

E-LETTER on Systems, Control, and Signal Processing
Issue 324
September 2015

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

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1. IEEE CSS Headlines

1.1. IEEE Control Systems Society Publications Content Digest

Contributed by: Elizabeth Kovacs, ekovacs2@nd.edu

CSS Publications Content Digest The IEEE Control Systems Society Publications Content Digest is a novel and convenient guide that helps readers keep track of the latest published articles. The CSS Publications Content Digest, available at <http://ieeecss.org/publications-content-digest> provides lists of current tables of contents of the periodicals sponsored by the Control Systems Society.

Each issue offers readers a rapid means to survey and access the latest peer-reviewed papers of the IEEE Control Systems Society. We also include links to the Society's sponsored Conferences to give readers a preview of upcoming meetings.

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1.2. IEEE Transactions on Automatic Control

Contributed by: Elizabeth Kovacs, ekovacs2@nd.edu

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Contributed by: Thomas Parisini, eic-ieeeetct@units.it

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1.4. IEEE Control Systems Society Outreach Fund

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

The IEEE CSS Outreach Task Force wishes to inform the CSS community that it will hold its fall proposal submission window from October 1 through 12, 2015. Please note that these dates are earlier than those used in recent years. General information regarding the program can be found in:

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

Inquiries regarding project suitability for the Outreach Fund, as well as requests for application materials, should be made directly to Daniel E. Rivera, Outreach Task Force Chair, at daniel.rivera@asu.edu.

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2. Books

2.1. Stability of Dynamical Systems - On the Role of Monotonic and Non-Monotonic Lyapunov Functions

Contributed by: Derong Liu, derong@uic.edu

New book: “Stability of Dynamical Systems - On the Role of Monotonic and Non-Monotonic Lyapunov Functions”, A. N. Michel, L. Hou and D. Liu, Birkhauser, New York, 2015. i - xviii, 653 pages, ISBN: 978-3-319-15274-5 (Print) 978-3-319-15275-2 (Online)

The stability results which comprise the Direct Method of Lyapunov involve the existence of scalar-valued functions of the system state and time (called Lyapunov functions) which when evaluated along the motions of a dynamical system decrease monotonically with increasing time. Functions of this type are called monotonic Lyapunov functions in this book. The qualitative analysis of “contemporary dynamical systems” (including hybrid dynamical systems, switching systems, impulsive dynamical systems, discrete event systems, etc.) has given rise to Lyapunov-like stability results where the requirement that the Lyapunov functions decrease monotonically along the system motions has been relaxed. Functions of this type are called non-monotonic Lyapunov functions in this book.

This book provides a single source for the analysis of system models represented by continuous-time and discrete-time, finite-dimensional and infinite-dimensional, and continuous and discontinuous dynamical systems. For these system models, it presents results which comprise the classical Lyapunov and Lagrange stability theory involving monotonic Lyapunov functions, as well as corresponding contemporary stability results involving non-monotonic Lyapunov functions. It is shown that the results involving monotonic Lyapunov functions reduce in general to corresponding results involving non-monotonic Lyapunov functions. Specific examples from several diverse areas are given to demonstrate the applicability of the developed theory to many important classes of systems, including digital control systems (with and without quantization nonlinearities), nonlinear regulator systems (Lure and Popov results), pulse-width-modulated feedback control systems, Hopfield and Grossberg neural networks (with and without time delays), digital filters (with generalized overflow nonlinearities), Hamiltonian systems subjected to persistent and intermittent dissipation, a multi-core nuclear reactor model, and discrete event systems (with an application to a manufacturing system and to computer load balancing).

This book addresses the following four general topics: (a) Representation and modeling of dynamical systems of the types described above (Chapter 2); (b) Presentation of the Lyapunov and Lagrange stability theory for dynamical systems defined on general metric spaces involving monotonic and non-monotonic Lyapunov functions (Chapters 3-5); (c) Specialization of this stability theory to finite-dimensional dynamical systems (Chapters 6-8); and (d) Specialization of this stability theory to infinite-dimensional dynamical systems

defined on Banach and Hilbert spaces (Chapter 9).

Replete with examples and requiring only a basic knowledge of linear algebra, analysis, and differential equations, this book can be used as a textbook for graduate courses in stability theory of dynamical systems. It may also serve as a self-study reference for graduate students, researchers, and practitioners in applied mathematics, engineering, computer science, economics, and the physical and life sciences.

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2.2. Fuzzy Neural Networks for Real Time Control Applications: Concepts, Modeling and Algorithms for Fast Learning

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

A new book is available in the area of adaptive neuro-fuzzy systems: “Fuzzy Neural Networks for Real Time Control Applications: Concepts, Modeling and Algorithms for Fast Learning”

store.elsevier.com/9780128026878

Description:

An indispensable resource for all those who design and implement TYPE-1 and TYPE-2 Fuzzy Neural Networks in real time systems

Delve into the type-2 fuzzy logic systems and become engrossed in the parameter update algorithms for type-1 and type-2 fuzzy neural networks and their stability analysis with this book!

Not only does this book stand apart from others in its focus but also in its application-based presentation style. Prepared in a way that can be easily understood by those who are experienced and inexperienced in this field. Readers can benefit from the computer source codes for both identification and control purposes which are given at the end of the book.

A clear and an in-depth examination has been made of all the necessary mathematical foundations, type-1 and type-2 fuzzy neural network structures and their learning algorithms as well as their stability analysis.

You will find that each chapter is devoted to a different learning algorithm for the tuning of type-1 and type-2 fuzzy neural networks; some of which are:

- . Gradient descent
- . Levenberg-Marquardt
- . Extended Kalman filter

In addition to the aforementioned conventional learning methods above, number of novel sliding mode control theory-based learning algorithms, which are simpler and have closed forms, and their stability analysis have been proposed. Furthermore, hybrid methods consisting of particle swarm optimization and sliding mode control theory-based algorithms have also been introduced.

The potential readers of this book are expected to be the undergraduate and graduate students, engineers, mathematicians and computer scientists. Not only can this book be used as a reference source for a scientist who is interested in fuzzy neural networks and their real-time implementations but also as a course book of fuzzy neural networks or artificial intelligence in master or doctorate university studies. We hope that this book will serve its main purpose successfully.

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3. Toolboxes

3.1. MTIC2

Contributed by: Joel M. Esposito, esposito@usna.edu

MTIC2: a MATLAB Toolbox for the iRobot Create 2 - beta version

What does the toolbox do?

This free toolbox allows you to control the Create 2 mobile robot from a PC or laptop running MATLAB, using a documented library of intuitive, high-level, functions. Even novice MATLAB users should be able to get the robot running within 10 minutes. MTIC2 builds off of the success of the original MTIC which has been downloaded thousands of times by roboticists from all over the world.

Where can I download the toolbox?

Documentation and source files can be found here:

<http://www.usna.edu/Users/weapsys/esposito/roomba.matlab.php>

What is new compared to the original CREATE and MTIC?

The Create 2 is a re-programmable version of the Roomba 650 vacuum cleaner targeted at robotics hobbyists, educators and researchers. The most interesting new features include:

- * communication cable is now USB, eliminating the need for a separate USB to serial converter and enabling a faster communication rate;
- * robot has more LEDs and a 7-segment display capable of producing ASCII characters;
- * robot has 6 short range IR sensors located on bumper for non-contact obstacle detection;
- * user can control drive wheel motors via raw pulse width modulation (PWM) commands;
- * user can read raw encoder readings;
- * user can sense drive wheel motor current; and
- * the top plate includes drill template for mounting hardware and CAD files are available to 3-D print accessories.

Please forward bug reports and user feedback to esposito@usna.edu

Professor Joel M. Esposito Systems Engineering Department

USNA, Annapolis, MD USA

<http://www.usna.edu/Users/weapsys/esposito/>

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4. Journals

4.1. Contents: Automatica

Contributed by: Elisa Capello, automatica@polito.it

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

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

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

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4.4. Contents: Journal of Automatica Sinica

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

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4.5. Contents: Asian Journal of Control

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

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4.6. CFP: International Journal of Control

Contributed by: Francoise Lamnabhi-Lagarrigue, lamnabhi@l2s.centralesupelec.fr

International Journal of Control Special Issue

Identification and Control of Nonlinear Electro-Mechanical Systems

Guest Editors: Alexandre Janot, Hugues Garnier, Francoise Lamnabhi-Lagarrigue and Peter Young

Call for Papers

Electro-mechanical systems are a ubiquitous feature of our present World. They affect almost every aspect of our life and we rely on them to service many of the day-to-day tasks with which we are confronted. Papers submitted for this special issue of the IJC can deal with the identification and control of any nonlinear electro-mechanical system. Here ‘identification’ is taken to mean the statistical identification and estimation of nonlinear mathematical models; and ‘control’ can include the automatic control of nonlinear systems ranging from simple position control to the adaptive control of multivariable systems such as flexible joint robotic systems and electrical motors. However, preference will be given to contributed papers that have innovatory theoretical and practical contributions, with applications based on the identification and/or control of real systems.

For more information on this special issue please contact: Alexandre Janot Alexandre.Janot@onera.fr

Deadline for submission of papers: 30 November 2015

Authors to receive a first decision by: March 2016

Final notification of acceptance: May 2016

Tentative publication: December 2016

Submission Instructions:

All papers should be submitted via the International Journal of Control ScholarOne submission site: <http://mc.manuscriptcentral.com/tcon>. During the submission process, please specify that the paper is intended for a special issue and select the correct special issue title from the drop-down menu when prompted. For detailed submission guidelines, please consult the Journal’s Instructions for Authors.

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5. Conferences and Workshops

5.1. Conference on Mathematical Modeling and Control of Communicable Diseases

Contributed by: Pierre-Alexandre Bliman, pierre-alexandre.bliman@inria.fr

2nd announcement of the Conference on Mathematical Modeling and Control of Communicable Diseases, January 11-14, 2016, Rio de Janeiro, Brazil

The Conference on Mathematical Modeling and Control of Communicable Diseases will be held from Monday through Thursday, January 11-14, 2016 at Fundação Getulio Vargas (FGV), Rio de Janeiro, Brazil.

A selection of contributions presented during the Conference will be published in a volume of the series “Springer Proceedings in Mathematics and Statistics”. The review process will take place after the event, more information will be communicated whenever available.

The Conference will take place in the emblematic building of FGV created by the architect Oscar Niemeyer in Praia de Botafogo, on the shore of Guanabara Bay, at the foot of Sugar Loaf Mountain. Mini-courses will be held on Monday, January 11, talks and poster presentation will take place from Tuesday 12 to Thursday 14. The conference will followed by satellite events on Friday, January 15, including the annual meeting of the Brazilian network for modeling of Dengue fever.

The preliminary website is www.fgv.br/math-epidemics. This site will be updated with further information.

This site will be updated with further information. The contact email address is emap.eventos@fgv.br

See the list of confirmed speakers, mini courses, important dates and committees below. Also more information about the conference structure and scopes are given at the end of the message.

Invited Speakers Plenaries (confirmed):

- . Nicolas Bacaër, IRD, Bondy e UPMC, Paris, France
- . Nick Britton, University of Bath, UK
- . Bernard Cazelles, Ecole Normale Supérieure, Paris, France
- . Cláudia Codeço, Fiocruz, Brazil
- . Vittoria Colizza, INSERM e UPMC, Paris, France, e ISI Foundation, Turin, Italy
- . Christl Donnelly, Imperial College of London, UK
- . Aaron King, University of Michigan, USA
- . Eduardo Massad, USP, São Paulo, Brazil
- . Mercedes Pascual, Michigan University, USA
- . Michael Turelli, Davis University, USA

Mini Courses (confirmed):

- . Patrick De Leenheer, Oregon State University, USA
- . Karl Sigmund, Vienna University, Austria
- . Michael Li, University of Alberta, Canada

Important Dates:

- . Abstract submission deadline: September 21st, 2015
- . Author notification deadline: October 9th, 2015
- . Final manuscripts due: November 9th, 2015
- . Author registration deadline: December 10th, 2015
- . Earlybird registration deadline: December 10th, 2015
- . Mini-courses: January 11th, 2016
- . Conference: January 12th-14th, 2016

. Satellite events: January 15th, 2016

Chairs:

- . Pierre-Alexandre Bliman, EMap/FGV, Brazil & Inria, France (organization chair);
- . Jorge Zubelli, IMPA, Brazil (scientific chair)

The objective of the organizers is to bring together researchers and students working on the modeling of human transmissible diseases, considered in the most extensive sense. Interested academics from a large spectrum of applied mathematics are expected, with interest ranging from mathematical epidemiology to statistics, from dynamical systems to control theory, at the borders of biology (including entomology and immunology), ecology, or even economy or climatology. The scope of the event is to provide comprehensive vision of the questions and methods raised by the mathematical modeling of transmissible diseases, from theory to application and back: model analysis, experimental data analysis, qualitative behaviors, control strategies, game theory are among the different approaches that are most welcome. One may forecast a substantial interest for the modeling of endemic tropical diseases (such as dengue fever, yellow fever, chikungunya, malaria, leishmaniasis) and of major global epidemics (e.g. influenza, Ebola fever, HIV), but the workshop is open to studies on all types of transmissible human pathologies.

The topics include, but are not limited to, the following: Spatial and seasonal aspects of epidemics; Control methods; Statistical modeling and parameter estimation methods; Qualitative behaviors and general tools from dynamical system theory; Evolutionary game theory, phylogenetics; Modeling in epidemiology and neighboring fields: sociology, immunology, environment and ecology, climatology, economy, public health.

The Conference will feature contributed papers for oral or poster sessions, including invited and tutorial. Apart from providing a forum for the presentation of new results, the workshop aims at offering a strong tutorial content. It will host ten plenary talks, delivered by some of the best specialists worldly, and will be preceded by three mini-courses devoted to more focused topics. Undergraduate students, as well as PhD students, from Brazil or abroad, are strongly encouraged to participate and will receive attendance certificate. Free entrances to the social dinner will be awarded to the authors of the Best Student Poster and to the Best Student Paper.

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5.2. Allerton Conference on Communication, Control, and Computing

Contributed by: Brenda Roy, broy@illinois.edu

The Fifty-Third Annual Allerton Conference on Communication, Control, and Computing will kick off with two Opening Tutorials being held on Tuesday, September 29, 2015 at the Coordinated Science Laboratory. The Conference sessions will start on Wednesday, September 30, 2015 through Friday, October 2, 2015, at the Allerton Park and Conference Center. The Allerton House is located twenty-six miles southwest of the Urbana-Champaign campus of the University of Illinois in a wooded area on the Sangamon River. It is part of the fifteen-hundred acre Robert Allerton Park, a complex of natural and man-made beauty designated as a National natural landmark.

Allerton Park has twenty miles of well-maintained trails and a living gallery of formal gardens, studded with sculptures collected from around the world.

Papers presenting original research are solicited in the areas of communication systems, communication and computer networks, detection and estimation theory, information theory, error control coding, source coding and data compression, network algorithms, control systems, robust and nonlinear control, adaptive control, optimization, dynamic games, multi-agent systems, large-scale systems, robotics and automation,

manufacturing systems, discrete event systems, multivariable control, computer vision-based control, learning theory, cyber-physical systems, security and resilience in networks, VLSI architectures for communications and signal processing, and intelligent transportation systems.

Plenary Lecture: Professor Martin Vetterli of the School of Computer and Communication Sciences, Ecole Polytechnique Fédérale de Lausanne, will deliver this year's plenary lecture. It is scheduled for Friday, October 2, 2015 at the Allerton Park and Retreat Center.

Opening Tutorial Lectures: Professor Andrea Montanari, Stanford University, and Professor Francis Bach, Laboratoire d'Informatique de l'Ecole Normale Supérieure, will both present a tutorial lecture on Tuesday, September 29, 2015 at the Coordinated Science Laboratory, University of Illinois at Urbana-Champaign.

Final versions of papers to be presented at the conference are required to be submitted electronically by October 4, 2015 in order to appear in the Conference Proceedings and IEEE Xplore.

Registration is now open:

<https://conf.papercept.net/registration/index.php>

Conference Co-Chairs: Angelia Nedich and Minh Do

Email: allerton-conf@illinois.edu URL: <http://www.csl.illinois.edu/allerton/> Coordinated Science Laboratory and The Department of Electrical and Computer Engineering
University of Illinois at Urbana-Champaign

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5.3. Mediterranean Conference on Control and Automation

Contributed by: George Nikolakopoulos, geonik@ltu.se

24th Mediterranean Conference on Control and Automation - MED'16

Athens, Greece

June 21-24, 2016

<http://www.med2016.org>

The theme of MED'16 centers on control and automation challenges and opportunities in the 21st century and on control of autonomous systems. MED'16 spans four full days. June 21 is devoted to Tutorials and Workshops, followed by the three day technical conference on June 22-24. The conference, through its technical program and keynote presentations, will provide a unique opportunity for the academic, research and industrial community to address new challenges, share solutions and discuss future research directions. A broad range of topics is proposed, following current trends of combining control and systems theory with hardware/software and communication technologies, as well as new developments in robotics and mechatronics, autonomous systems, unmanned systems, cyber physical systems, network controlled systems, with the goal of strengthening cooperation of control and automation scientists with industry.

See the conference website for the list of topics of interest.

Paper Submission:

The Program Chairs are soliciting contributed technical papers for presentation at the Conference and publication in the Conference Digital Proceedings. All papers must be submitted and uploaded electronically. Go to <https://contols.papercept.net>. Click on the link "Submit a Contribution to MED'16" and follow the steps. The paper format must follow IEEE paper submission rules, two-column format using 12 point fonts, Times New Roman. The maximum number of pages per submitted paper is 6. Up to two additional pages will be permitted for a charge of 100 Euros per additional page. Illustrations and references are included in the page count.

Invited and Special Sessions:

Proposals for invited and special sessions by topic of interest must be submitted and 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 1, 2016. In addition, authors must submit full versions of invited papers electronically, through <https://contols.paperecept.net>. Each such paper must be marked as 'Invited Session Paper'.

Workshops - Tutorials:

Proposals for workshops - tutorials should contain the title of the session, the list of speakers, and extended summaries (2000 words) of their presentations. Proposals must be sent by e-mail to the Tutorial and Workshop Chair by February 1, 2016.

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 are encouraged to accompany their presentations with multimedia material (i.e., videos), which will be included in the Conference Digital Proceedings. Conference Proceedings will be acquired by IEEE and they appear in IEEE Xplore.

For information and details about the Conference, contact by e-mail the General or Program Chairs.

Important Dates/Deadlines:

Full Papers/Invited Sessions/Tutorial Proposals: February 1, 2016

Acceptance/Rejection Notification: April 15, 2016

Upload Final, Camera Ready Papers: May 6, 2016

Early Registration: April 15 - May 6, 2016

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5.4. International Conference on Control, Automation and Systems

Contributed by: conference@icross.org

2015 15th International Conference on Control, Automation and Systems (ICCAS 2015)

October 13(TUE)-16(FRI), 2015

Bexco, Busan, Korea

<http://2015.iccas.org>

ICCAS 2015 will be held at Bexco, Busan Korea on October 13-16, 2015.

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.

It is our pleasure to announce that a number of high-profile plenary speakers have confirmed their participation and will give their lectures at the conference:

- Karl Johansson, KTH Royal Institute of Technology, Sweden, Cyber-secure Control Systems
- Pheng Shi, University of Adelaide, Australia, Analysis and Design on Dynamical Systems with Hybrid Structure
- Jay Farrell, University of California, Riverside, USA, Precision Mapping and Vehicle State Estimation for Autonomous Highway Vehicles
- Yoshihiko Nakamura, University of Tokyo, Japan, Mechanism and Actuators for Disaster Response Robots
- Sangbae Kim, Massachusetts Institute of Technology, USA, The MIT Cheetah: New Design Paradigm for Mobile Robots

- David Boas, Harvard Medical School, USA, Functional Near Infrared Spectroscopy - What is it and its potential role in brain-computer interfacing?
- Taek Lyul Song, Hanyang University, Korea, Computationally Efficient Multi-target Data Association

Tutorials

The conference program will include Technical Workshops & Tutorials on Tuesday, October 13.

Stability and control of Markovian Jump systems

Time: 10:00-17:30

Fee: Student 150 USD, Regular 200 USD

Introduction to Attack-resilient Control Systems

Time: 13:30 - 17:30

Fee: 50 USD

Special Sessions

- Korean Student Workshop: Do's and Don'ts in Paper Writing and Presentation
- Advances in Underwater Vehicle
- How to Achieve Successful Technology Transfer
- Bio-inspired Robot Design
- fNIRS Forum : Toward a mobile brain imager

Important Dates

September 21, 2015: Advanced Registration Deadline

Organizing Chair: Myo Taeg Lim (Korea Univ., Korea)

Program Chair: Jae Weon Choi (Pusan Natl. Univ., Korea)

Busan, the venue, is famed as Northeast Asia's perfect mix of natural beauty and modern infrastructure. With 3.6 million residents, Busan is Korea's second largest city, and the world's 5th busiest port, making it the center of Korean global trade.

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5.5. International Conference on Cyber Physical Systems

Contributed by: Sonia Martinez, soniamd@ucsd.edu

7th ACM/IEEE International Conference on Cyber Physical Systems, ICCPS 2016

When: 11-14 April, 2016

Where: Vienna, Austria, as part of the CPS Week 2016

Website: <http://iccps.acm.org/2016>

CPS week website: <http://cpsweek.org/2016/>

Aim and scope:

As digital computing and communication becomes faster, cheaper and available in packages which are smaller and use less power, these capabilities are becoming embedded in many objects and structures in the physical environment. Cyber-physical systems (CPS) are physical and engineered systems whose operations are monitored, coordinated, controlled and integrated by such computing and communication. Broad deployment of cyber-physical systems is transforming how we interact with the physical world as profoundly as the world wide web transformed how we interact with one another, and harnessing their capabilities holds the possibility of enormous societal and economic impact.

ICCPS is the premier single-track conference for reporting advances in all aspects of cyber-physical systems, including theory, tools, applications, systems, testbeds and field deployments. This year, the conference features two focus areas for submissions: one on CPS foundations (the traditional focus of ICCPS), and one on secure and resilient infrastructure CPS (the focus of the former HiCoNS conference). The entire program committee is eligible to review in both areas, but authors will be asked to specify one of the two areas during submission in order to aid with reviewer selection

The CPS foundations (CPSF) area focuses on core science and technology for developing fundamental principles that underpin the integration of cyber and physical elements. Application domains include transportation, energy, water, agriculture, ecology, supply-chains, medical and assistive technology, sensor and social networks, and robotics. Among the relevant research areas are security, control, optimization, machine learning, game theory, mechanism design, mobile and cloud computing, model-based design, verification, data mining / analytics, signal processing, and human-in-the-loop shared or supervisory control.

The secure and resilient infrastructure CPS (HiCoNS) area focuses on the confluence of cyber-security, privacy, and CPS that impacts the operation of critical infrastructures such as the smart grid, water distribution, transportation, healthcare, building automation, and process control. Of particular interest is foundational work that cuts across multiple application areas or advances the scientific understanding of underlying principles for the development of high confidence (secure, reliable, robust, and trustworthy) networked CPS.

Submissions and Key Dates:

In concert with the other CPSWeek conferences, ICCPS will require that authors register paper titles and abstracts by October 8 (one week before the full paper submission deadline).

Abstract Registration: October 8, 2015 (mandatory)

Full Paper Submission deadline: October 15, 2015 (no extensions possible)

Manuscripts should be no more than 10 pages in two-column ACM conference style. Formatting and submission instructions can be found at the website

5.6. Workshop on Control of Systems Governed by Partial Differential Equations

Contributed by: Alessandro Macchelli, alessandro.macchelli@unibo.it

2nd IFAC Workshop on Control of Systems Governed by Partial Differential Equations
Bertinoro, Italy; June 13-15, 2016

The workshop will address new and state-of-the-art developments in modelling and control of distributed parameter systems and their application. Since the control design for these systems resides at the intersection of mathematics, systems and control theory, control systems technology, and computer and information science it is essential to provide a joint forum to foster and evolve this important and emerging field of research. CPDE'16 aims at providing this forum under the IFAC flagship.

The second IFAC Workshop on Control of Systems Governed by Partial Differential Equations will be held in Bertinoro (I) from Monday to Wednesday 13-15 June 2016 at the Centro Residenziale Universitario (<http://www.ceub.it>).

To enlarge the community of researchers working in modelling and control of distributed parameter systems, before the workshop an introductory summer school titled "An introduction to modelling and control of systems governed by PDEs" is organised in the same location from Thursday to Sunday 9-12 June 2016.

More information on the workshop web site: <http://www.cpde2016.org>.

Important dates:

Deadline for submission of draft regular papers: November 30, 2015

Deadline for submission of invited session proposals: November 30, 2015
Deadline for submission of invited session draft papers: November 30, 2015
Authors notification: February 2016
Final Paper: April 30, 2016

Organizing Committee:

Ralph C. Smith (North Carolina State University, USA) IPC Co-Chair
Hans Zwart (University of Twente, The Netherlands) IPC Co-Chair
Alessandro Macchelli (University of Bologna) NOC Co-Chair
Lorenzo Marconi (University of Bologna) NOC Co-Chair

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5.7. Towards Scalable Formal Synthesis of Complex Systems Workshop

Contributed by: Majid Zamani, zamani@tum.de

Title: Towards Scalable Formal Synthesis of Complex Systems

Pre-Conference Workshop - The 54th IEEE Conference on Decision and Control

Organizers: Majid Zamani (Technische Universität München), Antoine Girard (Université de Grenoble), Alessandro Abate (University of Oxford)

Speakers: Alessandro Abate (University of Oxford), Murat Arcak (University of California, Berkeley), Calin Belta (Boston University), Amin Ben Sassi (University of Colorado, Boulder), Domitilla Del Vecchio (Massachusetts Institute of Technology), Rüdiger Ehlers (University of Bremen), Antoine Girard (Université de Grenoble), Hai Lin (University of Notre Dame), Necmiye Ozay (University of Michigan, Ann Arbor), Pavithra Prabhakar (Kansas State University), Ufuk Topcu (University of Texas at Austin), Arjan van der Schaft (University of Groningen), Majid Zamani (Technische Universität München)

Abstract: The use of concepts, techniques, and algorithms from the literature on formal verification and synthesis in computer science is becoming increasingly common within the systems and control community. Formal notions such as that of abstraction, or that of simulation relation, which are fundamental in computer science, are increasing their presence in the study of dynamical and control systems. Furthermore, such notions help to improve the understanding of similar concepts that are already in use in systems and control theory, such as that of model reduction (abstraction). The concept of formal synthesis stands for the process of automated synthesis of controller codes from higher-level temporal logic requirements. The use of temporal logic allows the expression of rich specifications for time-dependent models, and enables to draw comparisons between themes in classical control theory and their equivalents in computer science. Correspondingly, we invited an interdisciplinary group of control theorists and computer scientists, expert in this domain, to present recently developed scalable formal synthesis techniques. These techniques are particularly relevant to address problems dealing with cyber-physical systems, i.e. systems in which computing devices interact with the physical world and vice versa. These techniques can solve many large-scale complex problems that until recently could not be addressed in a formal methodological way. Furthermore, these approaches have demonstrated their practical relevance with many available model checkers and synthesis tools growing from being exclusively of academic interest to becoming industrially relevant techniques.

Target Audience: The proposed workshop will benefit the control community as well as computer science community. We believe that the potential audience of this workshop consists of a large number of CDC participants especially those interested in formal methods and cyber-physical systems. The workshop will be a unique opportunity for an active and productive interaction between control theorists and computer scientists.

6. Positions

6.1. PhD: University of Nevada, USA

Contributed by: Kostas Alexis, kalexis@unr.edu

The recently established “Agile Robotics & Autonomy Lab” (AERIAL) at the University of Nevada, Reno (UNR) is opening PhD positions in the field of advanced navigational and operational autonomy for aerial robotics. The main focus of the envisaged research efforts will be related with leveraging the currently achieved autonomy levels towards enabling what we call autonomous aerial service robotic co-workers, a new class of robots that simultaneously perceive their environment, decide their actions, collaborate with other robots, plan and actuate themselves so that useful work tasks take place for the benefit of our societies. We explicitly aim to contribute into closing the “Perception-Navigation-Action loops” and through that not only improve the individual modules (perception, path planning and control) but further exploit them through their tight combination. PhD candidates with path planning/control or robotic perception background are equally welcome to apply. The salaries are competitive by international and national standards.

Download the detailed call from <http://www.kostas-alexis.com/positions> OR <https://goo.gl/gTH1VD>

Working Environment and Conditions: The student will be based at the Computer Science & Engineering Department of the University of Nevada, Reno and will have access to a number of robotic Unmanned Aerial Vehicles and all the required hardware components and software tools, laboratory infrastructure for safe testing and ground-truth analysis as well as access to large field-testing areas. Interdisciplinary research is encouraged across laboratories, including the Computer Vision Laboratory, the human-robot interaction team, the Human + team, the Socially Assistive Robotics team and the group of researchers under the Nevada Advanced Autonomous Systems Innovation Center (NAASIC). The research group collaborates with leading national and international laboratories. The PhD salaries are competitive by international and national standards (1800 \$/month, tuition waiver and fringe benefits) while a highly integrated, open to different cultures and experiences and top-notch environment is to be expected.

Requirements:

The ideal candidate holds (or is about to obtain) a first-class honor undergraduate/postgraduate degree (or equivalent) in Computer Science, Electrical/Electronic Engineering, Mechanical Engineering, Aerospace Engineering, Mathematics or has authored publications in recognized conferences/journals. Good programming skills are necessary. We seek for highly autonomous researchers but also good team players. Collegiality and interpersonal skills are essential. Experience with robotics-related projects will be highly valued, so make sure to mention these in your application. Excellent English language skills are highly desired. As 2+ positions are to be fulfilled, applicants adept in both control/path-planning as well as robotic vision are equally encouraged to submit their application.

Submit your Application:

The positions are to be fulfilled immediately and ideally before the Spring 2016 Semester. Prospective candidates should submit their application by e-mail to the following address by 30 September 2015:

Prof. Dr. Kostas Alexis
Dept. of Computer Science Engineering MS-171
University of Nevada, Reno

e-mail: kalexis@unr.edu

www-unr: <http://www.unr.edu/cse/people/faculty/alexis>

www-personal: <http://www.kostas-alexis.com>

Please include:

- * A letter of motivation describing your skills and plans
- * Your current CV
- * A list of three references together with contact information
- * Possible publications or any project description you consider relevant

Happen that you have any question, please do not hesitate to contact us.

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6.2. PhD: Florida Atlantic University, USA

Contributed by: Karl von Ellenrieder, ellenrie@fau.edu

2 PhD Positions available starting Jan 2016 in unmanned marine vehicles (robotic boats) with a focus on: automatic control; localization and mapping; and human robot interaction.

Research will be conducted at Florida Atlantic University (FAU), under the supervision of Prof. Karl von Ellenrieder. The work is based at the FAU SeaTech Campus in Dania Beach, Florida USA but will possibly also involve short trips to Northern Florida, College Park, MD USA or Girona, Spain for joint research with collaborating institutions.

Position Descriptions:

We are looking for motivated, talented students, who wish to undertake PhD research at the cutting edge of automatic control; decision making for sparse advisory control; and human robot interaction. Provided that the applicant is admitted to candidacy in the Ph.D. program at FAU, the appointments will be for up to 4 years.

Who should apply:

The desired candidate holds a B.S. or M.S. degree in engineering (preferably in ocean engineering, electrical engineering, computer science, mechanical engineering, aerospace engineering), or a related field, and has:

- an strong academic record showing excellent analytical skills;
- a strong mathematical background including systems and control theory;
- a strong interest in: robotics, control theory, human-robot interaction;
- proficiency in: linux, C/C++;
- familiarity with unmanned vehicle system architecture and robot 'operating systems' (e.g. ROS, LCM, MOOS);
- proficiency in oral and written English.

Expression of interest:

If interested in the position please send an email to ellenrie@fau.edu with subject "NRI PhD-student last-name" including:

- a one page cover letter describing your research interests and early achievements;
- a detailed CV;
- B.S. and M.S. (if you have been in an M.S. program) transcripts;

- the names and email addresses of at least 2 referees.

Contact:

Prof. Karl von Ellenrieder, ellenrie@fau.edu , +1 954 924 7232

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6.3. PhD: ETH Zürich, Switzerland

Contributed by: Roy Smith, rsmith@control.ee.ethz.ch

PhD position: ETH Zürich; Automatic Control Laboratory
Modelling and Identification of Buildings for Energy Management

The research is a part of a larger effort in advanced control of buildings and energy-hubs to improve energy efficiency, occupant comfort and reliability. Modelling of the complex interactions between heterogeneous buildings and the environment, and between multiple buildings within the connected grids (electricity, gas, warm water) and storage facilities of an energy hub, is key to the successful optimisation and control of such systems.

The Automatic Control Laboratory has had a significant effort in building energy managements systems for more than the past six years, including an extended duration full-scale demonstration of MPC control on an occupied 6-storey building (see: www.opticontrol.ethz.ch). The current research group includes several Post-Doctoral researchers and several Ph.D. students.

Qualifications: PhD students at ETH Zurich must hold a Master's degree from a recognised university. Those close to the completion of their Master's degree are welcome to apply.

Administrative conditions: The starting annual salary for a Ph.D. student at the Automatic Control Laboratory is 70,000 CHF (gross) plus social costs. The working language is English.

For more information and application details please see the online advertisement at http://control.ee.ethz.ch/news/jobs/building_modeling_2015_07_29.en.html.

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6.4. PhD: University of Houston, USA

Contributed by: Karolos Grigoriadis, karolos@uh.edu

Research assistantships are available in the Department of Mechanical Engineering at the University of Houston for Ph.D. studies in the areas of dynamic systems identification and control with applications to mechanical, energy and biomedical systems. Specific areas of interest include: (i) the modeling and control of combustion engines, (ii) the identification and control of the human physiology and response to drugs, and (iii) the real-time monitoring and control of subsea oil production systems. Applicants are expected to have strong mathematical background and knowledge of modern control systems theory and applications documented by publications and prior MS studies on relevant topics. The vibrant Houston metropolitan area offers ample opportunities for interaction with collaborating industry and the Texas Medical Center. Applications from qualified students are invited for Spring and Fall 2015. For more information please contact: Prof. Karolos Grigoriadis, Department of Mechanical Engineering, University of Houston, Houston, TX 77204-4792, E-mail: karolos@uh.edu

6.5. PhD/Post-Doc: Nanyang Technological University, Singapore

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

Research Fellow and PhD Research Student Positions: Nanyang Technological University, Singapore

A research fellow and a Ph.D research student positions are available in the School of Electrical & Electronic Engineering, Nanyang Technological University, working on the project on Autonomous Docking of Food Catering Truck to Aircraft.

The goal of this project is to develop a food catering truck-docking assistant system to help a human operator to dock the truck precisely. In addition, the system should prevent errors that damage the aircraft and cause flight delays during the docking process. Sensors will be used to determine the position of the aircraft and the truck. Appropriate docking algorithms will be developed to guide the docking of the truck based on optimal path planning and real-time feedback of the sensors' measurement data.

The salary range for the research fellow is S\$4000 - S\$5000 per month, with additional performance bonus payable at the end of academic year. The position can start immediately for a term of 2 years.

The requirements are:

- . A Ph.D degree in relevant areas of the project;
- . Demonstrated technical knowledge and capabilities (in the form of publication records) pertaining to intelligent vision systems and/or autonomous vehicles;
- . Experiences in algorithm development and implementation for intelligent vision systems and/or autonomous vehicles working under various operational conditions.

The position for the Ph.D student needs to meet NTU's general admission criteria stated in

<http://admissions.ntu.edu.sg/graduate/R-Programs/BeforeApplying-Research/Pages/GeneralAdmissionRequirements.aspx>.

The successful applicant should be admitted in Jan 2016.

Interested candidates please email CV/resume to Prof Changyun Wen through email address: ecywen@ntu.edu.sg

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6.6. PhD/Post-Doc: Nanyang Technological University, Singapore

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

* PhD

Fully funded PhD position in the Flight Mechanics and Control Laboratory in the School of Mechanical and Aerospace Engineering at NTU (Singapore) is available.

Research topic: Intelligent control of unmanned aerial vehicles. The project involves:

- Soft computing methods including artificial neural networks, fuzzy logic control theory and adaptive neuro-fuzzy systems
- Parameter update rules for artificial neural networks and adaptive neuro-fuzzy systems
- State estimation and control of unmanned aerial vehicles
- Robotic vision

Requirements:

Prospective candidates should hold a B.Sc. or M.Sc. degree in electrical engineering, aerospace engineering, mechanical engineering, automatic control, mechatronics, applied mathematics, or other related disciplines from reputable universities.

The candidate should have excellent verbal and writing skills in English. (A TOEFL score of >570 paper-based, >230 computer-based, >88 internet-based or a minimum IELTS score of 6.0 is required.

A Bachelor's degree with honors of at least a Second Class Upper Level or equivalent (min GPA: 3.2/4.0).

International applicants are also required to have a Graduate Aptitude Test in Engineering (GATE) score of at least 90% or Total GRE score of >319/3.5 where score for verbal section must be min 149, score for quantitative section must be min 166 and analytical writing score is at least 3.5.

The application should consist of:

- . A motivation letter,
- . A CV with a full publication list,
- . Transcripts of B.Sc. (and M.Sc. if possible).
- . The contact details of three referees.

These documents must be compiled as a single pdf file, and named as “<Name >.<Surname >.pdf”. Then, the single file should be sent to “erdal@ntu.edu.sg” with a subject line of “PhD application of <Name ><Surname>”.

The position will be available from January, 2016. The deadline for the applications is 11th of September 2015. We regret that only shortlisted candidates will be notified.

Erdal Kayacan PhD Assistant Professor

Email: erdal@ntu.edu.sg

* Post-doc position in the Flight Mechanics and Control Laboratory in the School of Mechanical and Aerospace Engineering at NTU (Singapore) is available.

Research topic: Intelligent control of unmanned aerial vehicles.

The project involves:

- Soft computing methods including artificial neural networks, fuzzy logic control theory and adaptive neuro-fuzzy systems
- Parameter update rules for artificial neural networks and adaptive neuro-fuzzy systems
- State estimation and control of unmanned aerial vehicles

Requirements:

Prospective candidates should hold a Ph.D. degree in electrical engineering, aerospace engineering, mechanical engineering, automatic control, mechatronics, applied mathematics, or other related disciplines. Moreover, he/she should have a strong publication record in the fields related to control theory and state estimation, preferable in model-free control methods. The ideal candidate will have prior experience with unmanned aerial vehicles. The candidate should also have excellent verbal and writing skills in English.

The contract is for one year, and the salaries are competitive and are determined according to the successful applicant's accomplishments, experience and qualifications. Singapore has low income tax and a postdoc is likely to pay a variable income tax of a maximum of 15% (see <http://www.iras.gov.sg/irasHome/page04.aspx?id=1190>).

How to apply for the Postdoc position:

The application should consist of

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

These documents must be compiled as a single pdf file, and named as “<Name >.<Surname >.pdf”. Then, the single file should be sent to ”erdal@ntu.edu.sg” with a subject line of “Postdoc application of <Name ><Surname >”

Deadline and starting date:

The deadline for the applications is 25th of September 2015.

We regret that only shortlisted candidates will be notified.

For further information, feel free to contact:

Erdal Kayacan PhD Assistant Professor

Email: erdal@ntu.edu.sg

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6.7. PhD/Post-Doc: Technion - Israel Institute of Technology, Israel

Contributed by: Vadim Indelman, vadim.indelman@technion.ac.il

PhD and Postdoc positions in belief space planning and active perception at the Technion, Israel

Fully funded PhD and Postdoc positions are available at the Technion - Israel Institute of Technology. The objective of the project, funded by the Israel Science of Foundation (ISF), is to investigate novel approaches for belief-space planning and active perception in the context of single - and multi-robot autonomous navigation and active SLAM. The successful candidate(s) will work with Assist. Prof. Vadim Indelman within the recently established Autonomous Navigation and Perception Lab (ANPL). Depending on the candidate's background and interests, the position can involve fundamental research, algorithmic implementation and experimental validation on aerial and/or ground robots. Funds for some conference travel and research expenses will be provided.

Applicants should submit a cover letter that briefly describes their background and career plans, CV and three professional references. Please send all application materials to vadim.indelman@technion.ac.il. Starting date is flexible, however applications are encouraged to be submitted by September 30th.

For more information, please visit <http://vindelman.net.technion.ac.il> or contact Vadim Indelman via email. Vadim Indelman, Ph.D.

Assistant Professor

Autonomous Navigation and Perception Lab

Department of Aerospace Engineering

Technion - Israel Institute of Technology

Tel: +972-4-829-3815

Email: vadim.indelman@technion.ac.il

Web: <http://vindelman.net.technion.ac.il/>

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6.8. Post-Doc: Nanyang Technological University, Singapore

Contributed by: Soong Boon Hee (Thomas), ebhsoong@ntu.edu.sg

There is a Post Doc position available in the corporate lab Wireless Networking for interested graduating students.

The Post Doc will assist the Principal Investigator on the Project:

- To develop models for design of networking algorithms to enhance fault tolerant capabilities of the sensor networks deployed on electrical machine platform.
- To develop methodology for reliability of the sensor networks applied to electrical machine platform, with an optimal allocation of number of sensors, and networking algorithm that improves the fault tolerant capabilities of electrical drives and mechanical drives at minimum cost.

- To implement the algorithms in simulation and verify the performance in hardware test.

Instructions: Interested candidates can send your to A/Prof Soong Boon Hee by E-mail: ebhsoong@ntu.edu.sg

- Detail CV, List of publications and References
- List job reference number RRWSN15-93
- Only shortlisted candidates will be notified for interview.
- Electronic submission of application is highly encouraged.

The applicant must have:

- A PhD degree in the area of Electrical & Electronic Engineering or Computer Engineering;
- Experience on Sensor network deployment, Communication Protocols, Networking algorithms for modelling of Electrical and Mechanical components for electrical machine platform;
- Good knowledge about Energy efficient protocols of for wireless sensors networks, Energy harvesting capabilities design;
- Good Team Dynamics and Project Management Skills;
- Excellent Communication Skills (both oral and written) in English.

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6.9. Post-Doc: Nanyang Technological University, Singapore

Contributed by: Rong Su, rsu@ntu.edu.sg

A postdoc position immediately available in School of Electrical and Electronic Engineering at Nanyang Technological University

A candidate for a Research Fellow position is sought, who will be placed in a project on Urban Traffic Signal Control based on V2X Information Infrastructure, which is sponsored by Singapore Economic Development Board (EDB) within an NTU-NXP ITS program. The candidate is expected to have a PhD degree in the areas of operations research and/or control with a strong background in mathematical modelling, operation planning, scheduling and control with substantial knowledge on optimization methods and relevant computational tools. Past experience in urban traffic signal control and software simulation of large-scale networks will be a plus. The candidate is expected to undertake research on modelling a large urban traffic network, and developing computationally efficient traffic light scheduling and control algorithms, which are implementable within a V2X infrastructure. The salary is competitive including a base salary proportional to the candidate's research experience, and an annual performance bonus. The first contract is for one year, and can be renewed up to 2.5 years. An interested candidate can send his/her CV, a list of publications, and a list of at least two references to the following address:

Prof Rong Su
S1-B1b-59, School of Electrical & Electronic Engineering
Nanyang Technological University
50 Nanyang Avenue
Singapore 639798
email: rsu@ntu.edu.sg

Electronic submission of application is highly encouraged. Only shortlisted candidates will be notified for interview.

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6.10. Post-Doc: Tallinn University of Technology, Estonia

Contributed by: Eduard Petlenkov, eduard.petlenkov@ttu.ee

Control Systems Research Laboratory <http://www.a-lab.ee/> is a part of the Faculty of Information Technology of Tallinn University of Technology <http://www.ttu.ee> that was established in 1918. Our focus lies in the area of advanced system modeling and control design methods.

We invite applications for one post-doctoral position in advanced control methods for industrial applications. The main objectives of this research is process data based analysis of Industrial Control Systems (e.g. district heating plants) and development of advanced control algorithms including MPC and Switched Control to increase the performance.

The project will be focused on the combination of classical control techniques with intelligent control methods and its application to control of complex nonlinear systems. The proposed research aims to:

- Determine the most suitable (with respect to predefined control criteria) control strategy for particular industrial system by means of (i) experimental data analysis, (ii) analytical and numerical modeling, and (iii) computer based simulation/verification;
- Validate the developed framework on the basis of laboratory prototypes of real industrial plants;
- Incorporate the developed algorithms into practical applications.

Required qualification:

- PhD in control systems engineering or relevant field;
- Previous experience in control and modeling of industrial processes;
- Knowledge of MATLAB/Simulink;
- Knowledge of C/C++ and/or Java programming languages is an asset;
- Good communication skills in oral and written English.

We offer:

- The appointment will be for a period of 1 year with a possibility to extend for the second year;
- As an employee of the university, you will receive a competitive salary (approximately 2600 EUR Gross Salary (2000 EUR Net Salary) per month);
- Access to a variety of research equipment available in our laboratory;
- Friendly atmosphere in a rapidly growing laboratory with worldwide recognition and international research connections.

The application should consist of:

- A motivation letter stating why the proposed research topic interests you;
- A complete CV with a full publication list;
- The contact details of at least two reference persons.

These documents must be compiled in a single pdf file and sent to a-lab@ttu.ee with a subject "Post-Doc application of <Name ><Surname>".

The deadline of the application is September 30, 2015.

Expected start of the project is November 2015.

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6.11. Post-Doc: Johannes Kepler University Linz, Austria

Contributed by: Daniela Hummer, daniela.hummer@jku.at

* Post Doc Position in the Field of Insulin-Glucose Metabolic Identification, Modelling and Control

Together with several partners, the Institute for Design and Control of Mechatronical Systems at the Johannes Kepler University in Linz, Austria, (www.jku.at) is developing control algorithms for adaptive, predictive replacement therapy of diabetes patients (both type 1 diabetes and type 2 diabetes).

In this framework, a PostDoc position is available, initially for one year, which in the case of successful cooperation can be extended up to 6 years with a full position. This position is not on a tenure track.

The tasks associated to this position will include algorithmic development, participation in testing and evaluation, in the administration of projects and in the direction of Master and PhD students in this field. The candidate should have a PhD with a focus on automatic control or biomedical engineering, mathematics or computer sciences, be interested in the field of medical systems. Team player qualities are essential.

In the first year, the salary will be around 2800Euros/month gross, 14 times a year, after the first year it will become about 3600Euros/month gross 14 times a year.

For more information please contact Prof. Luigi del Re; luigi.delre@jku.at; applications to be sent to the same address. The position can be filled anytime from 1. October 2015 to 1. February 2016.

* Post Doc Position in the Field of Design and Verification of Advanced Driver Assistance Systems

Together with several industrial partners, the Institute for Design and Control of Mechatronical Systems at the Johannes Kepler University in Linz, Austria, (www.jku.at) is developing control algorithms for ADAS and in particular for their verification under general circumstances (traffic conditions, sensors failures etc.).

In this framework, a PostDoc position is available, initially for one year, which in the case of successful cooperation can be extended up to 6 years with a full position. This position is not on a tenure track.

The tasks associated to this position will include algorithmic development, participation in testing and evaluation, in the administration of projects and in the direction of Master and PhD students in this field. The candidate should have a PhD with a focus on automatic control or robotics, mathematics or computer sciences, be interested in the field of Intelligent Transport Systems. Team player qualities are essential.

In the first year, the salary will be around 2800Euros/month gross, 14 times a year, after the first year it will become about 3600Euros/month gross 14 times a year.

For more information please contact Dr. Harald Waschl (harald.waschl@jku.at) or Prof. L. del Re. (luigi.delre@jku.at). Applications to be sent to luigi.delre@jku.at.

The position can be filled anytime from 1. October 2015 to 1. February 2016.

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6.12. Research Assistant/Associate/Senior Research Associate: University of Cambridge, UK

Contributed by: Rodolphe Sepulchre, r.sepulchre@eng.cam.ac.uk

Applications are invited for a Research Assistant/Associate and for a Senior Research Associate in the Department of Engineering, to work on the ERC Advanced Grant project “Switchlets: a theory of multi-resolution behaviors for systems and control across scales” awarded to Professor Rodolphe Sepulchre. The 5-year project aims at laying the mathematical foundations of a multi-resolution behavioral theory.

The project is primarily inspired, steered, and benchmarked by the specific application of understanding the robustness and modulation principles of neuronal behaviors, in collaboration with experimental neuroscientists.

If you have any questions about the post or about the application process, please contact Diane Hazell, Acting Divisional Administrator: email dsu21@cam.ac.uk. (Tel +44 01223 748529).

The University values diversity and is committed to equality of opportunity.

The University has a responsibility to ensure that all employees are eligible to live and work in the UK.

* Research Assistant/Associate in Systems and Control (Fixed Term)

The post holder will be located in Central Cambridge, Cambridgeshire, UK.

The work will require the successful candidate to design and develop appropriate methodologies to address the above research objective with a focus on systems and control across scales. This will involve planning and managing their own research activity and liaising with colleagues in the control research group at Cambridge and with the partner company and universities. Results of the work will be presented at sponsor workshops, and will be written up in the form of reports, conference papers or journal articles, as appropriate.

Applicants must have a very good first degree in engineering, applied mathematics or a closely related field and a PhD degree (or be close to obtaining one) in an area related to systems and control. Candidates will have an interest in one or several areas of biological modelling, such as systems biology, synthetic biology, computational neuroscience, or experimental neurophysiology. A broad knowledge of systems and control areas is expected and experience in one or more of the following technical areas is necessary: nonlinear modelling, multi-resolution techniques, mean-field modelling, synchronization, oscillatory waves and patterns, computational neuroscience, experimental neurophysiology, neuroimaging.

Salary Ranges: Research Assistant: £24,775 - £28,695 Research Associate: £28,695 - £37,394 Fixed-term: The funds for this post are available for 24 months in the first instance.

To apply online for this vacancy, please click on the 'Apply' button below. This will route you to the University's Web Recruitment System, where you will need to register an account (if you have not already) and log in before completing the online application form.

Please ensure that you upload your Curriculum Vitae (CV), a statement of research interest and a covering letter in the Upload section of the online application. If you upload any additional documents which have not been requested, we will not be able to consider these as part of your application. Please submit your application by midnight on the closing date.

Please quote reference NM06989 on your application and in any correspondence about this vacancy.

* Senior Research Associate

The post holder will conduct independent research that will contribute to the advancement of the project. In addition, they will assist the PI in the scientific management of the ERC project. This role includes assistance to the PI in PhD supervision, scientific management of the research team, finance, and organisation of scientific events related to the project. The successful candidate will join the Control Group and will be expected to make a contribution to excellence in research. The role holder will participate in the overall contribution of the department/faculty, as appropriate.

Applicants must have a very good first degree in engineering, applied mathematics or a closely related field and a PhD degree in an area related to systems and control. It is expected that candidates will have an interest and previous experience in one or several areas of biological modelling, such as systems biology, synthetic biology, computational neuroscience, or experimental neurophysiology. A broad knowledge of systems and control areas is expected and experience in one or more of the following technical areas is necessary: nonlinear modelling, multi-resolution techniques, mean-field modelling, synchronization, oscillatory waves and patterns, computational neuroscience, experimental neurophysiology, neuroimaging.

Salary Ranges: Senior Research Associate: £38,511 - £48,743 Fixed-term: The funds for this post are available for 24 months in the first instance.

To apply online for this vacancy, please click on the 'Apply' button below. This will route you to the University's Web Recruitment System, where you will need to register an account (if you have not already) and log in before completing the online application form.

Please ensure that you upload your Curriculum Vitae (CV), a statement of research interest and a covering letter in the Upload section of the online application. If you upload any additional documents which have not been requested, we will not be able to consider these as part of your application. Please submit your application by midnight on the closing date.

Please quote reference NM06995 on your application and in any correspondence about this vacancy.

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6.13. Faculty: Delft University of Technology, The Netherlands

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

The Delft Center for Systems and Control (DCSC) of Delft University of Technology, The Netherlands, announces an open position for a Tenure Track Assistant Professor in the field of Nonlinear and Hybrid Systems.

The research area of the position will be oriented towards fundamental topics in one or more of the following fields:

- nonlinear systems
- hybrid systems
- optimization for control
- time-delay systems.

Prospective research activities involve the development of systematic and computationally efficient modeling, analysis, control, and/or verification methods within the topics listed above. The activities of the new position should be complementary to the ongoing fundamental research within the Hybrid and Distributed Systems and Control group of DCSC, which mainly involves model predictive control of max-plus linear and piecewise affine systems, adaptive control, and distributed model predictive control and estimation.

In addition, within this position applications of the developed fundamental methods should be targeted in application fields that could either connect to current application fields at DCSC, such as road and freeway networks, transportation systems, smart grids, water distribution networks, robotics, renewable energy, smart buildings, or that could focus on a completely new field within DCSC that is related to the current research fields of the Faculty of Mechanical Maritime and Materials Engineering (see <http://www.3me.tudelft.nl/en/research/research-areas/>).

The position offered is a tenure-track position for a period of 6 years, leading to a permanent position assuming excellent performance. During the tenure track, the candidate will have the opportunity to develop into an internationally acknowledged and recognized academic. To this aim we offer a structured career and personal development program. For more information about the tenure track and the personal development program, please visit <http://www.tudelft.nl/tenuretrack>.

Delft University of Technology offers an attractive benefits package, including a flexible work week, and the option of assembling a customized compensation and benefits package. Salary and benefits are in accordance

with the Collective Labor Agreement for Dutch Universities, and depends also on the past track record of the candidate.

We are looking for a candidate with a PhD degree in systems and control, computer science, applied mathematics, mechanical engineering, electrical engineering, operations research, or informatics, and with an extensive expertise in the topic of the position as well as the broad field of systems and control. The candidate should have at least 1 year of postdoc experience. She/he should already have gained an international reputation in her/his field of research and also have a proven track record in conducting innovative fundamental research demonstrated by the ability to publish in leading international journals. She/he is expected to develop her/his own line of research and to establish cooperation with other groups at the university, national, and international level. The candidate should also have the didactic abilities for teaching systems and control courses at the BSc, MSc, and postgraduate level, and for supervising MSc projects. A good command of English is an essential requirement. International applicants must be willing to acquire knowledge of the Dutch language.

For more detailed information on the position, please contact Bart De Schutter or Tamás Keviczky at t.keviczky@tudelft.nl, b.deschutter@tudelft.nl or t.keviczky@tudelft.nl

Applicants should submit their letter of application along with a curriculum vitae or resume, a personal research and teaching statement, as well as a list of publications, electronic copies of three key publications, and the names and email addresses of three referees, via email to Application-3mE@tudelft.nl attn. Ms Bianca van Someren of the HR department. When applying, make sure to mention the vacancy number: 3ME15-22.

The application deadline for the position is September 15, 2015.

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6.14. Research Scientist: Rockwell Automation, Strategic Development, USA

Contributed by: Bijan Sayyarodsari, bsayyarodsari@ra.rockwell.com

The Strategic Development group at Rockwell Automation (<http://www.rockwellautomation.com>) has a research position available for a data scientist at its Austin, Texas location. The successful candidate will join a dynamic research team to develop innovative analytics solutions for a diverse range of applications that will put the candidate's technical and creative skills to the test. The specific activities will focus on real-time predictive and prescriptive analytics for applications in manufacturing and process industries.

Required Skills:

- Strong Background in Statistical Data Analysis.
- Solid background in algorithmic development for analytics. Of special interest is the ability to customize analytics algorithms for streaming data.
- Ability to develop & deploy creative analytics solution for real world problems.
- Good programming background with languages such as Python, R, C/C++.

Desired Skills:

- Familiarity with the development of presentation layer for the analytics solutions (e.g. HTML5)
- Familiarity with optimization & control theory
- Ability to communicate effectively with people of diverse technical backgrounds and across technologies, disciplines and functions.

Education Requirements:

- Graduate degree (preferably Ph.D) in Engineering, Physics, or Computer Science specializing in one or more of the following: Statistical Data Analysis, Computational Efficiency of Numerical Algorithms (preferably in statistical data analysis, optimization), Process Modelling, Control & Optimization.

Salary and contract conditions:

- Compensation package will be commensurate with the qualifications of the applicant.
- Minimal travel requirements.

Please send your application (including a full CV) to Bijan Sayyar-Rodsari (bsayyarodsari@ra.rockwell.com).

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