cyber security;
- Social network analysis, text analytics;
- RF theory, propagation, and antenna design

Control and Mathematics

- Game theoretic estimation and control;
- Graph theory;
- Machine learning;
- Robotics dynamics and control;
- Guidance, navigation and control for aerospace vehicle.

Software Design

- Cloud computing;
- Service Oriented Architecture;
- Open Architecture/ Open sources government off-the-shelf (GOTS) development;
- Geospatial Information System;
- Human Factors display technology and integration.

Candidates with a Ph. D. degree are preferred. The pay is competitive and can be negotiated.

For interested candidates, please send your resume to hr@intfusiontech.com.

[Back to the contents](#)

8.27. Senior Research Engineer: Lockheed Martin's Advanced Technology Laboratories, USA

Contributed by: Kingsley Fregene, kocrege@ieee.org

Senior Research Engineer

Description:

This position is for a senior research engineer in the Robotics Group at Lockheed Martin's Advanced Technology Laboratories (LM ATL). Leading and/or working as part of a team of engineers and scientists (often in collaboration with academia and other advanced technology organizations), the Senior Research Engineer will develop perception, planning, and autonomy technologies that embody emerging technological principles in robotics and unmanned systems, applied to a growing portfolio of R&D programs at Lockheed Martin ATL. The successful candidate will be able to demonstrate a history of creative and innovative problem solving in robotics technology areas such as long-term autonomous operation, planning, perception, navigation, state estimation, localization and mapping. The candidate will also have demonstrable experience leading complex robotics and unmanned systems projects, and will be a motivated individual with an entrepreneurial mindset who is interested in proposing and advocating for new R&D ideas within Lockheed Martin and with external clients.

Located in Cherry Hill, NJ (minutes from Philadelphia) with a second site in Arlington, VA (just outside Washington, DC), Lockheed Martin ATL is the advanced research facility of Lockheed Martin Corporation - a global enterprise with core businesses in systems integration, space, aeronautics, and technology services. The mission of the Advanced Technology Laboratories is to enhance the Corporation's competitive edge by developing new technologies and performing applied research in robotics, informatics, spectrum systems and cyber.

Basic Qualifications:

- Master's degree or higher in technical disciplines such as Robotics, Computer Science, Artificial Intelligence, Computer Engineering, Electrical Engineering, or Mechanical Engineering
- Candidate must have either job experience or strong academic concentration (e.g. thesis) in developing and implementing algorithms for autonomous robots and unmanned systems
- Candidate must have hands-on experience with programming, configuring, integrating, and testing of robotic or unmanned systems (interfaces, sensors, etc.)
- Technology experience with several of the following: state estimation; Bayesian reasoning; sensor exploitation; perception (machine vision or point cloud processing); simultaneous localization and mapping; robotic behavior control; machine learning; path/trajectory planning; control systems synthesis

- Strong oral and written communication skills (as evidenced by proposals, published articles, presentation at conferences, etc.)
- Strong team leadership skills, demonstrated via academic or job-based project work
- Strong programming skills in C/C++, Python and Matlab/Simulink
- Ability to obtain a U.S. Security clearance

Additional Desired Skills:

- Experience writing proposals or grants
- Experience with the Robot Operating System (ROS) or other robotic architecture standards
- Experience working with U.S. DOD Science & Technology organizations

Contact: Dr. Kingsley Fregene kocrege@ieee.org