E-Letter on Systems, Control, & Signal Processing
Issue 370, June 2019

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Welcome to Issue 370 of the CSS E-letter.

- To submit new articles, visit article submissions on the E-Letter website.
- To **subscribe**, send an empty email to eletter-css-join@lists.it.utsa.edu and you will be automatically subscribed to the CSS E-Letter.
- To **unsubscribe**, please send a blank email to eletter-css-leave@lists.it.utsa.edu and you will be automatically unsubscribed.
- **Note**: The CSS website is getting a new look and as a result, for the time being, the E-Letter will be available only via this PDF.

The next E-Letter will be mailed out at the beginning of July 2019.

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6.29 Research Associate: University of New South Wales, Australia

1 IEEE CSS Headlines

1.1. CSS Technically Cosponsored Events

Contributed by: Luca Zaccarian, CSS AE Conferences, zaccarian@laas.fr

The following items have been recently included in the list of events technically cosponsored by the IEEE Control Systems Society:

- 57th Allerton Conference on Communication, Control, and Computing. Monticello, United States. Sep 24–Sep 27, 2019. https://allerton.csl.illinois.edu/

- 24th International Conference on Methods and Models in Automation and Robotics (MMAR 2019). Miedzyzdroje, Poland. Aug 26 - Aug 29, 2019. http://mmar.edu.pl/

- 8th International Conference on Systems and Control (ICSC'19). Marrakech, Morocco. Oct 23 - Oct 25, 2019. http://lias.labo.univ-poitiers.fr/icsc/icsc2019/

- 23rd International Conference on System Theory, Control and Computing - ICSTCC 2019. Sinaia, Romania. Oct 9 - Oct 11, 2019. http://icstcc2019.cs.upt.ro/

- 27th Mediterranean Conference on Control and Automation. Akko, Israel. Jul 1 - Jul 4, 2019. https://med19.net.technion.ac.il/

For a full listing of CSS technically cosponsored conferences, please visit http://ieeecss.org/conferences/technically-cosponsored and for a list of the upcoming and past CSS main conferences please visit http://ieeecss.org/conferences

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1.2. IEEE Control Systems Society Publications Content Digest

Contributed by: Kaiwen Chen, kaiwen.chen16@imperial.ac.uk

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://ieeecss.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. We also include links to the Society's sponsored Conferences to give readers a preview of upcoming meetings.

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1.3. IEEE Transactions on Automatic Control

Contributed by: Alessandro Astolfi, ieeetac@imperial.ac.uk

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IEEE Transactions on Automatic Control
Volume 64 (2019), Issues 5 and 6 (May and June)

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2 Miscellaneous

2.1. Italian PhD School on Automatic Control, Italy

Contributed by: Elena Valcher, meme@dei.unipd.it

The Italian PhD school on Automatic Control "SIDRA 2019" will be held in Bertinoro:
- Beginning on Monday, July 15 at 9:00
- Ending on Saturday, July 20 at 13:00.

The two themes of this edition are:
- Model reduction by moment matching for linear and nonlinear systems
Coordinated by Alessandro Astolfi (Universita' di Roma, Tor Vergata, e Imperial College, London, UK)
- Intelligent Collaborative Robotics
Coordinated by Paolo Rocco e Andrea Zanchettin (Politecnico di Milano)

All the relative information is available in the web page:
http://sidra2019.dei.unibo.it/

where in due time (beginning of July) you will be able to access to all the teaching material. The classes will be taught in English. Participants will be housed at the University Centre of Bertinoro (Ce.UB). The available rooms will be assigned based on the booking date. Information about the Center is available on the web page http://www.ceub.it/; the contact person at the Ce.UB is Ms. Monica Michelacci (e-mail: mmichelacci@ceub.it).

The participation fee includes the registration fee and the cost of staying with half board (bed, breakfast and lunch). Rates are 520,00 Euro for accommodation in a double room and 650,00 Euro for single room accommodation (from the afternoon of Sunday, July 14 till the afternoon of Saturday, July 20). The request to participate has to be submitted through the application form that will be available on the web from Ce.UB and it represents a formal commitment to attend the school.
The registration process follows the following steps:
- June 7, 2019: Deadline for submission of application (see http://sidra2018.dei.unibo.it/registration/) (in this web site there is also other general information on the school)
- June 14, 2019: communications of admission to school will be sent out
- June 28, 2019: deadline for payment of the fee, to be paid according to the procedures that will be indicated on the entry form (which will be available on the web Ce.UB). Upon departure, the Centre will release a receipt of the expenses incurred. For logistics contact Ms. Michelacci.

All students attending the school will receive a certificate of participation. For those who are interested, a final test will also be offered. The School welcomes foreign PhD students. With our best regards.
Claudio Melchiorri (University of Bologna)
Maria Elena Valcher (University of Padova)

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2.2. Workshop on Control Engineering and Synthetic Biology, UK

Contributed by: Antonis Papachristodoulou, antonis@eng.ox.ac.uk

International Workshop on Control Engineering and Synthetic Biology - 9-11 September 2019, Worcester College, Oxford

Designing and implementing effective feedback control in living cells has the potential to dramatically change biotechnology and synthetic biology. However, before this potential is realised, a number of theoretical and practical challenges must be addressed which lie at the interface between control engineering and synthetic biology.

This will be the topic of an International Workshop on Control Engineering and Synthetic Biology, which will be held on the 9th, 10th and 11th September 2019 in the Sultan Nazrin Shah Centre at Worcester College, Oxford. This workshop will discuss both the challenges and the opportunities that Synthetic Biology offers. A specific focus will be on the "next grand challenges" in the field of synthetic biology and how control engineering can address them. An exceptional group of speakers, world leaders in synthetic biology and control engineering, will present recent progress, identify challenges and share their vision of where synthetic biology is headed and how the control engineering community can contribute to delivering its promise. This follows on from previous very successful events that we organised at the Royal Academy of Engineering and the University of Oxford.

This event is supported by the Engineering and Physical Sciences Research Council (EPSRC) under projects EP/M002454/1 and EP/M002187/1. Please visit
http://sysos.eng.ox.ac.uk/wiki/index.php/SynBioControl2019 for more information, the list of speakers, and to register.

We would be grateful if you could disseminate this information to your colleagues and within your institution.

Antonis Papachristodoulou, Harrison Steel and Guy-Bart Stan

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2.3. Summer School of Automatic Control, France

Contributed by: Mirko Fiacchini, mirko.fiacchini@gipsa-lab.fr

40-th Summer School of Automatic Control on Control of Computing Systems
Grenoble, France
September, 09-13, 2019

More information at http://www.gipsa-lab.fr/summerschool/auto2019/home.html

Confirmed lecturers:
Karl-Erik Årzén, Lund University, Sweden
Lydia Y. Chen, TU Delft, Netherlands
Gwenaël Delaval, Université Grenoble Alpes, France

Niklas Karlsson, Verizon Media, CA USA
Eric Kerrigan, Imperial College London, UK
Stéphane Lafortune, University of Michigan, MI USA
Daniel Simon, INRIA Montpellier, France
Eric Rutten, INRIA Grenoble Rhône Alpes, France
Bogdan Robu, Université Grenoble Alpes, France

Self-managing or autonomic computing systems are answering to the need to address dynamic variations in the computing, memory or communication loads, as well as in their environment, the evolutions in their computing infrastructure (shared or subject to faults) or (re)adaptations of their initial functionalities. Their administration, usually performed by human administrators, needs to be automated in order to be efficient, safe and highly reactive. The Autonomic Computing paradigm using self-manageable closed loops emerged in the early 2000, targeting distributed system and addressing these questions from a computer science point of view. A particularly insightful way of building such control loops is to use control systems theory, which employs a large spectrum of modelling, estimation and control techniques (continuous, discrete, stochastic), classically applied mostly to electro-mechanical, physical systems, but much less usually to computing systems.

The aim of this Summer School is to offer the opportunity of a scientific forum from control systems, informatics, distributed systems, around the various challenges and methodologies dedicated to the control of computing systems. To this end, domain experts will be present to share their expertise and cutting-edge research results. The School will consist of a series of surveys, lectures and research talks taught in English, completed by a series of applications sessions.

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3 Books

3.1. MPC-Based Reference Governors

Contributed by: Laura Burgess, laura.burgess@springer.com

MPC-Based Reference Governors by Martin Klaučo and Michal Kvasnica
ISBN: 978-3-030-17404-0
July 2019, Springer
Hardcover, 137 pages, $169.99/€139,99
https://www.springer.com/gb/book/9783030174040

This monograph focuses on the design of optimal reference governors using model predictive control (MPC) strategies. These MPC-based governors serve as a supervisory control layer that generates optimal trajectories for lower-level controllers such that the safety of the system is enforced while optimizing the overall performance of the closed-loop system.

The first part of the monograph introduces the concept of optimization-based reference governors, provides an overview of the fundamentals of convex optimization and MPC, and discusses a rigorous design procedure for MPC-based reference governors. The design procedure depends on the type of lower-level controller involved and four practical cases are covered:
• PID lower-level controllers;
• linear quadratic regulators;
• relay-based controllers; and
• cases where the lower-level controllers are themselves model predictive controllers.
• For each case the authors provide a thorough theoretical derivation of the corresponding reference governor, followed by illustrative examples.

The second part of the book is devoted to practical aspects of MPC-based reference governor schemes. Experimental and simulation case studies from four applications are discussed in depth:
• control of a power generation unit;
• temperature control in buildings;
• stabilization of objects in a magnetic field; and
• vehicle convoy control.
• Each chapter includes precise mathematical formulations of the corresponding MPC-based governor, reformulation of the control problem into an optimization problem, and a detailed presentation and comparison of results.

The case studies and practical considerations of constraints will help control engineers working in various industries in the use of MPC at the supervisory level. The detailed mathematical treatments will attract the attention of academic researchers interested in the applications of MPC.
Contents

1. Reference Governors
2. Mathematical Preliminaries and General Optimization
3. Model Predictive Control

4. Inner Loops with PID Controllers
5. Inner Loops with Relay-Based Controllers
6. Inner Loops with Model Predictive Control Controllers
7. Boiler–Turbine System
8. Magnetic Levitation Process
9. Cascade MPC of Chemical Reactors
10. Conclusions and Future Research

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3.2. Analytical Design of PID Controllers

Contributed by: Laura Burgess, laura.burgess@springer.com

Analytical Design of PID Controllers by Ivan D Diaz-Rodriguez, Sangjin Han, and Shankar P. Bhattacharyya
ISBN: 978-3-030-18227-4
July 2019, Springer
Hardcover, 302 pages, $149.99/€119,99
https://www.springer.com/gb/book/9783030182274

This monograph presents a new analytical approach to the design of proportional-integral-derivative (PID) controllers for linear time-invariant plants. The authors develop a computer-aided procedure, to synthesize PID controllers that satisfy multiple design specifications. A geometric approach, which can be used to determine such designs methodically using 2- and 3-D computer graphics is the result.

The text expands on the computation of the complete stabilizing set previously developed by the authors and presented here. This set is then systematically exploited to achieve multiple design specifications simultaneously. These specifications include classical gain and phase margins, time-delay tolerance, settling time and H-infinity norm bounds. The results are developed for continuous- and discrete-time systems. An extension to multivariable systems is also included.

Analytical Design of PID Controllers provides a novel method of designing PID controllers, which makes it ideal for both researchers and professionals working in traditional industries as well as those connected with unmanned aerial vehicles, driverless cars and autonomous robots.

Contents

1. Introduction to Control
2. Stabilizing Sets for Linear Time-Invariant Continuous-Time Plants
3. Stabilizing Sets for Ziegler–Nichols Plants
4. Stabilizing Sets for Linear Time-Invariant Discrete-Time Plants
5. Computation of Stabilizing Sets from Frequency Response Data
6. Gain and Phase Margin-Based Design for Continuous-Time Plants
7. Gain–Phase Margin-Based Design of Discrete-Time Controllers
8. PID Control of Multivariable Systems
9. H-Infinity Optimal Synthesis for Continuous-Time Systems
10. H-Infinity Optimal Synthesis for Discrete-Time Systems

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3.3. Computer-Controlled Systems with Delay

Contributed by: Laura Burgess, laura.burgess@springer.com

Computer-Controlled Systems with Delay by Efim N. Rosenwasser, Bernhard Lampe, and Torsten Jeinsch
ISBN: 978-3-030-15041-9
June 2019, Springer
Hardcover, 519 pages, $179.99/€149,99
https://www.springer.com/gb/book/9783030150419

Computer-Controlled Systems with Delay is a systematic study of the problems of analysis and synthesis for multidimensional sampled-data (SD) systems with delay. It is based on the frequency polynomial method, in which the concept of a parametric transfer matrix (PTM) plays a key role. Until now, no alternative general methods have been available to solve the above problems.

The text is divided into three parts:
• background information from the theory of polynomial and rational matrices, helps the reader to acquire the basic understanding necessary to use the main content of the book without addressing additional sources;
• methods for the mathematical description of multidimensional SD systems with delay, based on the concept of the PTM; and
• optimization methods for multidimensional SD systems with delay, including H2 and L2 optimization as well as H2 optimization for colored input signals.

The monograph is completed by three appendices. An algorithm for constructing the set of pathological sampling periods for a continuous SISO object with delay is provided first. MATLAB®-toolbox algorithms representing methods described in the book and application examples for selected optimization problems are given in the second. A solution to the problem of guaranteeing the required performance in a class of stochastic disturbances for SD systems with delay is considered in the third.
Computer-Controlled Systems with Delay is intended for engineers, scientists and teachers working in modern control theory. It will also benefit post-graduate students taking courses in related disciplines. The book continues the description of the authors' research results on developing methods for SD systems theory which are based on the PTM concept and published in the monographs Computer Controlled Systems and Multivariable Computer-controlled Systems.

Contents

7. H2 Optimization and Fixed Poles of the Standard Model for SD Systems with Delay
8. H2 Optimization and Fixed Poles for the Standard Model of SD Systems with Delay Under Colored Noise
9. L2 Tracking Problem for the Standard Model of SD Systems with Delay
10. Mathematical Description and Optimization for the Generalized Standard Model of SD Systems with Delay

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4 Journals

4.1. Unmanned Systems

Contributed by: Qing Wang, sunnyqing1020@163.com

Unmanned Systems
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Volume 07, Issue 01 (January 2019)
https://www.worldscientific.com/toc/us/current

Papers:

-Editorial: Special Issue on New Advances on Formation Control of Autonomous Vehicles. Shiyu Zhao, Ziyang Meng, Ronghao Zheng and Zhengtao Ding, pages: 1–2
- Time-Varying Formation Control for Time-Delayed Multi-Agent Systems with General Linear Dynamics and Switching Topologies. Wei Xiao, Jianglong Yu, Rui Wang, Xiwang Dong, Qingdong Li and Zhang Ren, pages: 3–13
- Distributed Observer-Based Formation Tracking Control of Multi-Agent Systems with Multiple Targets of Unknown Periodic Inputs. Ya Zhang, Yaoyao Wen, Feifei Li and Yangyang Chen, pages: 15–23
- Distributed Back-Stepping Consensus Protocol for Attitude Synchronization and Tracking on Undirected Graphs. Yuanjin Yu, Zhenhong Li, Zhaohua Yang and Zhengtao Ding, pages: 25–32
- Affine Formation Algorithms and Implementation Based on Triple-Integrator Dynamics. Okechi Onuoha, Hilton Tnunay, Zhenhong Li and Zhengtao Ding, pages: 33–45
- Multiple Quadrotors Formation Flying Control Design and Experimental Verification. Jianan Wang, Zhengyang Zhou, Chunyan Wang and Jiayuan Shan, pages: 47–54
- Velocity Obstacle Approaches for Multi-Agent Collision Avoidance. James A. Douthwaite, Shiyu Zhao and Lyudmila S. Mihaylova, pages: 55–64

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4.2. IEEE/CAA Journal of Automatica Sinica

Contributed by: Yan Ou, yn.ou@ia.ac.cn

IEEE/CAA Journal of Automatica Sinica
Volume 6 (2019), Issue 3 (May)
http://ieeexplore.ieee.org/xpl/RecentIssue.jsp?punumber=6570654

- A Reflection of Future in History: Introduction to The Alfred North Whitehead Laureate Lecture. F.-Y. Wang, page 609
- The Need for Fuzzy AI. J. M. Garibaldi, page 610

Review:

- A Survey of Model Predictive Control Methods for Traffic Signal Control. B.-L. Ye, W. M. Wu, K. Y. Ruan, L. X. Li, T. H. Chen, H. M. Gao, and Y. B. Chen, page 623

Papers:

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4.3. Systems & Control Letters

Contributed by: Lusia Veksler, lveksler@ucsd.edu

Volumes 127 and 128
May and June 2019

Papers:

- On Lyapunov functionals for linear functional difference equations, D. Melchor-Aguilar, Pages 1-5
- The viability kernel of dynamical systems with mixed constraints: A level-set approach, Pedro Gajardo,, Cristopher Hermosilla, Pages 6-12
- Model-invariant viability kernel approximation, Mahdi Yousefi, Klaske van Heusden, Ian M. Mitchell, Guy A. Dumont, Pages 13-18
- Imaginary characteristic roots of neutral systems with commensurate delays, Fernando de Oliveira Souza, Pages 19-24
- Deterministic continuous-time Virtual Reference Feedback Tuning (VRFT) with application to PID design, Simone Formentin, Marco C. Campi, Algo Carè, Sergio M. Savaresi, Pages 25-34
- Families of solutions of algebraic Riccati equations, Daniele Alpago, Augusto Ferrante, Pages 35-38
- Well-posedness and stabilization of the Benjamin–Bona–Mahony equation on star-shaped networks, Kaïs Ammari, Emmanuelle Crépeau, Pages 39-43
- A globally convergent method to compute the real stability radius for time-delay systems, Francesco Borgioli, Wim Michiels, Ding Lu, Bart Vandereycken, Pages 44-51
- Distributed output-feedback model predictive control for multi-agent consensus, David A. Copp, Kyriakos G. Vamvoudakis, João P. Hespanha, Pages 52-59
- On the relationship between spline interpolation, sampling zeros and numerical integration in sampled-data models, Claudia J. Sánchez, Juan I. Yuz, Pages 1-8
- MPC-based defense strategy for distributed networked control systems under DoS attacks, Hongjiu Yang, Ying Li, Li Dai, Yuanqing Xia, Pages 9-18
- Well-posedness of infinite-dimensional linear systems with nonlinear feedback, Anthony Hastir, Federico Califano, Hans Zwart, Pages 19-25
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- Control of biological models with hysteresis, Sergey A. Timoshin, Toyohiko Aiki, Pages 41-45
- Cooperative output regulation for a group of nonlinear systems with limited information exchange: A distributed observer approach, Bomin Huang, Ziyang Meng, Pages 46-55
- Nonlinear system identification via data augmentation, Simone Formentin, Mirko Mazzoleni, Matteo Scandella, Fabio Previdi, Pages 56-63

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4.4. Asian Journal of Control

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

Asian Journal of Control
Vol. 21, No. 3
May, 2019
https://onlinelibrary.wiley.com/toc/19346093/2019/21/3

Regular Papers:

1. Paper Title: Average Consensus for Multi-Agent System with Measurement Noise and Binary-Valued Communication (Pages: 1043-1056)
Authors: Ximei Wang, Ting Wang, Changbao Xu, Yanlong Zhao
2. Paper Title: Some Controllability Aspects for Iterative Learning Control (Pages: 1057-1063)
Authors: Patrik Leissner, Svante Gunnarsson, Mikael Norrlöf
3. Paper Title: Feedback Linearization Control for Systems with Mismatched Uncertainties via Disturbance Observers (Pages: 1064-1076)
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4. Paper Title: Design and Implementation of a Hierarchical-Clustering CMAC PID Controller (Pages: 1077-1087)
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5. Paper Title: 3D Multi-Agent Formation Control with Rigid Body Maneuvers (Pages: 1088-1099)
Authors: Pengpeng Zhang, Marcio de Queiroz
6. Paper Title: Disturbance Decoupling Control for Flexible Air-Breathing Hypersonic Vehicles with Mismatched Condition (Pages: 1100-1110)
Authors: Feng Hao, Dong Zhang, Lin Cao, Shuo Tang
7. Paper Title: Robust Tracking Controller Design for a Class of Block Lower-Triangular Systems (Pages: 1111-1124)
Authors: Yuan Pu, Zongying Shi, Yisheng Zhong
8. Paper Title: Guaranteed-Performance Consensualization for High-Order Lipschitz Nonlinear Multi-Agent Systems with Balanced Directed Switching Topologies (Pages: 1125-1141)
Authors: Tang Zheng, Jianxiang Xi, Zhiliang Fan, Guangbin Liu
9. Paper Title: Observer-Based H-Infinity Synchronization Control for Input and Output Time-Delays Coronary Artery System (Pages: 1142-1152)
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10. Paper Title: A New Residual Evaluation Function Based Fault Diagnosis for a Kind of Nonlinear Systems (Pages: 1153-1165)
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11. Paper Title: A Sensitivity-Based Construction Approach to Variance Minimization of Markov Decision Processes (Pages: 1166-1178)
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12. Paper Title: Variable Structure Predefined-Time Stabilization of Second-Order Systems (Pages: 1179-1188)
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15. Paper Title: Reduced-order Observer for State-dependent Coefficient Factorized Nonlinear Systems (Pages: 1216-1227)
Authors: Fernando Ornelas-Tellez, Alma Y. Alanis, Jorge D. Rios, Mario Graff
16. Paper Title: Full-Order Sliding-Mode Control of Rigid Robotic Manipulators (Pages: 1228-1236)
Authors: Yong Feng, Minghao Zhou, Xinghuo Yu, Fengling Han
17. Paper Title: Quadrotor Control Via Robust Generalized Dynamic Inversion and Adaptive Non-Singular Terminal Sliding Mode (Pages: 1237-1249)
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18. Paper Title: Pinning Control of the Coupled Distributed Parameter System with Time Delay (Pages: 1250-1259)
Authors: Kun Yuan, Kaifeng Zhang, Jinde Cao
19. Paper Title: Synchronization of Switched Neural Networks with Time-varying Delays via Sampled-data Control (Pages: 1260-1269)
Authors: Yuchen Han, Jie Lian
20. Paper Title: Decoupling control for wastewater treatment process based on recurrent fuzzy neural network (Pages: 1270-1280)
Authors: Jun-Fei Qiao, Gai-Tang Han, Hong-Gui Han, Cui-Li Yang, Wei Li
21. Paper Title: Generalized Nonlinear Stiffness Identification on Controlled Mechanical Vibrating Systems (Pages: 1281-1292)
Authors: Francisco Beltran-Carbajal, Gerardo Silva-Navarro
22. Paper Title: Robust Trajectory-Tracking Control of a PVTOL under Crosswind (Pages: 1293-1306)
Authors: Carlos Aguilar-Ibanez, Hebertt Sira-Ramirez, Miguel S. Suarez-Castanon, Ruben Garrido
23. Paper Title: Lyapunov-Based Stability of Mix-Valued Logical Networks (Pages: 1307-1317)
Authors: Jing Zhao, Fanwei Meng, Zhenbin Liu
24. Paper Title: A New Full-Order Sliding Mode Observer Based Rotor Speed and Stator Resistance Estimation for Sensorless Vector Controlled Pmsm Drives (Pages: 1318-1327)
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25. Paper Title: Autonomous Adaptive Control System for Airplane Landing (Pages: 1328-1341)
Authors: Mihai Lungu, Romulus Lungu
26. Paper Title: Global Adaptive Neural Network Control of Underactuated Autonomous Underwater Vehicles with Parametric Modeling Uncertainty (Pages: 1342-1354)
Authors: Zheping Yan, Man Wang, Jian Xu
27. Paper Title: Necessary and Sufficient Stability Criterion and Stabilization for Positive 2-D Continuous-Time Systems with Multiple Delays (Pages: 1355-1366)
Authors: Zhaoxia Duan, Imran Ghous, Bing Wang, Jian Shen
28. Paper Title: Disturbance Rejection Control for a Vibrating String System (Pages: 1367-1376)
Authors: Zhijia Zhao, Ying Xiao, Zhifu Li, Hua Liu

29. Paper Title: An Optimal Tracking Performance of MIMO NCS with Quantization and Bandwidth Constraints (Pages: 1377-1388)
Authors: Ling-Li Cheng, Xi-Sheng Zhan, Jie Wu, Tao Han

Brief Paper:

1. Paper Title: A Filter-based Clock Synchronization Protocol for Wireless Sensor Networks (Pages: 1389-1403)
Authors: Wenlun Yang, Minyue Fu

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4.5. International Journal of Control, Automation, and Systems

Contributed by: Keum-Shik Hong, journal@ijcas.com

International Journal of Control, Automation, and Systems (IJCAS)
ISSN: 1598-6446
http://www.springer.com/engineering/robotics/journal/12555
Indexed in: Science Citation Index Expanded (SciSearch), Journal Citation Reports/Science Edition, SCOPUS, INSPEC, Google Scholar, ProQuest, Academic OneFile, Current Contents/Engineering, Computing and Technology, EI-Compendex, OCLC, SCImago, Summon by Serial Solutions

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- Extended PI Feedback Tracking Control for Synchronous Motors Francisco Beltran-Carbajal*, Ruben Tapia-Olvera, Irvin Lopez-Garcia, Antonio Valderrabano Gonzalez, Julio Cesar Rosas-Caro, and Jose Luis Hernandez Avila pp.1346-1358
- A Multi-loop Switching Controller for Aircraft Gas Turbine Engine with Stability Proof Amin Imani* and Morteza Montazeri-Gh pp.1359-1368
- Three-dimensional Adaptive Sliding Mode Guidance Law for Missile with Autopilot Lag and Actuator Fault Guiying Li, Zhigang Yu*, and Zhongxian Wang pp.1369-1377
- Metaheuristics-based Multi-objective Design of Global Robust Optimal Sliding Mode Control of Discrete Uncertain Systems Wafa Boukadida, Anouar Benamor, Hassani Messaoud, and Patrick Siarry* pp.1378-1392
- Design and Stability Analysis of a Discrete-time Sliding Mode Control for a Synchronous DC-DC Buck Converter Mahnaz Janipoor Deylamani, Parviz Amiri*, and Mohammad Hossein Refan pp.1393-1407
- Adaptive Backstepping Based Fault-tolerant Control for High-speed Trains with Actuator Faults Shangkun Liu, Bin Jiang*, Zehui Mao, and Steven X. Ding pp.1408-1420
- Adaptive Fault-Tolerant Neural Control for Large-scale Systems with Actuator Faults Jianye Gong, Bin Jiang, and Qikun Shen* pp.1421-1431
- Robust Adaptive Dynamic Surface Control of Nonlinear Time-varying Systems in Strict-feedback Form Mojgan Elmi, Heidar Ali Talebi*, and Mohammad Bagher Menhaj pp.1432-1444

- Adaptive Controller Design Based On Predicted Time-delay for Teleoperation Systems Using Lambert W Function Soheil Ganjefar, Mohammad hadi Sarajchi, Seyed Mahmoud Hoseini, and Zufeng Shao* pp.1445-1453
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Michael Hernandez, Carlos E. Capovilla, Ivan R.S. Casella, Alfeu J. Sguarezi Filho, An analysis of performance by co-simulation of a wind PMSG using Z-source inverter and coded wireless power control for smart grid applications
Georges Bastin, Jean-Michel Coron, Amaury Hayat, Peipei Shang, Boundary feedback stabilization of hydraulic jumps
Jörn Kretschmer, Paul D. Docherty, Shaun M. Davidson, Bernhard Laufer, Knut Möller, Comparing three differing approaches to identify a three-parameter gas-exchange model with noisy data
Wen Kang, Bao-Zhu Guo, Arbitrary decay for boundary stabilization of Schrödinger equation subject to unknown disturbance by Lyapunov approach

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4.19. CFP: Special Issue on Navigation and Control of UAVs

Contributed by: Houria Siguerdidjane, Houria.Siguerdidjane@centralesupelec.fr

Special Issue “Navigation and Control of UAVs”:

https://www.mdpi.com/journal/robotics/special_issues/ncuavs

Dear colleagues, you are kindly invited to contribute to this SI and about 10 distinguished scholars or recognized experts in the field, may be invited to contribute for free of charge in this SI.

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4.20. CFP: IEEE/ASME Transactions on Mechatronics

Contributed by: Ye Yuan, yye@hust.edu.cn

Call for Papers Focused Section on AI-based monitoring in smart manufacturing

Smart manufacturing, which takes advantages of advanced information technologies and rapidly developing artificial intelligence (AI) into entire production processes, offers improved production quality and cost reduction through effective monitoring and managing the manufacturing systems holistically in real time. Sensory data (including vibration, pressure, temperature and energy) that support AI algorithms and intelligent mechatronics, play an important role in prognoses before faults occur, help to prevent production halt, and save valuable resources while guaranteeing optimal manufacturing performance. Successful implementation of Al-based mechatronics allows regular maintenance to be replaced by condition-based or predictive maintenance. In an effort to disseminate current AI advances for intelligent manufacturing, a focused session in this area will be published in IEEE/ASME Transactions on Mechatronics (TMECH), which will provide a platform for scientists, engineers and industrial practitioners to present their latest theoretical and technological advancements in the design of advanced and/or emerging health monitoring and management, fault diagnosis and prognosis, practical implementation, and various case studies of the AI-based manufacturing applications of these techniques.
The topics of interest within the scope of this Focused Section include but not limited to:
- Modeling of complex mechanical systems especially with component fault/failure
- Data-science including data mining and data analytics
- Advanced signal processing and machine perception of mechanical systems
- Machine learning techniques for smart manufacturing
- Theoretical development in fault detection, isolation, and identification
- Advanced approaches for health monitoring and management
- Smart sensors, online monitoring and diagnosis in practical applications
- Machinery prognostic health management (PHM) including abnormal detection, health stage division, and remaining life prediction
- Transferable approaches for generalization on insufficient data
- Implementation practices of AI-monitoring for real world manufacturing processes for successful case study in detail.

Manuscript preparation
Papers must contain original contributions and be prepared in accordance with the journal standards. Instructions for authors are available online at: http://www.ieee-asme-mechatronics.org/

Manuscript submission
Manuscripts should be submitted online at: https://mc.manuscriptcentral.com/tmech-ieee. The cover letter should report the following statement: "This paper is submitted for possible publication in the Focused

Section on AI-based monitoring in smart manufacturing". All manuscripts will be subjected to the regular TMECH peer review process. Any questions relating to this focused section can be sent to one of the Guest Editors below via emails.

Important dates:
Paper Submission Dec. 1, 2019
Completion of First Review Mar. 1, 2020
Submission of Revised Papers Apr. 15, 2020
Completion of Final Review Jun. 1, 2020
Submission of Final Manuscripts and Copyright Forms Jul. 1, 2020
Publication Oct., 2020

Guest editors:
Han Ding, Lead Guest Editor (Huazhong University of Science and Technology) Email: dinghan@hust.edu.cn
Robert Gao, Guest Editor (Case Western Reserve University) Email: robert.gao@case.edu
Alf Isaksson, Guest Editor (ABB) Email: alf.isaksson@se.abb.com
Robert G. Landers, Guest Editor (Missouri University of Science and Technology) Email: landersr@mst.edu
Thomas Parisini, Guest Editor (Imperial College London) Email: t.parisini@imperial.ac.uk
Ye Yuan, Guest Editor (Huazhong University of Science and Technology) Email: yye@hust.edu.cn

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4.21. CFP: IET Cyber-Systems & Robotics

Contributed by: Chao Xu, cxu@zju.edu.cn

Editorial:
Jian Chu; Rob Buckingham; Max Meng, Editors-in-Chief, IET Cyber-Systems & Robotics
We are honored to serve the inaugural Editors-in-Chief of the new journal, IET Cyber-Systems & Robotics https://digital-library.theiet.org/content/journals/iet-csr
In the year of 1948, Norbert Wiener published the famous book "Cybernetics: or Control and Communication in the Animal and the Machine" which defines cybernetics as a cutting-edge discipline of synergic studies between control and communication in both animals and machines. In the 1950s, cybernetics was more like a philosophical concept rather than an easily available technology of that moment. With the rapid progress in many areas such as automatic control, artificial intelligence, neuroscience, and communication within the past decades, nowadays the magnificent picture sketched by Wiener in his "Cybernetics" book is becoming a reality. Among uncountable examples, brain-computer interface (BCI) is really the most exciting representative of cybernetics, where bi-directional information flow exists between the bio-minds and manmade machines.

Now, it is our great pleasure to welcome you to the very first issue of IET Cyber-Systems & Robotics. From this issue, you will read the history and recent progress of the aerodynamic mechanisms in bio-inspired micro air vehicles (MAVs) [1]; a survey of the state-of-the-art algorithms of optimal motion planning [2]; a method of flow field inference based on image sequence data and PDE model [3]; a novel reinforcement learning (RL) framework involving traditional cybernetics [4]; and a policy-search-based method for efficient thrust generation of robotic fish caudal fins [5]. We expect IET Cyber-Systems & Robotics to become

a unique journal on promoting multidisciplinary research of cybernetics and robotics, to reflect the most recent evolution of Wiener's "Cybernetics" in an information-rich world. With the effort and contribution from researchers around the world, we believe that IET Cyber Systems & Robotics journal has a high possibility of becoming an exciting forum for unbounded technological innovations on any cybernetic systems and robotics.

[1] Aerodynamic mechanisms in bio-inspired micro air vehicles: a review in the light of novel compound layouts, https://digital-library.theiet.org/content/journals/10.1049/iet-csr.2018.0003

[2] A survey of optimal motion planning, https://digital-library.theiet.org/content/journals/10.1049/iet-csr.2018.0003

[3] Visual inference of flow flux via free surface PDE model and image sequence assimilation, https://digital-library.theiet.org/content/journals/10.1049/iet-csr.2018.0002

[4] Time-in-Action Reinforcement Learning, https://digital-library.theiet.org/content/journals/10.1049/iet-csr.2018.0001

[5] Efficient thrust generation in robotic fish caudal fins using policy search, https://digital-library.theiet.org/content/journals/10.1049/iet-csr.2018.0005

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5 Conferences and Workshops

5.1. Mediterranean Conference on Control & Automation, Israel

Contributed by: Daniel Zelazo, dzelazo@technion.ac.il

27th Mediterranean Conference on Control & Automation
July 1 - 4, 2019 Akko, Israel
https://med19.net.technion.ac.il

Registration is Now Open!

Dear Friends and Colleagues, The 27th Mediterranean Conference on Control and Automation (MED 2019) will be held on the 1-4 of July 2019 in Akko, Israel. Akko is situated on the Phoenician northern part of the Mediterranean coast of Israel, with an exceptional history and rich cultural heritage, spanning over 4,000 years. It has been designated by UNESCO as a World Heritage site. MED 2019 will include tutorials and workshops, a technical program of presentations, keynote lectures and social events. It offers a great opportunity for academics, researchers and industrial players working in control and automation to network together, present research progress and address new challenges. The conference will include a wide range of topics on systems, automation, robotics and control including theory, related hardware, software and communication technologies, as well as applications.

Accepted and presented papers will be published in the digital conference proceedings and made available on IEEE Xplore.

Keynote Speakers:
- Shimon Marom, Technion
- Martina Maggio, Lund University
- Florian Dorfler, ETH

Important Dates:
- 15 May 2019: Final submissions due.
- Early Registration: May 27, 2019

We look forward to your participation!

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5.2. International Workshop on Advanced Motion Control, Norway

Contributed by: Michael Ruderman, michael.ruderman@uia.no

IEEE International Workshop on Advanced Motion Control (AMC2020) will be held on April 20-22, 2020, at the University of Agder, Campus Kristiansand, in Norway.
http://ewh.ieee.org/conf/amc/2020/

AMC2020 is 16th in a series of biennial international workshops on Advanced Motion Control, started

in 1990 in Yokohama, Japan, and since there uniting an always young and enthusiastic research community grown around the omnipresent motion control technologies and applications. Following to the last AMC2018 in Tokyo, Japan, our wish is to continue bringing together the researchers from both academia and industry and to maintain a highest scientific conference level, with enriching meetings and discussions and interesting and memorable events and experiences.

Main Topics::
- Advanced motion control in mechatronics
- Compliant and flexible robotics
- Intelligent and adaptive motion control systems
- Haptics and robotics in medical applications
- Hybrid and discrete motion control systems
- Actuators and sensors in motion control
- Motion control systems with human-in-the-loop
- Visual servo systems in motion control
- Micro- and nano-mechatronic systems and control
- Related topics involving motion dynamics and control

Important Dates:
- Submission of Special Session proposals: August 31, 2019
- Submission of full papers: October 15, 2019
- Notification of acceptance: January 10, 2020
- Submission of final manuscripts: February 7, 2020

Call for Papers:
http://ewh.ieee.org/conf/amc/2020/download/CfP_AMC2020_.pdf

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5.3. International Conference on Digital Signal Processing, Spain

Contributed by: Mohammad Banat, banat@just.edu.jo

The 2nd International Conference on Digital Signal Processing (MIC-SigProc 2019) is intended to represent a major forum for researchers, academicians, professionals, and students from all over the world to meet in the beautiful and culturally rich city of Barcelona in Spain to present their latest research results, and to exchange new ideas and practical experiences in the most up-to-date areas of this exciting field. As part of the Global 2019 Congress on Electrical Engineering, MIC-SigProc 2019 will be held in Barcelona, Spain in the period 18-20 October 2019. You may view more details at the conference website here:

http://mosharaka.net?Area=Conferences&Page=CongSite&Conf=106

The type of articles that will be considered for publication include case studies, reviews, as well as theoretical and empirical research. Only papers with top technical quality will be accepted; a fact that is assured by a world-class technical program committee (TPC) and a thorough and rigorous peer review process. All submitted manuscripts are peer reviewed, and acceptance/rejection decisions about a manuscript are

based mainly on the importance, originality, clarity, and contribution of the submission to knowledge in the conference scope. You may view the TPC of MIC-SigProc 2019 here:

http://mosharaka.net/?Area=Conferences&Page=CongSite&Sec=ArchiTek2019&Div=Committee&Conf=106

Papers to be published at MIC-SigProc 2019 will be indexed by Google Scholar. The conference is also being considered for indexing by both Scopus and Compendex. Authors of best-reviewed papers will be given the opportunity to publish extended versions of their papers in special issues of top-ranked journals.

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5.4. European Workshop on Advanced Control and Diagnosis, Italy

Contributed by: Silvio Simani and Elena Zattoni, silvio.simani@unife.it

15th European Workshop on Advanced Control and Diagnosis (ADS 2019)
21-22 November 2019, Bologna, Italy
https://eventi.unibo.it/acd2019

The Organizing Committee has the pleasure of inviting you to submit papers and invited session proposals for the 15th European Workshop on Advanced Control and Diagnosis, which will be held in Bologna, Italy, on November 21-22, 2019.

The submission site is now open https://ocs.springer.com/misc/home/ACD2019 Information for authors are available at
https://eventi.unibo.it/acd2019/paper-submission
Submission Deadline: June 30, 2019
Invited Session Proposals Deadline: May 31, 2019
Notification of Acceptance: July 10, 2019
Final Paper Submission: July 31, 2019
Early Registration Deadline: July 31, 2019
Workshop Dates: November 21-22, 2019

Paper awards
Best Student Paper Award https://eventi.unibo.it/acd2019/best-student-paper-award
Best Industry Paper Award
https://eventi.unibo.it/acd2019/best-industry-paper-award

Plenary Speakers
Sarah Spurgeon (University College London) - Thursday, November 21, hrs 9.00-10.00
Alessandro Giua (Università di Cagliari & Aix-Marseille Université) - Friday, November 22, hrs 9.00-10.00

The technical program will be announced early September. Authors are invited to submit papers and invited session proposals in all areas of advanced control and fault diagnosis. Papers will be reviewed by at least three independent reviewers and acceptance/ rejection will be decided by the IPC. At least one author is required to register at the conference and present his/her paper for this to be included in the proceedings. By uploading their manuscript, the authors certify that the submission represents original work that

neither has appeared or has been accepted to appear elsewhere for publication, nor is under review for another publication in its current form.

The conference proceedings will be published online in a volume of the Springer series "Lecture Notes in Control and Information Sciences – Proceedings" https://eventi.unibo.it/acd2019/paper-submission.

Full Registration: 250,00 Euro before 31 July 2019 (280,00 Euro after 31 July 2019).
Student Registration: 150,00 Euro before 31 July 2019 (170,00 Euro after 31 July 2019).
Industry Day: 150,00 Euro before 31 July 2019 (170,00 Euro after 31 July 2019).

Contact:
Dr. Elena Zattoni
Department of Electrical, Electronic and Information Engineering "G. Marconi"
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Viale Risorgimento 2, 40136 Bologna, Italy
Phone: +39 051 2093023
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Workshop Secretariat: acd2019@unibo.it
Workshop Website: https://eventi.unibo.it/acd2019

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5.5. International Conference on Mechatronics and Robotics, Indonesia

Contributed by: Tua Tamba, ttamba@unpar.ac.id

2019 International Conference on Mechatronics, Robotics and Systems Engineering (MoRSE 2019)
4-6 December 2019; Bali, Indonesia
https://morse.unpar.ac.id/
Technical Co-Sponsor: IEEE Indonesia Section CSS/RAS Joint Chapter
Paper Submission Dates: 1 June - 30 September, 2019

Call for Papers:

MoRSE 2019 conference is an international conference which covers recent advances and development in the areas of Mechatronics, Robotics and Systems Engineering. We invite students, researchers, scientists and engineers from research/educational institutions and industries to submit manuscripts on subjects that are related to the conference scope which include (but are not limited to):
-Mechatronics systems: theory & application
-Mechatronics modeling, simulation and design
-Robotics: theory and applications
-Unmanned and autonomous systems
-Sensors, actuators and drivers systems
-Measurement, data acquisition and diagnostics
-Optimization/mathematical programming
-Artificial intelligent -

Intelligent transportation systems
-Multi-agent systems
-Systems biology/ecology
-Operations research/decision theory
-Dynamical systems: theory & application
-Control systems: theory & application
-Process Control
-Power electronics systems
-Information & communication systems
-Cyber-physical systems
-Vibration and noise control
-Energy harvesting systems
-Microelectromechanical systems (MEMS)
-Network systems
-Sensor data fusion
-Estimation & filtering

Bali, known worldwide as The Island of God, is one of the world's most popular island holiday destination. Located in the Indonesian archipelago, the island is well-known for its magnificent mountains, rugged coastlines, volcanic hillsides, black sandy beaches and exotic temples and palaces. The organizing committee is committed to give its best to provide rich program and ensure pleasant stay for the participants of MoRSE 2019 conference. Detailed information about the conference are available on the conference web at https://morse.unpar.ac.id/

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5.6. International Robotic Sailing Conference, China

Contributed by: cxu@zju.edu.cn, Chao Xu

The 12th World Robotic Sailing Championship (WRSC) and International Robotic Sailing Conference (IRSC) will be held August 25th to 31st in Ningbo, China. The theme is "connected maritime intelligence" and teams from research institutions and companies are welcomed to enter. The rules and competition for the 2019 competition are now available on our official website: https://www.roboticsailing.org/2019/rules/ Mailing list of the competition is https://groups.google.com/forum/#!forum/wrsc-discuss.

Teams can register for the competition at
https://www.roboticsailing.org/2019/register/
Early bird registration before the 1st of June is entitled a full discount for free entry. The international travel grant provides funding for overseas teams. Complete your registration before the 1st of June and follow the application steps. The Organising Committee will review the technical progress report and notified your status within 15 days.

A brief introduction on getting started with robotic sailing is available at
https://robotic-sailing-intro.readthedocs.io/en/latest/
We can also help purchase a standard robotics sailing kit for teams that don't have a boat yet. The second Robotic Sailing Academy will be organised in Ningbo around the mid of June to provide basic training of

sailing physics and robotics. A detailed time will be announced soon. In addition, tutorial video and the online forum will be available for technical assistance.

Important dates:
15th June, 2019: deadline of the early bird registration (registration fee waive)
15th June, 2019: deadline for international travel grant application (same as above)
20th June, 2019: announcement of awardee of the travel grant
25th – 31st August: WRSC & IRSC

Feel free to ask us any question at wrsc2019@outlook.com with a copy to cxu@zju.edu.cn
We are looking forward to seeing you soon in Ningbo, China.
Thank you and good luck!
Best regards, The Organising Committee of the WRSC-2019

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5.7. International Conference on Control, Automation and Systems, South Korea

Contributed by: Zee Yeon Lee, conference@icros.org

2019 19th International Conference on Control, Automation and Systems (ICCAS 2019), October 15–18, 2019 ICC Jeju, Korea, http://2019.iccas.org
Call for Papers: http://icros.org/data/download/ICCAS2019/ICCAS2019_CFP.pdf
The aim of the ICCAS is to bring together researchers and engineers worldwide to present their latest works, and disseminate the state-of-the-art technologies related to control, automation, robotics, and systems.

IMPORTANT DATES
- May 31, 2019 : Submission of Regular Papers (3 6 pages)
- June 30, 2019 : Submission of Organized Session/Mini-symposium Proposal with Papers and Research Poster Papers (1 2 pages)
- July 31, 2019 : Notification of Acceptance
- August 31, 2019 : Submission of Final Camera-ready Papers

PAPER SUBMISSION:
The conference invites three types of submission: “Regular Paper”, “Research Poster Paper”, and “Organized (Invited) Session/Mini-symposium Paper.”
Indexed in: IEEE Xplore, EI compendex, and SCOPUS

PLENARY SPEAKERS
- Frank Doyle (Harvard Univ., USA)
- Jun-Ichi Imura (Tokyo Institute of Technology, Japan)
- Eduardo F. Camacho (Univ. of Seville, Spain)
- Tianyou Chai (Northeastern Univ., China)
- Dawn Tilbury (Univ. of Michigan, USA)

ICCAS 2019 will be held on October 15–18, 2019 at ICC Jeju in Jeju, Korea. Jeju is a very beautiful and relaxing island, and selected as the World Natural Heritage. The aim of ICCAS 2019 is to bring together

professors, researchers, engineers and students worldwide to present their recent works and discuss the state-of-the-art technologies related to control, automation, robotics and systems.

General Chair: Chung Choo Chung (Hanyang Univ., Korea)
General Co-Chair: Jay H. Lee (KAIST, Korea)
Program Chair: Dong Eui Chang (KAIST, Korea)
Organized by Institute of Control, Robotics and Systems (ICROS)

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6 Positions

6.1. PhD: University of Gävle, Sweden

Contributed by: Niclas Björsell, niclas.bjorsell@hig.se

Open positions for two PhD students on digitalization and Robotic Exoskeletons, Electrical Engineering.

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6.2. PhD: University of Lorraine, France

Contributed by: Marion Gilson, marion.gilson@univ-lorraine.fr

Open PhD position at LORIA/CRAN, University of Lorraine, Nancy, France on "Statistical learning theory and hybrid dynamical system identification."

Advisors: Fabien Lauer and Marion Gilson
Email : fabien.lauer@loria.fr and marion.gilson@univ-lorraine.fr
Profile: The candidate should have a solid background in mathematics (probability, statistic) and a high affinity for machine learning, control theory.

More details : https://members.loria.fr/FLauer/files/phdsubject.pdf
Dates: Beginning: October 2019. Duration: 3 years.

How to apply: Applications should be declared as soon as possible. The position may be closed as soon as a competent candidate has applied. Please include the CV, marks and a list of (at least) two references to one of the advisors.

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6.3. PhD: Western University, Canada

Contributed by: A. Tayebi, atayebi@lakeheadu.ca

A PhD position in Nonlinear Control Systems is available in the ECE department, Western University, London, Ontario, Canada.

Please send your CV to Prof. A. Tayebi: atayebi@lakeheadu.ca
http://flash.lakeheadu.ca/∼tayebi

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6.4. PhD: Graz University of Technology, Austria

Contributed by: Gernot Kubin, g.kubin@ieee.org

Nine PhD positions in Dependable Internet of Things at Graz University of Technology, Austria

The Excellence Research Center "Dependable Internet of Things in Adverse Environments" at Graz University of Technology (TU Graz) has been established in 2016 and has been extended until 2021 after a successful midterm evaluation. For further information see http://dependablethings.tugraz.at. The mission of this long-term center is to foster a highly interdisciplinary research team spanning the computer

science and electrical engineering faculties to lay the scientific foundations for an Internet of Things that is highly reliable, safe, and secure in order to enable critical applications that require guaranteed performance and long-term operation even in adverse environments.

The center is seeking to fill 9 University Assistant positions with excellent candidates, who will pursue their PhD working closely together in three sub-projects that focus on the following topics:

1. Dependable Wireless Communication and Localization: one position in wireless networking (Institute for Technical Informatics), one position in physical layer signal processing (Signal Processing and Speech Communication Lab), and one position in tunable microwave frontends (Institute for Microwave and Photonic Engineering).
2. Verified Dependability by Design: one position in embedded security and one position in formal verification (both at Institute of Applied Information Processing and Communications), one position in real-time operating systems (Institute for Technical Informatics), one position in model-based testing (Institute for Software Technology).
3. Dependable Multi-Agent Systems: one position in robotics (Institute for Software Technology), and one position in information and control theory (Signal Processing and Speech Communication Lab).

For more information see
https://www.tugraz.at/projekte/dependablethings/jobs/

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6.5. PhD: Norwegian University of Science and Technology, Norway

Contributed by: Sebastien Gros, sebastien.gros@ntnu.no

We are opening 2 PhD positions at the Dept. of Cybernetics, NTNU, Norway, on the topic of Reinforcement Learning based on Model Predictive Control. We are looking for excellent candidates with a strong background in control and MPC. A background on Reinforcement Learning is a plus. The positions will approach theoretical, algorithmic and practical problems. NTNU offers highly competitive salaries and benefits. Read more about the position using the following link (scroll down for details):
https://www.jobbnorge.no/en/available-jobs/job/170327/phd-candidate

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6.6. PhD: Norwegian University of Science and Technology, Norway

Contributed by: Sigurd Skogestad, skoge@ntnu.no

Three PhD positions at NTNU in Norway on Real-time optimization

NTNU is Norway's main institution for engineering, and in the Department of Chemical Engineering there are three PhD positions available. Two are in the field of Machine learning (deadline: 10 June 2019) and one in the field of Production Optimization of oil and gas (deadline: 17 June 2019). All positions are supervised by Professor Sigurd Skogestad. The PhD students will be integrated in the Process Systems Engineering Group at NTNU, which has more than 30 Faculty, PhD students and Master students.

For all three positions:
1. The successful candidate should have a background in process systems engineering.

2. Good written and oral English language skills.

The PhD candidate salary is normally NOK 449400 before tax per year. From the salary, 2% is deducted as a contribution to the Norwegian Public Service Pension Fund. The period of employment is 3 years with the possibility of until one year extension with 25% teaching duties. Please submit your application electronically via jobbnorge.no with your CV, diplomas and certificates.

More details about the two positions on Machine learning(ML): The positions are in the field of "Intelligent use of data for process optimization using machine learning" and the project is financed by the Norwegian research council through the IKTPLUSS program. The project aim is to utilize process data to develop machine-learning based models (also known as digital-twins), that can be used for developing optimization tools. To address the computational robustness issues of solving optimization problems, we also aim to approximate computationally intensive optimization problems using machine-learning algorithms. Several companies are joining the project, including AkerBP, Kongsberg Digital and Perstorp (Sweden). Applications can be towards oil and gas industries, chemical production, human waste (sludge) management, fish farming and development of generic tools for industrial use.

ML Position 1. Grey-box machine-learning models (feature engineering)
ML Position 2. Surrogate optimizers for computationally robust and fast online optimization.

More information and application:
https://www.jobbnorge.no/en/available-jobs/job/169691/two-phd-positions
Application deadline: 10 June 2019
More details about the position on Production optimization:
The project is part of the SUBPRO center which is a large 8-year research-based innovation program in the field of subsea processing and production. Industrial partners in SUBPRO include Equinor, Lundin, AkerBP, Neptune Energy, Aker Solutions, DNVGL and Kongsberg Digital. The overall objective of the PhD project is to achieve lost-cost production with low carbon footprint towards the final aim of achieving zero emissions oil and gas production. Scientifically, the PhD project focuses towards online process optimization using both existing software infrastructure and advanced optimization tools as well as machine learning and data analytics.
More information and application:
https://www.jobbnorge.no/en/available-jobs/job/170442/phd-position-production-optimization
Application deadline: 17 June 2019

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6.7. PhD: Norwegian University of Science and Technology, Norway

Contributed by: Dinesh Krishnamoorthy, dinesh.krishnamoorthy@ntnu.no

Two PhD positions at NTNU on "process optimization using machine learning"
Supervisor: Professor Sigurd Skogestad
Application deadline: 03 June 2019

NTNU is Norway's main institution for engineering. In the Department of Chemical Engineering there are two PhD position in the field of "Intelligent use of data for process optimization using machine learning."

The project aim is to utilize process data to develop machine-learning based models (also known as digital-twins), that can be used for developing optimization tools. To address the computational robustness issues of solving optimization problems, we also aim to approximate computationally intensive optimization problems using machine-learning algorithms. Several companies are joining the project, including AkerBP, Kongsberg Digital and Perstorp (Sweden). Applications can be towards oil and gas industries, chemical production, human waste (sludge) management, fish farming and development of generic tools for industrial use.

Position 1. Grey-box machine-learning models (feature engineering)
Position 2. Surrogate optimizers for computationally robust and fast online optimization.

Requirements:
1. The successful candidate should have a background in process systems engineering.
2. Good written and oral English language skills

The project is financed by the Norwegian research council through the IKTPLUSS program. The PhD students will be integrated in the Process Systems Engineering Group at NTNU, which has about 30 Faculty, PhD students and Master students. PhD candidate salary is normally NOK 449400 before tax per year. From the salary, 2% is deducted as a contribution to the Norwegian Public Service Pension Fund.

The period of employment is 3 years with the possibility of until one year extension with 25% teaching duties. Please submit your application electronically via jobbnorge.no with your CV, diplomas and certificates.

https://www.jobbnorge.no/en/available-jobs/job/169691/two-phd-positions
Application deadline: 10 June 2019
Questions about the position can be directed to Sigurd Skogestad, e-mail sigurd.skogestad@ntnu.no

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6.8. PhD: Norwegian University of Science and Technology, Norway

Contributed by: Dinesh Krishnamoorthy, dinesh.krishnamoorthy@ntnu.no

PhD position at NTNU on "Production optimization"
Supervisor: Professor Sigurd Skogestad
Application deadline: 17 June 2019

NTNU is Norway's main institution for engineering, and in the Department of Chemical Engineering there is a PhD position in the field of "Field-wise production optimization". The project is part of the SUBPRO center which is a large 8-year research-based innovation program in the field of subsea processing and production. Industrial partners in SUBPRO include Equinor, Lundin, AkerBP, Neptune Energy, Aker Solutions, DNVGL and Kongsberg Digital.

The overall objectice of the PhD project is to achieve lost-cost production with low carbon footprint towards the final aim of achieving zero emissions oil and gas production. Scientifically, the PhD project focuses towards online process optimization using both existing software infrastructure and advanced optimization

tools as well as machine learning and data analytics.

This project will build upon the PhD work of Dinesh Krishnamoorthy on "Production optimization under uncertainty" where we developed different algorithms that can use such transient measurements efficiently for optimization. One of the deliverables of the new project is to apply these methods to industrial cases. This project also aims to develop new machine learning based algorithms for online production optimization, which when combined with the existing first-principle models result in what is called a grey-box model. Such a model is more flexible and has potential for further savings. Furthermore, we want to develop further software tools and methods in order to optimize production from a field while reducing emissions.

The project is financed by the Norwegian research council and SUBPRO through the SUBPRO program. The PhD student will be integrated in the SUBPRO program as well with the Process Systems Engineering Group at NTNU, which has about 30 Faculty, PhD students and Master students.

Requirements:
1. The successful candidate should have a background in process systems engineering.
2. Good written and oral English language skills

PhD candidate salary is normally NOK 449400 before tax per year. From the salary, 2% is deducted as a contribution to the Norwegian Public Service Pension Fund.

The period of employment is 3 years with the possibility of until one year extension with 25% teaching duties. Questions about the position can be directed to Sigurd Skogestad, e-mail: sigurd.skogestad@ntnu.no

Please submit your application electronically via jobbnorge.no with your CV, diplomas and certificates.
Application deadline: 17 June 2019

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6.9. PhD: University of Seville, Spain

Contributed by: Eduardo F. Camacho, efcamacho@us.es

The Automatic Control Department of the University of Seville has three PhD open positions in the following topics:

PhD position 1: Design, Modelling and simulation fleet of mobile sensors
PhD position 2: Dynamic models of solar plants with spatial irradiance estimation.
PhD position 3: Coalitional MPC algorithms for large scale processes
Primary supervisor: Eduardo F. Camacho.
Duration: Up to three years for PhDs starting September 2019
Positions funded by the European Research Council under the Advanced Research Grant OCONTSOLAR.

Context and Objectives

Technology developments in many fields advance much faster than the methodologies needed to apply them in industry. This is the case of many devices used in our daily life such as sensors installed in cell phones or drones. These devices can supply a huge amount of information over extended geographical areas that can be used to extend the capability of control systems to heights unforeseen in the past. OCONTSOLAR aims to develop new control methods using mobile sensors mounted on drones and unmanned ground vehicles (UGV) as an integral part of the control systems. Sensors mounted on vehicles have been used for surveillance and for gathering information, however these mobile sensors have not been used so far as an integral part of control systems. Solar power plants will be used as a case study, with the aim of optimizing their operation using spatial irradiance estimations and predictions. Many results will be applicable to other systems such as traffic control in highways and cities, energy management in buildings, micro-grids, agriculture (irrigation and plague control) and flood control.

Work description

PhD position 1: designing and modelling a fleet of mobile sensors mounted on drones and UGVs and their corresponding docking stations. Different granularity models (ranging from simple models for planning the missions to more precise models for simulating the mobile sensors) of the mobile UGVs, drones and sensors will be developed. The design will be based on proven off-the-shelf products able to provide a technically sound solution to produce a spatially distributed estimation of the irradiance

PhD position 2: developing dynamical models of solar plants with a spatially distributed solar irradiance. The modelling stage will require the use of complexity reduction techniques in order to get models that can be used both for simulation and control. A library of elements will be built, and these elements will be validated in two reference plants.

PhD/PostDoc position 3: developing cooperative MPC algorithms for large scale systems formed by dynamically coupled units with changing topologies. Coalitional control ideas will be considered for this purpose. In order to form the different coalitions of cooperating controllers, different approaches will be used.

Background of the candidate

PhD positions: The candidate must hold a Master in engineering or computer science with a strong background on control. A prior experience in the technical areas related to the applied PhD position is desired. Programming skills and a good level of English are also needed.
Salary and others:

- PhD positions 20 keuros. It is a 1 year position that can be extended to 3 years in total. - Application closing date is 30th of June 2019 or until finding a suitable candidate. Expected start date is September 2019 or soon thereafter.

Applications: please submit the following (in PDF format) to Prof. Eduardo F. Camacho (efcamacho@us.es, cc: svallejo@us.es). Indicate in the subject "Application PhD #" .
a) CV, b) a one page summary of your research interests and motivation, c) a copy of your most recent transcript (PhDs), d) contact information for up to three references to assess your research potential and e)

copies of your three most relevant publications (PostDocs).

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6.10. PhD: GIPSA-lab, Grenoble, France

Contributed by: Paolo Frasca, paolo.frasca@gipsa-lab.fr

A PhD position is available at GIPSA-lab, Grenoble, France, to perform research on "Modeling and Systems-theory for the Disorders Of Online Media" in the context of a national interdisciplinary project that connects control theory and media studies.

Supervisors: Paolo Frasca (GIPSA-lab, Grenoble) and Tommaso Venturini (CIS, Paris)
Duration: 3 years
Salary: 1800 euros per month after taxes
Key dates: The position is available immediately. To receive full consideration, applications should include a *motivation letter* and should be received no later than June 15.

Context: This work will be carried out in the context of the interdisciplinary project DOOM "Systems-theory for the Disorders Of Online Media" that is funded by CNRS within the framework of the 80—PRIMEinitiative to mark CNRS' 80th anniversary. The student will be enrolled in the EEATS doctoral school of Grenoble University with main research affiliation with the GIPSA-lab research center in Grenoble. To perform the desired interdisciplinary work, the student shall divide his/her time between GIPSA-lab and the Center for Internet and Society in Paris.

Candidate profile: Given the interdisciplinary nature of the position, we shall consider candidates that are committed to an interdisciplinary research and my have backgrounds ranging from Applied Mathematics and Control Systems to formal Political Science, Economics, quantitative Sociology.

Topic description: Online social media have a key role in contemporary society and the debates that take place on them are known to shape political and societal trends. For this reason, pathological phenomena like the formation of "filter bubbles" and the viral propagation of "fake news" are observed with concern. The scientific assumption of this project is that these information disorders are direct consequences of the inherent nature of these communication media, and more specifically of the collective dynamics of attention thereby. In order to capture these dynamics, this project advocates the mathematical modelling of the interplay between the medium (algorithmic component) and the users (human component). The resulting dynamics shall be explored by a system-theoretic approach, using notions such as feedback and stability. This quantitative and rigorous approach is meant to not only unlock fundamental insights but also deliver suggestions on suitable policies to manage the media.

Information also available at https://bit.ly/2W549sz

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6.11. PhD: Hamburg University of Technology, Germany

Contributed by: Herbert Werner, h.werner@tuhh.de

The Institute of Control Systems at Hamburg University of Technology is inviting applications for two PhD positions, salary according to TVL-13.

Position 1: Development of data-driven control schemes for nonlinear systems, stability and performance analysis, research on the interface between machine learning and control theory.

Position 2: Cooperative control of large-scale multi-agent systems, synthesis of distributed control strategies with stability and performance analysis, distributed predictive control.

Both positions are funded for four years. Candidates will have a MS degree in Control Systems, Electrical Engineering, Applied Mathematics or related disciplines. Familiarity with robust control theory and linear parameter-varying (LPV) systems will be helpful. Participation in teaching control courses at bachelor and master level is expected

Review of applicants will begin immediately and will continue until the positions are filled. Informal inquiries: Prof. Herbert Werner, h.werner@tuhh.de

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6.12. PhD: The University of Sheffield, UK

Contributed by: George Konstantopoulos, g.konstantopoulos@sheffield.ac.uk

Fully Funded PhD (UK/EU applicants only) on "Nonlinear control and optimisation in micro-grids" at The University of Sheffield, Department of Automatic Control and Systems Engineering, starting in September 2019. The studentship offers a 3.5-year funded* PhD scholarship open to all UK/EU applicants.

The project deals with the development of novel nonlinear hierarchical control strategies for a local community-type micro-grid to enable maximum utilisation of Distributed Energy Resources (DERs), such as renewables, storage and active loads. The main aim is to analyse the accurate nonlinear dynamic model of a micro-grid consisting of both producers and consumers in a local neighbourhood and design primary and supervisory control techniques to enhance system stability and resilience. Research work will focus on the design of decentralised and distributed control methods to optimise power flow and enable energy trading between the users in order to maximise the financial and environmental benefits of the entire community. The project combines fundamental research in terms of control design, stability analysis and optimisation, and applied research in micro-grids that includes the verification and validation of the developed techniques through hardware-in-the-loop and experimental implementation, using the state-of-the-art laboratory facilities of the University of Sheffield.

Candidate Requirements:
Prospective applicants must have a minimum undergraduate Honours degree (UK 2:1 or better) or MSc (Merit or Distinction) in Control Engineering, Electrical Engineering, Mathematics or other related disciplines from a reputable institution. Candidates with a background in one or more of the following topics are particularly encouraged to apply: nonlinear systems theory, control and optimisation, power system analysis, knowledge of DSP programming. EU applicants must submit IELTS results (with an overall score 6.5 or higher, with a minimum of 6 in each component) or TOEFL score of 88+ within their application. More details on entry requirements can be found at:
https://www.sheffield.ac.uk/acse/research-degrees/applyphd

Applying:
To apply, please submit a PhD application using the University's online application system via the Postgraduate online application form link at the following:
http://www.sheffield.ac.uk/postgraduate/research/apply/applying

Within the application, please state Dr George Konstantopoulos and Dr Paul Trodden as your preferred supervisors and state the project title as 'Nonlinear control and optimisation in micro-grids'. Should you have any queries about the position, please contact either Dr George Konstantopoulos on g.konstantopoulos@sheffield.ac.uk or Dr Paul Trodden on p.trodden@sheffield.ac.uk.

Deadline for applications: 9am, Friday 28th June 2019.

Shortlisted Candidates will be required to attend an interview. The interview will consist of i) a short test of knowledge in systems and control theory, ii) discussion with the supervisory team. Interviews will take place in the week commencing on 8th July 2019. This studentship is fully funded for 3.5 years for UK/EU nationals only, covering full tuition fees and offering a tax-free stipend at the EPSRC rate (£15,009 for 2019/20).

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6.13. PhD: University of Stuttgart, Germany
Contributed by: Carsten Scherer, carsten.scherer@mathematik.uni-stuttgart.de

PhD Position in Mathematical Systems Theory, University of Stuttgart

In Carsten Scherer's research group we offer a PhD position related to a project embedded in the project network 4 of the Cluster of Excellence Data-Integrated Simulation Science (SimTech) at the University of Stuttgart.

Project title: Optimization-based design of data-integrated controllers

Short description: Integrating machine learning and data in the design of controllers is highly promising for mastering future complex technological systems. The goal of this project is to develop novel control synthesis methodologies that permit to exploit the benefit of data and learning on top of classical control and model structures. A particular emphasis is put on the largely open questions of how to provide rigorous stability and robustness guarantees for the overall learning-control system.

Conditions of employment: The current funding period is for 3 years. The PhD student will participate in the training and research activities of the SimTech Graduate School. As an employee of the University of Stuttgart, the PhD student will receive a competitive salary including all social benefits of an employment in Germany.

If you are interested, please send
- a complete resume
- a letter of motivation
- the names of two professional referees

until June 30 to
Ms. Elisabeth Schaettgen (administration)
University of Stuttgart
Mathematical Systems Theory
Pfaffenwaldring 5A
70569 Stuttgart
elisabeth.schaettgen@mathematik.uni-stuttgart.de

https://www.imng.uni-stuttgart.de/mst/index.html
https://www.simtech.uni-stuttgart.de/en/

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6.14. PhD: Chalmers University of Technology, Sweden

Contributed by: Changfu Zou, changfu.zou@chalmers.se

PhD student position in adaptive Li-ion battery modelling for high-performance usage (Chalmers University of Technology, Gothenburg, Sweden)

The position is with the Automatic Control group in the division of Systems and Control. Aiming for sustainable solutions, the group is involved in many research projects on energy savings using automatic control methods. In general the projects are carried out in collaboration with other research groups, institutes and industry.

The interest and use of battery based electric, hybrid electric and plug-in hybrid electric vehicles, are steadily increasing and are gradually replacing the traditional combustion engine based vehicles due to environmental concern and legislation. In order to use the batteries optimally, and minimize the use of fuel and energy, advanced control algorithms are required in the battery management system (BMS). Its perhaps most important function is to estimate and predict the charge and discharge powers allowed in order to not prematurely age or damage the battery cells. Today, it is at best calculated using simple equivalent circuit models and fixed limits on voltage and current, which have been experimentally determined on beforehand. The actual limits for when the cells are getting damaged, however, are dependent on potentials and conditions inside the cell. These limits are in fact time-varying and depend on the operating conditions and the status (age) of the cell. The goal of this project is to develop a method for how to derive adaptive model based algorithms estimating these interior limits and also the aging properties of the cells. Using the algorithms the power capacity of the battery can then be better utilized; charging can be made faster, the life-time increased and the energy management in hybrid vehicles be improved.

The Automatic Control research group at the department has a well established research group in the area of electrified vehicles. This project is in part a collaboration between the Automatic Control research group at Chalmers and Volvo Cars, who will provide aged cells and data. The position is at Chalmers but you will be working in close cooperation with researchers, battery experts and developers at both Chalmers and Volvo Cars. There will also be a cooperation with Department of Physics who provides cell expertice, experimental facilities and will aid in the construction of test cells. The position is for four years of PhD studies extended up to five years to accomodate teaching performed at the Department

Details and application link: https://bit.ly/2HNX6vx

For questions, please contact:
Torsten Wik, Automatic Control, Department of Electrical Engineering,
tw@chalmers.se,
Tel: +46 (0)31 772 5146
Changfu Zou, Automatic Control, Department of Electrical Engineering, changfu@chalmers.se,
Tel: +46 (0)31 772 3392
Sebastien Gros, Automatic Control, Department of Electrical Engineering, grosse@chalmers.se,
Tel: +46 (0)31 772 1555

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6.15. PhD: Coventry University, UK

Contributed by: Hafiz Ahmed, hafiz.ahmed@coventry.ac.uk

Coventry University (CU) is inviting applications from suitably-qualified graduates for a fully-funded PhD studentship in partnership with Oxford Vision and Sensor technology (OVST). The successful candidates will be joining the project "Vision Based Robotic Guidance and Monitoring Using 3D Sensor and Industrial Internet of Things". The project will be based in the Control, Sensing and Learning laboratory at Coventry. This laboratory is part of the Institute of Future Transport and Cities (FTC) and is dedicated to the application of control, sensing and learning technologies for various industrial applications.

Please contact Dr. Hafiz Ahmed (e-mail: hafiz.ahmed@coventry.ac.uk) with cc to Dr. Dina Laila (e-mail: dina.laila@coventry.ac.uk) to find out more about the project. Details can also be found in the following link:
https://www.jobs.ac.uk/job/BSD641/phd-studentship-vision-based-robotic-guidance-and-monitoring-using-3d-sensor-and-industrial-internet-of-things

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6.16. PhD: University of New South Wales, Australia

Contributed by: Daoyi Dong, daoyidong@gmail.com

Scientia PhD Scholarship at UNSW: Machine learning for quantum estimation and control

This project aims to develop effective estimation and control methods using machine learning for quantum systems. Benchmarking and controlling quantum systems have been an important task in next generation technology. However, efficient methods for the estimation and control of complex quantum systems are lacking. The project will advance key knowledge and provide effective methods to enable us to identify and control complex quantum systems for wide applications arising in this emerging technological revolution. The research outcomes will make an important contribution to accelerating practical applications of future quantum technology.

The scholarship provides the following support:
• Work on high quality research projects with the best supervisory teams in world class environments
• $40K a year stipend for four years

• Tuition fees covered for the full 4 year period
• Coaching and mentoring will form a critical part of your highly personalised leadership development plan
• Up to $10k each year to build your career and support your international research collaborations

More application information could be found at:
http://www.2025.unsw.edu.au/apply/
If you are interested in applying for the scholarship, please submit your application online, or contact A/Prof Daoyi Dong (d.dong@unsw.edu.au), Dr Hidehiro Yonezawa (h.yonezawa@unsw.edu.au) or Prof Valeri Ougrinovski (v.ougrinovski@adfa.edu.au) by 14 July 2019.

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6.17. Postdoc: University of Groningen, The Netherlands
Contributed by: Pietro Tesi, pietro.tesi@unifi.it

Postdoctoral position, University of Groningen, The Netherlands, under the STW Smart Industry project: "Integrating models and real-time data for zero-defect manufacturing control systems."

Project description:
High-precision manufacturing pushes the limits of what is possible with conventional manufacturing systems. The development of the new generation of manufacturing systems relies on a detailed understanding of the process disturbances which cause variations in the end-product. This project aims at developing models for high-precision control of manufacturing processes. Such accurate models can only be developed through integration of knowledge from physics-based models with knowledge obtained from large streams of sensor data. Integration of models and sensor data is key for the development of novel data analytic tools providing information on the product-to-product variations which can subsequently be used by novel data-driven control systems to preempt and remove such variations in real-time.

The research consortium comprises two universities (Univ. Groningen and Univ. Twente) and seven small-medium and large companies. The project has two main research goals: (R1) the development of model-based data analytics tools for inferring / obtaining accurate and mature models which are applicable for control of high-precision manufacturing systems; and (R2) the development of control design mechanisms towards a self-learning control architecture based on the integration of process models and real-time process data.

In this advert, we will hire one postdoctoral researcher who will focus on research activity (R2). In particular, he/she will develop data-driven control algorithms to supplement classic model-based control architectures.

Duration:
Initially one year, with the option of extending the contract for one or two more years.
Deadline for submitting applications: August 30, 2019

Qualifications:
• A Ph.D. degree in Control Theory, Mechanical, Computer, Electrical & Electronics Engineering, Applied

Mathematics, Computer Science, or other equivalent degree programmes from top universities;
• An excellent background in Systems & Control. Preference might be given to candidates with strong expertise in one of the following areas: identification, nonlinear control, optimization, machine learning;
• Strong academic credentials, written and spoken English proficiency.

Information:
Interested candidates please send your application together with your detailed CV, motivational letter (1/2-1 A4 page) and list of references to Pietro Tesi: pietro.tesi@unifi.it, p.tesi@rug.nl, Bayu Jayawardhana: b.jayawardhana@rug.nl and Claudio De Persis: c.de.persis@rug.nl (with f.g.fokkens@rug.nl in cc). *Please specify the following text in the subject*: Data-driven control - PostDoc application.

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6.18. Postdoc: The Nanyang Technological University, Singapore

Contributed by: C. C. Cheah, ecccheah@ntu.edu.sg

The Nanyang Technological University, Singapore invites applications for one postdoctoral research fellow position to participate in the development of robotic dexterous and bimanual micro-manipulation techniques.

Applicants for the postdoc research fellow position should hold a PhD degree in one or more of the following areas:
1) Micro-manipulation
2) Dexterous manipulation
3) Cooperative control

The applications should have a track record of competitive research experience in terms of journal publications and have a good command of English and are able to communicate well.

Application Procedure:
Suitably qualified candidates are invited to submit a CV, cover letter initially. Short-listed candidates will be notified for submission of full application packages. Electronic submission of application is encouraged and can be sent to:
Prof C. C. Cheah
School of Electrical & Electronic Engineering Nanyang Technological University
50 Nanyang Avenue
Block S1
Singapore 639798
E-mail Address for E-mailed Applications: ECCCheah@ntu.edu.sg

Application closes when the position is filled. Only shortlisted candidates will be notified for interview.

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6.19. Postdoc: KTH, Sweden

Contributed by: Håkan Hjalmarsson, hjalmars@kth.se

One to two Postdocs in Modeling and Control for Bioproduction

The open postdoc positions are associated with the new Centre for Advanced BioProduction, AdBIOPRO, led by KTH, and in collaboration with Lund University and Karolinska University Hospital as well as seven Swedish companies in the Biopharmaceutical/Biotech industry, including GE Healthcare. The Centre focuses on bioproduction based on mammalian cells, with the objective to respond to the paradigm shift towards continuous processing.

The postdoc project concerns model based optimization and control of culture media and processes. It involves developing methodologies for mechanistic macroscopic metabolic modeling, parameter estimation and experiment design for such models, optimizing cell metabolism through media feeds for perfusion, and feedback control of perfusion processes. These problems are tackled using state-of-the art techniques from data analytics, (machine) learning, and control. The project is in close collaboration with the School of Chemistry, Biotechnology and Health at KTH, world leading in perfusion and hosting extensive laboratory facilities, and our industrial partners, with the ultimate objective to verify methodologies in an industrial setting.

Details can be found at
https://www.kth.se/en/om/work-at-kth/lediga-jobb/what:job/jobID:268614/where:4/

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6.20. Postdoc: INRIA, France
Contributed by: Konstantin Avrachenkov, K.Avrachenkov@inria.fr

Topic of postdoc project: Asynchronous distributed algorithms for information retrieval and machine learning at Inria

Resume: Many tasks in information retrieval (IR) and machine learning (ML) require operation with very large volumes of data, often distributed across distant databases. This calls for development of asynchronous distributed algorithms. Let us mention just a few typical tasks in IR and LM that require distributed approaches to process the data: PageRank, databases update and synchronization, distributed (federated) machine learning. Most existing distributed approaches for the mentioned tasks are either not asynchronous or have slow convergence. Thus, we aim to design, to analyse and to test rapidly convergent asynchronous distributed approaches.

Requirements: PhD in Mathematics, Computer Science or Electrical Engineering; Solid background in Linear Algebra, Optimization, Probability and Statistics; Knowledge of Python as working programming language is another requirement. Experience in machine learning or information retrieval is a plus.

For more information visit:
https://jobs.inria.fr/public/classic/fr/offres/2019-01636

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6.21. Postdoc: Nanyang Technological University, Singapore
Contributed by: ,C. C. Cheah ecccheah@ntu.edu.sg

The Nanyang Technological University, Singapore invites applications for two postdoctoral research fellow positions to participate in the development of an intelligent robot system for construction inspection and progress monitoring. Applicants for the postdoc research fellow position should hold a Ph.D degree in one or more of the following areas:

1) Robot vision
2) Machine learning
3) Mobile robot control

The candidates should have a track record of competitive research experience in terms of journal publications and have a good command of English and are able to communicate well.

Application Procedure:
Suitably qualified candidates are invited to submit a CV, cover letter initially. Short-listed candidates will be notified for submission of full application packages. Electronic submission of application is encouraged and can be sent to:

Prof C. C. Cheah
School of Electrical & Electronic Engineering, Nanyang Technological University
50 Nanyang Avenue
Block S1
Singapore 639798
E-mail Address for E-mailed Applications: ECCCheah@ntu.edu.sg

Application closes when the position is filled. Only shortlisted candidates will be notified for interview.

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6.22. Postdoc: Oxford, UK

Contributed by: Antonis Papachristodoulou, antonis@eng.ox.ac.uk

Postdoctoral Research Assistant in Control Engineering
Department of Engineering Science, Parks Road, Oxford
Grade 7: £32,236 - £34,189 p.a.
Vacancy ID: 140885
Closing Date: 03-June-2019
Contact Name: Antonis Papachristodoulou
Contact Email: antonis@eng.ox.ac.uk

We are seeking a Postdoctoral Research Assistant to join the Control Engineering group at the Department of Engineering Science (central Oxford). The position is funded by EPSRC under a fellowship grant held by the University of Oxford. The position is fixed-term until 27 February 2020.

This post will involve feedback design in synthetic biology, using control engineering principles but which is also bio-inspired. The position would suit a theoretician with a control engineering or mathematical background. The successful candidate will also benefit from an international collaboration with MIT, ETHZ, the

California Institute of Technology and KAIST as well as Microsoft Research, Cambridge and will become part of the growing and flourishing inter-disciplinary environment in Oxford, working in Systems and Synthetic Biology. The work will be partly mathematical, partly computational and will involve close interaction with experimental researchers.

You should have a good first degree in engineering or mathematics and have completed or about to complete a doctorate in control engineering/synthetic biology or a relevant subject. A good publication record commensurate with your stage of career is expected. You must have the organisational skills and initiative to carry out independent research; be able to work as part of an interdisciplinary team; and have the written and verbal skills necessary to present scientific ideas clearly. Experience of developing mathematical algorithms and simulations in MATLAB, and of the modelling of biological systems and the analysis and design of feedback control systems, is essential.

Informal enquiries may be addressed to Professor Antonis Papachristodoulou (antonis@eng.ox.ac.uk). Please follow https://eng.ox.ac.uk/jobs/ to apply. You will be required to upload a covering letter, a brief statement of research interests (describing how past experience and future plans fit with the advertised position), CV and the details of two referees as part of your online application. Only applications received before 12.00 midday on 3 June 2019 can be considered. The Department holds an Athena Swan Bronze award, highlighting its commitment to promoting women in Science, Engineering and Technology.

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6.23. Postdoc: University of Groningen, The Netherlands

Contributed by: Claudio De Persis, c.de.persis@rug.nl

A postdoctoral position is available with the SMS-Cyber-Physical Systems research group (currently consisting of 1 full professor, 2 assistant professors, 1 postdoc, 8 doctoral students) at the Faculty of Science and Engineering, University of Groningen, the Netherlands. The group is affiliated with the J.C. Willems Center in Systems and Control.

The research of the group currently focuses on resilient control, security of cyber-physical systems, data-driven estimation and control, feedback control via optimization, with applications to power systems, flow networks and data centers. The postdoc will be involved in the research activities of the group. The position also gives the successful candidate the possibility to further develop his/her educational skills and to be involved in teaching and student supervision.

Duration: initially one year, starting as soon as possible, with the possibility of extending the contract for one or two more years. Applications are accepted on a rolling basis and the position will remain open until a successful candidate is found.

Your Profile:

• A Ph.D. degree in Control Theory, Mechanical, Computer, Electrical & Electronics Engineering, Applied Mathematics, Computer Science;

• An excellent background in Systems & Control Theory. Preference will be given to candidates with strong expertise in one or more of the following areas, as demonstrated by results and papers in top-tier publications: identification, nonlinear control, networked control systems, cyber-physical systems, dynamical

networks, hybrid control systems, distributed control and optimization, machine learning, synchronization in complex networks, robust and optimal control;
• Strong academic credentials, written and spoken English proficiency.

About the organization:
Since its foundation in 1614, the University of Groningen has enjoyed an international reputation as a dynamic and innovative center of higher education offering high-quality teaching and research. Study and career paths in a wide variety of disciplines encourage currently more than 30,000 students and researchers to develop their individual talents. Belonging to the best research universities in Europe, the top 100 universities in the world and joining forces with prestigious partner universities and networks, the University of Groningen is truly an international place of knowledge.

Information:
Interested candidates please send your application together with your detailed CV, motivational letter (1/2-1 A4 page) and list of references to: c.de.persis@rug.nl, p.tesi@rug.nl, n.monshizadeh@rug.nl *Please specify the following text in the subject*: SMS-CPS - PostDoc application

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6.24. Faculty: Northeastern University, USA
Contributed by: Rifat Sipahi, rifat@coe.neu.edu

Professor and Chair - Mechanical and Industrial Engineering
(Full ad can be found at https://neu.peopleadmin.com/postings/61425)

Strongly connected with alumni and industry, and supported by world-class experiential learning models, the Mechanical and Industrial Engineering (MIE) Department at Northeastern University is rapidly growing as a key contributor in higher education and use-inspired research. Cognizant of addressing pressing societal challenges and preparing the next-generation graduates for life-long learning in a rapidly changing world, the department is a fertile and dynamic academic environment where creativity, collegiality, and collaboration are key ingredients in all aspects of research and education. The department's momentum is further propelled by Northeastern University's 2025 Academic Plan, which proposes a visionary approach to a new era of learning and discovery.

The Mechanical and Industrial Engineering Department invites applications and nominations for the position of Chair. The Chair will develop new initiatives in both research and education, further strengthen relationships with industry and alumni, and will help propel the department to its new level of excellence, both nationally and internationally. Candidates should be committed to fostering diverse and inclusive environments as well as to promoting experiential learning, which are central to Northeastern University education.

About the department:
The MIE Department (http://www.mie.neu.edu/) is a successful, vibrant, and diverse academic enterprise. With over 20 new faculty additions since 2014, the department is on a rapid growth trend, and currently comprises 25 full-time co-op and teaching faculty and 55 tenured/tenure-track faculty members, of which 35% are women. Backed by strong external research funding and programs in core areas as well as in

robotics, data analytics, energy systems, and engineering management, the department is home to a large and highly-talented student pool, currently enrolling about 140 Ph.D., 1,400 M.S., and 1,400 B.S. students. Our U.S. News and World Report graduate rankings have progressed to 43 (Mechanical Engineering) and 33 (Industrial Engineering).

A research contract vehicle of $125M from the Veterans Health Administration and $20M from the Army Research Office awarded in recent years have significantly accelerated research activities in the MIE Department, with annual expenditures reaching around $13M. In addition, the department is home to two research centers: 1) Center for High-rate Nanomanufacturing and 2) Healthcare Systems Engineering Institute. At the core of the Northeastern engineering education experience is our top-ranked cooperative education program, which contributes significantly to the integrated learning model of our students in the MIE Department.

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6.25. Faculty: University of Louisiana at Lafayette, USA

Contributed by: Afef Fekih, afef.fekih@louisiana.edu

Dean of Engineering, University of Louisiana at Lafayette Nominations and applications are invited for a visionary leader to serve as Dean of the College of Engineering at the University of Louisiana at Lafayette. The Dean reports to the Provost and Vice President for Academic Affairs and will serve on the Deans' Council, which is the academic leadership team of the university. The Dean works with the Provost, Vice Presidents, Deans, Academic Affairs personnel, faculty, administrative staff and students to ensure the engineering programs achieve academic excellence.

Qualifications:

The successful candidate will have an earned doctoral degree in engineering or related fields, with a record of teaching, scholarship, and research accomplishments suitable for tenure as full professor in one of the College's academic units. Demonstrated success in administrative leadership, managing budgets, management, operation, accreditation and continuous improvement of educational and research programs, as well as fundraising and advancement activities, is expected. Preferred qualifications of at least five years of academic administrative experience at or above the level of department head. The Dean will demonstrate the ability to foster and maintain relationships through effective communication with key stakeholders e.g., students, faculty, staff, alumni, community and industry partners.

Nominations/Application Process:

Applications and nominations will be accepted until the position is filled. For initial consideration, applications should be received by August 21, 2019. Application materials must include: 1) a letter of interest stating how the candidate's experiences and qualifications address the expectations and strategic priorities of the position; 2) a curriculum vitae; and 3) names, addresses, telephone numbers, and email addresses of five references for future contact. The applicant must also include his/her professional relationship to each provided reference. References will only be contacted with the permission of the candidates. All candidate names will remain confidential, except for those individuals invited for a campus interview. Application materials, nominations, and inquiries should be submitted online through the university career site. Appli-

cants may contact Dr. Emad Habib, Chair of the Search Committee at habib@louisiana.edu with questions about the position.

Application Deadline: Open until filled

Position Start Date: Available Immediately

Apply Online Here
https://louisiana.csod.com/ats/careersite/JobDetails.aspx?site=1&id=732

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6.26. Faculty: Paderborn University, Germany

Contributed by: Daniel Quevedo, dquevedo@ieee.org

The Automatic Control Group in the Department of Electrical Engineering at Paderborn University is seeking a Lecturer (Akademische Rätin/ Akademischer Rat auf Zeit).

This is a full-time position, initially limited to three years, with the possibility of further extensions. We offer a stimulating work environment in an international team and an attractive remuneration package according to pay scale A13 of the German public service (approx. €4,000 per month).

Your profile:
- A doctoral degree in control theory or a related field from an excellent University.
- A proven capacity for high-quality research and publications in leading international journals in systems control.
- Fluency in English and German

Your duties and responsibilities:
The chosen candidate will be actively involved in research projects of the Automatic Control Group and also support some of its teaching activities. Our current research interests lie in networked estimation and control, including topics such as control with limited communication or computation resources, reinforcement learning, energy harvesting, distributed architectures, security and privacy. For further information on our activities, see http://ei.uni-paderborn.de/rat

Applications from women are particularly welcome and, in case of equal qualifications and experience, will receive preferential treatment according to state law (LGG). Qualified disabled people (in the sense of the German social law SGB IX) are also encouraged to apply. The applicant may choose to have the staff council (WPR) involved in his/her appointment.

Please send your application (including a cover letter, your CV, list of publications, and contact details of three referees) to Ines Kaiser, ines.kaiser@upb.de, by 01. August 2019.

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6.27. Faculty: Delft Center for Systems and Control, The Netherlands

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

Assistant professor Nonlinear and Adaptive Systems and Control at the Delft Center for Systems and Control

The Delft Center for Systems and Control (DCSC - www.dcsc.tudelft.nl) of Delft University of Technology,The Netherlands has a vacancy for a tenure track assistant professor in the broad field of Nonlinear and Adaptive Systems and Control.

The research area of the position will be oriented towards fundamental topics in one or more of the following fields:
* adaptive control of nonlinear systems and/or hybrid systems
* analysis and control of networks with nonlinear or hybrid dynamics
* integrated model-based and learning-based control
* big data methods for systems and control
* nonlinear time-delay systems
* mixed human-machine decision making

Prospective research activities involve the development of systematic and computationally efficient modeling, analysis, control, and/or verification methods within the topics listed above. In addition, within this position applications of the developed fundamental methods should be targeted towards application fields that could either connect to current application fields at DCSC, such as road and freeway networks, transportation systems, smart power grids, smart energy systems, water distribution networks, robotics, renewable energy, smart buildings, social and biological networks, or that could or involve a completely new application field within DCSC.

The position offered is a tenure-track position for a period of 6 years, leading to a permanent position assuming excellent performance. During the tenure track, the candidate will have the opportunity to develop into an internationally acknowledged and recognized academic. To this aim, we offer a structured career and personal development program. Delft University of Technology offers an attractive benefits package, including a flexible work week, and the option of assembling a customized compensation and benefits package.

Profile of the candidate: We are looking for a candidate with a PhD degree in systems and control, computer science, applied mathematics, mechanical engineering, electrical engineering, operations research, or informatics, and with an extensive expertise in the topic of the position as well as the broad field of systems and control. The candidate should preferably have at least 1 year of postdoc experience and they should already have gained an international reputation in their field of research and have a good track record in conducting innovative fundamental research. The candidates should also have the necessary didactic abilities for teaching systems and control courses at the BSc, MSc, and postgraduate level. International applicants must be willing to acquire knowledge of the Dutch language. In accordance with the equal opportunity policy of Delft University of Technology female candidates are in particular invited to apply.

Information and application: For more detailed information on the position, please contact Bart De Schutter

at b.deschutter@tudelft.nl Applicants should submit their letter of application along with a curriculum vitae or resume, a personal research and teaching statement, as well as a list of publications, electronic copies of three key publications, and the names and email addresses of three referees, via email to Application-3mE@tudelft.nl attn. Ms Irina Bruckner of the HR department. When applying, please make sure to mention the vacancy number: 3mE19-30. The application deadline for the position is July 1, 2019. However, the position will stay open until a suitable candidate has been found.

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6.28. Faculty: Delft Center for Systems and Control, The Netherlands

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

Three Tenure Track Assistant Professor or Associate Professor positions at Delft Center for Systems and Control

The Delft Center for Systems and Control (DCSC) of Delft University of Technology, The Netherlands, announces three Tenure Track Assistant Professor or Associate Professor positions in the following fields:
* Multi-dimensional signal processing and control
* Self-organizing control systems
* Optimal control of thermofluids networks

Multi-dimensional signal processing and control (3mE19-44)

Global digitalization has greatly expanded the availability of high-performance multi-dimensional sensor systems. To increase the performance and robustness of such complex multi-disciplinary control systems in high-tech manufacturing, safety systems, aerospace, and the biomedical sciences, it is essential to exploit these vast amounts of data efficiently. The high-dimensional nature of these signals and systems poses great challenges in terms of signal processing, system identification, and control. A comprehensive approach, combining insights from several scientific areas, cross-fertilized with signal processing and control engineering, is essential.

This position is located in the Numerics for Control and Identification (N4CI) section within DCSC. The position should expand and/or strengthen N4C's current activities in the area of signal analysis, identification, and control on one side and application areas including adaptive optics, microscopy, molecular imaging, mass spectrometry, fibre optics, and water waves on the other side. For more information on this position consult the expanded vacancy description at https://www.dcsc.tudelft.nl/vacancies.html

Self-organizing control systems (3mE19-45)

The complexity of human engineered systems is reaching such high levels that traditional, manual based methods for analysing and controlling them are no longer applicable. This position aims to tackle the challenge of learning to control and/or monitor such complex systems from data. Scientific goals include determining how self-organization, adaptation/evolution, and fragility/resilience can be used to understand, monitor and control such complex systems. This fundamental framework makes it possible to develop control and monitoring systems for demanding industrial application fields such as large-scale mechatronic systems, dynamic positioning systems, ocean and wind energy harvesting systems.

This position is located in the Data Driven Control section within DCSC. The position should expand and/or strengthen DDC's current activities in the area of data-driven modeling, data-driven control, learning control, robust control, and real-time control systems. For more information on this position consult the expanded vacancy description at https://www.dcsc.tudelft.nl/vacancies.html

Optimal control of thermofluids networks (3ME19-43)

The matching between (intermittent) heat sources with different temperature levels and consumers will play an important role in the energy transition. This is a complex optimization problem that requires novel control approaches incorporating the underlying turbulent fluid flow and related nonlinear heat transfer processes. Fundamental challenges include model reduction, optimization, control, and monitoring of coupled/networked nonlinear infinite-dimensional distributed parameter systems, along with topology design for fluid networks, and extremum seeking control of multiscale process systems.

This position is located within the Networked Cyber-Physical Systems (NCPS) section, whose research efforts are aimed at improving our understanding and control of cyber-physical systems composed of a large number of interconnected and embedded components. This new position is intended to bridge the fields of control systems and thermofluids fundamentals with several potential application areas including (but not limited to) heat networks. For more information on this position consult the expanded vacancy description at https://www.dcsc.tudelft.nl/vacancies.html

Positions: To address the emerging challenges mentioned above DCSC is seeking to expand its faculty with three tenure track assistant professors (or higher, depending on qualifications). In particular, the positions offered are either tenure-track positions for a period of 6 years, leading to a permanent position assuming excellent performance, or – depending on the current position, background, and expertise of the candidate – tenured positions. During the tenure track, the candidate will have the opportunity to develop into an internationally acknowledged and recognized academic. To this aim, we offer a structured career and personal development program.

Profile of the candidate: We are looking for candidates with a research profile that complements and/or expands our current activities. In particular, we are looking for candidates with a PhD degree in systems and control, computer science, applied mathematics, mechanical engineering, electrical engineering, or informatics, and with an extensive expertise in the topic of the advertised positions as well as the broad field of systems and control. The candidate should already have gained an international reputation in her/his field of research and also have a proven track record in conducting innovative fundamental research, demonstrated by the ability to publish in leading international journals.

The candidate should also have the didactic abilities for teaching systems and control courses at the BSc, MSc, and postgraduate level, and for supervising MSc projects. A good command of English is an essential requirement. In accordance with the equal opportunity policy of Delft University of Technology female candidates are in particular invited to apply.

Application: For more information and details about the different vacancies and on how to apply, please check our website: https://www.dcsc.tudelft.nl/vacancies.html The application deadline for these posi-

tions is September 1, 2019. However, the position will stay open until a suitable candidate has been found.

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6.29. Research Associate: University of New South Wales, Australia

Contributed by: Daoyi Dong, daoyidong@gmail.com

Research Associate at the University of New South Wales, Australia

An exciting Research Associate in Quantum System Identification is available at the University of New South Wales, Australia. This role will be located within the School of Engineering and Information Technology (SEIT). The engineering disciplines have close research collaborations promoting multidisciplinary research opportunities. Over recent years SEIT has produced more than 400 high impact research publications each year and continues to perform exceptionally in terms of research outputs and grant funding obtained through competitive funding opportunities as offered by the Australian Research Council, Industry partners and Defence, in addition to generous internal support provided by UNSW Canberra.

About the Role:
- Level A: $93,578 to 100,090 pa (+17% super and leave loading)
- Fixed term – 24 months
- Full Time

The Research Associate Position is a key role within the research team working on the Australian Research Council (ARC) Discovery Project (DP) "Efficient and high-precision system identification in quantum cybernetics". The Research Associate will conduct research into the development of novel efficient algorithms and approaches for high-precision quantum system identification. The formal application information will be available soon at the HR website of UNSW Canberra
https://www.unsw.adfa.edu.au/career/academic-job-opportunities

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