

**E-LETTER on Systems, Control, and Signal Processing**  
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Welcome to the 349 issue of the Eletter, available electronically [here](#).  
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- 6.20 PostDoc/Visiting Professor: Huazhong University of Science & Technology, China
- 6.21 Research Fellow: Hull University, UK
- 6.22 Faculty: Umeå University, Sweden
- 6.23 Faculty: University of Bath, UK
- 6.24 Faculty: Polytechnique Montreal, Canada
- 6.25 Faculty: Universidad Técnica Federico Santa María, Chile
- 6.26 Faculty: Naval Postgraduate School, USA
- 6.27 Research Scientist: Intelligent Fusion Technology Inc., USA
- 6.28 Research Scientist: Bosch Center for Artificial Intelligence, Germany
- 6.29 Senior Systems Engineer: NIO, USA

## 1. IEEE CSS Headlines

### 1.1. CFP: IEEE Control Systems Society Outreach Fund

Contributed by: Daniel E. Rivera, [daniel.rivera@asu.edu](mailto:daniel.rivera@asu.edu)

The IEEE CSS Outreach Task Force is pleased to announce that the window for proposal submission to the CSS Outreach Fund for its 2017 fall solicitation will be held from November 1 to 24, 2017. Information regarding the program, which includes proposal requirements and descriptions of current and past funded projects, can be found in:

<http://www.ieeecss.org/general/control-systems-society-outreach-fund>

Inquiries, notices of intent, and requests for application forms must be made directly to Daniel E. Rivera, Outreach Task Force Chair, at [daniel.rivera@asu.edu](mailto:daniel.rivera@asu.edu).

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### 1.2. IEEE Control Systems Society Technically Cosponsored Conferences

Contributed by: Luca Zaccarian, CSS AE Conferences, [zaccarian@laas.fr](mailto:zaccarian@laas.fr)

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

- 2018 International Conference on Unmanned Aircraft Systems (ICUAS 2018). Dallas (TX), United States. Jun 12 - Jun 15, 2018. <http://www.uasconferences.com/>
- 2018 SICE International Symposium on Control Systems. Tokyo, Japan. Mar 9 - Mar 11, 2018. <http://iscs2018.sice-ctrl.jp/>
- XXVI International Conference on Information, Communication and Automation Technologies (ICAT 2017). Sarajevo, Bosnia and Herzegovina. Oct 26 - Oct 28, 2017. <http://icat.etf.unsa.ba/>
- 21st International Conference on System Theory, Control and Computing (ICSTCC 2017). Sinaia, Romania. Oct 19 - 21, 2017. <http://www.icstcc2017.ac.tuiasi.ro/>

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

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### 1.3. IEEE Transactions on Automatic Control

Contributed by: Elizabeth Kovacs, [ekovacs2@nd.edu](mailto:ekovacs2@nd.edu)

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Volume 62 (2017), Issue 9 (September)

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Contributed by: TCST Editorial Board, [ieeetcst@osu.edu](mailto:ieeetcst@osu.edu)

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## 1.5. IEEE Control Systems Society Publications Content Digest

Contributed by: Elizabeth Kovacs, [ekovacs2@nd.edu](mailto:ekovacs2@nd.edu)

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

The CSS Publications Content Digest, available at <http://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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## 2. Summer School and Seminar

### 2.1. Summer School on Formal Methods for Cyber-Physical Systems

Contributed by: Matthias Rungger, [matthias.rungger@tum.de](mailto:matthias.rungger@tum.de)

CALL FOR PARTICIPATION

1st Summer School on Formal Methods for Cyber-Physical Systems

Edition 2017: Automatic Synthesis of Controllers for Hybrid Systems



12-16 September 2017

Department of Computer Science

University of Verona, Italy

The 1st Summer School on Formal Methods for Cyber-Physical Systems (FM-CPS) is a new summer school to be held at University of Verona from September 12th to 16th. The 2017 edition of FM-CPS 2017 focuses on the foundations, techniques, and tools for analysis, verification, control, synthesis, implementation, and applications of cyber-physical systems (CPS). Applications deal broadly with engineering and natural systems, including signal circuits, robotics, automotive and avionics, large-scale infrastructure networks, as well as biochemical and physiological processes.

Details <https://cps-2017.di.univr.it/school-editions/2017>

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## 2.2. Oberwolfach Seminar “Mathematical Modeling in Systems Biology”

Contributed by: Steffen Waldherr, [steffen.waldherr@kuleuven.be](mailto:steffen.waldherr@kuleuven.be)

Oberwolfach Seminar ”Mathematical Modeling in Systems Biology”

The Oberwolfach Seminar ”Mathematical Modeling in Systems Biology“, organized by Susanna Röblitz (Zuse Institute Berlin), Heike Siebert (Free University Berlin), Jan Hasenauer (Helmholtz Center Munich) and Steffen Waldherr (KU Leuven), takes place on 19th - 25th November 2017 at the Oberwolfach Research Institute for Mathematics. It is aimed at PhD students and PostDocs interested in the mathematical underpinnings of modeling molecular networks, providing background on the underlying theory and discussing its application. The format is a mixture of lectures and exercises, leaving also enough room to in-depth discussion, as is tradition for Oberwolfach activities.

Preliminary Program

Day 1: Discrete modeling

Day 2: Constraint-based modeling

Day 3: Continuous and stochastic modeling I

Day 4: Continuous and stochastic modeling II

Day 5: Modeling across the formalism scale

The program also includes a poster session and an excursion.

See also:

[www.mfo.de/occasion/1747a/www\\_view](http://www.mfo.de/occasion/1747a/www_view)

<http://userwikis.fu-berlin.de/display/biomath/Mathematical+Modeling+in+Systems+Biology>

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## 3. Books

### 3.1. Process Control: Theory and Applications

Contributed by: Yasmin Brookes, [yasmin.brookes@springer.com](mailto:yasmin.brookes@springer.com)

Process Control: Theory and Applications

by Jean-Pierre Corriou

ISBN: 978-3-319-61142-6

September 2017, Springer

Hardcover, 860 pages, \$129.00/EURO 109,00

<http://www.springer.com/gb/book/9783319611426>

This textbook introduces the topics and theories of process control step-by-step in increasing complexity, making the learning of detailed techniques and algorithms easier. Whether you are a student starting in control, or an industrial engineer who, at present, only has cursory contact with control, the initial classical approach to continuous control by transfer functions will be of enormous benefit. The more advanced material on discrete control and state-space control, as well as nonlinear control and observers, requires minimal previous knowledge, assisting you to move more easily to the use of high-performance techniques.

A range of identification and control methods applicable to industrial processes are accompanied by practical examples, allowing readers to learn the subject both broadly and in depth. The expanded second edition of Process Control explores and introduces detailed topics, such as:

- new sections on tuning rules for feedback controllers;
- new sequences for parameter identification such as multi-level and multisinusoidal sequences;
- improved presentation of optimal control with dynamic optimization and model predictive control;
- deeper coverage of applications of nonlinear geometric control;
- expanded coverage of state observers, introducing the unscented and ensemble Kalman filters, the particle filter, the bootstrap filter, and providing more profound treatment of the Luenberger observer and high-gain observer; and
- more examples of process control.

The book helps students to learn by using worked examples throughout the text, along with a downloadable solutions manual for the convenience of instructors. The broad coverage creates an important synthesis of the majority of aspects of process control, which gives a complete view of control theory and possible applications within the field, making the book accessible to engineers and academic researchers alike.

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### **3.2. Optimal Control of Energy Resources for State Estimation Over Wireless Channels**

Contributed by: Yasmin Brookes, [yasmin.brookes@springer.com](mailto:yasmin.brookes@springer.com)

Optimal Control of Energy Resources for State Estimation Over Wireless Channels

by Alex S. Leong, Daniel E. Quevedo, and Subhrakanti Dey.

ISBN: 978-3-319-65613-7

September 2017, Springer

Softcover, 125 pages, \$54.99/EURO 49,99

<http://www.springer.com/gb/book/9783319656137>

This brief introduces wireless communications ideas and techniques into the study of networked control systems. It focuses on state estimation problems in which sensor measurements (or related quantities) are transmitted over wireless links to a central observer.

Wireless communications techniques are used for energy resource management in order to improve the performance of the estimator when transmission occurs over packet dropping links, taking energy use into account explicitly in Kalman filtering and control. The brief allows a reduction in the conservatism of control designs by taking advantage of the assumed.

The brief shows how energy-harvesting-based rechargeable batteries or storage devices can offer significant advantages in the deployment of large-scale wireless sensor and actuator networks by avoiding the cost-prohibitive task of battery replacement and allowing self-sustaining sensor to be operation. In contrast with research on energy harvesting largely focused on resource allocation for wireless communication systems design, this brief optimizes estimation objectives such as minimizing the expected estimation error covariance. The resulting power control problems are often stochastic control problems which take into account both system and channel dynamics. The authors show how to pose and solve such design problems using dynamic programming techniques.

Researchers and graduate students studying networked control systems will find this brief a helpful source of new ideas and research approaches.

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### **3.3. Fuzzy Control, Estimation and Diagnosis: Single and Interconnected Systems**

Contributed by: Yasmin Brookes, [yasmin.brookes@springer.com](mailto:yasmin.brookes@springer.com)

Fuzzy Control, Estimation and Diagnosis: Single and Interconnected Systems

by Magdi S. Mahmoud

August 2017, Springer

Hardcover, 689 pages, \$119.00/EURO 99,99

<http://www.springer.com/gb/book/9783319549538>

This textbook explains the principles of fuzzy systems in some depth together with information useful in realizing them within computational processes. The various algorithms and example problem solutions are a well-balanced and pertinent aid for research projects, laboratory work and graduate study. In addition to its worked examples, the book also uses end-of-chapter exercises as an instructional aid with a downloadable solutions manual available to instructors. The content of the book is developed and extended from material taught for four years in the author's classes.

The text provides a broad overview of fuzzy control, estimation and fault diagnosis. It ranges over various classes of target system and modes of control and then turns to filtering, stabilization, and fault detection and diagnosis. Applications, simulation tools and an appendix on algebraic inequalities complete a unified approach to the analysis of single and interconnected fuzzy systems.

Fuzzy Control, Estimation and Fault Detection is a guide for final-year undergraduate and graduate students of electrical and mechanical engineering, computer science and information technology, and will also be instructive for professionals in the information technology sector.

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## 4. Journals

### 4.1. Contents: Automatica

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#### 4.2. Contents: System & Control Letters

Contributed by: John Coca, [j.coca@elsevier.com](mailto:j.coca@elsevier.com)

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#### **4.3. Contents: Journal of Process Control**

Contributed by: John Coca, [j.coca@elsevier.com](mailto:j.coca@elsevier.com)

Journal of Process Control

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#### **4.4. Contents: Mechatronics**

Contributed by: John Coca, [j.coca@elsevier.com](mailto:j.coca@elsevier.com)

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#### 4.5. Contents: International Journal of Control

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

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#### 4.6. Contents: Evolution Equations and Control Theory

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

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Vol 6, No 3, September, 2017

<http://aimsciences.org/journals/contentsListnew.jsp?pubID=974C>

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**4.7. Contents: Control Engineering Practice**

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**4.8. CFP: Asian Journal of Control**

Contributed by: Lichen Fu, [lichen@ntu.edu.tw](mailto:lichen@ntu.edu.tw)

Asian Journal of Control

CALL FOR PAPER

Special Issue on “Control Applications in Renewable Energy Systems”

<http://www.ajc.org.tw>

Renewable energy resources pose a number of fundamental and practical challenges such as cost and availability that need to be addressed before significant levels of renewable penetration into the existing power-mix can be realized. The intermittency of the renewable energy sources results in systems of exhibited changing dynamics, nonlinearities, and uncertainties. In addition, the behavior of these energy conversion systems is dominated by strong nonlinearities and the heavy interaction of continuous and discrete dynamics. This makes the application of classical control techniques, based on linearized models and purely continuous (or discrete) models inadequate. The use of more efficient control and optimization strategies would not only enhance the performance of these systems, but would also reduce the cost per kilowatt-hour produced. Therefore, the control applications of renewable energy systems are of great attractions to researchers. This special issue of the Asian Journal of Control (AJC) will provide a forum for researchers and practitioners to share insights on innovation and development of control methods for renewable energy systems, the application of advanced control techniques and methods to enable more efficient and higher operational capabilities of systems in the general area of renewable energy and Hybrid Power Systems (HPS).

Authors are invited to submit full papers describing original work in all aspects of engineering techniques related to the nonlinear control and stability analysis of the renewable energy-based systems covering the following topics but are not limited to:

- Nonlinear control of batteries or fuel cells.
- Battery and/or fuel cells integration into HPS.
- HPS in transportation applications.
- Optimal sizing of HPS.
- Linear/nonlinear control of HPS.
- HVDC use in HPSs.
- Power electronics and drives in HPS.
- Intelligent energy and smart grids.
- Green buildings.
- ICT applications in HPS.
- Energy storage systems impacts on HPS.
- Renewable-based off-Grid/Grid-Interactive systems.

Important Dates:

December 31, 2017 Deadline for submissions

March 31, 2018 Completion of First Review

July 31, 2018 Completion of Final Review

August 31, 2018 Receipt of Final Manuscript

Nov 30, 2018 Publication (Tentatively Vol. 20, No. 6)

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## CALL FOR PAPERS

Special Issue on “SMC based observation, identification, uncertainties compensation and fault detection”

<http://www.ajc.org.tw>

Sliding Mode Observers (SMO) are the only type of observers that even for the system with unknown inputs ensuring finite (or even fixed)-time exact convergence to the real system states. Moreover, SMO based on higher-order sliding modes provides best possible accuracy of states and unknown inputs estimation in the presence of sampling or deterministic noises.

Recently, a lot of new results were obtained in the field like fixed-time convergent differentiators, algorithms for finite- and fixed-time parameter identification.

The main goal of proposed Special Issue is to summarise the theoretical results about SMO results in the field and present different applications. The principal topics planned to be covered are as follows:

- Sliding Mode Based Differentiators
- SMO for nonlinear systems
- SMO for descriptor systems
- SMO for switched systems
- SMO based uncertainties compensation
- SMO Based parameter identification
- SMO Based Fault Detection
- SMO Based Fault Tolerant Control
- Applications of SMOs

Important Dates:

February 28, 2018 Deadline for submissions

May, 2018 Completion of First Review

September, 2018 Completion of Final Review

October, 2018 Receipt of Final Manuscript

January, 2019 Publication (Tentatively Vol. 21, No. 1)

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## 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 control areas, but also serves as an educational means for students and any others who would like to learn new topics in this 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: <http://mc.manuscriptcentral.com/asjc>.

If you encounter any submission problem, please contact Prof. Li-Chen Fu.

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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, phone and fax numbers. The contacting author should be clearly identified. For detailed submission guidelines, please visit: <http://wileyonlinelibrary.com/journal/asjc>.

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## 4.9. CFP: IET Cyber-Physical Systems: Theory & Applications

Contributed by: Zhen Ni, [zhen.ni@sdstate.edu](mailto:zhen.ni@sdstate.edu)

IET Cyber-Physical Systems: Theory & Applications Call for Papers

SPECIAL ISSUE ON: Cyber Physical Power Systems: Advanced Intelligent Technologies and Applications

With the spread of information & communication technologies (ICTs) and cyber and internet technologies, power systems are progressively evolving into Cyber-Physical Power Systems (CPPS). CPPS are emerging technologies characterized by major industrial and societal impacts which, in turn, require significant research developments in areas related to the deep integration of smart grid and information systems. The straight use of standard ICTs may not work for CPPSs since, here, we need to take into account the tight coupling between cyber and physical systems.

Therefore, the interdependency of the power system and its associated cyber properties should be investigated. It appears that advanced intelligent technologies must be developed to deal with challenges arising from multiple timescales, the presence of uncertainty and the existence of reliability concerns and security issues related to power systems. It is expected that these intelligent technologies can improve power system performance in terms of security, efficiency, reliability and, last but not least, make a strong economic impact.

This Special Issue aims to gathering research material so as to crystallize state-of-the-art of the research on CPPS technologies and their applications. The areas of interest include, but are not limited to:

- Computational intelligence techniques for CPPS
- Intelligent substation technologies of CPPS

- Intelligent and optimal operation of CPPS
- Intelligent control of CPPS
- Interaction mechanism analysis of CPPS
- Fault detection and diagnosis of CPPS
- Renewable energy integration for CPPS
- Power market and energy management of CPPS
- Testing and measurement technologies of CPPS
- CPPS based smart grid infrastructures
- Big data application in CPPS
- New frameworks, algorithms, tools and devices for CPPS
- Co-simulation testbeds/platforms for CPPS

Submission Deadline: 1 Feb 2018

[http://digital-library.theiet.org/files/IET\\_CPS\\_CPPS\\_CFP.PDF](http://digital-library.theiet.org/files/IET_CPS_CPPS_CFP.PDF)

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#### **4.10. CFP: IEEE Transactions on Control Systems Technology**

Contributed by: Guillaume Mercère, [guillaume.mercere@univ-poitiers.fr](mailto:guillaume.mercere@univ-poitiers.fr)

CFP: Special Issue on System identification and control in biomedical applications in IEEE Transactions on Control Systems Technology

Contributions are invited for a special issue of the IEEE Transactions on Control Systems Technology devoted to the subject of System Identification and Control in Biomedical Applications. The purpose of this special issue is to document the current status of research in this field through an original collection of diverse, high-quality papers. The emphasis is on the role control systems technology plays in advancing the state of the art in the challenges of applying feedback control in living organisms, with emphasis on biomedicine. Specifically, we aim at (i) pointing out theoretical and practical issues specific to bio-medical systems, (ii) bringing together solutions developed under different settings with specific attention to the validation of these tools in bio-medical settings using real-life datasets and experiments, and (iii) introducing significant case studies. Topics of common interests include (but are not limited to) the following:

- theoretical and implementation challenges which arise in medical systems,
- control engineering tools for solving specific system design problems in medical technology,
- novel data-driven modeling techniques capturing the dynamics of biomedical systems, and accounting for intra- and inter-individual variability,
- evidence of successful projects in biomedicine enabled by system identification and control, such as the artificial pancreas and closed-loop anesthesia.
- application areas in healthcare and medical systems, such as assistive devices and therapeutics in medical rehabilitation, and mathematical models of infectious disease spread.
- prevention and treatment of chronic, relapsing disorders and illnesses such as cancer, diabetes, obesity, and HIV.

Only contributions that include significant results based on analysis of real data or experimental validation will be included. Papers must contain high-quality original contributions and be prepared in accordance with the IEEE Transactions on Control Systems Technology standards. Prospective authors should state in their cover letter and in the notes section of the submission site that their manuscript is intended for the special issue on “system identification and control in biomedical applications.” Submitted manuscripts must not have been previously published or be under review for possible publication elsewhere.

Time line:

Manuscripts Due: November 1, 2017

Notification to authors (after the first round of reviews): March 1, 2018

Notification of final decision: June 1, 2018

Publication Date: January 2019

Authors can submit their manuscripts via <https://mc.manuscriptcentral.com/tcst>

Information for Authors prior to submitting a paper is available via

<http://www.ieeecs.org/publications/tcst/information-authors>

All inquiries should be directed to G. Mercère you can contact via his email address: [guillaume.mercere@univ-poitiers.fr](mailto:guillaume.mercere@univ-poitiers.fr)

Guest Editors:

Guillaume Mercere, Universitede Poitiers, France (LEAD)

Bayu Jayawardhana, University of Groningen, The Netherlands

Alexander Medvedev, Uppsala University, Sweden

Daniel E. Rivera, Arizona State University, Tempe, Arizona, USA

Caterina Scoglio, Kansas State University, Manhattan, Kansas, USA

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## 5. Conferences

### 5.1. ACM International Conference on Hybrid Systems: Computation and Control

Contributed by: Kostas Margellos, [kostas.margellos@eng.ox.ac.uk](mailto:kostas.margellos@eng.ox.ac.uk)

HSCC 2018 CALL FOR PAPERS

21st ACM International Conference on Hybrid Systems: Computation and Control (HSCC)

April 11-13, 2018,

Porto, Portugal

URL: [www.hsc2018.deib.polimi.it](http://www.hsc2018.deib.polimi.it)

Important dates:

Paper submission deadline: October 6, 2017 (11:59pm UTC-12)

Notification: December 2017

Camera-ready: February 2018

Conference dates: April 11-13, 2018

\* Please refer to the conference website for up-to-date submission information. \*

Paper submission information:

Regular papers (maximum 10 pages, 10pt font, two-column ACM format)

Tool and Case Study Papers (maximum 6 pages, 10pt font, two-column ACM format)

Demos and posters:

Demos (maximum 2 pages, 10pt font, two-column ACM format, title should begin with “Demo”)

Posters (maximum 2 pages, 10pt font, two-column ACM format, title should begin with “Poster”)

Awards:

- Best Repeatability Evaluation Award; Papers would be eligible upon passing the repeatability evaluation process and receive the “artifact evaluated” badge.



- Best Paper Award \*New\*
- Test-of-Time Award \*New\*

Conference scope:

HSCC 2018 is the 21st in a series of conferences and is part of the eleventh Cyber Physical Systems Week, and co-located with the International Conference on Cyber-Physical Systems, Internet-of-Things Design and Implementation, Information Processing in Sensor Networks, the Real-Time and Embedded Technology and Applications Symposium, and related workshops.

It focuses on original research on concepts, tools, and techniques from computer science, control theory, and applied mathematics for the analysis and control of hybrid systems, with an emphasis on computational aspects. By drawing on strategies from computation and control, hybrid systems theory finds application in both man-made cyber-physical systems (ranging from small robots to global infrastructure networks) and natural systems (ranging from biochemical networks to physiological models). Papers are expected to cover a wide spectrum of topics from theoretical results to practical considerations, from academic research to industrial adoption, including but not limited to:

- Mathematical foundations, computability and complexity
- Analysis, verification, validation, and testing
- Modeling paradigms and techniques
- Design, synthesis, planning, and control
- Programming and specification languages
- Network science and network-based control
- Security, privacy, and resiliency in cyber-physical systems with a focus on computation and control
- Artificial intelligence and machine learning in control algorithms
- Software tools
- Applications and industrial case studies in: automotive, transportation, autonomous systems, avionics, energy and power, robotics, medical devices, manufacturing, systems and synthetic biology, models for the life sciences, and other related areas

Program Committee Chairs:

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Claire Tomlin, University of California at Berkeley

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## **5.2. World Congress: Mathematical Problems in Engineering, Aerospace and Sciences**

Contributed by: Seenith Sivasundaram, [seenithi@gmail.com](mailto:seenithi@gmail.com)

World Congress: Mathematical Problems in Engineering, Aerospace and Sciences

WHEN: July 3, 2018 – July 6, 2018

WHERE: American University of Armenia, Yerevan

Website: <http://www.icnpaa.com>

<http://www.internationalmathematics.com/icnpaa/>

ICNPAA's AIM

Mathematical Problems in Engineering, Aerospace and Science have stimulated cooperation among scientists from a variety of disciplines. Developments in computer technology have additionally allowed for solutions of mathematical problems. This international forum will extend scholarly cooperation and collaboration, encouraging the dissemination of ideas and information.

The conference will have a pool of active researchers, with a proper balance between academia and industry, as well as between senior and junior researchers, including graduate students and post-doctoral fellows. It is anticipated that such a balance will provide both senior and junior researchers an opportunity to interact and to have a wider picture of recent advances in their respective fields. The conference, especially, enables the setting up of new interdisciplinary research directions among its participants by establishing links with world renowned researchers, making possible joint international projects that will no doubt bring about fresh and innovative ideas and technologies in engineering, aerospace and sciences

Co-Sponsored by: AIAA: American Institute of Aeronautics and Astronautics

IFIP: International Federation of Information Processing

American University of Armenia, Yerevan

The proceedings will be published by the American Institute of Physics.

AIP Conference Proceedings are indexed in:

- Astrophysics Data System(ADS)
- Chemical Abstracts Service (CAS)
- Crossref
- EBSCO Publishing
- Electronic Library Information Navigator (ELIN), Sweden
- Elsevier – SCOPUS
- International Atomic Energy Agency (IAEA)
- Thomson Reuters (ISI)

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## **5.3. International Conference on Unmanned Aircraft System**

Contributed by: Youmin Zhang, [Youmin.Zhang@concordia.ca](mailto:Youmin.Zhang@concordia.ca)

First Call-for-Papers: 2018 International Conference on Unmanned Aircraft Systems (ICUAS'18)

(<http://www.uasconferences.com>)

On behalf of the ICUAS'18 Organizing Committee, this is to invite you to submit your contributions to the 2018 International Conference on Unmanned Aircraft Systems (ICUAS'18; <http://www.uasconferences.com>). The conference is co-sponsored by the IEEE CSS and RAS, and several other organizations.

The ICUAS'18 will be held on June 12-15, in the Dallas Marriott City Center, <http://www.marriott.com/hotels/travel/dalddt-dallas-marriott-city-center> that is situated in the heart of a vibrant Arts District area. June 12 will be a Workshop/Tutorial day, followed by a three-day technical Conference on June 13-15. Judging from the interest ICUAS has drawn over the past eight years and its growth, ICUAS'18 is again expected to continue on this path and attract the highest number of participants from academia, industry, federal and state agencies, government, the private sector, users, practitioners and engineers who wish to be affiliated with and contribute technically to this highly demanding and evolving and expanding field. Details may be found at <http://www.uasconferences.com> and related links. ICUAS'18 is fully sponsored by the ICUAS Association, which is a non-profit organization. Information about the Association may be found at [www.icuas.com](http://www.icuas.com). The theme of ICUAS'18 will be twofold: UAS/RPAS design for assured autonomy and regulations, policy and law to enable UAS/RPAS technologies, both important and timely topics. The main novelty of ICUAS'18, is a completely separate track on regulations, policy, legal and ethical issues that are essential to allow for integration of UAS/RPAS in the national airspace. National and international organizations, agencies, industry, military and civilian authorities are working towards defining roadmaps of UAS expectations, technical requirements and standards that are prerequisite to their full utilization, as well as legal, policy and ethical issues. The next generation of UAS is expected to be used for a wide spectrum of civilian and public domain applications. Challenges to be faced and overcome include, among others, see-and-avoid systems, robust and fault-tolerant flight control systems, payloads, communications, levels of autonomy, manned-unmanned swarms, network-controlled swarms, as well as challenges related to policies, procedures, regulations, safety, risk analysis assessment, airworthiness, certification issues, operational constraints, standardization and frequency management, all of paramount importance, which, coupled with 'smart', 'environmentally friendly' cutting edge technologies will pave the way towards full integration of UAS with manned aviation and into the respective national airspace.

ICUAS'18 aims at bringing together different groups of qualified military and civilian representatives worldwide, organization representatives, funding agencies, industry and academia, to discuss the current state of UAS advances, and the roadmap to their full utilization in civilian and public domains. Special emphasis will be given to current and future research opportunities, and to 'what comes next' in terms of the essential technologies that need to be utilized to advance further UAS.

Conference topics include (but not limited to): Airspace Control; Integration; See/Sense-Detect-and-Avoid Systems; Airspace Management; Interoperability; Security; Airworthiness; Levels of Safety; Sensor Fusion; Autonomy; Manned/Unmanned Aviation; Smart Sensors; Biologically Inspired UAS; Micro- and Mini- UAS; Standardization; Certification; Networked UAS; Technology Challenges; Control Architectures; Payloads; Training; Energy Efficient UAS; Path Planning and Navigation; UAS Applications; Environmental Issues; Regulations; UAS Communications; Fail-Safe Systems; Reliability of UAS; UAS Testbeds; Frequency Management; Risk Analysis; UAS Transportation Management (UTM); Policy/Regulation/Law Aspects.

Unmanned system autonomy, collaboration and coordination, formation control, validation and verification and unmanned system design for assured autonomy, are topics of great interest to ICUAS'18.

Through Keynote addresses, round table panel discussions and presentations, it is expected that the outcome of the Conference will be a clear understanding of what industry, military, civilian, national/international authorities need, and what are the crucial next steps that need to be completed before UAS are utilized in everyday life applications.

IMPORTANT DATES (Please check the latest information at <http://www.uasconferences.com>)

February 12, 2018: Full Papers/ Invited Papers/Tutorial Proposals Due

April 15, 2018: Acceptance/Rejection Notification

May 7, 2018: Upload Final, Camera Ready Papers

April 15 - May 7, 2018: Early Registration

#### PAPER SUBMISSION

All papers must be submitted and uploaded electronically. Go to <https://controls.papercept.net>. Click on the link "Submit a Contribution to ICUAS'18" and follow the steps. The paper format must follow IEEE paper submission rules, two-column format using 10 point fonts, Times New Roman. The maximum number of pages per submitted paper is 10. For accepted papers, up to two additional pages will be permitted for a charge of \$100 per additional page. Illustrations and references are included in the page count. Invited and Special Sessions: Proposals for invited/special sessions must be submitted/uploaded electronically. A Summary Statement describing the motivation and relevance of the proposed session, invited paper titles and author names must be uploaded electronically by February 12, 2018. In addition, authors must submit FULL versions of invited papers electronically, through <https://controls.papercept.net>. Each paper must be marked as 'Invited Session Paper'. Workshops/Tutorials: Proposals for workshops/tutorials should contain title, the list of speakers, and extended summaries (2000 words) of their presentations. Proposals must be sent by e-mail to the Tutorial/ Workshop Chair by February 12, 2018. Paper Review Process: All submitted papers will undergo a peer review process coordinated by the Program Chairs, Advisory Committee Members, IPC members and qualified reviewers. Authors will be notified of results at the latest by April 15, 2018. Accepted papers must be uploaded electronically no later than May 7, 2018. Authors are encouraged to accompany their presentations with multimedia material, which will be included in the Conference Digital Proceedings. Conference Proceedings will be acquired by IEEE and they appear in IEEE Xplore.

Welcome and look forward to receiving your contributions and attendance to the ICUAS'18! For information about the ICUAS Association, Inc., see [www.icuas.com](http://www.icuas.com).

#### ICUAS ASSOCIATION LIAISON

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#### 5.4. International Conference on Control, Automation and Systems

Contributed by: Hye-Soo Kim, [conference@icross.org](mailto:conference@icross.org)

2017 17th International Conference on Control, Automation and Systems (ICCAS 2017)  
October 18(WED)-21(SAT), 2017

Ramada Plaza, Jeju Island, Korea

<http://2017.iccas.org>

CALL FOR PAPERS:

[http://icross.org/data/download/ICCAS2017/ICCAS2017\\_CFP.pdf](http://icross.org/data/download/ICCAS2017/ICCAS2017_CFP.pdf)

The aim of the ICCAS is to bring together researchers and engineers worldwide to present their latest works, and disseminate the state-of-the-art technologies related to control, automation, robotics, and systems.

Indexed in: IEEE Xplore, EI compendex, and SCOPUS

PLENARY SPEAKERS

- Richard D. Braatz (Massachusetts Inst. of Tech., USA)

"New Directions in the Control in Advanced Manufacturing Systems"

- Reza Moheimani (Univ. of Texas at Dallas, USA)

"On-Chip Atomic Force Microscope: Why and How?"

- Antonella Ferrara (Univ. of Pavia, Italy)

"Modern Sliding Mode Control with Application to Automotive Systems"

- Huijun Gao (Harbin Inst. of Tech., China)

"Network-Based Control and Estimation"

- Atsuo Takanishi (Waseda Univ., Japan)

"Humanoid Robotics Research and Its Applications"

VENUE: The Jeju is the largest island off the coast of the Korean Peninsula. The Jeju contains the natural World Heritage Site Jeju Volcanic Island and Lava Tubes, and has a temperate climate.

- Selected as the New 7 Wonders of Nature

- Only place in the world that has been certified by UNESCO Triple Crown in Natural Science: Biosphere Reserves, World Natural Heritage, World Geological Park

- Designated by WHO (World Health Organization) as an International Safe City

- No visa entry and 30-day stay for 187 countries including China

ACCOMMODATION: ICCAS 2017 participants can reserve rooms at the appointed hotels at a special (discounted) rate. View details: [http://2017.iccas.org/?page\\_id=63](http://2017.iccas.org/?page_id=63)

Organized by Institute of Control, Robotics and Systems (ICROS)

Technically Co-Sponsored by IEEE IES, IEEE CSS, IEEE RAS, SICE, ACA, CAA, CACS, ECTI, CAAI, and ISA

General Chair: Dong-il "Dan" Cho (Seoul Nat'l Univ., Korea / ICROS President)

Organizing Chair: Doyoung Jeon (Sogang Univ., Korea)

Program Chair: Hyosung Ahn (GIST, Korea)

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## **5.5. IFAC Symposium on Robust Control Design and IFAC Workshop on Linear Parameter Varying Systems**

Contributed by: Daniel Coutinho, [daniel.coutinho@ufsc.br](mailto:daniel.coutinho@ufsc.br)

ROCOND'18 & LPVS'18

9th IFAC Symposium on Robust Control Design (ROCOND'18) and 2nd IFAC Workshop on Linear Parameter Varying Systems (LPVS'18) - Florianopolis, SC, Brazil, September 03-05, 2018

<http://rocond18.ufsc.br> <http://lpvs18.ufsc.br>

#### Important Dates:

Submission site opens 15/10/2017

Open track session submission deadline 15/01/2018

Draft paper submission deadline 15/01/2018

Acceptance/rejection notification 15/04/2018

Final manuscript submission deadline 15/05/2018

Registration site opens 03/05/2018

Early registration deadline 03/06/2018

The Organizing Committees have the pleasure of inviting you to participate in the joint 9th IFAC Symposium on Robust Control Design (ROCOND'18) and 2nd IFAC Workshop on Linear Parameter Varying Systems (LPVS'18) to be held in Florianopolis, Brazil, September 3-5, 2018. The joint ROCOND'18 and LPV'18 will be held at the conference center of Majestic Palace Hotel near downtown Florianopolis. Majestic Palace Hotel is a 5-star hotel offering luxury accommodation, stunning views of the North Bay, and located just minutes from Shopping Malls, several beaches on the north, south and east of Santa Catarina Island.

#### IFAC Young Author Prize

It will be awarded a prize for the best paper in the joint ROCOND'18 and LPV'18 for an author younger than 30 years by September 1st 2018. The author should be the first (corresponding) and presenting author of the paper. The prize and a certificate will be awarded at the closing ceremony of the joint ROCOND'18 and LPV'18.

#### Scope and Topics:

ROCOND 2018 - Over the last three decades, robust control has been a topic of active research and development of new theoretical principles, numerical methods and effective control algorithms to design and implement complex engineering control systems that provide adequate performance and stability when implemented in real plants. Emphasis will be put on current challenges and new directions in development of theoretical and computational tools for versatile practical applications implemented on advanced control systems (networked, embedded, distributed control systems) and are not purely devoted to robust control design.

LPVS 2018 - The class of Linear Parameter Varying (LPV) systems can be used to represent several types of dynamical systems such as time varying uncertain, non-linear, switching or multi-models ones. The LPV modeling allows also the design of the so-called LPV controllers, where the control law parameters are updated according to the measurable plant varying parameters. In the last two decades, LPV systems and control have been an active topic of research in the control systems community. This Workshop aims at presenting new results in the field of LPV systems and their applications in real life and industry (automotive, aerospace, robotics, chemical processes, biological systems, energy and nuclear, network controlled-systems), including aspects on modeling, identification, stability, control design, observation and diagnosis.

#### Author Guidelines

The joint ROCOND'18 & LPVS'18 invite four types of submission: ROCOND Regular or Open Invited Track papers, and LPVS Regular or Open Invited Track papers. For the purpose of review only, all submitted manuscripts may be up to eight (8) pages long. However, normal length for the final manuscript is limited to six (6) pages. Papers exceeding the normal length may be submitted upon payment of over length page charges of EUR 100.00 for each page in excess of six. A maximum of two extra pages above normal six are permitted.

#### Rocond 2018 Organizing Committee:

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NOC Vice Chair Prof. Dr. Edson De Pieri (UFSC, Brazil)  
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IPC Vice Chair Ind. Dr. Isabelle Queinnec (LAAS-CNRS, France)  
Editor Prof. Dr. Valter J.S. Leite (CEFET-MG, Brazil)

LPVS 2018 Organizing Committee:

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NOC Co-Chair Prof. Luciola Campestrini (UFRGS, Brazil)  
NOC Vice-Chair Ind. Dr. Gustavo Medeiros Freitas (ITV-Vale, Brazil)  
IPC Chair Prof. Olivier Sename (Grenoble INP, France)  
IPC Vice-Chair Ind. Dr. Jean-Marc Biannic (ONERA, France)  
Editor Prof. Alexandre Bazanella (UFRGS, Brazil)

IFAC Technical Committee Sponsors

ROCOND:TC2.5 – Robust Control (Technical Committee Main Sponsor); TC 1.1 – Modelling, Identification and Signal Processing; TC 1.5 – Networked Systems; TC2.1 – Control Design; TC 2.4 – Optimal Control.

LPVS: TC2.2– Linear Control Systems (Technical Committee Main Sponsor); TC 1.1 – Modelling, Identification and Signal Processing; TC 2.5 – Robust Control; TC 6.4. Fault Detection, Supervision & Safety of Technical Processes; TC 7.3. Aerospace.

National Member Organization (NMO):

Sociedade Brasileira de Automática - SBA

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## 6. Positions

### 6.1. PhD: University of Massachusetts Lowell, USA

Contributed by: Ioannis Raptis, [ioannis\\_raptis@uml.edu](mailto:ioannis_raptis@uml.edu)

Ph.D. Students - Distributed Fault Diagnosis For Large-Scale Systems

Applications are invited for two Ph.D. positions in Distributed Fault Diagnosis for Large-Scale Nonlinear Stochastic Systems. The positions are with the Department of Mechanical Engineering at the University of Massachusetts Lowell and the students will work under the supervision of Dr. Ioannis Raptis. The research has analytical, computational and experimental components. The project involves the derivation of distributed estimation-based algorithms for complex processes. The results of this work will be disseminated to contemporary large-scale systems of interest such as mobile robots, power grid systems, water distribution networks, and transportation systems.

Students from all majors relevant to estimation theory, applied mathematics, and control systems are encouraged to apply. The successful candidate should hold a Master's degree in Engineering or Science. Preference will be given to students with strong background in probability theory, Bayesian signal processing, and stochastic systems. Good communication skills (written and oral) are essential.

The assistantship includes a tuition waiver and a graduate student stipend. Review of submissions will begin immediately. Interested students are strongly encouraged to apply early, as the hire of successful candidates will take place on first-come-first-served basis. The desired start date is January 2018.

To Apply:

Please email, as a single .pdf document: (i) a cover letter (clearly indicating expected start date, relevant experience, and motivation); (ii) detailed Curriculum Vita; (iii) copies of unofficial transcripts; and, (iv) copies of relevant publications (if any) (Ioannis\_Raptis@uml.edu). Only shortlisted applicants will be directed to apply to the Department of Mechanical Engineering at UMass Lowell.

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### **6.2. PhD: Slovak University of Technology in Bratislava, Slovakia**

Contributed by: Miroslav Fikar, [miroslav.fikar@stuba.sk](mailto:miroslav.fikar@stuba.sk)

The Institute of Information Engineering, Automation and Mathematics at Slovak University of Technology in Bratislava has vacancies for two PhD positions:

1. Guaranteed Parameter Estimation (advisor: Prof. Miroslav Fikar, consultant: Dr. Radoslav Paulen)
2. Optimal Control of Membrane Processes (advisor: Prof. Miroslav Fikar)

The project descriptions are available at <http://uiam.sk/fikar/phd.phtml>

Requirements: The applicant should have obtained an M.Sc. degree in a field related to the particular project, such as chemical engineering, systems & control, mechanical engineering, electrical or electronics engineering, or computer science. A good command of the English language is required.

Conditions of employment: The positions are vacant immediately and run for four years. The successful candidate will be enrolled in the university graduate school. Salary and benefits are in accordance with the Slovak legislation regarding research and education bodies.

Application: Please send your application including a motivation letter, a curriculum vitae, a list of courses with grades, and contact information for two academic references to Prof. Miroslav Fikar ([miroslav.fikar@stuba.sk](mailto:miroslav.fikar@stuba.sk)).

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### **6.3. PhD: Université Laval, Canada**

Contributed by: André Desbiens, [desbiens@gel.ulaval.ca](mailto:desbiens@gel.ulaval.ca)

Three PhD positions are available at the LOOP (Laboratoire d'observation et d'optimisation des procédés – Process Observation and Optimization Laboratory), Université Laval, Québec City, Canada. The projects are in collaboration with the multinational biopharmaceutical Pfizer. They address industrial problems and the solutions will have significant impacts for Pfizer.

For pharmaceutical industries, automation and continuous processing is a way to become more competitive, to reduce production time, energy consumption and the amount of waste produced. Towards this objective, the projects are:

Project #1 - Coating of the tablets: development of an in-line vision sensor providing film-coating properties (coating level, distribution across tablets, esthetical defects, etc.).

- \* Fractional factorial design
- \* Multivariate Image Analysis
- \* Partial Least Squares regression
- \* Validation of the machine vision sensor



Project #2 – Novel continuous drying of the granules (before they are compressed into tablets): safe and robust in-line minimization of the drying time and/or energy consumption while insuring a desired final humidity of the particles and avoiding their overheating.

- \* First-principles modelling and model calibration
- \* State estimation
- \* Model predictive control
- \* Real-time optimization

Project #3 - Freeze-drying of vials: safe and robust in-line minimization of the primary drying time and/or energy consumption while insuring that sublimation is completed and avoiding to exceed the collapse temperature.

- \* First-principles modelling and model calibration
- \* State estimation
- \* Model predictive control
- \* Real-time optimization
- \* Heating policies for various vials arrangements

The final stage of the three projects is to implement and validate the most promising approaches on pilot units.

Candidate profile:

- \* should have completed, or about to complete, a MSc degree in Electrical or Chemical Eng., or related areas,
- \* strong background in multivariate statistics and/or first-principles modelling and/or systems and control,
- \* solid programming skills in Matlab,
- \* ability to work in multi-disciplinary teams,
- \* excellent communication skills (oral and written) in English - a plus if knowledge of French (courses are given in French).

Please send a complete CV, a motivation letter and transcripts to Prof. André Desbiens (desbiens@gel.ulaval.ca) with the subject "E-Letter PhD position".

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#### **6.4. PhD: University of Sannio in Benevento, Italy**

Contributed by: Davide Liuzza, [davide.liuzza@unisannio.it](mailto:davide.liuzza@unisannio.it)

PhD Position available at the Department of Engineering of the University of Sannio in Benevento, Italy

Contacts: Prof. Luigi Glielmo (email [glielmo@unisannio.it](mailto:glielmo@unisannio.it)), Dr. Davide Liuzza (email [davide.liuzza@unisannio.it](mailto:davide.liuzza@unisannio.it))

The GRACE (Group for Research on Automatic Control Engineering) at the University of Sannio offers a PhD position in control theory and applications to be started in October 2017. The successful candidate will collaborate to our group's research on control and optimization theory, including their implementation in different areas.

Such areas comprise control of energy flows in smart grid, control of cyber-physical system, machine learning application to industrial processes, with special emphasis on the energy application.

Our ideal candidate has a sound knowledge in control and optimization methods from his/her Bachelor and Master degree, an excellent academic track record, well developed analytical and problem solving skills and a strongly motivated personality. Interests in both theoretical research and applications to practical control problems as well as the ability of working independently complete the candidate profile.

The candidate will be selected according to applicant fulfilment of the above qualifications.

Interested candidates must send detailed CV and two contacts to whom we can ask references to the email address [davide.liuzza@unisannio.it](mailto:davide.liuzza@unisannio.it) .

Answers will be given at the beginning of September, 2017.

The selected candidate will join the control system group at the University of Sannio, Benevento, Italy.

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### **6.5. PhD: KU Leuven, Belgium**

Contributed by: Jan Swevers, [jan.swevers@kuleuven.be](mailto:jan.swevers@kuleuven.be)

One fully funded PhD position in the area of optimal robot control at the Department of Mechanical Engineering, KU Leuven

Title of the project: REAL-TIME MOTION PLANNING AND FAST MODEL PREDICTIVE CONTROL FOR ROBOTS

The KU Leuven, Department of Mechanical Engineering is searching for a young, motivated and skilled PhD researcher with a strong background in numerical optimization, systems and control, and robotics.

RESEARCH PROJECT: This project focuses on optimal contact-free motion control of serial robots operating in changing environments. Changing environments require real-time motion planning, which is very challenging due to complex robot kinematics and dynamics and continuously changing collision constraints. The overall project goal is to develop and experimentally validate an effective MPC approach for serial robots that realizes contact-free optimal robot motion planning and control in real-time. This research will be supported by an MPC toolchain development in order to integrate all software in an open and modular fashion as to create a workflow from problem specification to deployment. All developments will be validated experimentally on industrial robotic set-ups in the lab.

YOUR PROFILE: An ideal candidate has a master degree in engineering (mechanical, control ...) and a strong background in control and dynamic system modelling, robotics, numerical optimization, programming (Matlab, C/C++), a strong interest and experience in work on real-world experiments, and enthusiasm for the project. Proficiency in English is a requirement. Applicants whose mother tongue is neither Dutch nor English must present an official language test report. The acceptable tests are TOEFL, IELTS, and Cambridge Certificate in Advanced English (CAE) or Cambridge Certificate of Proficiency in English (CPE). Required minimum scores are:

- TOEFL: 600 (paper-based test), 100 (internet-based test)
- IELTS: 7 (only Academic IELTS test accepted)
- CAE/CPE: grade B or A.

OUR OFFER: A fully funded PhD position for four years at the KU Leuven.

KU Leuven is among the top European universities and a hub for interdisciplinary research in the field of optimization. You will be embedded in the MECO research team of the department of Mechanical Engineering located at the campus in Leuven and the new mechatronics research group, established in 2015, and located at the campus in Bruges. Theoretical work and lab experiments, which will be the main part of the work, will be carried out at the campus in Leuven. Industrial applications will be implemented at the campus in Bruges.

APPLICATION PROCEDURE: To apply, send email to [jan.swevers@kuleuven.be](mailto:jan.swevers@kuleuven.be). Subject of your email should be: "ROBOT MPC PhD application". Deadline: October 31, 2017! Include:

- an academic CV,

- a pdf of your diplomas and transcript of course work and grades,
- statement of research interests and career goals (max. 2 pages),
- sample of technical writing (publication or thesis),
- contact details of at least two referees,
- proof of English language proficiency test results.

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## **6.6. PhD/PostDoc: University of Kansas, USA**

Contributed by: Huazhen Fang, [fang@ku.edu](mailto:fang@ku.edu)

PhD/Postdoc: University of Kansas, USA

Applications are invited for a postdoctoral and a Ph.D. student position in Dr. Huazhen Fang's group at the Department of Mechanical Engineering, University of Kansas. Both positions are anticipated to start as early as January 2018. The projects will be concerned with estimation and filtering for linear and nonlinear systems. The candidates will work on fundamental research involving Bayesian estimation, Kalman filtering, particle filtering, machine learning and optimization. A background in the broad areas of estimation, detection, control, signal processing, mathematics, and machine learning will be desirable. A Ph.D. degree is needed for the postdoctoral position, and a master's degree is preferred but not required for the Ph.D. position.

The postdoctoral appointment is for one year, with possible extension contingent on availability of funds and research performance. The salary will be in accordance with the postdoctoral salary scale of the University of Kansas. The successful Ph.D. applicant will be awarded a competitive scholarship covering both tuition and living expenses.

Correspondence can be addressed to Dr. Huazhen Fang at [fang@ku.edu](mailto:fang@ku.edu). For more information about Dr. Fang and his research, please visit <http://fang.faculty.ku.edu>.

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## **6.7. PhD/PostDoc: New York University Abu Dhabi, UAE**

Contributed by: Nikolaos M. Freris, [nf47@nyu.edu](mailto:nf47@nyu.edu)

### RESEARCH OPPORTUNITIES IN CYBERPHYSICAL SYSTEMS

The Cyberphysical Systems Lab at New York University Abu Dhabi is hiring PhD Students and Postdoctoral Fellows.

About: The focus of the Cyberphysical Systems Lab (CPSLab) is to conduct interdisciplinary research across a broad range of topics and applications pertaining to cyberphysical systems such as: a) distributed algorithms for estimation, optimization and control, b) big data: data mining/machine learning, c) wireless sensor networks, d) system theory: control & optimization, e) signal processing: sparse sampling and online algorithms, as well as applications in transportation, robotics, cyber security, networking, and biomedical modeling.

Requirements: PhD applicants must hold (or be close to completing) an MS degree, and postdoctoral fellow applicants a PhD degree, in Electrical Engineering, Computer Science or Applied Mathematics, with research experience in at least one of the aforementioned areas. PhD applicants need to additionally apply directly to NYU (<http://engineering.nyu.edu/admissions/graduate>) for admission by Dec. 15. A proven publication record, solid mathematical background, excellent communication skills, and the ability to work in multi disciplinary teams are essential. Applicants must submit a CV, cover letter, research statement with

detailed research plan, and the names and contact information for three recommenders, in a single PDF file to Prof. Nick Freris (nf47@nyu.edu).

Start date & Salary: The start date is flexible. A very competitive salary and benefits package (including relocation, housing, insurance, transportation and conference travel support) are provided – note: UAE do not levy any income tax.

For more information, please visit: <https://wp.nyu.edu/cpslab>

About NYUAD: New York University has established itself as a Global Network University, a multi-site, organically connected network encompassing key global cities and idea capitals. The network has three foundational degree-granting campuses: New York, Abu Dhabi, and Shanghai, complemented by a network of 12 research and study-away sites across five continents. Faculty and students circulate within the network in pursuit of common research interests and the promotion of cross-cultural and interdisciplinary endeavors, both local and global. Entering its eighth year, NYU Abu Dhabi has recruited a cohort of faculty who are at once distinguished in both research and teaching. Our students are drawn from around the world and surpass all traditional recruitment benchmarks, both US and global. NYU Abu Dhabi's highly selective liberal arts enterprise is enhanced by an institute for advanced research, sponsoring cutting-edge projects across the Arts, Humanities, Social Sciences, Sciences, and Engineering. NYUAD is housed at a newly built campus in the vibrant city of Abu Dhabi, the capital of UAE.

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### **6.8. PhD/PostDoc: University of Melbourne, Australia**

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

Post-doctoral and PhD Positions, University of Melbourne, Australia

Topic: Filtering, Control and Causal Estimation using Nonstochastic Information Theory

One Post-doctoral and two PhD positions are available to investigate the use of nonstochastic and zero-error information theory in filtering, control and causal inference problems with deterministic disturbances or unknown noise distributions. These positions are based in the Department of Electrical and Electronic Engineering, University of Melbourne, Australia, and support an Australian Research Council project.

\*\*Post-doctoral applicants should have a theoretically-focused PhD in a relevant area. Knowledge of probability theory and random sampling methods would be useful.

Salary: from AU\$87,415/year before tax, plus employer superannuation contribution of 9.25%.

Duration: one year including probation period. Extensions are subject to performance and funding.

Starting date: flexible, but preferably before Feb 2018.

To express interest, please email a research statement and CV, with 3 referees listed, to Prof. Girish Nair, [gnair@unimelb.edu.au](mailto:gnair@unimelb.edu.au)

\*\*PhD candidates should have a Bachelors and/or Masters degree with a strong background in control or information theory. Knowledge of probability theory would be helpful. Candidates must also meet the PhD admission requirements of the Department of Electrical and Electronic Engineering and the University of Melbourne.

Stipend: AU\$30,000/year tax-free for 3.5 years, with up to AU\$15,00 for travel and conferences; subject to passing Departmental confirmation after one year.

Starting date: flexible, but preferably before Feb 2018.

To express your interest, please email a research statement and CV, with 2 referees listed, to Prof. Girish Nair, [gnair@unimelb.edu.au](mailto:gnair@unimelb.edu.au)

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### **6.9. PostDoc: Northeastern University, USA**

Contributed by: Dagmar Sternad, [d.sternad@northeastern.edu](mailto:d.sternad@northeastern.edu)

Position for a Postdoctoral Fellow in Human Motor Control and Human-Robot Interaction

We are seeking a highly motivated postdoctoral fellow to work in the area of computational neuroscience and physical human-robot interaction. The research of Prof. Sternad's Action Lab's is on human motor control and learning with extensions to clinical populations and rehabilitation <http://www.northeastern.edu/actionlab/>. One recent extension is to robot control and human-robot interaction with a new line of research on "Robots with human dexterity". This research is a collaboration with Prof. Neville Hogan at MIT.

Our interdisciplinary research program addresses questions in motor control from the perspective of dynamical system, bridging disciplinary approaches from nonlinear dynamics, biomechanics and engineering, neuroscience and psychology. The overall goal of our research is to understand the generation of perceptually controlled behavior in human systems.

Our lab is equipped with state-of-the-art experimental equipment, ranging from three virtual reality set-ups with a robot manipulandum, 3D motion analysis system, force plates and wireless EMG. We also use brain measurement and stimulation techniques, such as EEG and TMS.

Our laboratory is currently supported by the National Science Foundation and the National Institutes of Health. For more information about ongoing projects please visit our website.

Candidates should have a Ph.D. in one of the following disciplines: Computational Motor Neuroscience, Physics, Mechanical, Electrical or Computer Engineering, the latter with an emphasis on Robotics and interest in human motor control. The applicant should demonstrate an academic record of scientific excellence, independent research, and a strong interest in an interdisciplinary approach to human and robotic motor control. Experience in programming is expected (Matlab, C++, Statistics packages, etc.). He/she is expected to get involved in existing research projects, but is also encouraged to bring to bear his/her expertise into the research project.

The Action Lab is located in the Departments of Biology, Electrical and Computer Engineering, and Physics at Northeastern University as well as the Center for Interdisciplinary Research in Complex Systems. Northeastern University is located in the heart of Boston, which provides a stimulating environment for interdisciplinary research.

Applicants should submit a curriculum vita, including a list of publications, and two letters of recommendation to

[d.sternad@northeastern.edu](mailto:d.sternad@northeastern.edu).

Hiring will start as soon as possible.

Dagmar Sternad

Professor of Biology, Electrical and Computer Engineering, and Physics

Northeastern University

360 Huntington Avenue

Boston MA 02115

[d.sternad@northeastern.edu](mailto:d.sternad@northeastern.edu)

<http://www.northeastern.edu/actionlab/>

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### **6.10. PostDoc: University of New Mexico, USA**

Contributed by: Meeko Oishi, [oishi@unm.edu](mailto:oishi@unm.edu)

Postdoctoral Associate:

Stochastic Reachability for Autonomous Cyber-Physical Systems

The Department of Electrical and Computer Engineering at the University of New Mexico (UNM) invites applications for a Postdoctoral Associate with an anticipated start date of January 2018.

Position:

The postdoctoral associate will work with an interdisciplinary team of researchers in Electrical and Computer Engineering and in Computer Science to develop theory and algorithms to enable autonomy in dynamic and uncertain environments. Specifically, the postdoctoral associate will 1) incorporate stochastic reachable sets into a model predictive control framework, and investigate convergence, convexity, and optimality, 2) develop scalable under-approximations in the case of imperfect measurements, and 3) integrate learning into stochastic reachability-based planning algorithms, to enable navigation in dynamic environments with poorly characterized uncertainty. This is a benefits-eligible, one-year appointment that may be renewed for an additional year contingent upon satisfactory performance and availability of resources. No teaching is expected during the appointment. Salary is dependent upon experience and qualification.

How to apply:

Interested candidates should provide a CV, a cover letter summarizing capabilities and interests, and contact information for three professional references. Please apply through <https://hr.unm.edu/unmjobs>. Applications received by November 1, 2017 will receive full consideration, although the position will remain open until filled.

Minimum Qualifications:

Applicants must have completed their Ph.D. by the time of appointment in engineering, computer science, mathematics, or a closely related field, and demonstrate excellent potential for research.

Preferred Qualifications:

Desirable experience includes work in hybrid systems, stochastic optimal control, reachability analysis, optimization, or learning. In addition, the applicant should have a demonstrated commitment to diversity, equity, inclusion, and student success, as well as working with broadly diverse communities.

About UNM:

UNM is New Mexico's flagship institution, and is located in Albuquerque, NM, USA, a metropolitan area of 650,000 that provides a wide variety of recreational and cultural opportunities. The surrounding area is renowned for outdoor activities including hiking, mountain biking, cycling, skiing, and others. The University of New Mexico is an Equal Opportunity/Affirmative Action employer and educator. Candidates from underrepresented groups are encouraged to apply. For additional information see <http://www.unm.edu>.

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### **6.11. PostDoc: The Ohio State University, USA**

Contributed by: Mingjun Zhang, [zhang.4882@osu.edu](mailto:zhang.4882@osu.edu)

The Nano-Biomaterials, Robotics and Brain Health Lab at The Ohio State University seeks three postdoctoral research associates in the following areas:

- 1) Robotic devices for non-invasive management of Alzheimer's Disease.
- 2) Mathematical modeling and control theory for brain health and performance. Specifically, creating performance models based on cognitive, physiological, biomarker, and behavioral measures.

Candidates with training in mathematics, electrical engineering, mechanical engineering, theoretical control or related fields are highly encouraged to apply for one of these positions. Desired skills include a strong background in system and control theory, mathematics, signal processing, robotics, and mechanical design.

3) Peptide nanoparticles for disease diagnosis and therapy.

Candidates with training in biomaterials, chemistry, engineering or related fields are highly encouraged to apply for this position. Desired skills include a strong background in self-assembled nanomaterials, peptide chemistry, and nano-characterization tools.

Interested applicants should send their CV and a short paragraph of interest to Dr. Mingjun Zhang: zhang.4882@osu.edu

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### **6.12. PostDoc: University of Michigan, USA**

Contributed by: Anna G. Stefanopoulou, [annastef@umich.edu](mailto:annastef@umich.edu)

Robotic Energy Control Postdoc at University of Michigan to develop methods and tools for optimal control of a hybrid (switching) power system (a robot powered from a fuel cell and a battery and the optimization of their switching under a stochastic or partially-known terrain).

Period: 2 years with possible extension

Compensation: Competitive upon qualifications, benefits, travel budget.

Applicants should have documented background and interest in modeling, identification, estimation, and optimal control. Experience in electrochemical energy storage and conversion such as batteries, fuel cells, and capacitors is desirable. Familiarity with software tools such as Matlab and Simulink is necessary.

Additional important qualifications: 1) Ability to work and lead interdisciplinary research with a large team of professors, students, industrial collaborators, and scientists. 2) Dexterity in processing data and 3) Strong motivation in experimentally implementing and verifying advanced control algorithms.

CV in pdf and further enquiries should be directed by e-mail to Anna G. Stefanopoulou ([annastef@umich.edu](mailto:annastef@umich.edu)) with "Robotic Energy Control Postdoc" in the subject.

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### **6.13. PostDoc: Shanghai Jiao Tong University, China**

Contributed by: Weidong ZHANG, [wzhang@sjtu.edu.cn](mailto:wzhang@sjtu.edu.cn)

The Optimization & Control Engineering Research Center of Shanghai (in the Department of Automation, Shanghai Jiao Tong University, China) offers 3 postdoc positions in control engineering as soon as possible thereafter. We are interested in candidates in the broad areas of advanced control theory, multi-agents formation, machine learning, pattern recognition, game theory, industrial networked control systems, etc.

Requirements and qualifications:

- PhD degree
- Documented experience with research dissemination in international scientific journals
- Experience with writing research applications
- Good communication skills in English or Chinese
- Self-motivation and the ability to work both independently and as a team player with researchers from different disciplines



Main tasks:

- Active involvement in research efforts
- Supervision of student projects and thesis at both master and Ph.D. levels

Salary and others:

- RMB 120-200k/year (approximately, 18-30kUSD)
- It is a 2-year position and can be extended to 5 years

Required documents

- One self-recommendation letter covering your research statements, your achievements, as well as your possible requirements from us
- A list of your publications

For further information, please contact Prof. Dr. Weidong Zhang, Email: [wzhang@sjtu.edu.cn](mailto:wzhang@sjtu.edu.cn), Tel: +86-21-34204019. Address: Dongchuan Road 800, Shanghai Jiao Tong University, Shanghai 200240, China.

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#### **6.14. PostDoc: Singapore University of Technology and Design, Singapore**

Contributed by: Mohammadreza Chamanbaz, [chamanbaz.arakut@gmail.com](mailto:chamanbaz.arakut@gmail.com)

Opportunity for Cutting-edge Research in Network Control Systems

Singapore University of Technology and Design (SUTD) seeks to fill a post-doctoral position in the area of Network Control Systems in the Project SUTD-ASPIRE (ASPIRE – Advancing Security of Public Infrastructure using Resilience and Economics). Selected candidates will have a unique opportunity to work with an international team of researchers located in Singapore, MIT, the University of Illinois at Urbana Champaign, and the Nanyang Technological University, Singapore (NTU). The primary focus of SUTD-ASPIRE is to develop experimentally validated techniques for the design of futuristic Cyber Physical Systems that are critical to the well-being of a society.

Qualifications for the position are as follows:

Research Task: Controls

Supervisor: Prof. Roland Bouffanais, SUTD

Co-Supervisor: Prof. Mohammadreza Chamanbaz, Arak University of Technology, Iran

Qualifications: PhD holder with a background in control and systems theory. This position will investigate topics in the control of networks and attack detection on cyber physical systems. Prior work with cyber physical systems, security, and/or networks is a plus.

Duration: 1 year (with possibility of extension)

Salary Range: SGD\$ 60'000-70'000 yearly

Requirements:

- . Successful candidates should have received a Ph.D. degree in Engineering Control or Control Science.
- . Research expertise in network control systems will be considered a plus.
- . Ability to work both independently and in a team environment, and to take ownership of, and autonomously carry forward, major aspects of a research project.
- . Ability of approaching research problems with a system view, of working in a multidisciplinary team environment, problem solving skills and high creativity.
- . Candidates must present strong publication record, as well as excellent verbal and written communication skills.



## How to Apply

Interested persons must send their updated curriculum vitae along with a brief statement of research to the following addresses: [bouffanais@sutd.edu.sg](mailto:bouffanais@sutd.edu.sg) and [chamanbaz.arakut@gmail.com](mailto:chamanbaz.arakut@gmail.com)

Please state “SUTD-ASPIRE Recruitment – Controls” in the email subject. Positions will be available until filled; only short-listed candidates will be notified.

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### **6.15. PostDoc: UIUC, USA**

Contributed by: Naira Hovakimyan, [nhovakim@illinois.edu](mailto:nhovakim@illinois.edu)

A postdoctoral position is available immediately to join ACRL at MechSE, UIUC; <http://naira.mechse.illinois.edu/>.

The group is working on numerous directions at the intersection of optimization, control theory and machine learning with applications to robotics, cyber security and aeronautics. Exceptional background in mathematics and a mindset for interdisciplinary research with clear impact across different industries are critically important. Interested applicants should direct their CVs and names of three referees to Prof. Naira Hovakimyan at [nhovakim@illinois.edu](mailto:nhovakim@illinois.edu).

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### **6.16. PostDoc: Gyeongsang National University, South Korea**

Contributed by: Yoonsoo Kim, [kimyoonsoo@yahoo.com](mailto:kimyoonsoo@yahoo.com)

Post-doctoral research fellow in “Control design and analysis of aircraft in upset conditions”

The Graduate School of Mechanical and Aerospace Engineering in Gyeongsang National University (Jinju, Republic of Korea) has a one-year postdoctoral research fellow position (with a possible extension) in aerospace, mechanical engineering, or applied mathematics to join an active research project on control design and analysis of aircraft (with fixed or rotary wings) in upset conditions due to icing, structural failure and so on.

This one-year research shall be funded by the Engineering Research Center (ERC) project (directed by the Ministry of Science and ICT in Korea), and mainly focused on three research items: (1) Following-up state-of-art technologies for control design and analysis of aircraft in upset conditions; (2) Proposing improved control laws for aircraft (with fixed or rotary wings) in upset conditions due to icing or structural failure; and (3) Analysis and experimental test of the proposed control laws on a test aircraft (to be built by other researchers). This research shall be supervised by Principal Investigator of the ERC project (Prof. R. S. Myong) and Technical Investigator (Prof. Yoonsoo Kim).

Requirements: This position requires a PhD degree in aerospace, mechanical engineering, or applied mathematics. Research experience and a record of journal publications in control theory or application are strongly recommended.

Salary: The starting annual salary is USD 25,000 (plus basic insurance fees). Salary negotiation is possible for a candidate with an excellent research background.

To apply: A full Curriculum Vitae including a list of journal publications and the contact details of two referees must be sent to [yunsoo@gnu.ac.kr](mailto:yunsoo@gnu.ac.kr).

Closing date: The closing date is September 30, 2017.

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### **6.17. PostDoc: University of Washington, USA**

Contributed by: Linda Bushnell, [LB2@uw.edu](mailto:LB2@uw.edu)

The Network Security Lab in the Department of Electrical Engineering at University of Washington – Seattle is searching for two-year post-doctoral research associate. Positions are in the area of game- and control-theoretic modeling and mitigation of network and computer security threats. Applicants must have a PhD degree in Electrical Engineering, Computer Science, or a related field, with expertise in two or more of the areas including control theory, stochastic game theory, algorithmic game theory, and optimization, as well as background in security. Expertise in machine learning also a plus. Applicants will be expected to conduct and disseminate research, mentor graduate students, and facilitate collaboration in a multi-university research effort. Multiple positions are available. If interested, please contact Professor Linda Bushnell ([lb2@uw.edu](mailto:lb2@uw.edu)) with full CV and references.

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### **6.18. PostDoc: Israel Institute of Technology, Israel**

Contributed by: Leonid Mirkin, [mirkin@technion.ac.il](mailto:mirkin@technion.ac.il)

Postdoctoral position at the Technion - Israel Institute of Technology

Applications are invited for a post-doctoral research position in the areas of sampled-data / event-triggered / networked control at the Faculty of Mechanical Engineering, Technion, Israel. The position is for a period of 1 year, with the possibility of renewal up to another 2 years contingent on performance. Applicants are required to have a recently completed PhD in control or related area of engineering or applied mathematics.

Applications (a motivation letter + CV with a list of publications) and enquiries should be addressed to Leonid Mirkin ([mirkin@technion.ac.il](mailto:mirkin@technion.ac.il)).

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### **6.19. PostDoc: University of Southern California, USA**

Contributed by: Suraj Chakravarthi Raja, [surajcha@usc.edu](mailto:surajcha@usc.edu)

THE POSITION: Funded postdoctoral position in Neuromorphic and robotic systems.

THE LOCATION: Brain-Body Dynamics Lab, University of Southern California, Los Angeles, California, USA.

WHO ARE WE:

The Brain-Body Dynamics Lab, led by Prof. Francisco Valero-Cuevas, is dedicated to understanding neuromuscular control and the interaction between neural systems and biomechanical/robotic systems. Our laboratory consists of an interdisciplinary group of graduate and undergraduate students, post-doctoral fellows, clinicians, and faculty in electrical engineering, computer science, mechanical engineering, neuroscience, bioengineering and mathematics. Further information about our laboratory can be found at: <http://valerolab.org/>

WHO WE ARE LOOKING FOR:

Our laboratory is accepting applications for an NIH-funded post-doctoral fellowship to understand the neuromuscular control of complex tendon-driven systems, and reverse-engineering brain function in collaboration with Profs. Terry Sanger and Jerry Loeb.

We are looking for candidates to implement models of neural circuitry and muscle function for simulation purposes or in real-time to control hardware-in-the loop systems. Successful applicants will have strong back-

grounds in several of the following: control and estimation of nonlinear systems, computational neuroscience, mechatronics, computational methods, robotics, and/or biomechanical modeling.

The successful candidate must have a Ph.D. in engineering, bioengineering or neuroscience; and a strong interest in neuromuscular control. She/he must have experience in at least two of the following: control & estimation of nonlinear or biological systems; computational modeling; FPGA-based acceleration of computational models/algorithms; and/or experimental design of electromechanical systems. Preference will be given to applicants with experience in neuroscience. Expertise in computer languages is essential.

#### NICE TO HAVE:

Hands-on experience in real-time control system design.

Familiarity with continuous-time, discrete-time, FIR/IIR, transfer-function, state-space representations of dynamic systems.

Understanding of physiology/pathophysiology of the neuromuscular system, spinal reflex circuitry, muscle afferentation, and biomechanics of muscletendinous complex.

Experience in time and frequency-domain analysis of biomedical signals and systems, digital signal processing and system identification.

Experience in programming in MATLAB, Python or R for model simulation and data analysis purposes.

Experience in object oriented programming.

Knowledge of C/C++.

Knowledge of Verilog and experience working with FPGA.

Hands-on experience in biomedical instrumentation and signal conditioning.

Hands-on experience with data acquisition systems.

#### HOW TO APPLY:

For consideration, please fill out this Form (<https://goo.gl/forms/5HC4uGvOmbGaJzKK2>) with your name and contact email, and upload your application as one single PDF document (include a cover letter, your full CV, a statement of research interests and career goals, and three references including their name and email addresses).

The position is available immediately, and applications will be received until the position is filled.

The University of Southern California offers a competitive salary and benefits.

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## 6.20. PostDoc/Visiting Professor: Huazhong University of Science & Technology, China

Contributed by: Ye Yuan, [ye.yuan@outlook.com](mailto:ye.yuan@outlook.com)

Prof. Ye Yuan (<http://yy311.github.io>) is looking for a number of postdocs and visiting researchers starting as soon as possible at Huazhong Artificial Intelligence Lab (HAIL), Huazhong University of Science & Technology (HUST), China.

The research project is broadly on the development of deep learning and control theory with application to cyber-physical systems (robotics and power systems).

1. For Postdoc, we offer

- A competitive salary (at least RMB 212,000 per year, negotiable depending on the qualification);
- Possibilities for the Postdoc to spend time at world-leading universities (such as UC Berkeley and Caltech) to take specialized courses and work with collaborators there;
- Experimental platform (Vicon + Crazyflies, GPU cluster, UR3 robot + Kinect, Hardware in the loop Power simulator)

- Full contract for 2 years with the possibility of renewal up to 6 years contingent on performance;
  - Possibilities to stay at HUST as a lecturer or an associate professor afterwards.
2. For visiting professors, we offer
- A highly competitive salary depending on the qualification (per month);
  - Travel cost and housing
3. Your Profile
- A Ph.D. degree in Control Theory, Mathematics, Computer Science, or a closely related field;
  - An excellent background in one of the following areas: system identification, control theory, machine learning, neuroscience, robotics.

Interested candidates should send their CV (with names of at least two references) and a cover letter (for postdoc candidates) describing their specific interest and how their background fits the qualifications to Prof. Ye Yuan [yye@hust.edu.cn](mailto:yye@hust.edu.cn).

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### **6.21. Research Fellow: Hull University, UK**

Contributed by: Ron Patton, [r.j.patton@hull.ac.uk](mailto:r.j.patton@hull.ac.uk)

Senior Research Fellowship

Applications are invited from experts in Robust Detection and Isolation (Fault Diagnosis) and Fault Tolerant Control to apply for a Research Fellow position tenable for up to 5 years at Hull University UK within an Offshore Wind turbine research project with Siemens and Dong Energy and in partnership with Sheffield and Durham Universities. The research interest is to (a) Establish Fault Detection and Isolation methods capable of identifying a variety of faults based on control system performance and integrating these methods with component based Condition Monitoring methods and (b) the development of robust integrated approaches to fault tolerant control, including applications to real wind turbine plant systems. Please contact Professor Ron J Patton.

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### **6.22. Faculty: Umeå University, Sweden**

Contributed by: Per Hallberg, [per.hallberg@umu.se](mailto:per.hallberg@umu.se)

Professor in Technology for Autonomous Systems

We would like to draw your attention to our announcement of a professor in technology for autonomous systems.

We are looking for a person that could complement and strengthen our current related research at the Department of Applied Physics and Electronics at Umeå University. The closing date is 4th of September, 2017.

Please share this information with your network of colleagues. For full advertisement, follow the link.

<https://umu.mynetworkglobal.com/what:job/jobID:157010/where:4/>

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### **6.23. Faculty: University of Bath, UK**

Contributed by: Mark Opmeer, [m.opmeer@bath.ac.uk](mailto:m.opmeer@bath.ac.uk)

Department of Mathematical Sciences, University of Bath, UK

The Department is inviting applications for a Lectureship (Assistant Professor) in Applied Mathematics to strengthen the activities in its Centre for Doctoral Training in Statistical Applied Mathematics at Bath (SAMBa).

The SAMBa CDT trains graduate students at the interface of Statistics, Applied Mathematics and Stochastics applied to real-world problems, and we invite applications from researchers in any area of mathematics that falls within this definition. We particularly encourage applications from within the fields of control theory, imaging, inverse problems, multi-scale problems, networks and their applications, optimisation, uncertainty quantification, as well as from those working in the application driven areas of mathematical biology, mathematical geosciences, nonlinear mechanics and other interdisciplinary or industrial areas.

The closing date is Monday 16 October 2017.

See the following website for details: <https://www.bath.ac.uk/jobs/Vacancy.aspx?ref=SF5138>

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#### **6.24. Faculty: Polytechnique Montreal, Canada**

Contributed by: Jerome Le Ny, [jerome.le-ny@polymtl.ca](mailto:jerome.le-ny@polymtl.ca)

##### Position summary

Polytechnique Montreal is one of Canada's leading engineering schools in terms of its student population and the scope of its research activities with more than 8,000 students and 1,000 employees. Polytechnique Montreal is seeking applicants for a tenure-track faculty position with the Department of Electrical Engineering, at the Assistant or Associate Professor levels. This position falls within the application areas of the Institute for Data Valorization (IVADO), an academic initiative bringing together researchers from HEC Montréal, Polytechnique Montréal and the Université de Montréal. The successful candidate will receive support from IVADO and its members.

The Department of electrical engineering has 31 professors, one senior lecturer, 26 support staff, many post-doctoral researchers, professional researchers and research assistants, 413 undergraduate and 169 graduate students. The department leads internationally-recognized research, in close collaboration with industry, in several core areas such as: automation and systems, biomedical engineering, power systems and networks, microelectronics, telecommunications and microwaves, clustering and recognition, machine learning, big data.

##### Major responsibilities

The successful candidate will be expected to carry out the basic duties of this position with a dynamic and creative approach. In particular, he/she will:

- take part in teaching and in laboratory activities for undergraduate and graduate courses in electrical engineering;
- supervise and lead graduate students;
- initiate and carry out leading-edge research projects;
- collaborate with research teams within Polytechnique Montreal and other institutions, notably IVADO;
- develop and maintain collaborations with industry.

##### Area of expertise

The applicant will have to demonstrate a deep understanding of theoretical and technological tools of data science, including deep learning, reinforcement learning, support vector machines, hidden Markov models, etc. and of their application to areas connected to electrical engineering or systems theory. More specifically, applications may fall within, but are not limited to, the following areas:

- Cyberphysical systems, e.g., analysis of massive sensor data for anomaly detection anomalies, system vulnerability and failure characterization; data-driven learning of high performance control schemes; machine based perception in robotics and autonomous systems.
- Electrical networks, e.g., data-based learning of the aggregate behavior of renewable energy sources; anticipation of vulnerable system states and data based learning and identification of corrective actions; disaggregation of loads based on smart meter and substation provided data.
- Communications systems, e.g. machine learning for optimal usage of the frequency spectrum in cognitive radio; learning of Internet traffic to improve network structure and routing algorithms, to increase communication speed and to decrease energy usage (Green Internet); data based speech and signal processing.
- Medical image analysis using artificial intelligence and machine learning algorithms, integration of genomic, proteomic, metabolomic data with clinical image analysis, big data science applied to medical imaging, etc.

Start date: January 2018

#### Essential qualifications

Applicants must hold a bachelor's degree in electrical engineering and a doctorate (PhD) in a relevant field of expertise. The successful candidate will be registered on the roll of the Ordre des ingénieurs du Québec (OIQ) as an engineer, or take the necessary measures to be registered on the roll of the OIQ as an engineer before applying for tenure. Relevant industry experience is an asset. The teaching language is French.

#### Conditions of employment

This faculty position is tenure-track. Salary and benefits will be set in accordance with the collective agreement between Polytechnique Montréal and its professors.

#### Applications

Candidates should submit an application file that consists of a curriculum vitae, a statement of teaching goals and research priorities, records of teaching effectiveness, official records of diplomas, and the names of three references, several examples of work relevant to the position and examples of recent contributions.

Applications must be sent by September 15th, 2017, at 5 PM, to the following address:

Yves Goussard, Professor and Chairman

Department of Electrical Engineering

École Polytechnique

Case postale 6079, succursale Centre-ville

Montréal (Québec) H3C 3A7

CANADA

E-mail: [dge.sec-direction@polymtl.ca](mailto:dge.sec-direction@polymtl.ca)

This posting may be extended past September 15th, 2017. Examination of applications will begin as soon as possible and continue until the position is filled. Only candidates selected for an interview will be contacted.

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### **6.25. Faculty: Universidad Técnica Federico Santa María, Chile**

Contributed by: Juan I. Yuz, [juan.yuz@usm.cl](mailto:juan.yuz@usm.cl)

Three Faculty Positions at the Department of Electronic Engineering,  
Universidad Técnica Federico Santa María (UTFSM), Valparaíso, Chile

This call is aimed at filling 3 (three) full-time faculty positions in the fields of Telecommunications and Signal Processing (Code 17-01-65), Automatic Control or Telecommunications (Code 17-01-66) and Telematics (Code 17-01-67).

#### About UTFSM:

- Our university is currently ranked top in Latin America in terms of citations at the Latin American Times Higher Education (THE) ranking. Also, UTFSM has been ranked 1 in Latin America in research impact factor by SIR Iberoamerica, Scimago. In Electrical and Electronic Engineering, UTFSM was ranked number one in Latin America at the Shanghai Academic Ranking of World Universities for years 2016 and 2017, and in the range 101 to 150 worldwide.

#### Benefits:

- UTFSM offers a starting salary between 47,000 and 61,000 USD per year, depending on initial academic evaluation. Additional benefits include supplemental health insurance and incentives for publications in ISI indexed journals. Additional economic incentives are possible through research grants funded by CONICYT-Chile

#### Job Responsibilities:

- The selected candidates are expected to be a competent and highly motivated academic, who will contribute to teaching in undergraduate and graduate (Master and Doctorate) programs and to exhibit research and innovation capabilities. The willingness of the candidate to perform theoretical and experimental teaching and experience in projects of multidisciplinary basic and applied research is particularly encouraged.

- A performance agreement will be established for an interim period of two years, establishing teaching and research goals to be achieved in that time frame. If necessary, the interim agreement will also provide a Spanish language training program, to achieve language proficiency for teaching purposes. Fulfilling the agreement goals will enable the candidate to participate on tenure track.

1. Telecommunications and Signal Processing 1 academic position, (Code 17-01-65): Candidates with know-how in Telecommunications and Signal Processing, preferably those with expertise in antenna design, propagation and modeling of wireless channels will be considered.

2. Automatic Control or Telecommunications 1 academic position, (Code 17-01-66): Candidates with expertise in one (or more) of the following areas: modeling and process control, advanced control system design, nonlinear control, system identification, and control over networks, telecommunications, signal processing or other related areas, with potential for application in industry, will be considered.

3. Telematics, 1 academic position, (Code 17-01-67): Candidates with specialization in one of the following areas is highly desirable: wireless communications applications (layers ISO/OSI 2-7), web technology, or network administration, however, other Information Technology and Telecommunications occupational areas will also be considered.

#### Application requirements:

- To be in possession of a doctoral degree or in the final stages of receiving it.

- The trajectory and expertise consistent with teaching and research duties in the field.

- To have teaching abilities and to be willing to teach at undergraduate level (theoretical and experimental).

- To be willing to participate in training programs aimed at the use of modern educational methodologies and also in the planning of the engineering education curriculum.

- To exhibit demonstrable results in the creation of knowledge (ISI journal publication, international conferences or patents).

- Writing and speaking proficiency in English and Spanish. Applicants not fluent in Spanish should show willingness to acquire within one-year sufficient proficiency to be able to teach and interact with students.

#### Documentation that must be included in the application

- Curriculum Vitae.

- A personal proposal for academic development in research and teaching.

- Undergraduate and graduate grade transcripts.
- Certificates of diplomas and degrees.
- Contact information of two senior academics who are willing to provide academic and personal references. One of the referees should be the Ph.D. thesis advisor. These references will be requested directly by the Head of the Department of Electronic Engineering, USM.

#### Selection Procedure

- The Department of Electronic Engineering will select a shortlist for each position, for interviews with a Selection Committee. The candidates in the shortlist will be asked to present a public lecture on a research and also on a teaching topic (via video-conference if a visit to UTFSM cannot be arranged).

#### Submission of Applications and Important Dates

- Applications should be sent in electronic format to: [concursos.elo@usm.cl](mailto:concursos.elo@usm.cl), sending a copy to: [postulaciones.rrhh@usm.cl](mailto:postulaciones.rrhh@usm.cl). The subject of the message should include the position code.
- Application Deadline: September 30th, 2017
- Preliminary Selection (shortlist) will be informed by: October 30th, 2017
- The selected candidate are expected to join UTFSM in March, 2018.

#### Additional information

- Activities of the Department of Electronic Engineering can be found at <http://www.electronica.usm.cl/en/>
- General information about UTFSM can be found at <http://usm.cl/en/>
- Further questions and enquiries: [concursos.elo@usm.cl](mailto:concursos.elo@usm.cl)

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## 6.26. Faculty: Naval Postgraduate School, USA

Contributed by: Mark Karpenko, [mkarpenk@nps.edu](mailto:mkarpenk@nps.edu)

Faculty Associate - Research

Non Tenure Track

Control and Optimization Laboratories

Department of Mechanical and Aerospace Engineering

Graduate School of Engineering and Applied Sciences

Naval Postgraduate School, Monterey, CA

Description:

The Control and Optimization Laboratories (COL) in the Department of Mechanical and Aerospace Engineering at the Naval Postgraduate School (NPS) invites applications for the position of Faculty Associate - Research in Computational Optimal Control as a researcher and student advisor in trajectory optimization and control systems architecture design and implementation for mechanical and aerospace systems.

We are seeking candidates with expertise in the mathematics of optimal control theory and application of optimal control theory and related concepts to challenging problems in the guidance and control of highly-nonlinear mechanical and aerospace systems. Examples include time-optimal and/or energy-optimal attitude control for spacecraft reorientation maneuverers and trajectory optimization for autonomous systems such as aerial and ground vehicles or other robotic systems.

Suitable candidates must have experience in the application of Pontryagin's Minimum Principle to the solution of nonlinear optimal control problems under a multitude of practical state, control and mixed state-control constraints, have familiarity with the design and implementation of classical inner-loop control systems/architectures and have a working knowledge of the latest software tools for control system development and computational optimal control. Further, we seek candidates with skills and desire to perform



basic laboratory management tasks and to coordinate research and development activities across a variety of concurrent projects.

A letter of application including resume and two letters of reference should arrive by September 29, 2017. Application packages should be sent to:

Dr. Mark Karpenko,  
Research Associate Professor and  
Associate Director, Control and Optimization Laboratories  
Department of Mechanical and Aerospace Engineering  
Naval Postgraduate School  
Monterey, CA 93943  
mkarpenk@nps.edu

Additional information about this position can be found at:

<http://main.hercjobs.org/jobs/10226865/faculty-associate-research/>

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### **6.27. Research Scientist: Intelligent Fusion Technology Inc., USA**

Contributed by: Dan Shen, [dshen@intfusiontech.com](mailto:dshen@intfusiontech.com)

Open Position: Research Scientist: System Controls  
Intelligent Fusion Technology, Inc – Germantown, MD

Company Overview:

Intelligent Fusion Technology (IFT) is a Research and Development (R&D) company focusing on information fusion technologies from basic research to industry transition and product development and support. IFT is located in Germantown, Maryland. We are looking for talented developers majoring in electrical engineering or related fields to join our multidisciplinary team as full-time employees or interns. In particular, we are looking for candidates having direct experience in system control design and implementation.

Job Summary :

Design and implement control systems for various dynamic applications such as robotic platforms, space communications, UAVs, and cognitive radios.

Near Term: For multiple robots (<http://www.robotshop.com/en/3wd-compact-omni-directional-arduino-compatible-mobile-robot.html>), implement SLAM/Localization and optimal controls on a ROS.

Electrical and Computer Engineering preferred.

Intern or full time job.

We sponsor H1B and Green card application.

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### **6.28. Research Scientist: Bosch Center for Artificial Intelligence, Germany**

Contributed by: Mathias Bürger, [mathias.buerger@de.bosch.com](mailto:mathias.buerger@de.bosch.com)

Research Scientist Positions at the Bosch Center for Artificial Intelligence

The Bosch Center for Artificial Intelligence is looking for outstanding research scientist to support our growing team.

The Bosch Center for Artificial Intelligence was founded in early 2017 with the aim to build cutting-edge Artificial Intelligence (AI) technologies. We design and implement AI technology for smart, connected and

learning products across all Bosch portfolios. We offer a variety of opportunities for successful employment and development.

Your contribution to something big

- Development and implementation of state of the art reinforcement (RL) and planning algorithms for behavior planning and control of autonomous systems
- Original research, theoretical investigations, and publications at top conferences and journals related to Machine Learning, Artificial Intelligence, Control and Robotics
- Possible research domains include reinforcement learning for multi-agent systems, learning with temporal logic constraints, or probabilistic planning and control
- Close contact to the scientific community, scouting and assessment of new approaches, publications on top conferences and journals
- Technical discussions and creation of new ideas within the existing Machine Learning research team
- Supervision of Master and PhD students

What distinguishes you:

- PhD in Machine Learning, Artificial Intelligence or Control and excellent publication record
- Proven programming skills, in particular C++, Python and Matlab
- Experience in development and implementation of state-of-the-art RL technologies is a plus
- Experience with autonomous systems and robotics is a plus
- Broad knowledge of machine learning and decision making algorithms and principles
- Strong team player, motivation and ability to define personal research roadmap

Detailed descriptions of the positions are available:

[https://your.bosch-career.com/de/web/de/de/bewerben/jobsearch/-/cui/job/ZRB\\_UNREG\\_SEARCH/EN/567D863A01021](https://your.bosch-career.com/de/web/de/de/bewerben/jobsearch/-/cui/job/ZRB_UNREG_SEARCH/EN/567D863A01021)

[https://your.bosch-career.com/de/web/de/de/bewerben/jobsearch/-/cui/job/ZRB\\_UNREG\\_SEARCH/EN/567D863A01021](https://your.bosch-career.com/de/web/de/de/bewerben/jobsearch/-/cui/job/ZRB_UNREG_SEARCH/EN/567D863A01021)

Contact: Mathias Bürger (mathias.buerger@de.bosch.com)

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## **6.29. Senior Systems Engineer: NIO, USA**

Contributed by: Michael Harris, [michael.harris@nio.io](mailto:michael.harris@nio.io)

Sr. Autonomous Systems Engineer – Path/Motion Planning and Decision Making  
(Please contact Michael Harris - [michael.harris@nio.io](mailto:michael.harris@nio.io) )

Team charter:

The Advanced Technologies and Autonomy team is responsible for delivering highly available, high quality systems to enable NIO's Autonomous driving vehicles. Our mission is to provide the next generation of hardware, software and algorithmic solutions. This includes but not limited to sensing, compute, storage as well as vehicle controls and safety system compute.

What the team works on:

- Autonomy hardware and software architecture
- Design, development, integration, and test of autonomous compute and sensing hardware
- Mass storage and Event Data Recorders
- Vehicle and Safety Controller HW and related functions
- Environment and Sensor modeling and simulation
- Autonomy AI and Controls
- Autonomy R&D Tools
- Autonomy compute and sensing HW and SW redundancy

- Sensing, GPS and IMU hardware, software, and integration
- Autonomy compute communication (sensing, compute, and controller inter-ECU communication)

You will be part of a team working towards NIO's autonomous vehicle vision. You will be architecting and contributing to system that processes input from a variety of vehicle sensors, evaluates possible vehicle strategies/trajectories, and automates the safe control of the vehicle.

Responsibilities:

- Excellent knowledge and expertise on Markov Decision Processes (POMDP, MDP, Markov Chains, ... etc.)
- Working knowledge and practical application of robotic path planning, motion planning and decision making algorithms (A\*, RRT, CC-RRT etc..)
- Conceptualize, prototype, test, and launch cutting-edge autonomous driving features
- Knowledge of vehicle modeling and dynamics, motion prediction, and kinematics
- Knowledge of control theory and applications
- Knowledge of localization algorithms (SLAM, probabilistic filters), vehicle state estimation, dead reckoning
- A practical, creative, hands-on approach to apply the theory required to solve autonomous driving related problems
- Passion for product excellence and quality. Strong desire to create high quality product, working as an integral part of a highly capable team
- Desire to work in a fast-paced, production oriented environment
- Collaborate with other teams to ensure a smooth, robust implementation
- Self-driven/enthusiastic/motivated to solve challenging engineering problems

Qualifications

MS with at least 2 years of work experience or PhD in relevant fields. Major in computer science, applied mathematics, aerospace, mechanical, robotics, or related field.

Preferred Qualifications

Hands-on experience in robotic and/or autonomous vehicle system design and implementation Proficient in high level design and analysis Experience in low level software implementation Knowledge of ROS Experience working in an automotive, aerospace, etc. environments Experience working in a larger team Experience with C/C++ software development

About NIO (NEXTEV USA, Inc d/b/a NIO)

The automotive industry is on the cusp of a profound change. Our goal is to lead the way into the future with smart, electric and autonomous vehicles. Our aspiration is make life better for millions of people around the world. Our vision is to give people their time back to be everything they want to be. We are confident that we will be the first to deliver the next generation experiences in the car of the future. We believe that your car will be the smartest device you own and we are designing for the best user experience from the wheels up. Want to be a part of this? Join us!

NIO is committed to a policy of equal employment opportunity. We recruit, employ, train, compensate, and promote without regard to race, color, age, sex, ancestry, marital status, religion, national origin, disability, sexual orientation, veteran status, present or past history of mental disability, genetic information or any other classification protected by state or federal law.

Online application:

<https://www.linkedin.com/jobs/cap/view/389873070/?pathWildcard=389873070>

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