

# E-LETTER ON SYSTEMS, CONTROL, & SIGNAL PROCESSING ISSUE 372, AUGUST 2019

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Welcome to Issue 372 of the CSS E-letter available [here](#).

- To submit new articles, visit [article submissions](#) on the E-Letter website.
- To **subscribe**, send an empty email to [elletter-css-join@lists.it.utsa.edu](mailto:elletter-css-join@lists.it.utsa.edu) and you will be automatically subscribed to the CSS E-Letter.
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The next E-Letter will be mailed out at the beginning of September 2019.

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- 6.7 PhD: Tampere University, Finland
- 6.8 PhD: IFP Energies Nouvelles, France
- 6.9 PhD: Hamburg University of Technology, Germany
- 6.10 PhD: University of Louisiana at Lafayette, USA
- 6.11 PhD/Postdoc: University of Melbourne, Australia
- 6.12 Postdoc: Lehigh University, USA
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- 6.14 Postdoc: University of Sydney, Australia
- 6.15 Postdoc: KTH, Sweden
- 6.16 Postdoc: Lund University, Sweden
- 6.17 Postdoc: University of California, Berkeley, USA
- 6.18 Postdoc: University of California, Berkeley, USA
- 6.19 Postdoc: North Carolina State University, USA
- 6.20 Faculty: Lund University, Sweden
- 6.21 Research Scientist: Mitsubishi Electric Research Laboratories, USA
- 6.22 Researcher: Luleå University of Technology, Sweden

## 1 IEEE CSS Headlines

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### 1.1. CSS Social Media Accounts

Contributed by: Ahmad Taha and Ankush Chakrabarty [ahmad.taha@utsa.edu](mailto:ahmad.taha@utsa.edu), [chakrabarty@merl.com](mailto:chakrabarty@merl.com)

Follow us on Twitter <https://twitter.com/CSSIEEE>

Like us on Facebook <https://facebook.com/CSSIEEE>

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### 1.2. CSS Technically Cosponsored Events

Contributed by: Luca Zaccarian, CSS AE Conferences, [zaccarian@laas.fr](mailto: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). Miedzysdroje, 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-co-sponsored> and for a list of the upcoming and past CSS main conferences please visit <http://ieeecss.org/conferences/financially-sponsored>

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### 1.3. CSS Publications Content Digest

Contributed by: Kaiwen Chen, [kaiwen.chen16@imperial.ac.uk](mailto: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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#### **1.4. ACC 2020: Welcome to Denver**

Contributed by: Garrett Clayton, [garrett.clayton@villanova.edu](mailto:garrett.clayton@villanova.edu)

Dear Colleagues,

You are cordially invited to attend the 2020 American Control Conference (ACC), which will be held July 1-3 in Denver, Colorado, USA at the Sheraton Denver Downtown Hotel. The Sheraton is conveniently located in downtown Denver on a mile-long pedestrian promenade filled with outdoor bistros, shopping, and entertainment and close to attractions like the Denver Art Museum and the Denver Botanic Gardens.

In addition to a high-quality technical program, the conference will include a banquet at the Denver Museum of Nature & Science. See an IMAX movie, learn about Egyptian mummies, or take a trip back to prehistoric time, all while enjoying the company of colleagues. Consider extending your stay to explore the Rocky Mountain National Park, Garden of the Gods or one of Colorado's more than two dozen national parks, monuments, or forests.

The 2020 ACC Operating Committee invites the worldwide participation of all those interested in the theory and practice of automatic control systems. Welcome to Denver!

Initial submissions are due September 23, 2019.

For more information, please visit: <http://acc2020.a2c2.org/>

Santosh Devasia – General Chair

Martha Grover – Program Chair

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## 2 Miscellaneous

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### 2.1. Control Curriculum Survey

Contributed by: JA Rossiter, [j.a.rossiter@sheffield.ac.uk](mailto:j.a.rossiter@sheffield.ac.uk)

The Technical Committees on Education (IFAC and IEEE) are coordinating a survey to help the global community share its views on what control related topics we should be including in a core engineering curriculum. Now we are in the 21st century and with the every advancing potential of technology, it is clear that topic priorities and teaching styles need to evolve to reflect modern needs.

Please take the 5 minute survey using the link below and let us know what you think! [Deadline August 31st 2019]

<http://iolab.sk/ifac/index.php>

We aim to summarise the responses and disseminate at the IFAC world congress in Berlin, 2020.

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### 2.2. School on Controlling Delayed Dynamics, Italy

Contributed by: Dimitri Breda, [dimitri.breda@uniud.it](mailto:dimitri.breda@uniud.it)

School on Controlling Delayed Dynamics, Italy, Nov 2019

It is a pleasure to announce the advanced school <http://www.cism.it/courses/C1914/>.

Please, feel free to circulate among collaborators and students.

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### 2.3. Richard E. Bellman Control Heritage Award

Contributed by: Irena Lasiecka, [lasiecka@memphis.edu](mailto:lasiecka@memphis.edu)

Irena Lasiecka, Distinguished University Professor at the University of Memphis and former Commonwealth Professor at the University of Virginia, has been awarded the 2019 Richard E. Bellman Control Heritage Award from the American Automatic Control Council [AACC], which is the U.S. national member organization of the International Federation of Automatic Control [IFAC]. The Bellman Award is given for distinguished career contributions to the theory and applications of control and it is the highest recognition of professional achievement for U.S. control systems scientists. Lasiecka was cited for her "Contributions to Boundary Control Theory of Distributed Parameter Systems". She was presented with the Bellman Heritage Award at the Awards Ceremony of 2019 American Control Conference on July 11, 2019 in Philadelphia, PA.

Lasiecka is an AMS Fellow, SIAM Fellow, IEEE Fellow and the 2011 recipient of the SIAM W.I. Reid Award for her contribution to control theory of differential equations.

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## 2.4. IFAC Automatica Paper Prize

Contributed by: Rodolphe Sepulchre, [r.sepulchre@eng.cam.ac.uk](mailto:r.sepulchre@eng.cam.ac.uk)

Call for Nominations: IFAC Automatica Paper Prize: The Prize is given for outstanding contributions to the theory and/or practice of control engineering or control science, as documented in papers published in the IFAC Journal Automatica. In each triennium, three such prizes are given, with funds provided by the publisher of Automatica, Elsevier Science Ltd.. For this triennium, the Prize will be presented during the Awards Ceremony at the 21st IFAC World Congress, to be held in Berlin, Germany, 12-17 July, 2020.

Eligibility: To be considered for the Control Engineering Practice Paper Prize, papers must have appeared in Automatica during the three calendar year period: January 2017 through December 2019, that are Volumes 75 to 110. Papers authored by members of the Selection Committee and by Editors of the journal are not eligible.

Nominations: A complete nomination should include:

- A nomination letter that contains the full title of the paper and name(s) of the author(s), as well as the issue (year, month, number) of Automatica where the paper has appeared.
- A brief description of the contributions of the paper, and why (in the opinion of the nominator) the paper deserves the prize.

Submission: Nominations should be submitted in electronic form no later than 1 February 2020 to:

Prof. Rodolphe Sepulchre  
Chair, IFAC Automatica Paper Prize Selection Committee  
Department of Engineering, University of Cambridge, UK  
Email: [r.sepulchre@eng.cam.ac.uk](mailto:r.sepulchre@eng.cam.ac.uk)

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## 2.5. IFAC Control Engineering Practice Paper Prize

Contributed by: Masayuki Fujita, [fujita@ctrl.titech.ac.jp](mailto:fujita@ctrl.titech.ac.jp)

Call for Nominations: IFAC Control Engineering Practice Paper Prize

Description and Presentation of the Award: The Prize is given for outstanding contributions to the practical application of control techniques and advanced control theory, as published in papers in the IFAC Journal Control Engineering Practice. The papers should meet the following criteria:

1. High-quality application paper,
2. Practically relevant results based on profound theory,
3. Supported by strong industrial results,
4. Simulation studies are only acceptable if it is demonstrated that the simulation model is representative of a genuine industrial application.

In each triennium, three such prizes are given, with funds provided by the publisher of Control Engineering Practice, Elsevier Science Ltd. For this triennium, the Prize will be presented during the Awards Ceremony at the 21st IFAC World Congress, to be held in Berlin, Germany, 12-17 July, 2020.

Eligibility: To be considered for the Control Engineering Practice Paper Prize, papers must have appeared in Control Engineering Practice during the three calendar year period: January 2017 through December 2019, that are Volumes 58 to 93. Papers authored by members of the Selection Committee and by Editors of the journal are not eligible.

Nominations: A complete nomination should include:

- a) A nomination letter that contains the full title of the paper and name(s) of the author(s), as well as the issue (year, month, number) of Control Engineering Practice where the paper has appeared.
- b) A brief description of the contributions of the paper, and why (in the opinion of the nominator) the paper deserves the prize.

Submission: Nominations should be submitted in electronic form no later than 1 February 2020 to:

Prof. Masayuki Fujita

Chair, IFAC Control Engineering Practice Paper Prize Selection Committee

Department of Systems and Control Engineering, Tokyo Institute of Technology, Japan

Email: [fujita@ctrl.titech.ac.jp](mailto:fujita@ctrl.titech.ac.jp)

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## 2.6. European Control Award

Contributed by: Paul Goulart, [paul.goulart@eng.ox.ac.uk](mailto:paul.goulart@eng.ox.ac.uk)

The European Control Award (ECA) is to recognize outstanding contributions by a young researcher in the area of systems and control. The award is sponsored by the European Control Association (EUCA), and will be presented during the annual European Control Conference. The recipient will give a plenary lecture during the final day of the ECC. Details of this award and the nomination procedure can be found at <https://euca-ecc.org/eca.html>.

The deadline for nominations for the European Control Award is November 30th, 2019.

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## 3 Books

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### 3.1. Structural Methods in the Study of Complex Systems

Contributed by: Laura Burgess, [laura.burgess@springer.com](mailto:laura.burgess@springer.com)

Structural Methods in the Study of Complex Systems edited by Elena Zattoni, Anna Maria Perdon, and Giuseppe Conte

ISBN: 978-3-030-18571-8

June 2019, Springer

Hardcover, 279 pages, \$169.99/€145,59

<https://www.springer.com/gb/book/9783030185718>

Structural Methods in the Study of Complex Systems helps the reader respond to the challenge of mastering complexity in systems and control. The book details the fundamental control problems arising from complex dynamical systems and shows how they can be tackled effectively by means of methods developed from graph theory, differential algebra and geometric approaches. These “structural methods” produce abstractions that fit a wide variety of applications by taking advantage of their intrinsic focus on the essential characteristics of dynamical systems, their geometric perspective and visual representation, and their algebraic formalization and ability to generate algorithmic frameworks to complement the theoretical treatment.

The original work and latest achievements of the contributors, expanding on material presented at a workshop organized to coincide with the 2018 European Control Conference will assist systems and control scientists interested in developing theoretical and computational tools to solve analysis and synthesis problems involving complex dynamical systems. The contributions provide a comprehensive picture of available results along with a stimulating view of possible directions for future investigations in the field. Emphasis is placed on methods with solid computational background and on specific engineering applications so that readers from both theoretical and practical backgrounds will find this collection of use.

#### Contents

1. Complex Systems and Control: The Paradigms of Structure Evolving Systems and System of Systems
2. Stability and the Kleinian View of Geometry
3. Strong Structural Controllability and Zero Forcing
4. Output Regulation of Hybrid Linear Systems: Solvability Conditions and Structural Implications
5. A Stratified Geometric Approach to the Disturbance Decoupling Problem with Stability for Switched Systems Over Digraphs
6. Unknown-Input State Observers for Hybrid Dynamical Structures
7. Advances of Implicit Description Techniques in Modelling and Control of Switched Systems
8. Huygens Synchronization Over Distributed Media—Structure Versus Complex Behavior

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### 3.2. Dissipative Systems Analysis and Control

Contributed by: Laura Burgess, [laura.burgess@springer.com](mailto:laura.burgess@springer.com)

Dissipative Systems Analysis and Control by Bernard Brogliato, Rogelio Lozano, Bernhard Maschke, and Olav Egeland



ISBN: 978-3-030-19419-2

August 2019, Springer

Hardcover, 711 pages, \$199.99/€166,39

<https://www.springer.com/gb/book/9783030194192>

The third edition of the now standard Dissipative Systems Analysis and Control presents a revised and expanded treatment of dissipative systems theory, constituting a self-contained, advanced introduction for graduate students, researchers and practising engineers. It examines linear, nonlinear and nonsmooth systems, with many examples in each chapter; occasional infinite-dimensional examples are also included. Throughout, emphasis is placed on the use of the dissipative properties of a system for the design of stable and robust feedback control laws or state observers. The theory is substantiated by experimental results and by reference to its application in illustrative physical cases (Lagrangian systems, passivity-based and adaptive controllers are covered thoroughly).

The third edition is substantially updated to accommodate new material within the existing chapter structure. The additions include:

- the introduction of negative imaginary transfer functions;
- the design of stable state observers that use passivity as a tool for their stability analysis;
- a new section on robust set-valued control of uncertain Lagrangian systems;
- extended section on discrete-time systems, especially the preservation of dissipativity after discretization;
- a thorough treatment of nonsmooth set-valued Lur'e systems well-posedness and stability;
- an extended chapter on the Kalman–Yakubovich–Popov Lemma; and
- over 1000 references.

#### Contents

1. Introduction
2. Positive Real Systems
3. Kalman–Yakubovich–Popov Lemma
4. Dissipative Systems
5. Stability of Dissipative Systems
6. Dissipative Physical Systems
7. Passivity-Based Control
8. Adaptive Control
9. Experimental Results

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### 3.3. IEEE Press Book Series on Control Systems Theory and Applications

Contributed by: Maria Domenica Di Benedetto, [mariadomenica.dibenedetto@univaq.it](mailto:mariadomenica.dibenedetto@univaq.it)

IEEE Press Book Series on Control Systems Theory and Applications

Series Editor: Prof. Maria Domenica Di Benedetto - University of L'Aquila (Italy)

The scope of the IEEE Press Book Series on Control Systems Theory and Applications is the broad span of the Control Science and Engineering discipline. Control science and engineering has had a very significant

impact on society and continues to be an important, relevant and ever-expanding field.

This IEEE Press Book Series is expected to publish high quality books in all areas of control. The series will include monographs, edited volumes, and textbooks, geared to control scientists and engineers, as well as to researchers and practitioners working in various areas of applied mathematics such as optimization, game theory, and operations research. Educational purposes are also in the scope of the series as secondary and reference material. Relevant results from research projects may also be considered for publication.

Examples of theory research topics of interest are cyber-physical systems, hybrid systems, networked control systems, autonomous systems, coordinated and cooperative control, identification and learning in complex systems modeling and control, data-driven identification and control. Examples of interdisciplinary applications of interest are engineering system design, societal and socioeconomic system modeling and control, ecological and biological system analysis, synthetic biology, intelligent transportation, smart energy and robotics. The application domains are characterized by the combination of control and other disciplines such as computer science, machine learning and artificial intelligence, economics, and biology.

For additional information, please contact

- Maria Domenica Di Benedetto, Series Editor on CSTA, mariadomenica.dibenedetto@univaq.it
- Vaishali Damle, Managing Editor, Proceedings of the IEEE and IEEE Press v.damle@ieee.org.

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## 4 Journals

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### 4.1. Systems & Control Letters

Contributed by: Lusia Veksler, [lveksler@ucsd.edu](mailto:lveksler@ucsd.edu)

Systems & Control Letters

Volume 129, July 2019

#### Papers:

- A new encounter between leader–follower tracking and observer-based control: Towards enhancing, robustness against disturbances, Chuan Yan, Huazhen Fang, Pages 1-9
- Dichotomy theorem for control sets, Tao Wang, Yu Huang, ZhiJing Chen, Pages 10-16
- A dynamic graph characterisation of the fixed part of the controllable subspace of a linear structured system, Jacob van der Woude, Christian Commault, Taha Boukhobza, Pages 17-25
- Conditions for fixed-time stability and stabilization of continuous autonomous systems, Francisco Lopez-Ramirez, Denis Efimov, Andrey Polyakov, Wilfrid Perruquetti, Pages 26-35
- Linear observed systems on groups, Axel Barrau, Silvère Bonnabel, Pages 36-42
- New criteria of input-to-state stability for nonlinear switched stochastic delayed systems with asynchronous switching, Meng Zhang, Quanxin Zhu, Pages 43-50
- On instability of LS-based self-tuning systems with bounded disturbances, Shuai Xu, Chanying Li, Pages 51-55

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### 4.2. Evolution Equations and Control Theory

Contributed by: Irena Lasiecka, [lasiecka@memphis.edu](mailto:lasiecka@memphis.edu)

Evolution Equations and Control Theory

Volume 8, Issue 4, December 2019

Website: [aimsciences.org](http://aimsciences.org).

#### Papers:

- Controllability of the semilinear wave equation governed by a multiplicative control  
Mohamed Ouzahra  
2019, 8(4) : 669-686
- Simultaneous controllability of two vibrating strings with variable coefficients  
Jamel Ben Amara and Emna Beldi  
2019, 8(4) : 687-694
- A penalty decomposition method for nuclear norm minimization with l1 norm fidelity term  
Duo Wang, Zheng-Fen Jin and Youlin Shang  
2019, 8(4) : 695-708
- Well-posedness and asymptotic behavior of the dissipative Ostrovsky equation  
Hongwei Wang and Amin Esfahani  
2019, 8(4) : 709-735

- Discontinuous solutions for the generalized short pulse equation  
Giuseppe Maria Coclite and Lorenzo di Ruvo  
2019, 8(4) : 737-753
- On some nonlinear problem for the thermoplate equations  
Suma'inna, Hirokazu Saito and Yoshihiro Shibata  
2019, 8(4) : 755-784
- A new energy-gap cost functional approach for the exterior Bernoulli free boundary problem  
Julius Fergy T. Rabago and Hideyuki Azegami  
2019, 8(4) : 785-824
- Optimal energy decay rates for some wave equations with double damping terms  
Ryo Ikehata and Shingo Kitazaki  
2019, 8(4) : 825-846
- Exponential stability for the coupled Klein-Gordon-Schrödinger equations with locally distributed damping  
Adriana Flores de Almeida, Marcelo Moreira Cavalcanti and Janaina Pedroso Zanchetta  
2019, 8(4) : 847-865
- Existence and extinction in finite time for Stratonovich gradient noise porous media equations  
Mattia Turra  
2019, 8(4) : 867-882
- Sliding mode control of the Hodgkin-Huxley mathematical model  
Cecilia Cavaterra, Denis Enăchescu and Gabriela Marinoschi  
2019, 8(4) : 883-902

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### 4.3. IEEE/CAA Journal of Automatica Sinica

Contributed by: Yan Ou, [yan.ou@ia.ac.cn](mailto:yan.ou@ia.ac.cn)

IEEE/CAA Journal of Automatica Sinica

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Volume 6 (2019), Issue 4 (July)

<http://ieeexplore.ieee.org/xpl/RecentIssue.jsp?punumber=6570654>

#### Reviews:

- An Overview and Perspectives On Bidirectional Intelligence: Lmsr Duality, Double IA Harmony, and Causal Computation. L. Xu, page 865
- A Survey of Multi-robot Regular and Adversarial Patrolling. L. Huang, M. C. Zhou, K. R. Hao, and E. Hou, page 894
- A Review on Swarm Intelligence and Evolutionary Algorithms for Solving Flexible Job Shop Scheduling Problems. K. Z. Gao, Z. G. Cao, L. Zhang, Z. H. Chen, Y. Y. Han, and Q. K. Pan, page 904

#### Papers:

- A Mixed-Depth Visual Rendering Method for Bleeding Simulation. W. Shi, P. X. Liu, and M. H. Zheng, page 917

- On Cost Aware Cloudlet Placement for Mobile Edge Computing. Q. Fan and N. Ansari, page 926
- Balance Control of a Biped Robot on a Rotating Platform Based on Efficient Reinforcement Learning. A. Xi, T. W. Mudiyansele, D. C. Tao, and C. Chen, page 938
- Indoor INS/UWB-based Human Localization With Missing Data Utilizing Predictive UFIR Filtering. Y. Xu, C. K. Ahn, Y. S. Shmaliy, X. Y. Chen, and L. L. Bu, page 952
- A Heuristic Algorithm for the Fabric Spreading and Cutting Problem in Apparel Factories. X. Q. Shang, D. Y. Shen, F.-Y. Wang, and T. R. Nyberg, page 961
- A Simulation Engine for Stochastic Timed Petri Nets and Application to Emergency Healthcare Systems. J. N. Zhou, J. C. Wang, and J. Wang, page 969
- A Correntropy-based Affine Iterative Closest Point Algorithm for Robust Point Set Registration. H. C. Chen, X. Zhang, S. Y. Du, Z. Z. Wu, and N. N. Zheng, page 981
- High-Speed Trains Automatic Operation with Protection Constraints: A Resilient Nonlinear Gain-based Feedback Control Approach. S. G. Gao, Y. H. Hou, H. R. Dong, S. Stichel, and B. Ning, page 992
- Fractional-Order Control for a Novel Chaotic System Without Equilibrium. S. Y. Shao and M. Chen, page 1000
- Optimal Valve Closure Operations for Pressure Suppression in Fluid Transport Pipelines. T. H. Chen and Z. G. Ren, page 1010
- Asymptotic Magnitude Bode Plots of Fractional-Order Transfer Functions. A. A. Kesarkar and S. Narayanasamy, page 1019
- Stabilization of the Cascaded ODE-Schrodinger Equations Subject to Observation With Time Delay. A. A. Than and J. M. Wang, page 1027
- Image Analysis by Two Types of Franklin-Fourier Moments. B. He, J. T. Cui, B. Xiao, and X. Wang, page 1036
- Consensus Control With a Constant Gain for Discrete-time Binary-valued Multi-agent Systems Based on a Projected Empirical Measure Method. T. Wang, M. Hu, and Y. L. Zhao, page 1052
- Twisting Sliding Mode Control of an Electrostatic MEMS Micromirror for a Laser Scanning System. H. Chen, Z. D. Sun, W. J. Sun, and J. T. W. Yeow, page 1060
- Stability Analysis of Systems With Time-varying Delay via a Novel Lyapunov Functional. Y. Chen and G. Chen, page 1068
- Integrated Design and Accuracy Analysis of Star Sensor and Gyro on the Same Benchmark for Satellite Attitude Determination System. B. W. Hou, Z. M. He, H. Y. Zhou, and J. Q. Wang, page 1074

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#### 4.4. Control Theory and Technology

Contributed by: Zou Tiefeng, [tfzou@scut.edu.cn](mailto:tfzou@scut.edu.cn)

Control Theory and Technology (formerly entitled Journal of Control Theory and Applications)

Vol. 17, No. 3, August 2019

ISSN: 2095-6983

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

#### Papers:

- Parallel loop recovery with quiescent compensation for high performance feedback control of systems with imperfect actuators Y. V. O'Brien, J. F. O'Brien P.201

- Nonlinear observer-based control design and experimental validation for gasoline engines with EGR W. Jiang, T. Shen P.216
- Invariant observer design of attitude and heading reference system M. Barczyk P.228
- On the mechanism and control for the ultra-low frequency oscillation in NY Power Grid with large-scale hydropower A. Xue, J. Wang, C. Zheng, J. H. Chow, T. Bi P.241
- Guaranteed feasible control allocation using model predictive control M. Naderi, A. Khaki Sedigh, T. A. Johansen P.252
- Diagnosability of a class of discrete event systems based on observations S. Reshmila, D. Rajagopalan P.265
- Optimal finite-dimensional spectral densities for the identification of continuous-time MIMO systems I. M. Mithun, S. Mohan, B. Bhikkaji P.276
- Routh table test for stability of commensurate fractional degree poly nomials and their commensurate fractional order systems S.-G. Wang, S. Liang, L. Ma, K. Peng P.297

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#### 4.5. IET Control Theory & Applications

Contributed by: Jessica Bristow, [JBristow@theiet.org](mailto:JBristow@theiet.org)

IET Control Theory & Applications

Volume 13, August 2019

<http://digital-library.theiet.org/content/journals/iet-cta/13/12>

##### Review:

- Yizhen Meng, Bin Jiang, Ruiyun Qi, Adaptive non-singular fault-tolerant control for hypersonic vehicle with unexpected centroid shift, Pages 1773 –1785

##### Papers:

- Hongyan Feng, Huiling Xu, Shengyuan Xu, Distributed finite-time control for spatially interconnected systems, Pages 1786 –1795
- Qingyu Su, Zhongxin Fan, Jian Li, H-Infinity fault detection for switched systems with all subsystems unstable, Pages 1796 –1803
- Shi Liang, Chan Qiu, Zhenyu Liu, Xiang Peng, Daxin Liu, Jianrong Tan, Approximate optimal estimation based on Kullback–Leibler divergence for lossy networks without acknowledgement, Pages 1804 –1813
- Mengping Xing, Jianwei Xia, Xia Huang, Hao Shen, On dissipativity-based filtering for discrete-time switched singular systems with sensor failures: a persistent dwell-time scheme, Pages 1814 –1822
- Yao Xu, Chenyin Chu, Wenxue Li, Stabilisation of coupled delayed regime-switching diffusion with continuous-state-dependent switching via intermittent control, Pages 1823 –1833
- Nallappan Gunasekaran and Young Hoon Joo, Stochastic sampled-data controller for T–S fuzzy chaotic systems and its applications, Pages 1834 –1843
- Wencan Wang, Optimal control of backward doubly stochastic system, Pages 1844 –1854
- Ying Chen, Yuming Bo, Baozhu Du, Positive L 1-filter design for continuous-time positive Markov jump linear systems: full-order and reduced-order, Pages 1855 –1862

- Junhao Zhang, Wen-An Zhang, Fuwen Yang, Switched system approach to distributed guaranteed cost control for interconnected systems with communication unreliability, Pages 1863 –1871
- Iman Hosseini, Alireza Khayatian, Paknoush Karimaghaee, Mirko Fiacchini, Miguel Angel Davo Navarro, LMI-based reset unknown input observer for state estimation of linear uncertain systems, Pages 1872 –1881
- Jung-Min Yang and Seong Woo Kwak, Model matching and fault-tolerant control of switched asynchronous sequential machines with transient faults, Pages 1882 –1890
- Sounghwan Hwang, Jin Bae Park, Young Hoon Joo, Disturbance observer-based integral fuzzy sliding-mode control and its application to wind turbine system, Pages 1891 –1900
- Kemao Ma, Long Xu, Hongxia Fan, Unscented Kalman filtering for target tracking systems with packet dropout compensation, Pages 1901 –1908
- Zihao Cheng, Dong Yue, Songlin Hu, Xiangpeng Xie, Chongxin Huang, Detection-based weighted H-Infinity LFC for multi-area power systems under DoS attacks, Pages 1909 –1919
- Chunhong Zheng, Yuxin Su, Paolo Mercorelli, Simple saturated relay non-linear PD control for uncertain motion systems with friction and actuator constraint, Pages 1920 –1928
- Qinghua Hou, Jiuxiang Dong, Changjiang Xi, Adaptive neural network tracking control for switched uncertain non-linear systems with actuator failures and time-varying delays, Pages 1929 –1939

#### **Brief Papers:**

- Ying Zhao, Xiaotai Wu, Jinde Cao, Stability of highly non-linear switched stochastic systems, Pages 1940 –1944
- Hao Liu, Wanbing Zhao, Sheng Hong, Frank L. Lewis, Yao Yu, Robust backstepping-based trajectory tracking control for quadrotors with time delays, Pages 1945 –1954
- Paolo Massioni, Nikolay N. Salnikov, Gérard Scorletti, Ellipsoidal state estimation based on sum of squares for non-linear systems with unknown but bounded noise, Pages 1955 –1961

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#### **4.6. International Journal of Control, Automation, and Systems**

Contributed by: Keum-Shik Hong, [journal@ijcas.com](mailto:journal@ijcas.com)

International Journal of Control, Automation, and Systems (IJCAS)

ISSN: 1598-6446

Vol. 17, No. 8, August 2019

<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-Compindex, OCLC, SCImago, Summon by Serial Solutions

#### **Papers:**

- Controlled Synchronization of Nonlinear Teleoperation in Task-space with Time-varying Delays Amir Zakerimanesh, Farzad Hashemzadeh\*, Ali Torabi, and Mahdi Tavakoli pp.1875-1883
- Fast Terminal Sliding Control Application for Second-order Underactuated Systems Ansu Man Singh\* and Quang P. Ha pp.1884-1898

- Further Improvement on Delay-derivative-dependent Stochastic Stability Criteria for Markovian Jumping Neutral-type Interval Time-varying Delay Systems with Mixed Delays Pin-Lin Liu pp.1899-1910
- Real-time Inverse Model Estimation by a Recursive Least Squares Method for Disturbance Observer-based Control Systems: Balancing Control of a Single-wheel Robot Sang-Deok Lee and Seul Jung\* pp.1911-1920
- Time-varying H-Infinity Control for Discrete-time Switched Systems with Admissible Edge-dependent Average Dwell Time Rui-Hua Wang, Bing-Xin Xue\*, and Jing-Bo Zhao pp.1921-1934
- Stability of Limiting Zeros of Sampled-data Systems with Backward Triangle Sample and Hold Minghui Ou, Shan Liang\*, and Cheng Zeng pp.1935-1944
- Distributed Event-triggered Consensus Control for Heterogeneous Multiagent Systems under Fixed and Switching Topologies Junhua Huang, Liding Chen, Xuhuan Xie, Mufeng Wang, and Bugong Xu\* pp.1945-1956
- Passive Fault-tolerant Control Based on Weighted LPV Tube-MPC for Air-breathing Hypersonic Vehicles Chaofang Hu\*, Xiaofang Wei, and Yanli Ren pp.1957-1970
- Lag Group Consensus for the Second-order Nonlinear Multi-agent Systems via Adaptive Control Approach Wanli Guo\*, Wenqiang Luo, and Zhimin Zheng pp.1971-1977
- 3D Trajectory Tracking Control for a Thrust-Propelled Vehicle with Time-varying Disturbances Meisam Kabiri, Hajar Atrianfar\*, and Mohammad Bagher Menhaj pp.1978-1986

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#### 4.7. International Journal of Control

Contributed by: Bing Chu, [b.chu@soton.ac.uk](mailto:b.chu@soton.ac.uk)

International Journal of Control

Volume 92, Issue 8, 2019

<http://www.tandfonline.com/toc/tcon20/current>

#### Papers:

- Boundary stabilisation to non-stationary solutions for deterministic and stochastic parabolic-type equations, Ionuț Munteanu, pages: 1720-1728
- Fault-tolerant control of linear systems using adaptive virtual actuator, Meysam Yadegar, Nader Meskin & Ahmad Afshar, pages: 1729-1741
- Controllability and observability of switched multi-agent systems, Lingling Tian, Yongqiang Guan & Long Wang, pages: 1742-1752
- Boosting the decay of solutions of the linearised Korteweg-de Vries–Burgers equation to a predetermined rate from the boundary, Türker Özsarı & Eda Arabacı, pages: 1753-1763
- Digital redesign of analogue dynamic output-feedback controllers for polytopic systems, Cecília F. Morais, Márcio F. Braga, Eduardo S. Tognetti, Ricardo C. L. F. Oliveira & Pedro L. D. Peres, pages: 1764-1777
- Discrete-time interval optimal control problem, J. R. Campos, E. Assunção, G. N. Silva, W. A. Lodwick & M. C. M. Teixeira, pages: 1778-1784
- Robust finite-time consensus tracking for second-order multi-agent systems with input saturation under general directed communication graphs, Junjie Fu, Qi Wang & Jinzhi Wang, pages: 1785-1795
- A self-tuning adaptive distributed observer approach to the cooperative output regulation problem for networked multi-agent systems, Yi Dong, Jie Chen & Jie Huang, pages: 1796-1804
- Global stabilisation of nonlinear time-delay systems by partial-state feedback, Xuhuan Wang & Zhengrong



Xiang, pages: 1805-1814

- Optimised active disturbance rejection motion control with resonant extended state observer, Momir R. Stanković, Milan R. Rapaić, Stojadin M. Manojlović, Srđan T. Mitrović, Slobodan M. Simić & Milica B. Naumović, pages: 1815-1826

- Impulses-induced p-exponential input-to-state stability for a class of stochastic delayed partial differential equations, Dingshi Li & Guiling Chen, pages: 1827-1835

- Robust quantised control of hybrid stochastic systems based on discrete-time state and mode observations, Gongfei Song, Xuerong Mao & Tao Li, pages: 1836-1845

- Versal deformation of realisable Markov parameters, Itziar Baragaña & Ferran Puerta, pages: 1846-1857

- Observer-based force reflecting robust coordination control for networked bilateral shared telerobotic system, Shafiqul Islam, Peter X. Liu & Abdulmotaleb El Saddik, pages: 1858-1869

- Switching strategy in tracking constant references for linear time-varying delay systems with actuator failures, Qing-Kui Li, Georgi M. Dimirovski, Jun Fu & Jiuhe Wang, pages: 1870-1882

- Stabilisation of a relative equilibrium of an underactuated AUV on SE(3), Hongjiao Niu & Zhiyong Geng, pages: 1883-1902

- Stability analysis and controller design for Lur'e system with hysteresis nonlinearities: a negative-imaginary theory based approach, Arnab Dey, Sourav Patra & Siddhartha Sen, pages: 1903-1913

- Fault estimation and controller compensation in Lure systems by LPV-embedding, Ainain Nur Hanafi, Maria M. Seron & José A. De Doná, pages: 1914-1927

- Event-triggered simultaneous fault detection and tracking control for multi-agent systems, Shahram Hajshirmohamadi, Farid Sheikholeslam, Mohammadreza Davoodi & Nader Meskin, pages: 1928-1944

- H-Infinity bumpless transfer for switched LPV systems and its application, Dong Yang & Jun Zhao, pages: 1945-1958

- LMI-based boundary and distributed control design for a flexible string subject to disturbance, Xueyan Xing & Jinkun Liu, pages: 1959-1969

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#### 4.8. CFP: Journal of Intelligent and Robotic Systems

Contributed by: George Nikolakopoulos, [geonik@ltu.se](mailto:geonik@ltu.se)

Journal of Intelligent and Robotic Systems, Special Issue Proposal on "Visual Perception for Micro Aerial Robots."

During the last decades, aerial robots have emerged from a concept to a leading-edge technology with the enormous potential to become a valuable tool in multiple applications, in terms of human life safety and task execution efficiency. So far, the commercial use of aerial robots is mainly restricted within the photography-filming industry, but its growth is rapid, investing nowadays in applications that require autonomous inspection and environmental interaction. The vision of integrating aerial robotic platforms in the industrial process is in its infancy, with quite a few open challenges remaining. One of the backbone functionalities that these platforms should possess to enable and support such tasks are advanced perception capabilities. Specifically, from a scientific point of view, reliable localization, navigation, mapping and object perception are topics that have received a lot of attention, but still require further developments to reify aerial robot autonomous inspection and physical interaction.

The purpose of this special issue is to address theoretical and application-oriented problems in the general

area of visual perception for micro-aerial robots and to identify and provide key perception solutions that meet the real-time constraints posed by aerial vehicles, following recent advances in computer vision and robotics. Topics of interest include (but are not limited to):

- Vision-based control and visual servoing
- Visual navigation, mapping, and SLAM
- Cooperative perception using multiple platforms
- Vision-assisted floating-base manipulation
- Deep Learning for visual perception
- Object recognition, tracking, semantic and 3D vision techniques
- Fusion of vision with other sensing systems, e.g., laser scanner
- Advanced visual sensors and mechanisms (event-based, solid state sensors, LiDAR, RGB-D, time-of-flight cameras, etc.)
- Aerial robot applications on key enabling perception technologies
- Model predictive control for vision-based autonomous navigation
- Reinforcement learning for visual perception

Manuscripts should describe original and previously unpublished results which are currently not considered for publication in any other journal. All the manuscripts shall be submitted electronically at <http://www.editorialmanager.com/jint/>, and will undergo a peer-review process.

For further details, please, consult the Journal website at <http://www.springer.com/engineering/robotics/journal/10846> or contact the Guest Editors.

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#### **4.9. CFP: Special Issue on Resilient Control in Large-Scale Systems**

Contributed by: Yan Ou, [yan.ou@ia.ac.cn](mailto:yan.ou@ia.ac.cn)

CFP: Special Issue on Resilient Control in Large-Scale Networked Cyber-Physical Systems

Guest Editors:

- Xianghui Cao, Southeast University, Nanjing, China ([xhcao@seu.edu.cn](mailto:xhcao@seu.edu.cn))
- Giancarlo Fortino (Leading Guest Editor), University of Calabria, Italy ([g.fortino@unical.it](mailto:g.fortino@unical.it))
- Giuseppe Franzè, University of Calabria, Italy ([giuseppe.franze@unical.it](mailto:giuseppe.franze@unical.it))
- Giuseppe Maria Luigi Sarnè, University Mediterranea of Reggio Calabria, Italy ([sarne@unirc.it](mailto:sarne@unirc.it))
- Zhen Song, Siemens Smart Infrastructure, USA ([zhen.song@siemens.com](mailto:zhen.song@siemens.com))

Aims and Scope:

Recent advances in sensing, communication and computing have opened the door to the deployment of large-scale networks of sensors and actuators that allow fine-grain monitoring and control of a multitude of physical processes and infrastructures. The appellation used by field experts for these paradigms is Cyber-Physical Systems (CPS) because the dynamics among computers, networking media/resources and physical systems interact in a way that multi-disciplinary technologies (embedded systems, computers, communications and controls) are required to accomplish prescribed missions. Moreover, they are expected to play a significant role in the design and development of future engineering applications such as smart

grids, transportation systems, nuclear plants and smart factories.

As a consequence, the analysis of security issues has gained an increasing attention in the control community. In this perspective, a comprehensive classification of the most relevant cyber-attacks (Denial of Service, False Data Injection, replay and zero-dynamics), as well as their impact on the CPS security is essential. Due to their reliance on communication channels, intentional jamming and false data injections lead to undesirable phenomena that are categorized as cyber-attacks. The main consequence is that measurement and actuator data integrity and availability might be compromised with a significant degradation of the control architecture performance. Nonetheless, it is worth to underline that most of existing contributions focus their attention only on the detection problem, whose proposed solutions can be classified as passive and active approaches, leaving out the control countermeasures issue.

Then, the main aim is to develop resilient model-based control architectures able to provide adequate countermeasures in order to contrast anomalies on the plant dynamical behavior due to attack occurrences despite constraint satisfaction and disturbance/noise perturbations. The suggested topics of interest for this special issue include, but are not limited to:

- Secure/Robust Control Systems
- Networked and Distributed Control Systems
- Detection of Integrity Attacks
- Cyber-attacks in Smart Grids
- Denial of Service management in sensor networks
- Trust management
- Multi-agent configurations
- Internet of Things
- Applications in emerging domains (e.g. Internet of Vehicles, Smart Cities and Industry 4.0)

Submission site: <https://mc03.manuscriptcentral.com/ieee-jas->

The journal's review policy is double-blind peer review (the submission should not contain any author-related information).

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#### **4.10. CFP: Asian Journal of Control Special Issue**

Contributed by: ,

Asian Journal of Control: Special Issue on "TP Model Transformation based Control Design Theories and Applications"

The topic of the special issue belongs to multi-objective control design based on quasi Linear Parameter Varying (qLPV) models and Linear Matrix Inequality (LMI) based optimization. The special issue focuses on advanced theories and design solutions based on Tensor Product (TP) model transformation.

Recent research shows that by varying the antecedents and consequents in Takagi-Sugeno fuzzy models as well as in other polytopic models, one can strongly influence how the further control design steps will proceed and also how good the resulting control performance will be. The TP model transformation is capable of deriving alternative antecedents and consequents, and of varying and combining the inputs of multiple

TS fuzzy and polytopic models. The aim of this special issue is to investigate how better controllers can be obtained by using the best variant of TS fuzzy or polytopic models, and how such variants can be found by TP model transformation. Papers about further developments on the TP model transformation are also highly welcome.

Guest Editors:

Prof. Péter Baranyi, Budapest University of Technology and Economics, Hungary,  
prof.peter.baranyi@gmail.com

Prof. Yeung Yam, Chinese University of Hong Kong, Hong Kong SAR, China, yyam@mae.cuhk.edu.hk

Important Dates:

December 30, 2019 Deadline for Submissions

March 31, 2020 Completion of First Review

May 31, 2020 Completion of Final Review

August 31, 2020 Receipt of Final Manuscript

January, 2021 (Tentatively Vol. 23, No. 1) Publication

About AJC:

The Asian Journal of Control, an ACA (Asian Control Association) affiliated journal, is the first international journal originating from the Asian Pacific region and being recognized by the major body of control researchers in this region. The Asian Journal of Control publishes bimonthly high-quality papers on original theoretical and experimental research and development in the areas of control, involving all facets of control theory and its application. Functionally, this journal not only provides a forum where control researchers and practitioners can exchange their knowledge and experiences in the control areas, but also serves as an educational means for students and any others who ever likes to learn some topics in the same technical area. The journal aims to be a key interface between control communities within the Asian Pacific region and throughout the world and is listed by Science Citation Index Expanded.

How to submit:

Potential authors are encouraged to upload the electronic file of their manuscript (in PDF format) through the journal's online submission website: <https://mc.manuscriptcentral.com/asjc> If you encounter any submission problem, please contact the editorial office: [asianjcontr@ntu.edu.tw](mailto:asianjcontr@ntu.edu.tw)

Editor-in-Chief: Professor Li-Chen Fu

Department of Electrical Engineering, EE II-524 Tel: +886-2-3366-3558

National Taiwan University, Taipei 10617, Taiwan E-mail: [lichen@ntu.edu.tw](mailto:lichen@ntu.edu.tw)

All submission should include a title page containing the title of the paper, an abstract and a list of keywords, authors' full names and affiliations, complete postal and electronic address, and phone numbers.

The contacting author should be clearly identified. For detailed submission guidelines, please visit:

<https://onlinelibrary.wiley.com/page/journal/19346093/homepage/forauthors.html>

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## 5 Conferences and Workshops

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### 5.1. Allerton Conference, USA

Contributed by: Peggy Wells, [pwells@illinois.edu](mailto:pwells@illinois.edu)

The 57th Allerton Conference September 24-27, 2019

August 2: Acceptance Date Authors will be notified of acceptance via email by August 6, 2018, at which time they will also be sent detailed instructions for the preparation of their papers for the Conference Proceedings.

After August 5: Registration Opens

September 24–27: Conference Dates

September 24, 2019:

Opening Tutorial Sessions, given by Christoforos Hadjicostis, University of Cyprus and Angelia Nedich, Arizona State University

Coordinated Science Laboratory, CSL Auditorium (B02), 1308 West Main Street, Urbana, IL

September 25-27, 2019:

Main Conference and Plenary Lecture, given by Professor Benjamin Van Roy, Stanford University

Allerton Park and Retreat Center, 515 Old Timber Road, Monticello, IL

2019 Conference Co-Chairs:

Daniel Liberzon and Alejandro Dominguez-Garcia

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### 5.2. Workshop on Advanced Motion Control, Norway

Contributed by: Michael Ruderman, [michael.ruderman@uia.no](mailto: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

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### 5.3. IEEE Conference on Control Technology and Applications, Canada

Contributed by: Angelika Peer, [Angelika.Peer@unibz.it](mailto:Angelika.Peer@unibz.it)

4th IEEE Conference on Control Technology and Applications (CCTA 2020)

August 24–26, 2020

Le Centre Sheraton, Montréal, Canada

[ccta2020.ieeecss.org](http://ccta2020.ieeecss.org)

General Chair's Welcome: As the Chair of the 4th IEEE Conference on Control Technology and Applications (CCTA 2020), I would like to invite you to join us in the fascinating city of Montréal, Canada from, August 24 to 26, 2020. The conference will be held at Le Centre Sheraton in the downtown core of the city. The CCTA conference is one of the main conferences sponsored by the IEEE Control Systems Society and replaces the successful former IEEE CCA and IEEE MSC. The CCTA 2020 Technical Program will include regular and invited sessions, as well as application-oriented tutorial and workshop sessions, and of course a number of Plenary Lectures on some of the cutting-edge control technology topics.

Montréal is Canada's second largest city, and the province of Québec's metropolis. It is a vivid, multilingual, dynamic, hi-tech and creative cosmopolitan city. With its signature blend of North American and European cultures, Montréal is where the world comes to meet and exchange ideas in a safe, friendly and easy to navigate environment. Open, welcoming, quick with a smile or a "bonjour", Montréalers love to welcome visitors to their city. You will love Montréal for its legendary cultural and gastronomical scenes, with a multitude of restaurants, shopping, nightlife and entertainment options to suit every taste and budget. Montréal is close to the heavily populated American east coast and is a gateway city for international travellers from Europe. Just 20 minutes from the city centre, Montréal-Trudeau International Airport makes getting to Montréal a breeze with over 200 flights arriving daily. Once in Montréal, you will mostly use the green and orange subway (metro) lines as well as the main bus routes that service the downtown core. In addition to these traditional modes of transportation, Montréal offers a public sharing bike system called BIXI (a contraction of the words Bicycle and taxi). It is important to keep in mind that Montréal is a human-scale walkable city. Its city center is compact and all is within walking distance. We hope you will join us for a productive CCTA in a wonderful setting. See you in August 2020!

**Call for Contributed Papers:** Papers are invited in the form of regular manuscripts. Papers must conform to the submission policy, described below, requiring that all manuscripts be in 2-column format and meet strict page limits.

**Call for Invited Sessions:** Invited sessions consist of 5-6 papers, which should present a unifying theme from a diversity of viewpoints. Proposals must describe the motivation and relevance of the session. Proposals must be accompanied by full versions of each paper, which will be individually reviewed together with the proposal itself. Individual papers may be removed from a proposed session and replaced by appropriate contributed papers. In case an entire proposed session is rejected, selected papers may be accepted as contributed papers.

**Call for Tutorial Sessions:** Tutorial sessions and panel discussions addressing state-of-the-art control theory and advanced industrial applications are solicited.

**Call for Workshops:** Workshops to be held prior to the conference are solicited on all related topics. Proposals for workshops addressing novel control methodologies and control applications are strongly encouraged.

**Important Dates:**

Submission site opens: October 27, 2019

Initial submission deadline (Contributed Papers, Invited Papers, Invited Session Proposals and Tutorial Session Proposals): January 19, 2020

Notification of Acceptance/Rejection: April 26, 2020

Final submission/registration sites open: April 26, 2020

Final submission due date: May 31, 2020

**Submission Policy:**

- All submitted papers must be formatted in the standard 2-column IEEE Proceedings format.
- For the purposes of REVIEW, papers are limited to 8 pages; papers exceeding this limit cannot be uploaded.
- For PUBLICATION in the Proceedings, accepted papers are limited to 6 pages; papers exceeding this limit are subject to a page over-length fee.
- A regular registration by an Author will allow the Author to upload up to 3 of the accepted papers the Author has (co)authored, and a reduced registration will allow the Student/Retiree Author to upload up to one of the accepted papers the (Student/Retiree) Author has (co)authored.

For further information, please refer to:

Email: [amir.aghdam@concordia.ca](mailto:amir.aghdam@concordia.ca)

CCTA 2020 Website: [ccta2020.ieeecss.org](http://ccta2020.ieeecss.org)

Conference Submission Website: [css.paperplaza.net](http://css.paperplaza.net)

General Chair: Prof. Amir Aghdam, Concordia Univ.

Program Chair: Prof. Maarten Steinbuch, Eindhoven Univ.of Technology

Publicity Chair: Prof. Angelika Peer, Free Univ. of Bozen

Registration Chair: Prof. Bahram Shafai, Northeastern Univ.

Finance Chair: Prof. David Saussié, Ecole Polytechnique Montréal  
Local Arrangements Co-Chairs: Prof. Ouassima Akhrif, École de  
Technologie Supérieure: Prof. Luis Rodrigues, Concordia Univ.  
Publication Chair: Prof. Sergio Galeani, Univ. di Roma, Tor Vergata  
Workshop Chair: Prof. Sergey Nersesov, Villanova Univ.  
Invited and Tutorial Sessions Chair: Prof. Rastko Selmic, Concordia Univ.  
Industry Chair: Prof. Mae Seto, Dalhousie Univ.

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#### **5.4. International Conference on Mechatronics and Robotics, Indonesia**

Contributed by: Tua A. Tamba, [ttamba@unpar.ac.id](mailto:ttamba@unpar.ac.id)

2019 International Conference on Mechatronics, Robotics and Systems Engineering (MoRSE 2019)

Date/Location: 4-6 December 2019 / Bali - Indonesia

Technical Co-Sponsor: IEEE Indonesia Section CSS/RAS Joint Chapter

Website: <https://morse.unpar.ac.id/>

Submission is currently open at <http://edas.info/N26473> (due: 30 August 2019)

MoRSE conference 2019 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 related to the area of Mechatronics, Robotics, and Systems Engineering. Accepted and presented papers will be submitted for publication in IEEE Xplore Digital Library (Part #: CFP19MOR-ART, ISBN: 978-1-7281-3984-5).

Plenary Speakers (to be updated regularly):

- Prof. Joris De Schutter (KU Leuven, Belgium)

- Dr. Agus Budiyo (Vice Chairman, Indonesia Center for Technology Empowerment)

Venue: 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 conference 2019. Detailed information about the conference are available on the conference web at <https://morse.unpar.ac.id/>.

We look forward to your participation and meet you in Bali!

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#### **5.5. IFAC Workshop on Distributed Estimation and Control, USA**

Contributed by: Shreyas Sundaram, [sundara2@purdue.edu](mailto:sundara2@purdue.edu)

8th IFAC Workshop on Distributed Estimation and Control in Networked Systems (NECSYS 2019)

September 16-17, 2019

Chicago, Illinois, United States of America



<http://necsys2019.csl.illinois.edu>

The Organizing Committee has the pleasure of inviting you to participate in the 8th IFAC Workshop on Distributed Estimation and Control in Networked Systems (NECSYS 2019), which will be held on September 16-17, 2019. The workshop venue will be Wintrust Hall near Downtown Chicago, located a few minutes from the Magnificent Mile, the Loop, and Lake Michigan.

Scope: Networked systems and complex dynamical systems are composed of a large number of simple systems interacting through a communication medium. These systems arise as natural models in many areas of engineering and science, such as sensor networks, autonomous robots and vehicles, Internet of Things, smart manufacturing, power networks, biological networks, and animal groups.

The workshop will focus on recent theoretical and experimental developments in the last few years for the analysis, design, identification, estimation, and control of networked systems. The aim of this workshop is to bring together researchers from control, computer science, communication, game theory, statistics, mathematics and other areas, as well as practitioners in the related industrial or educational fields, to discuss emerging topics in networked systems of common interest.

Program and Plenary Speakers: Following the tradition of previous NECSYS workshops, the workshop will be single track and will feature plenary presentations and poster/interactive sessions of contributed papers. The exciting lineup of plenary speakers includes:

- Domitilla del Vecchio (MIT)
- Emilio Frazzoli (ETH/nuTonomy)
- Fredrik Gustafsson (Linköping)
- Maurice Heemels (Eindhoven)
- Mihailo Jovanovic (USC)
- Naomi Leonard (Princeton)
- Ben Recht (Berkeley)
- Sri Sarma (Johns Hopkins)
- Alireza Tahbaz-Salehi (Northwestern)
- Dawn Tilbury (Michigan/NSF)

Important Dates: Early registration deadline July 31st, 2019

<https://ifac.papercept.net/conferences/scripts/reglogin.pl?ConfID=363>

Conference hotel special rate deadline August 14, 2019 <http://necsys2019.csl.illinois.edu/venue.html>

Conference Chair

\* Geir Dullerud (University of Illinois at Urbana-Champaign, USA)

Conference Co-chairs

\* Mohamed Ali Belabbas (University of Illinois at Urbana-Champaign, USA)

\* Shreyas Sundaram (Purdue University, USA)

Program Committee Chair

\* Henrik Sandberg (KTH Royal Institute of Technology, Sweden)

Program Committee Co-chairs

\* Bart Besselink (University of Groningen, Netherlands)

\* Dennice Gayme (Johns Hopkins University, USA)

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## 5.6. International Conference on Control, Automation and Systems, South Korea

Contributed by: Zee Yeon Lee, [conference@icross.org](mailto:conference@icross.org)

2019 19th International Conference on Control, Automation and Systems (ICCAS 2019), October 15–18, 2019  
ICC Jeju, Korea, <http://2019.iccas.org>

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.

Dates:

- August 31, 2019: Submission of Final Camera-ready Papers

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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## 5.7. International Workshop on Control Engineering and Synthetic Biology, UK

Contributed by: Antonis Papachristodoulou, [antonis@eng.ox.ac.uk](mailto:antonis@eng.ox.ac.uk)

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

\* Registration Deadline: 20 August 2019 \*

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 theo-

retical 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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## 5.8. Workshop on Verifiable Control Systems and Learning Algorithms, France

Contributed by: Tansel Yucelen, [yucelen@usf.edu](mailto:yucelen@usf.edu)

2019 IEEE CDC Workshop on Verifiable Adaptive Control Systems and Learning Algorithms

Organizers: Tansel Yucelen (University of South Florida), Anuradha Annaswamy (Massachusetts Institute of Technology), Warren Dixon (University of Florida), K. Merve Dogan (University of South Florida), Jonathan A. Muse (Air Force Research Laboratory), and Frank Lewis (University of Texas at Arlington)

Summary: A fundamental problem in the design of feedback control architectures is to achieve closed-loop system stability, performance, and robustness against exogenous disturbances and system uncertainties. Unlike fixed-gain control architectures, adaptive control systems offer the capability to deal with exogenous disturbances and system uncertainties, in an online fashion, through learning. This implies that they are not tuned to a worst-case scenario and they continuously improve their performance in real-time. These two appealing aspects make adaptive control systems and learning algorithms important candidates for a wide array of physical systems. Although government and industry agree on their potential in providing vehicle safety and reducing vehicle development costs, a major issue is the lack of system-theoretic methods for their verification, due to their nonlinear nature. Motivated by this standpoint, the objective of this full-day workshop is to cover the state-of-the-art verifiable system-theoretic approaches in adaptive control systems and learning algorithms for their safe and reliable real-world applications.

Specifically, the presenters of this workshop will cover topics addressing how to implement adaptive control systems with verifiable transient and steady-state performance guarantees, how to address the presence of actuator and unmodeled dynamics when adaptive control systems are in feedback loops, how to design and analyze adaptive control systems for physical plants with switching modes, and how to advance adaptive control systems with system-theoretic guarantees using tools and methods from machine and reinforcement learning. This workshop will be relevant to practicing professionals from electrical, mechanical, and aerospace industries. It also intends to cultivate new future research directions under a panel discussion involving organizers and expected workshop attendees. Finally, this workshop is expected to be a great value to experts and students in the adaptive control systems and learning algorithms fields.

Website: <http://lakis.eng.usf.edu/page6/index.html>

Registration: PaperPlaza <https://css.paperplaza.net/conferences/scripts/start.pl>  
(Registration opens on August 1, 2019)

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## 5.9. IFAC World Congress, Germany

Contributed by: Uwe D. Hanebeck, [Uwe.Hanebeck@kit.edu](mailto:Uwe.Hanebeck@kit.edu)

21st IFAC 2020 World Congress (IFAC WC 2020), July 12 - 17, 2020  
Berlin, Germany, [www.IFAC2020.org](http://www.IFAC2020.org)

### Key Dates:

- 15 September 2019 Open invited track proposals
- 15 October 2019 Invited session proposals
- 31 October 2019 Draft manuscript submission
- 28 February 2020 Late breaking results submission

The IFAC World Congress is IFAC's flagship conference and is held every three years. The IFAC WC 2020 will take place July 12 - 17, 2020 in Berlin Germany. It is time to prepare your submissions and participation. With several thousand attendees from all over the world, the IFAC World Congress is the biggest and most important meeting of this kind. For six days in 2020, Berlin will be the place where new collaborations and stimulating ideas from theory development, over academic and industrial applications, to technology development and further fields can originate, in and after the sessions.

### Berlin – Where Innovation Meets Science and Culture:

Germany's capital is a vibrant cosmopolitan city, offering a wide range of cultural and touristic attractions. Berlin is a green city, with rivers and canals, and is particularly enjoyable in summer time. Berlin has a long tradition of science and innovation. It is the city where Alexander and Wilhelm von Humboldt, Max Planck, Gustav Hertz, Albert Einstein, and many others lived and worked. Berlin is among the most important and diverse regions of science within Europe. It has the largest concentration of universities and research institutes within Germany and a student population of about 200,000.

Conference Venue:

IFAC WC 2020 will be held in the Estrel Hotel and Congress Center situated in the Neukölln district of Berlin, easily accessible by public transportation. Neukölln is a rapidly evolving lively neighborhood attractive for students and artists, with uncountable cultural and culinary attractions.

The motto of the 21st IFAC World Congress is “Automatic Control – Meeting Societal Challenges”. It focuses on current and future societal challenges such as mobility and transportation, health care and medicine, the delivery of sustainable resources and green energy, digitalization, Industry 4.0, and the dramatic changes in the working environment. The junction of artificial intelligence and control will be spotlighted. This is reflected in five topics days, where the standard conference program is complemented by special keynotes, tutorial sessions, outreach lectures, and exhibitions by industrial and technological leaders.

#### Oral, Interactive, and Demonstrator Contributions:

Oral sessions consist of six contributions of 20 minutes. Contributions in interactive sessions will take place during two hour session slots. All contributions undergo the same review process and the decision on the format is not implied by the review outcome. Demonstrator contributions will either be part of interactive sessions (for video or software demonstrators) or demonstrators’ exhibitions.

#### Tutorials and Pre-Congress Workshops:

You are invited to submit proposals for tutorials and pre-congress workshops. Both tutorials and workshops should inform participants about the state of the art in specific areas of interest to the IFAC community.

#### Late Breaking Results:

Extended abstract contributions spotlight work in progress, application-oriented contributions to industrial, economic or social fields, and cutting edge research from other scientific communities. Extended abstract contributions will appear only in the congress preprints, not in the proceedings of the congress.

#### Invited Sessions and Open Invited Tracks:

Invited sessions consist of six regular papers or one survey paper/four regular papers based on invitation by the organizers. Open invited tracks have no limit on the number of papers, organizers are expected to solicit contributions, and the proposal is advertised on the IFAC 2020 website.

#### Technical Areas:

- Systems and Signals
- Design Methods
- Computers, Cognition and Communication
- Mechatronics, Robotics and Components
- Manufacturing and Logistics Systems
- Process and Power Systems
- Transportation and Vehicle Systems
- Bio- and Ecological Systems
- Social Systems

#### Congress Core Team:

Klaus Janschek Coordinating Chair  
Frank Allgöwer IFAC President  
Sandra Hirche IPC Co-Chair  
Rolf Findeisen IPC Co-Chair  
Ulrich Jumar Industry Chair  
Jörg Raisch Local Arrangements Chair  
Uwe D. Hanebeck Publicity and Outreach Chair  
Dagmar Dirzus Finance Chair  
Silke Nienhausen Congress Officer

IFAC 2020 contact: [info@ifac2020.org](mailto:info@ifac2020.org)

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## 6 Positions

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### 6.1. PhD: Lehigh University, USA

Contributed by: Nader Motee, [motee@lehigh.edu](mailto:motee@lehigh.edu)

Several doctoral positions are available with the Distributed Control and Dynamical Systems (DCDS) Laboratory in the Department of Mechanical Engineering and Mechanics at Lehigh University. All candidates with strong backgrounds in systems, controls, and mathematics are encouraged to apply.

Applicants should have a B.Sc. degree in Engineering, Computer Science, or Applied Mathematics. The start will be Fall 2019 or Spring 2020. The central theme of our research team is to develop theoretical foundations for understanding structure, dynamics, and holistic behaviors of complex networks of dynamical systems. The focused research areas are on learning and control over networks and risk analysis of distributed control systems with applications to networked robotics.

Interested applicants may contact Prof. Nader Motee ([motee@lehigh.edu](mailto:motee@lehigh.edu)) by sending him the following information: (1) one-page research statement explaining how his/her background fits the research areas, (2) detailed CV and list of publications, (3) names of two references. All documents should be sent in PDF format. More information about our research activities can be found at: <https://dcds.lehigh.edu>

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### 6.2. PhD: KTH, Sweden

Contributed by: Håkan Hjalmarsson, [hjalmars@kth.se](mailto:hjalmars@kth.se)

The Division of Decision and Control Systems at KTH has openings for PhD students for the project “New Trends in Learning Dynamical Systems.”

Learning Dynamical Systems is an area closely related to cyber-physical systems as well as real-time big data analytics, and it provides backbone algorithms for digitalization of industry and society. Together with researchers from Uppsala University, and with strong support from the Swedish Research Council, we are now building the research environment NewLEADS for this core technology in autonomous systems with applications such as smart buildings, self-driving vehicles, and self-learning robots. We focus on theory development around three important themes: Fundamental techniques focuses on how to learn parsimonious models in a statistical and computationally efficient way. Active and on-line learning concerns how to improve data-efficiency by actively controlling the excitation of the system in a sequential manner, possibly together with an application specific objective. Dynamical networked systems addresses issues of relevance to interconnected systems, a field rapidly increasing in importance thanks to the fast development of (wireless) communication technology and the Internet-Of-Things paradigm.

More information can be found here:

<https://www.kth.se/en/om/work-at-kth/lediga-jobb/what:job/jobID:275201/where:4/>

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### 6.3. PhD: Luleå University of Technology, Sweden

Contributed by: George Nikolakopoulos, [geonik@ltu.se](mailto:geonik@ltu.se)

PhD Position in Control Engineering, Aerial Robotics - Luleå University of Technology – Ref 2150-2019

The Robotics Team at the department of Computer Science and Electrical and Space Engineering at Luleå University of Technology, is now looking for one PhD student contributing to our growing activities in the area of aerial robotics.

The candidate will be part of a strong research team with expertise in aerial robotics and will have the pleasure to work in multiple European and National research projects in Robotics, while contributing to the vision and goals of the group. Among the currently active projects, the candidate will have the ability to work under the Horizon 2020 project SIMS with a special focus on Aerial Robotics for Mining.

Subject description: Control Engineering comprises the analysis, design, optimisation and implementation of autonomous control systems. Topics: Characteristic research topics will focus on, but not be limited to, the following areas:

- Inspection robotics
- Optimal control synthesis for robotic locomotion
- Path planning and feasible trajectory identification
- Collaborative SLAM
- Cooperative Task allocation, scheduling and planning
- Safe and robust navigation for aerial and ground robots in featureless or reduced feature environments
- Field robotics demonstration of the corresponding research topics outcomes

To be qualified for the position, the applicant must have a MSc degree in Electrical/Mechanical Engineering or related subject. The research tasks require a solid mathematical background with proven advanced experimental capabilities and excellent programming skills (e.g. LabVIEW, MATLAB, C++, ROS etc.), knowledge of basic control algorithms and proven experimental capabilities. The candidate should have a strong vision to evaluate and demonstrate the research findings in real life operating conditions, in an approach to close the gap between pure theory and experimental verifications.

For further information about a specific subject see; General curricula for the Board of the faculty of science and technology. The candidate will perform research with substantial experimental components that should be published in peer-reviewed international journals and at major impact international conferences. The position will include supervision of MSc students, teaching and support in acquiring funds for future research projects from research funding agencies/councils, EU framework program or industry. The candidate will need to represent the group in different contexts, both in Sweden and abroad, and hence have excellent skills in English.

For further information please contact Professor George Nikolakopoulos +46 920 491298, geonik@ltu.se.

Luleå University of Technology is actively working on equality and diversity that contributes to a creative study- and work environment. The University's core values are based on respect, openness, cooperation, trust and responsibility. In case of different interpretations of the English and Swedish versions of this announcement, the Swedish version takes precedence.

Application: We prefer that you apply for this position by clicking on the apply button below. The applica-



tion should include: CV, reference list (2-3 contacts), personal letter highlighting past accomplishments and future research plans, Copies of verified diplomas from universities. Your application, including diplomas, must be written in English or Swedish. Mark your application with the reference number below.

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#### **6.4. PhD: KTH, Sweden**

Contributed by: Håkan Hjalmarsson, [hjalmars@kth.se](mailto:hjalmars@kth.se)

One to five PhD positions in Learning Dynamical Systems

We are currently looking for 1-5 PhD students in data-driven learning of dynamical systems in the project New Trends in Learning Dynamical Systems (NewLEADS). Full details can be found at

<https://www.kth.se/en/om/work-at-kth/lediga-jobb/what:job/jobID:275201>

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#### **6.5. PhD: University of Louisville, USA**

Contributed by: Tamer Inanc, [t.inanc@louisville.edu](mailto:t.inanc@louisville.edu)

PhD positions at University of Louisville, Louisville, KY, USA

Two PhD positions are immediately available at the Department of Electrical and Computer Engineering (ECE), University of Louisville, Louisville, KY, USA, on the topic of application of control systems theory on biomedical problems. The positions are TA (Teaching assistantship) and RA (Research Assistantship) and they both include a stipend of \$22,000 per year, plus full tuition support, and health insurance. The offers are valid for one year and renewable for additional years depending on the performance of the student.

Qualifications: Successful candidates must have a solid background on control systems theory. A background on system identification or biomedical problems is a plus. Applicants must hold, or be about to complete, a Master's degree (or equivalent) in ECE or related areas. Good written and oral English language skills are required as well.

Dates: Beginning in Fall 2019 (August 19, 2019).

How to apply: Applications should be emailed to Dr. Tamer Inanc, [t.inanc@louisville.edu](mailto:t.inanc@louisville.edu), as soon as possible. Please include a detailed CV, a list of at least two academic references and pdf copies of previously published papers, if possible.

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#### **6.6. PhD: The University of Sheffield, USA**

Contributed by: George Konstantopoulos, [g.konstantopoulos@sheffield.ac.uk](mailto:g.konstantopoulos@sheffield.ac.uk)

PhD scholarship - The University of Sheffield: Modelling and Advanced Control Design for Hybrid AC/DC Micro-grids

Fully Funded PhD (UK/EU applicants only) on 'Modelling and Advanced Control Design for Hybrid AC/DC 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.

Project description: The project deals with the nonlinear modelling of hybrid AC/DC micro-grids and the dynamic interaction between AC and DC subgrids. The main aim is to design advanced control strategies to develop reliable and resilient AC/DC micro-grids consisting of heterogeneous distributed energy resources integrated via power electronic converters (DC/DC and AC/DC converters). The research work will focus on improving both decentralised primary control and distributed supervisory control strategies in order to rigorously guarantee system stability and enhance the micro-grid dynamic performance during faults, sudden changes of supply/demand, unit/grid disconnections etc. The project combines fundamental research in systems and control theory and applied research in hybrid AC/DC 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 as your preferred supervisor and state the project title as 'Modelling and advanced control design for hybrid AC/DC micro-grids.'

Should you have any queries about the position, please contact Dr George Konstantopoulos on [g.konstantopoulos@sheffield.ac.uk](mailto:g.konstantopoulos@sheffield.ac.uk).

Deadline for applications: 9am, Thursday 15th August 2019.

Shortlisted Candidates will be required to attend an interview. Interviews will take place during the last week of August 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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## 6.7. PhD: Tampere University, Finland

Contributed by: Azwirman Gusrialdi, [azwirman.gusrialdi@tuni.fi](mailto:azwirman.gusrialdi@tuni.fi)

We are looking for a PhD candidate to join Intelligent Networked Systems Group in the Faculty of Engineering and Natural Sciences, Tampere University, Finland. The candidate must have a Master's degree (close to completion) in Control Systems or Electrical Engineering or Applied Mathematics or related disciplines. Experience with machine learning is advantageous. The candidate should have good command of the English language (Finnish not required), a strong motivation to do research, and capability of performing independent research under advice.

The research topic will be at the intersection of (distributed) optimisation, control and learning with main applications to complex systems or networked cyber-physical-human systems (e.g., power systems, intelligent transportation systems or robotic network).

Please send your application including a motivation letter and description of research interests, a curriculum vitae, grade transcripts of obtained degrees (in English), names and contact information of two academic references, a sample of research writing (if any) in a single PDF file to Azwirman Gusrialdi, email: [azwirman.gusrialdi@tuni.fi](mailto:azwirman.gusrialdi@tuni.fi). Please use the subject of the email as "INES-PHD-application." The position is available immediately and will remain open until an ideal candidate is found. The salary is based on the university salary scheme.

About Tampere University: The new Tampere University and higher education community begin their operations on 1 January 2019. Tampere University of Technology, the University of Tampere and Tampere University of Applied Sciences are building a unique environment for multidisciplinary, inspirational and high-impact research and education and a hub of expertise in technology, health and society. Tampere University is a member of Research Alliance for Autonomous Systems and the home of AI Hub Tampere (a new artificial intelligence research center).

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#### 6.8. PhD: IFP Energies Nouvelles, France

Contributed by: Hoai-Nam Nguyen, [hoai-nam.nguyen@ifp.fr](mailto:hoai-nam.nguyen@ifp.fr)

PhD Position at IFPEN in Machine Learning, Wind Energy, Automatic Control

Article Design of Real-time Estimation Algorithms for Fault Detection and Load Mitigation Control at the Wind Farms Scale In the field of wind energy, operators are now focusing on using existing wind farms more efficiently, reducing farm-level mechanical stress and reducing maintenance costs through improved fault detection. In this context, our central question will be "How to design an algorithm capable of optimally and robustly estimate the wake and the wind field properties in real-time at the wind farm scale?". These estimations will make it possible to design improved fault detection algorithms, as well as farm-level load distribution controls.

Classical centralized estimation approaches are unfortunately unable to address such a question due to the inaccuracy in the estimations and the high computational burden. To address our problem, we will rely on the theoretical tools of machine learning and advanced estimation methods. The machine learning paradigm makes it possible to adapt itself to create an increasingly robust and reliable model of the studied phenomena based on observations. The interest is to learn information from the uncertain and fluctuating environment. In particular, the Gaussian process approach shows good potential in terms of performance

and ability to learn from a large amount of data. This research work will greatly support the developments of the next generation of the IFPEN industrial solutions for wind estimation.

Academic Supervisor: Prof. Nicolas PETIT, CAS, MINES ParisTech IFPEN

Supervisor: Dr. Olivier LEPREUX, Research engineer, Control, Signal, Systems Dpt.

PhD Location: IFP Energies nouvelles, Lyon, France

Duration and Start Date: 3 years, starting preferably on October 1, 2019

Academic Requirements: University Master degree in mathematics, automatic control or signal proc.

Language Requirements: Fluency in English

Gross Annual Salary: 26940€ to 30960€. Additional company benefits.

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### **6.9. PhD: Hamburg University of Technology, Germany**

Contributed by: Herbert Werner, [h.werner@tuhh.de](mailto:h.werner@tuhh.de)

The Institute of Control Systems at Hamburg University of Technology (TUHH) is inviting applications for a PhD position on nonlinear control using Koopman operator theory and LPV techniques. The position will be funded initially for 3 years, salary according to German Public Service pay grade TVL-13.

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 position is filled. Informal inquiries: Prof. Herbert Werner, [h.werner@tuhh.de](mailto:h.werner@tuhh.de)

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### **6.10. PhD: University of Louisiana at Lafayette, USA**

Contributed by: Afef Fekih, [afef.fekih@louisiana.edu](mailto:afef.fekih@louisiana.edu)

The Advanced Controls Laboratory at the University of Louisiana at Lafayette, USA has available funding to support a PhD student in the general area of advanced control design/Fault Tolerant Control with application to dynamic systems. Special considerations will be given to students who have a strong background in power systems such as wind turbines and/or PVs. The successful candidate is expected to have a strong background in control systems theory, and a very good knowledge of power systems. Programming skills in MATLAB/Simulink are required. A genuine interest and curiosity in the subject, excellent oral and written English communication skills are needed.

Applicants shall have a Master's degree or equivalent in systems and controls, power systems, electrical engineering, mechanical engineering, applied Math or a related discipline. The PhD student is expected to carry out original research and complete coursework throughout the period of appointment. Results will be communicated in the form of journal publications, conference presentations, and the PhD dissertation.

The funding covers the cost of full tuition and stipends at a competitive rate and will start in Spring 2020. Interested individuals should send their detailed curriculum vitae, copies of their recent transcripts, a copy of

their best publication in English, and if applicable GRE/test scores to Dr. Afef Fekih (afef.fekih@louisiana.edu).

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#### **6.11. PhD/Postdoc: University of Melbourne, Australia**

Contributed by: Girish Nair, [gnair@unimelb.edu.au](mailto:gnair@unimelb.edu.au)

Three Postdocs and PhD positions in Control and Spatial Awareness at Uni. Melbourne

Expressions of interest are invited for up to three postdoctoral and three PhD positions in the Dept. Electrical and Electronic Engineering at the University of Melbourne, Australia. These positions are to work on a multidisciplinary project on perception, navigation and spatial awareness in mobile robots, using vision or other sensing modalities. There will be opportunities to collaborate with and visit institutions in Boston, USA.

\* Postdoctoral candidates should ideally have PhDs in areas related to control, robot navigation, optimisation, or statistical signal processing. Experience with mobile robots, and familiarity with vision-based methods, information theory, or partially observed Markov processes would be advantageous. Salaries would range from AUD 91,125 to 97,811 per year, plus 9.5% superannuation. Contracts would be of up to three years in duration.

\* PhD candidates must have good Masters or four-year Bachelor degrees related to engineering or applied maths/probability, and familiarity with control, signal processing or stochastic models, with strong weighted averages. The living allowance is AUD 30,960 per year tax-free, conditional on gaining admission into the PhD degree at the University of Melbourne with a tuition fee waiver.

If interested, please email your CV and research statement to Prof Girish Nair [gnair@unimelb.edu.au](mailto:gnair@unimelb.edu.au), with either the subject heading ROBOT POSTDOC or ROBOT PHD.

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#### **6.12. Postdoc: Lehigh University, USA**

Contributed by: Nader Motee, [motee@lehigh.edu](mailto:motee@lehigh.edu)

Two postdoctoral positions are available with the Distributed Control and Dynamical Systems (DCDS) Laboratory in the Department of Mechanical Engineering and Mechanics at Lehigh University. All candidates with strong backgrounds in **networked control systems** and **stochastic dynamical systems** are encouraged to apply. The application area is networked robotics.

Applicants should have a PhD degree in Engineering, Computer Science, or Applied Mathematics. The initial appointment is for one year with a possible extension up to 2-3 years. As employees of Lehigh University, postdocs will receive a competitive salary, travel budget, benefits, and discounts for health insurance.

Interested applicants may contact Prof. Nader Motee ([motee@lehigh.edu](mailto:motee@lehigh.edu)) by sending him the following information: (1) one-page research statement explaining how his/her background fits the research areas, (2) detailed CV and list of publications, (3) names of two references. All documents should be sent in PDF format.

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### 6.13. Postdoc: Grenoble-INP, France

Contributed by: Perrin Julie, [julie.perrin@gipsa-lab.fr](mailto:julie.perrin@gipsa-lab.fr)

Post-Doc Position on Traffic models in large-scale urban networks

Gipsa-lab is a CNRS research unit joint with Grenoble-INP (Grenoble Institute of Technology), and Université Grenoble Alpes (Grenoble Alpes University). It has agreements with INRIA, Observatoire des Sciences de l'Univers de Grenoble. With 350 people, including about 150 doctoral students, Gipsa-lab is a multi-disciplinary research unit developing both basic and applied researches on complex signals and systems. Gipsa-lab is internationally recognized for the research achieved in Automatic Control, Signal and Images processing, Speech and Cognition. The research unit develops projects in the strategic areas of energy, environment, communication, intelligent systems, Life and Health and language engineering. Thanks to the research activities, Gipsa-lab maintains a constant link with the economic environment through a strong partnership with companies. Gipsa-lab staff is involved in teaching and training in the various universities and engineering schools of the Grenoble academic area (Grenoble Alpes University). Research is achieved in Gipsa-lab thanks to 12 research teams organized in 3 departments : Automatic control, Images-signal, Speech-cognition. Gipsa-lab regroups 150 permanent staff and around 250 no-permanent staff (Phd, post-doctoral students, visiting scholars, trainees in master. . .).

Scale-FreeBack is an ERC hosted by the CNRS. The project will be conducted within the NeCS group ( a joint CNRS (GIPSA-Lab)-INRIA team), at Grenoble France. Scale-FreeBack is a project with the overall aim of developing holistic scale-free control methods of controlling complex network systems in the widest sense, and to set the foundations for a new control theory dealing with complex physical networks with an arbitrary size, see [scale-freeback.eu](http://scale-freeback.eu)

This research proposal deals with the problem of modeling and validating urban traffic network at an aggregated level. In this framework a field of research concentrates on two dimensional PDE models while another group of works concentrates on the notion of Macroscopic Fundamental Diagram (MFD). Starting with some empirical observation of traffic in a city, "Existence of urban-scale macroscopic fundamental diagram" show that it is possible to exhibit a relation between the average density and the average flow over a whole network. This result enables the introduction of accumulation models —also called reservoir models — which consist of representing the traffic state of a network with a single scalar field variable representing the total number of vehicles in the network. These models are practical because they are understandable, with few parameters to tune and a low computational cost. However, they contain little information about the traffic states. For example, they are not able to describe precisely where vehicles are located over the reservoir. This problem was later on addressed in some papers in which the authors separated different areas of the city with different reservoirs. Other models show that traffic in urban areas can be modeled with two-dimensional continuous and dynamic models. These models represent the traffic density as a variable over a 2D-plane. Such models are based on a two-dimensional conservation law and a review of some of these model have been done by "Dynamic traffic assignment using the macroscopic fundamental diagram: a review of vehicular and pedestrian flow models" . As 2D models are recent, there is little validation or calibration of these models. A first challenge in testing 2D models is to obtain a two-dimensional density function from real traffic data. In particular, the reconstruction of a density in the 2D-plane from

vehicle data on the road network needs to be defined properly. In the project we developed 2D-LWR model (which includes 2D wave propagations. This model can be seen as a natural extension to 2D of the well-known CTM. This was the first 2D model with a geometry-dependent flux where the magnitude depends on the density and the direction depends on space. However, at the current stage, the model is able to represent only monodirectional flow. The main goal of this post-doc is to extend this model to multidirectional flow (probably using a multi-layer approach) and to validate the model using synthetic and real data.

Several specific task will be expected:

- Extend our previous model to a 2-D multilayer PDE model for a large-scale urban traffic systems based on the 2D-LWR model ideas
- Starting from real data, recover the function in the PDE that models the flux function and the interaction between cars using inverse problems.
- Validate the model using a microscopic simulator
- Perform experiments in our micro-simulator to verify the aggregation process, and the validity of the detailed model.

Field tests and other realistic simulations to validate the theory will be performed using the equipment available at the Grenoble Traffic Lab center (see GTL), that is currently being extended at the level of city-center of Grenoble (GTL-Ville project) where we are collecting traffic related data and constructing a real-time data-collection systems. The algorithms developed in this work, will be integrated into the GTL-Ville project. Experiments that cannot be realized in vivo, will be tested on a microscopic traffic simulator replicating the full complexity of the Grenoble urban network.

To apply, please click on the following link:

<https://emploi.cnrs.fr/Offres/CDD/UMR5216-ALLBEL-011/Default.aspx?lang=EN>

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#### **6.14. Postdoc: University of Sydney, Australia**

Contributed by: Robin Vujanic, [robin.vujanic@sydney.edu.au](mailto:robin.vujanic@sydney.edu.au)

Postdoc: University of Sydney, Australia

- Opportunity to contribute to world class operations and optimisation research for fleets of autonomous vehicles
- Located at The Australian Centre for Field Robotics, Rio Tinto Centre for Mine Automation within the University of Sydney
- Full-time fixed term for up to two years. Academic Level A or B: package \$94,629 p.a- \$126,279 p.a plus leave loading and up to 17% superannuation

We are currently seeking a self-motivated and well-qualified postdoctoral researcher to contribute to theoretical and applied control systems/operations research, with a focus on real-time optimisation of dispatching or scheduling of fleets of mobile equipment and agents.

Research topics of interest include

1. Distributed control/optimisation; multi-agent systems
2. Machine learning, data-driven modelling of equipment and processes performance

### 3. Real-time, computationally efficient algorithms

This role will provide an exceptional opportunity to work closely with academia and Rio Tinto at the intersection of fundamental research into field-robotics and mine operations. We are seeking both theoretical as well as application-oriented candidates. You will also have the opportunity to work with the Centre's team of software engineers to facilitate your work and the real-world validation and operational deployment of your academic research.

As a university academic, you will be expected to build research areas, engage in academic publication of research, and may also have the opportunity to teach at postgraduate and industry levels.

Link to more details about the position:

<https://sydney.nga.net.au/cp/index.cfm?event=jobs.checkJobDetailsNewApplication&jobid=51E3941F-5754-479B-8700-AA8000C6D440>

For further questions, contact:

- Prof. Dr. Salah Sukkarieh (email: [salah.sukkarieh@sydney.edu.au](mailto:salah.sukkarieh@sydney.edu.au))
- Dr. Robin Vujanic (email: [robin@acfr.usyd.edu.au](mailto:robin@acfr.usyd.edu.au))
- Dr. Andrew Hill (email: [andrew.hill@sydney.edu.au](mailto:andrew.hill@sydney.edu.au))

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#### 6.15. Postdoc: KTH, Sweden

Contributed by: Håkan Hjalmarsson, [hjalmars@kth.se](mailto:hjalmars@kth.se)

One to three Postdocs in Learning Dynamical Systems

We are currently looking for 1-3 postdocs in data-driven learning of dynamical systems in the project New Trends in Learning Dynamical Systems (NewLEADS). Full details can be found at

<https://www.kth.se/en/om/work-at-kth/lediga-jobb/what:job/jobID:280755>

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#### 6.16. Postdoc: Lund University, Sweden

Contributed by: Anders Rantzer, [rantzer@control.lth.se](mailto:rantzer@control.lth.se)

The department of Automatic Control at Lund University is announcing PhD and postdoc positions funded by an Advanced Grant from the European Research Council. The project is devoted to theory for large scale systems, adaptive control and applications in district heating networks.

See <http://www.lth.se/english/work> for more information.

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#### 6.17. Postdoc: University of California, Berkeley, USA

Contributed by: Somayeh Sojoudi, [sojoudi@berkeley.edu](mailto:sojoudi@berkeley.edu)

Two postdoctoral positions are available in the Department of Electrical Engineering & Computer Sciences at the University of California, Berkeley. The research topics are in the broad areas of optimization theory



and machine learning.

The preferred start date is anytime before January 2020. To apply, please send a cover letter describing your research interests and background, CV, three sample publications, and the contact information of two references to Prof. Somayeh Sojoudi (sojoudi@berkeley.edu).

Please check out the website <http://eecs.berkeley.edu/~sojoudi> for more details.

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#### **6.18. Postdoc: University of California, Berkeley, USA**

Contributed by: Javad Lavaei, [lavaei@berkeley.edu](mailto:lavaei@berkeley.edu)

Multiple postdoctoral positions are available in the Department of Industrial Engineering and Operations Research at the University of California, Berkeley. The positions are on optimization theory, data science, energy systems, and distributed control. To apply, please email a CV along with sample research papers to Professor Javad Lavaei ([lavaei@berkeley.edu](mailto:lavaei@berkeley.edu)).

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#### **6.19. Postdoc: North Carolina State University, USA**

Contributed by: Aranya Chakraborty, [achakra2@ncsu.edu](mailto:achakra2@ncsu.edu)

My research group at the Electrical & Computer Engineering department of NC State University currently has a postdoctoral opening starting in the Fall 2019 semester.

The candidate is desired to have a strong background in control theory and optimization, with research interests in the general area of multi-agent control, consensus, optimization, reinforcement learning. The candidate will get to work on a large range of topics on control and machine learning with a multi-disciplinary team of researchers. Interested candidates please feel free to email me at [achakra2@ncsu.edu](mailto:achakra2@ncsu.edu) with their latest CVs.

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#### **6.20. Faculty: Lund University, Sweden**

Contributed by: Anders Rantzer, [rantzer@control.lth.se](mailto:rantzer@control.lth.se)

The department of Automatic Control at Lund University is announcing faculty position in control large-scale systems. The faculty position is announced as “Senior lecturer in Automatic Control” on <http://www.lth.se/english/work>.

An associated start-up package covering two PhD students and two postdocs is funded by the Knut and Alice Wallenbergs Foundation <https://kaw.wallenberg.org/en>.

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### **6.21. Research Scientist: Mitsubishi Electric Research Laboratories, USA**

Contributed by: Scott A. Bortoff, [bortoff@merl.com](mailto:bortoff@merl.com)

Mitsubishi Electric Research Laboratories (MERL, <http://www.merl.com>) located in Cambridge, MA, USA, invites qualified candidates to apply for the position of Research Scientist in the Multiphysical Systems Group. All levels of experience will be considered. Successful candidates will be expected to perform original, relevant research in areas including model predictive control, computational analysis of interconnected dynamical systems, model-based control system design, data assimilation, large-scale inverse problems, or next generation tools for scientific computing.

Details are at: <http://www.merl.com/employment/employment/#MP377>

Qualifications for this position are:

- A Ph.D. from an internationally-recognized institution in electrical engineering, mechanical engineering or equivalent, or in applied mathematics,
- Experience with constructing and using system-level dynamic models of multiphysical systems of interest,
- Knowledge of control theory and experience with model-based control system design,
- Strong software engineering skills,
- A strong publication record in leading conferences and journals, consistent with experience,
- A record of independently proposing and executing research programs with academic impact.

Interested parties should send a resume and a one-page statement of research interests to Dr. Chris Laughman, Team Leader/Senior Principal Research Scientist, [laughman@merl.com](mailto:laughman@merl.com), and Dr. Scott A. Bortoff, Distinguished Research Scientist, [bortoff@merl.com](mailto:bortoff@merl.com).

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### **6.22. Researcher: Luleå University of Technology, Sweden**

Contributed by: George Nikolakopoulous, [geonik@ltu.se](mailto:geonik@ltu.se)

The Robotics Team at the Department of Computer Science and Electrical and Space Engineering at Luleå University of Technology, is now looking for a researcher contributing to our growing activities in the areas of Robotics.

The candidates will be part of a strong research team with intense expertise in aerial and ground robotics and will have the pleasure to work in multiple European and National research projects in Robotics, while contributing to the vision and goals of the group. Among the projects that the candidates will work in are the Horizon 2020 projects CompInnova - <http://compinnova.eu/>

Research topics: Characteristic research topics for the positions will focus on, but not be limited to, the following areas:

Wall-climbing robotics

Mobile robots for inspection and repair purposes

Safe and robust navigation for ground robots in featureless or reduced feature environments (e.g. aircraft fuselages)

Path planning and feasible trajectory identification in uneven and unknown terrains  
Model-based control (robust, optimal etc.) for mobile robots  
Robot simulation for collision avoidance  
Data fusion-based robot localization  
Negative pressure actuation technologies  
Robot assembly and experimental evaluation  
Field Robotics demonstration of the corresponding research topics outcomes Qualifications

To be qualified for one of the two aforementioned positions, the applicants must have a PhD in Automatic control or related subject. The research tasks require a solid mathematical background with proven advanced experimental capabilities and excellent programming skills (e.g. C++, MATLAB, LABVIEW etc.). The candidate should have a strong vision to evaluate and demonstrate the research findings in real life operating conditions, in an approach to close the gap between pure theory and experimental verifications.

Tasks: The candidates will perform research with substantial experimental components that should be published in peer-reviewed international journals and at major impact international conferences. The positions will include supervision of MSc students, teaching and supporting in acquiring funds for future research projects from research funding agencies/councils, EU framework program or industry. The candidates will need to represent the group in different contexts, both in Sweden and abroad, and hence have excellent skills in English.

Information: The contract for this position will be one year, with possibility to be extended up to 2 years in total. For further information please contact Professor George Nikolakopoulos +46 920 491298, geonik@ltu.se

Luleå University of Technology is actively working on equality and diversity that contributes to a creative study and work environment. The university's core values are based on respect, openness, cooperation, trust and responsibility. In case of different interpretations of the English and Swedish versions of this announcement, the Swedish version takes precedence.

Application: We prefer that you apply for this position by clicking on the apply button below. The application should include:

- CV
- Reference list (2-3 contacts)
- Personal letter highlighting past accomplishments and future research plans
- Copies of verified diplomas from universities.
- Your application, including diplomas, must be written in English or Swedish.
- Mark your application with the reference number below.

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