E-Letter on Systems, Control, & Signal Processing
Issue 383, July 2020

Editor: Ahmad F. Taha
Department of Electrical & Computer Engineering
The University of Texas at San Antonio
1 UTSA Circle, San Antonio, TX 78249
ahmad.taha@utsa.edu
http://engineering.utsa.edu/ataha

Welcome to Issue 383 of the CSS E-letter available here.

- To submit new articles, visit article submissions on the E-Letter website.
- To **subscribe**, send an empty email to eletter-css-join@lists.it.utsa.edu and you will be automatically subscribed to the CSS E-Letter.
- To **unsubscribe**, please send a blank email to eletter-css-leave@lists.it.utsa.edu and you will be automatically unsubscribed.

The next E-Letter will be mailed out at the beginning of August 2020.

Contents

6.12 PhD: Maynooth University, Ireland
6.13 PhD/Postdoc: City University of New York, USA
6.14 Postdoc: EPFL, Switzerland
6.15 Postdoc: Free University of Bozen-Bolzano, Italy
6.16 Postdoc: Jinan University, China
6.17 Postdoc: Kiel University, Germany
6.18 Postdoc: Linköping University, Sweden
6.19 Postdoc: Bundeswehr University Munich, Germany
6.20 Faculty: KU Leuven, Belgium
6.21 Faculty: Jinan University, China
6.22 Faculty: University of Groningen, The Netherlands
6.23 Faculty: University of Groningen, The Netherlands
6.24 Faculty: University of Paderborn, Germany
6.25 Faculty: The Norwegian University of Science and Technology, Norway
6.26 Faculty: Norwegian University of Science and Technology, Norway
6.27 Faculty: Norwegian University of Science and Technology, Norway
6.28 Research Scientist: National University of Singapore, Singapore

1 IEEE CSS Headlines

1.1. Become a CSS Member

Contributed by: Ahmad Taha, ahmad.taha@utsa.edu

Become a CSS Member by visiting the following link https://bit.ly/2ZBWCCs.

Back to the contents

1.2. Follow the CSS Social Media Accounts

Contributed by: Ahmad Taha and Ankush Chakrabarty ahmad.taha@utsa.edu, chakrabarty@merl.com

Follow us on Twitter https://twitter.com/CSSIEEE
Like us on Facebook https://facebook.com/CSSIEEE

Back to the contents

1.3. CSS Technically Cosponsored Events

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

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

- 2020 IEEE 17th India Council International Conference (INDICON 2020). New Delhi, India. December 11-13, 2020. http://www.indicon2020.in/

- 29th Mediterranean Conference on Control and Automation (MED 2021). Brindisi, Italy. June 22-25, 2021. http://www.med2021.poliba.it/

- 24th International Conference on System Theory, Control and Computing (ICSTCC 2020). Sinaia, Romania. October 8-10, 2020. http://ace.ucv.ro/icstcc2020/

- 25th International Conference on Methods and Models in Automation and Robotics (MMAR 2020). Miedzyzdroje, Poland. August 23-26, 2021. http://www.mmar.edu.pl

- 39th Chinese Control Conference (CCC2020). Shenyang, China. July 27-29, 2020. http://www.ccc2019.cn/en/index.html

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

Back to the contents

1.4. CSS Publications Content Digest

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

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

The CSS Publications Content Digest, available at
http://ieeecss.org/publications-content-digest
provides lists of current tables of contents of the periodicals sponsored by the Control Systems Society. Each issue offers readers a rapid means to survey and access the latest peer-reviewed papers of the IEEE Control Systems Society. We also include links to the Society's sponsored Conferences to give readers a preview of upcoming meetings.

Back to the contents

1.5. IEEE Transactions on Automatic Control

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

IEEE Transactions on Automatic Control

Volume 65 (2020), Issue 6 (June)

Papers:

- Removing SPR-like Conditions in Adaptive Feedforward Control of Uncertain Systems Yang Wang, Gilberto Pin, Andrea Serrani, Thomas Parisini, p. 2309
- Extended Kalman Filtering with Nonlinear Equality Constraints: a Geometric Approach Axel Barrau, Silvere Bonnabel, p. 2325
- Pointing Consensus and Bearing-Based Solutions to the Fermat-Weber Location Problem Minh Hoang Trinh, Daniel Zelazo, Hyo-Sung Ahn, p. 2339
- SI-ADMM: A Stochastic Inexact ADMM Framework for Stochastic Convex Programs Yue Xie, Uday V. Shanbhag, p. 2355
- Switched Systems with Multiple Equilibria Under Disturbances: Boundedness and Practical Stability Sushant Veer, Ioannis Poulakakis, p. 2371
- Online Stochastic Optimization of Networked Distributed Energy Resources Xinyang Zhou, Emiliano Dall'Anese, Lijun Chen, p. 2387
- Computing Optimal Control of Cascading Failure in DC Networks Qin Ba, Ketan Savla, p. 2402
- Optimal Control of Endo-Atmospheric Launch Vehicle Systems: Geometric and Computational Issues Riccardo Bonalli, Bruno Herisse, Emmanuel Trelat, p. 2418
- Optimal Secure Control with Linear Temporal Logic Constraints Luyao Niu, Andrew Clark, p. 2434
- Random directions stochastic approximation with deterministic perturbations Prashanth L.A., Shalabh Bhatnagar, Nirav Bhavsar, Michael C. Fu, Steven Marcus, p. 2450
- Metric and topological entropy bounds for optimal coding of stochastic dynamical systems Christoph Kawan, Serdar Yuksel, p. 2466
- Reduced Order Controller Design for Robust Output Regulation Lassi Paunonen, Duy Phan, p. 2480
- AsySPA: An Exact Asynchronous Algorithm for Convex Optimization Over Digraphs Jiaqi Zhang, Keyou You, p. 2494

Technical Notes and Correspondence:

Volume 65 (2020), Issue 7 (July)

Papers:

Technical Notes and Correspondence:

- Novel all-pass factorization, all solutions to rational matrix equation and control application Jovan Stefanovski, p. 3176
- Extremum Seeking Control with Input Dead-zone Guangru Shao, Andrew R. Teel, Ying Tan, Kun-Zhi Liu, Rui Wang, p. 3184
- Model Predictive Tracking Control for Invariant Systems on Matrix Lie Groups via Stable Embedding into Euclidean Space Dong Eui Chang, Karmvir Singh Phogat, Jongeun Choi, p. 3191
- Risk Probability Minimization Problems for Continuous-Time Markov Decision Processes on Finite Horizon Xianping GUO, Haifeng Huo, p. 3199
- A Reference Governor for Nonlinear Systems with Disturbance Inputs Based on Logarithmic Norms and Quadratic Programming Nan Li, Ilya V. Kolmanovsky, Anouck Girard, p. 3207
- Leader-Following Consensus for Linear Multi-Agent Systems via Asynchronous Sampled-Data Control Wei Liu, Jie Huang, p. 3215
- Correction to the paper "A robust IDA-PBC approach for handling uncertainties in underactuated mechanical systems" Alejandro Donaire, Jose Guadalupe Romero, Romeo Ortega, p. 3223

Back to the contents

1.6. IEEE Transactions on Control Systems Technology

Contributed by: Michelle Colasanti, ieeetcst@osu.edu

IEEE Transactions on Control Systems Technology
Volume 28 (2020), Issue 4 (July)

Regular Papers:

- Wafer Residency Time Analysis for Time-Constrained Single-Robot-Arm Cluster Tools With Activity Time Variation, F. Yang, X. Tang, N. Wu, C. Zhang, and L. Gao, page 1177
- Vision-Based Control for Fast 3-D Reconstruction With an Aerial Robot, E. Cristofalo, E. Montijano, and M. Schwager, page 1189
- Experimental Validation of String Stability for Connected Vehicles Subject to Information Delay, W. B. Qin and G. Orosz, page 1203
- Hierarchical Control of Aircraft Electro-Thermal Systems, J. P. Koeln, H. C. Pangborn, M. A. Williams, M. L. Kawamura, and A. G. Alleyne, page 1218
- Dynamics Analysis and Control of a Bird Scale Underactuated Flapping-Wing Vehicle, G. He, T. Su, T. Jia, L. Zhao, and Q. Zhao, page 1233
- Fuel Consumption Minimization, With Emissions Constraints, for Diesel Powered Cars, G. Pease, D. Limebeer, and P. Fussey, page 1243
- Mixed Data-Driven and Model-Based Robot Implicit Force Control: A Hierarchical Approach, M. Parigi Polverini, S. Formentin, L. Merzagora, and P. Rocco, page 1258
- Distributed Sliding Mode Control for Nonlinear Heterogeneous Platoon Systems With Positive Definite Topologies, Y. Wu, S. E. Li, J. Cortés, and K. Poolla, page 1272
- A Feedback Interpretation of the Doyle–Fuller–Newman Lithium-Ion Battery Model, R. Drummond, A. M. Bizeray, D. A. Howey, and S. R. Duncan, page 1284
- Energetically Passive Multi-Degree-of-Freedom Hydraulic Human Power Amplifier With Assistive Dynamics, S. Lee, P. Y. Li, and F. Eskilsson, page 1296

Brief Papers:

Comments and Corrections:

Back to the contents

1.7. IEEE Control Systems Letters

Contributed by: Francesca Bettini, bettini@dei.unipd.it

IEEE Control Systems Letters
Volume 4 (2020), Issue 3 (July)
This issue includes a Special Issue on Learning and Control
http://ieeexplore.ieee.org/xpl/RecentIssue.jsp?punumber=7782633

Papers:

Special Issue on Learning and Control:

Back to the contents

1.8. IEEE Transactions on Control of Network Systems

Contributed by: Arij Barakat, arij.barakat@kaust.edu.sa

IEEE Transactions on Control of Network Systems
June 2020, Volume 7, Number 2

The table of contents of this IEEE TCNS issue, with links to paper abstracts, is available on
http://sites.bu.edu/tcns/june-2020/

Papers:

Back to the contents

1.9. Submission to IEEE Control Systems Letters with ACC 2021

Contributed by: Francesca Bettini, bettini@dei.unipd.it

Submission to IEEE Control Systems Letters with ACC (2021) option starting July 1, 2020, is possible

For the first year the IEEE Control Systems Letters (L-CSS) offers the opportunity for authors to not only publish a paper in the journal but also to present the same paper at the annual conference of the American Automatic Control Council (AACC): the American Control Conference (ACC).

The joint submission to IEEE Control Systems Letters and ACC 2021 will be possible from July 1 to September 1, 2020.

Manuscripts submitted to the L-CSS with the ACC option will undergo a regular review as papers submitted to the Letters (so they should be submitted only to the L-CSS and not to the ACC). At the end of the first round of review, the reviews and the Associate Editor's report will be forwarded to the ACC Program Committee, which will use them to decide on the inclusion of these manuscripts in the program of the Conference.

After the first cycle of review, the decisions about the acceptance or rejection of the manuscript for the L-CSS and for the ACC will be independent of each other. In particular, reviews and reports collected during a possible second round of review will not be forwarded to the ACC Program Committee.

Note that you can submit your paper through the Letters also if the paper will be part of an Invited Session at ACC 2021. In that case you should select "L-CSS and ACC Invited", as submission type.

For more information about joint submission to L-CSS and ACC see, specifically, https://bit.ly/2zPYVqC section "L-CSS and CDC/ACC".

For more information about the L-CSS, please check the website at
http://ieee-cssletters.dei.unipd.it/index.html.

Back to the contents

2 Miscellaneous

2.1. EECI PhD Award 2019

Contributed by: Denis Efimov, denis.efimov@inria.fr

The EECI PhD Award is given annually in recognition of the best PhD thesis in Europe in the field of Control for Complex and Heterogeneous Systems:

http://www.eeci-institute.eu/index.php?p=PhD-Award

The aim is to encourage high-quality works among young researchers in their initial research period. For 2019 year competition, the Scientific committee is composed by Alberto Bemporad, Marika Di Benedetto, Francoise Lamnabhi-Lagarrigue, Christophe Prieur, Romeo Ortega, and co-chaired by Denis Efimov and Luca Greco.

The competition this year has been very tough due to an extraordinary quality of each participant. Based on 20 reviews, 4 finalists have been selected among 13 applicants for the PhD Award in 2019, whose names are by alphabetic order:

Cosimo DELLA SANTINA
Amaury HAYAT
Dario PACCAGNAN
Yang ZHENG

And the winners of EECI PhD Award 2019 are:

Amaury HAYAT
Yang ZHENG

The competition for 2020 year will be open at the end of the year.

Back to the contents

3 Books

3.1. Active Control of Bidirectional Structural Vibration

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

Active Control of Bidirectional Structural Vibration by Wen Yu and Satyam Paul
ISBN: 978-3-030-46649-7
June 2020, Springer
Softcover, 120 pages, $59.99/€54,49
https://www.springer.com/gb/book/9783030466497

This book focuses on safeguarding civil structures and residents from natural hazards such as earthquakes through the use of active control. It proposes novel proportional-derivative (PD) and proportional-integral-derivative (PID) controllers, as well as discrete-time sliding mode controllers (DSMCs) for the vibration control of structures involving nonlinearities. Fuzzy logic techniques are used to compensate for nonlinearities.

The first part of the book addresses modelling and feedback control in inelastic structures and presents a design for PD/PID controllers. In the second part, classical PD/PID and type-2 fuzzy control techniques are combined to compensate for uncertainties in the structures of buildings. The methodology for tuning the gains of PD/PID is obtained using Lyapunov stability theory, and the system's stability is verified. Lastly, the book puts forward a DSMC design that does not require system parameters, allowing it to be more flexibly applied. All program codes used in the paper are presented in a MATLAB®/Simulink® environment.

Given its scope, the book will be of interest to mechanical and civil engineers, and to advanced undergraduate and graduate engineering students in the areas of structural engineering, structural vibration, and advanced control.

Contents

Back to the contents

3.2. Variable-Structure Systems and Sliding-Mode Control: Theory to Practice

Contributed by: Martin Steinberger, martin.steinberger@tugraz.at

Variable-Structure Systems and Sliding-Mode Control: From Theory to Practice
Editors: Martin Steinberger, Martin Horn, Leonid Fridman
Publisher: Springer International Publishing, 2020
Series: Studies in Systems, Decision and Control vol. 271

Hardcover ISBN: 978-3-030-36620-9
eBook ISBN: 978-3-030-36621-6
About the book: The book covers the latest theoretical results and sophisticated applications in the field of variable-structure systems and sliding-mode control.
This book is divided into four parts. Part I discusses new higher-order sliding-mode algorithms, including new homogeneous controllers and differentiators. Part II then explores properties of continuous sliding-mode algorithms, such as saturated feedback control, reaching time, and orbital stability. Part III is focused on the usage of variable-structure systems (VSS) controllers for solving other control problems, for example unmatched disturbances. Finally, Part IV discusses applications of VSS; these include applications within power electronics and vehicle platooning.

Contents:

Back to the contents

3.3. Controller Design for Distributed Parameter Systems

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

Controller Design for Distributed Parameter Systems by Kirsten A. Morris
ISBN: 978-3-030-34948-6
June 2020, Springer
Hardcover, 287 pages, $149.99/€124,79

https://www.springer.com/gb/book/9783030349486

This book addresses controller and estimator design for systems that vary both spatially and in time: systems like fluid flow, acoustic noise and flexible structures. It includes coverage of the selection and placement of actuators and sensors for such distributed-parameter systems.
The models for distributed parameter systems are coupled ordinary/partial differential equations. Approximations to the governing equations, often of very high order, are required and this complicates both controller design and optimization of the hardware locations.

Control system and estimator performance depends not only on the controller/estimator design but also on the location of the hardware. In helping the reader choose the best location for actuators and sensors, the analysis provided in this book is crucial because neither intuition nor trial-and-error is foolproof, especially where multiple sensors and actuators are required, and moving hardware can be difficult and costly. The mechatronic approach advocated, in which controller design is integrated with actuator location, can lead to better performance without increased cost. Similarly, better estimation can be obtained with carefully placed sensors. The text shows how proper hardware placement varies depending on whether, disturbances are present, whether the response should be reduced to an initial condition or whether controllability and/or observability have to be optimized.
This book is aimed at non-specialists interested in learning controller design for distributed-parameter systems and the material presented has been used for student teaching. The relevant basic systems theory is presented and followed by a description of controller synthesis using lumped approximations. Numerical algorithms useful for efficient implementation in real engineering systems and practical computational challenges are also described and discussed.

Contents

Back to the contents

3.4. Linear Feedback Controls: The Essential

Contributed by: Sonnini Yura, s.yura@elsevier.com

Linear Feedback Controls: The Essential, 2nd edition by Mark Haidekker
Paperback ISBN: 9780128187784
eBook ISBN: 9780128188125
Published Date: 12th May 2020; Elsevier
Paperback, 398 pages, $130
https://www.elsevier.com/books/linear-feedback-controls/haidekker/978-0-12-818778-4

Description: Control systems are one of the most important engineering fields, and recent advances in microelectonics and microelectromechanical systems have made feedback controls ubiquitous – a simple cell

phone, for example, can have dozens of feedback control systems. Recent research focuses on advanced controls, such as nonlinear systems, adaptive controls, or controls based on computer learning and artificial intelligence. Conversely, classical (linear) control theory is well established; yet, it provides the crucial foundation not only for advanced control topics, but also for the many everyday control systems ranging from cell phone backlight control to self-balancing hoverboard scooters. Linear Feedback Controls provides a comprehensive, yet compact introduction to classical control theory. The present Second Edition has been expanded to include important topics, such as state-space models and control robustness. Moreover, aspects of the practical realization have been significantly expanded with complete design examples and with typical building blocks for control systems.

The book is ideal for upper level students in electrical and mechanical engineering, for whom a course in Feedback Controls is usually required. Moreover, students in bioengineering, chemical engineering, and agricultural and environmental engineering can benefit from the introductory character and the practical examples, and the book provides an introduction or helpful refresher for graduate students and professionals.

Key Features:
• Focuses on the essentials of control fundamentals, system analysis, mathematical description and modeling, and control design to guide the reader
• Illustrates how control theory is linked to design of control systems and their performance by introducing theoretical elements as tools in a designer's toolbox
• Guides the reader through the different analysis and design tools with strands of examples that weave throughout the book
• Highlights both the design process and typical applications by presenting detailed practical examples and their realization and performance, complete with circuit diagrams and measured performance data

Table of Contents

Back to the contents

3.5. Advanced Seat Suspension Control System Design for Heavy Duty Vehicles

Contributed by: Sonnini Yura, s.yura@elsevier.com

Advanced Seat Suspension Control System Design for Heavy Duty Vehicles by Haiping Du, Weihua Li, Donghong Ning, Shuaishuai Sun
Paperback ISBN: 9780128196014
eBook ISBN: 9780128226834
Imprint: Academic Press
Published Date: 23rd May 2020
Page Count: 314, $180
Series: Emerging Methodologies and Applications in Modelling, Identification and Control
https://www.elsevier.com/books/advanced-seat-suspension-control-system-design-for-heavy-duty-vehicles/du/978-0-12-819601-4

Description: Advanced Seat Suspension Control System Design for Heavy Duty Vehicles provides systematic knowledge of the advanced seat suspension design and control for heavy duty vehicles.
Nowadays, people are paying more and more attention to ride comfort and the health of drivers and passengers. This is especially for heavy duty vehicles, where drivers/operators are exposed to much severer vibrations than those in passenger vehicles due to a harsh working environment, operating conditions, and long hour driving, etc. Seat suspension systems can effectively help to suppress the high magnitude vibration transmitted to drivers with relatively simple structure and low cost, and hence are widely adopted in heavy duty vehicles.

This book helps researchers and engineers to have a comprehensive understanding of the seat suspension system and to conduct in-depth studies on seat suspension design and control; this book covers a wide range of perspectives about seat suspension design and control methods.

Key Features:
• Describes the variable damping, variable stiffness, and, especially, variable inertance seat suspensions
• Provides the advanced and comprehensive knowledge about semi-active vibration control
• Introduces the multiple-DOF seat suspension
• Includes the innovative hybrid seat suspension and nonlinear seat suspension
• All the introduced designs have been prototyped and experimentally validated

• Provides Matlab Simulation programming codes

Table of Contents:

Back to the contents

3.6. Vibration Control and Actuation of Large-Scale Systems

Contributed by: Sonnini Yura, s.yura@elsevier.com

Vibration Control and Actuation of Large-Scale Systems edited by Hamid Reza Karimi
Paperback ISBN: 9780128211946
eBook ISBN: 9780128211984
Imprint: Academic Press
Published Date: 21st May 2020
Page Count: 408, $150
Series: Emerging Methodologies and Applications in Modelling, Identification and Control
https://www.elsevier.com/books/book-series/emerging-methodologies-and-applications-in-modelling-identification-and-control

Description: Vibration Control and Actuation of Large-Scale Systems gives a systematically and self-contained description of the many facets of envisaging, designing, implementing, or experimentally exploring advanced vibration control systems. The book is devoted to the development of mathematical methodologies for vibration analysis and control problems of large-scale systems, including structural dynamics, vehicle dynamics and wind turbines, for example. The research problems addressed in each chapter are well motivated, with numerical and simulation results given in each chapter that reflect best engineering practice.

Key Features:

• Provides a series of the latest results in vibration control, structural control, actuation, component failures, and more
• Gives numerical and simulation results to reflect best engineering practice

• Presents recent advances of theory, technological aspects, and applications of advanced control methodologies in vibration control

Table of Contents:

Back to the contents

3.7. Digital Twin Development and Deployment on the Cloud

Contributed by: Sonnini Yura, s.yura@elsevier.com

Digital Twin Development and Deployment on the Cloud: Developing Cloud-Friendly Dynamic Models Using Simulink®/SimscapeTM and Amazon AWS by Nassim Khaled, Bibin Pattel, Affan Siddiqui
Paperback ISBN: 9780128216316
eBook ISBN: 9780128216460
Imprint: Academic Press
Published Date: 27th May 2020
Page Count: 592, $130
https://www.elsevier.com/books/digital-twin-development-and-deployment-on-the-cloud/khaled/978-0-12-821631-6

Description: Digital Twin Development and Deployment in the Cloud: Developing Cloud-Friendly Dynamic Models Using Simulink®/SimscapeTM and Amazon AWS promotes a physics-based approach to the field of digital twins. Through the use of multiphysics models running in the cloud, significant improvement to the diagnostics and prognostic of systems can be attained. The book draws a clear definition of digital twins, helping business leaders clearly identify the value it brings. In addition, it outlines the key elements needed for deployment, including the hardware and software tools needed. Special attention is paid to the process of developing and deploying the multi-physics models of the digital twins.

Key Features:

• Provides a high-level overview of digital twins and their underutilization in the field of asset management and maintenance
• Proposes a streamline process to create digital twins for a wide variety of applications using MATLAB® Simscape™
• Deploys developed digital twins on Amazon Web Services
• Includes MATLAB and Simulink codes available for free download on MATLAB central
• Covers popular prototyping hardwares, such as Arduino and Raspberry Pi

Table of Contents:

Back to the contents

3.8. Optimal Impulsive Control for Cancer Therapy

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

Optimal Impulsive Control for Cancer Therapy by João P. Belfo and João Miranda Lemos
ISBN: 978-3-030-50487-8
June 2020, Springer
Softcover, 102 pages, $59.99/€49,99
https://www.springer.com/gb/book/9783030504878
This Springer brief discusses the use of control engineering methods to plan a cancer therapy which tends to reduce tumour size in patients, striking a balance that minimizes the toxic effects of the treatment. The authors address the design and computation of impulsive control therapies, a methodology previously underexplored in the application of control methods to medical modelling. This allows simulation of such discrete events as taking a pill rather than relying on the supply of therapy being continuous and steady.

The book begins with an introduction to the topic, before moving onto pharmacokinetic, pharmacodynamical and tumour-growth models and explaining how they describe the relationship between a certain therapy plan and the evolution of cancer. This is placed firmly in the context of work introducing impulsive differential equations. The final chapter summarizes the research presented and suggests future areas of research to encourage readers in taking the subject forward.
This book is of interest to biomedical engineers, researchers and students, particularly those with a background in systems and control engineering.

Contents

Back to the contents

3.9. Control Theory in Biomedical Engineering

Contributed by: Sonnini Yura, s.yura@elsevier.com

Control Theory in Biomedical Engineering: Applications in Physiology and Medical Robotics edited by Olfa Boubaker
ISBN: 9780128213506
10th July 2020; Academic Press
Paperback, 396 pages, $130
https://www.elsevier.com/books/control-theory-in-biomedical-engineering/boubaker/978-0-12-821350-6

Description: Control Theory in Biomedical Engineering: Applications in Physiology and Medical Robotics highlights the importance of control theory and feedback control in our lives and explains how this theory is central to future medical developments. Control theory is fundamental for understanding feedback paths in physiological systems (endocrine system, immune system, neurological system) and a concept for building artificial organs. The book is suitable for graduate students and researchers in the control engineering and biomedical engineering fields, and medical students and practitioners seeking to enhance their understanding of physiological processes, medical robotics (legs, hands, knees), and controlling artificial devices (pacemakers, insulin injection devices).

Control theory profoundly impacts the everyday lives of a large part of the human population including the disabled and the elderly who use assistive and rehabilitation robots for improving the quality of their lives and increasing their independence.

Key Features:
- Gives an overview of state-of-the-art control theory in physiology, emphasizing the importance of this theory in the medical field through concrete examples, e.g., endocrine, immune, and neurological systems
- Takes a comprehensive look at advances in medical robotics and rehabilitation devices and presents case studies focusing on their feedback control
- Presents the significance of control theory in the pervasiveness of medical robots in surgery, exploration, diagnosis, therapy, and rehabilitation

Table of Contents

Back to the contents

4 Journals

4.1. CFP: ISA Transactions: Modeling, Prediction and Control of COVID-19

Contributed by: YangQuan Chen, ychen53@ucmerced.edu

CFP: ISA Transactions Special Issue on Modeling, Prediction and Control of COVID-19 Spreading Dynamics
https://www.journals.elsevier.com/isa-transactions/call-for-papers/special-issue-on-modeling-prediction-and-control-of-covid-19

The Urgent Need: The COVID-19 pandemic partially paused our societies in a global scale. The WHO situation report published on May 28, 2020 tells that the confirmed cases are 5,593,631 and deaths are 353, 334! COVID-19 is a global threat and obviously to tackle the pandemic requires an urgent global effort from not only all countries, but also the scientific communities across all fields and disciplines.

The Scope: This call invites the sensor instrumentation and control automation community to contribute from different perspectives using multidisciplinary approach to the studies of COVID-19. Modeling, analysis and control insights can be very useful for us to explain and predict the complex COVID-19 spreading dynamics and hence to devise the best mitigation or control strategies to contain the contagion and treat COVID-19 infected patients.

Understanding the spreading dynamics is critical to decision makers and policy makers too. The richness of models for COVID-19, with differing structures, varied epidemiological scenarios, parameters and presentation, and sometimes conflicting projections, is also a challenge for decision-makers. GEP Box once said "All models are wrong but some of them are useful", thus it is critical for all modelers to address the "usefulness" of any model proposed. In other words, it is necessary to justify the existence of the proposed model among many other existing options. Among three main purposes of "modeling": prediction, control/monitoring, training/education, we wish to suggest to consider "control" aspect. For example, mitigation measures can be considered as a control measure to flatten the curve. When we turn down from the peak, re-opening policies should be considered as a closed-loop control problem. For example, it is very interesting and useful to study the best relaxing policies for social distancing.

This Special Issue welcomes paper submissions considering the above new topics using real world data. Submissions on the following topics are encouraged.
• Mathematical/epidemiological predictive models
• Mitigation policy design and effectiveness evaluation
• Mitigation policy as a sense-and-control problem
• Re-opening policy design and effectiveness evaluation
• Re-opening policy as a sense-and-control problem
• Modeling and control in COVID-19 related equipment such as 3D prints for ventilators, disinfection robots etc.
• Deep learning applications in COVID-19 spreading dynamics
• Uncertain quantification and statistic inference in COVID-19 spreading dynamics
• Identifiability and controllability studies for data-driven models of the pandemic.

Submission URL: https://ees.elsevier.com/isatrans/

Timeline (subject to change)
Submission deadline: 7/30/2020;
Review completed: 8/30/2020;
Published online: 10/30/2020

Guest co-editors:
- Prof. YangQuan Chen, University of California, Merced, CA, USA, ychen53@ucmerced.edu
- Prof. Yongguang Yu, Beijing Jiaotong University, Beijing, China, ygyu@bjtu.edu.cn
- Prof. Igor Podlubny, Technical University of Kosice, Slovak Republic, igor.podlubny@tuke.sk

Back to the contents

4.2. CFP: Measurement and Control Special Issue

Contributed by: Ibrahim Kucukdemiral, ibrahim.kucukdemiral@gcu.ac.uk

CFP: Measurement and Control Special Issue on "Advanced Control of Systems Having Magnitude and Rate Bounded Actuators/Sensors"

Almost all practical systems in industry are dominated by physical constraints. Unfortunately, in most cases, these constraints are ignored in the design of control systems. One of the most commonly encountered constraints in engineering is the one that is relevant to actuators. The magnitude, and especially rate bounded actuators, are very common, even inevitable in control systems and identified as a source of severe performance degradation or instability in many applications including aerospace and transportation systems, particularly those having mechanical actuators. They may cause fatal effects in several situations such as the crash of YF-22 in 1992, which has been caused by pilot-induced oscillations due to rate saturated control surfaces.

Other examples in which the magnitude and rate bounded actuators are a source of performance degradation and instability can be listed as jet engine compressors, general reaction processes with sluggish actuators and rudders and fins of ships. However, as opposed to the broad literature on the control of systems considering only the magnitude bounded actuators, the research work on the control of systems having both magnitude and rate bounded actuators is somewhat shallow. The aim of this special issue is to seek high-quality submissions that highlight advances and applications of control techniques for systems having both magnitude and rate bounded actuators.

The potential topics of this special issue include, but are not limited to:
- Continuous/Discrete-time control,
- Linear Parameter Varying (LPV) control,
- Nonlinear control,
- Optimal control
- Gain-scheduling control,
- Adaptive control,
- Intelligent control,
- Robust Model Predictive control,

• Iterative and learning control,
• Repetitive control,
• Fractional order control,
• Set theoretic methods in control,
of linear/nonlinear processes having magnitude and rate bounded actuators and/or sensors.

The submitted manuscripts for this Special Collection will be peer-reviewed before publication. Submission Deadline : October 1, 2020

Link to the call:
https://journals.sagepub.com/page/mac/call-for-papers/special-collection/rate-bounded-actuators-sensors

To submit a paper: https://mc.manuscriptcentral.com/jmac

Lead Guest Editor: Dr Ibrahim Kucukdemiral, Glasgow Caledonian University, UK

Guest Editor: Dr Geraint Bevan, Glasgow Caledonian University, UK

Back to the contents

4.3. CFP: Asian Journal of Control

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

Special Issue on "Emerging Control Techniques for Mechatronic and Transportation Systems"

It is extremely important in the contemporary global society to develop reliable control techniques for mechatronic and transportation systems that can be easily implemented using modern digital and wireless technologies to force engineering systems to behave like skilled workers who work quickly, accurately, and cheaply, despite parametric variations, nonlinearities, and persistent disturbances. Many engineering control problems still remain unsolved, especially for mechatronic and transportation systems, under the following realistic hypotheses: parametric and/or structural uncertainties, fast-varying references, measurement noises, real amplifiers and actuators, and/or finite online computation time of the control signal. Furthermore, to reduce the gap between theory and practical feasibility, the designed control laws should be easy to design and implement with smart sensors, power supplies, and intelligent actuators.

The objective of this Special Issue is to present emerging control techniques for mechatronic and transportation systems that can be successfully applied to numerous engineering applications (e.g., control of rolling mills, conveyor belts, unicycles, bicycles, cars, trains, ships, airplanes, drones, missiles, satellites, platoons, manufacturing robots, such as welding, painting, assembly, pick and place for printed circuit boards, packaging and labeling, palletizing, product inspection, and testing ones, and surgical robots). The topics include but are not limited to:
– Unmanned systems
– Industrial robots
– Remote servomechanisms
– Transportation systems
– Vehicle platoons

– Networked autonomous agents
– Smart sensors and actuators
– Human-machine interaction and human-machine cooperation
– IoT control design
– From research to industry

Guest Editors:
Prof. Michael Basin Autonomous University of Nuevo, Mexico mbasin@fcfm.uanl.mx
Prof. Laura Celentano University of Naples Federico II, Italy laura.celentano@unina.it
Prof. Mohammed Chadli University of Paris-Saclay, Univ Evry, France mohammed.chadli@univ-evry.fr
Prof. Peng Shi Universiry of Adelaide, Australia peng.shi@adelaide.edu.au

Important Dates:
September 15, 2020 Deadline for Submissions
November 15, 2020 Completion of First Review
January 15, 2021 Completion of Final Review
January 31, 2021 Receipt of Final Manuscript
March 31, 2021 (Tentatively Vol. 23, No. 2) Publication

Special Issue on "Analysis and Control of Complex Cyber-Physical Networks"

A large number of coupled systems in nature and society can be modeled by complex cyber-physical networks, whose normal functioning significantly relies on the tight interactions between its physical and cyber components. Many modern critical infrastructures can be appropriately modelled as complex cyber-physical networks. Typical examples of such infrastructures are power grids, the Internet, WWW, and public transportation systems. The ubiquity of such networked systems leads to many important and fascinating scientific problems concerning how network topologies and parameters affect collective dynamics, and how to control them. Analysis and control of complex cyber-physical networks have received a lot of attention recently, from various scientific and engineering communities. Furthermore, revealing the fundamental properties and controlling the collective behaviors of networked systems not only can provide a better understanding of the emergence mechanisms for cooperative behaviors, but also can provide benefits to various applications of cyber-physical networked systems, such as smart grids, Internet of Things and unmanned aircraft systems.

The focus of this special issue is on new approaches to analysis and synthesis of complex cyber-physical networks as well as their potential practical applications. The special issue aims to establish a forum for international researchers from different fields of electrical engineering, bioinformatics, systems and control theory, and applied mathematics, to present and evaluate the most recent developments and new ideas on analysis and synthesis of complex cyber-physical networks, regarding both fundamental theory and practical applications. The topics to be covered include, but are not limited to:
– Analysis and coordination control of complex cyber-physical networks
– Bio-inspired control techniques for networked systems
– Big-data mining and analysis over complex cyber-physical networks
– Controllability and observability of complex cyber-physical networks

– Distributed cognitive architectures in robotic networks
– Distributed control and estimation of multi-agent networks
– Distributed optimization of multi-agent networks
– Deep learning and intelligent control of complex cyber-physical networks
– Distributed machine learning in complex cyber-physical networks
– Distributed reinforcement learning techniques for networked systems
– Energy management and distributed intelligent control of smart grids
– Efficient privacy protection and security of complex cyber-physical networks
– Efficient privacy protection and security of complex cyber-physical networks
– Finite-time and fixed-time control of complex cyber-physical networks
– Game analysis and control over complex cyber-physical networks

Guest Editors:
Prof. Guanghui Wen Research Center for Complex Systems and Network Sciences, School of Mathematics, Southeast University, China ghwen@seu.edu.cn
Prof. Mahdi Jalili School of Engineering, RMIT University, Australia mahdi.jalili@rmit.edu.au
Prof. Wei Ren Department of Electrical Engineering, University of California, Riverside, USA ren@ee.ucr.edu
Guest Editorial Committee:
Prof. Yongcan Cao Department of Electrical and Computer Engineering, University of Texas at San Antonio, USA yongcan.cao@utsa.edu
Prof. Haibo Du School of Electrical Engineering and Automation, Hefei University of Technology, China haibo.du@hfut.edu.cn
Prof. Guanrong Chen Department of Electrical Engineering, City University of Hong Kong, China eegchen@cityu.edu.hk

Important Dates:
November 30, 2020 Deadline for Submissions
February 28, 2021 Completion of First Review
May 31, 2021 Completion of Final Review
August 31, 2021 Receipt of Final Manuscript
January 31, 2021 (Tentatively Vol. 24, No. 1) Publication

Back to the contents

4.4. CFP: International Journal on Soft Computing, AI and Applications

Contributed by: IJSCAI Journal, ijscaijournal@yahoo.com

Special issue for IJSCAI to the subject of Automation, Control and Intelligent Systems-August 2020 Publications.
International Journal on Soft Computing, Artificial Intelligence and Applications (IJSCAI)
ISSN : 2319 - 1015 [Online]; 2319 - 4081 [Print]
http://airccse.org/journal/ijscai/index.html

CFP: International Journal on Soft Computing, Artificial Intelligence and Applications (IJSCAI) is an open access peer-reviewed journal that provides an excellent international forum for sharing knowledge and results in theory, methodology and applications of Artificial Intelligence, Soft Computing. The Journal looks for significant contributions to all major fields of the Artificial Intelligence, Soft Computing in theoretical

and practical aspects. The aim of the Journal is to provide a platform to the researchers and practitioners from both academia as well as industry to meet and share cutting-edge development in the field.

Authors are solicited to contribute to the journal by submitting articles that illustrate research results, projects, surveying works and industrial experiences that describe significant advances in the areas of Database management systems.

Topics of interest include but are not limited to, the following

AI

* AI Algorithms * Artificial Intelligence tools & Applications * Automatic Control * Bioinformatics * Natural Language Processing * CAD Design & Testing * Computer Vision and Speech Understanding * Data Mining and Machine Learning Tools * Fuzzy Logic * Heuristic and AI Planning Strategies and Tools * Computational Theories of Learning * Hybrid Intelligent Systems * Information Retrieval * Intelligent System Architectures * Knowledge Representation * Knowledge-based Systems * Mechatronics * Multimedia & Cognitive Informatics * Neural Networks * Parallel Processing * Pattern Recognition * Pervasive computing and ambient intelligence * Programming Languages * Reasoning and Evolution * Recent Trends and Developments * Robotics * Semantic Web Techniques and Technologies * Soft computing theory and applications * Software & Hardware Architectures * Web Intelligence Applications & Search

Soft Computing

* Fuzzy Systems * Neural Networks * Machine learning * Probabilistic Reasoning * Evolutionary Computing * Pattern recognition * Hybrid intelligent systems * Software agents * Morphic Computing * Image processing * Rough Sets * Symbolic machine learning * Data Visualization

Control Systems

* Control theory * Linear and nonlinear control systems * Optimization and optimal control * Robust control * Adaptive control * Digital control * Feedback control * Sliding mode control * Soft computing and control * Process control and instrumentation * Fault detection and isolation * Model predictive control * Stochastic control and filtering * Systems and automation

Paper Submission: Authors are invited to submit papers for this journal through submission system. Submissions must be original and should not have been published previously or be under consideration for publication while being evaluated for this Journal.

Publication Date: Last week of August 2020.

Back to the contents

4.5. CFP: IEEE/ASME Transactions on Mechatronics

Contributed by: Xiang Chen, xchen@uwindsor.ca

First Announcement of Call for Papers: The Second Edition of Focused Section on TMECH/AIM Emerging Topics

Submissions are called for the Second Edition of Focused Section (FS) on TMECH/AIM Emerging Topics (renamed from previous TMECH/AIM Concurrent Submission) for IEEE/ASME Transactions on Mechatronics (TMECH).

The Inaugural Edition of Focused Section on TMECH/AIM Emerging Topics was a great success and accepted papers will be published in August Issue of TMECH. This Focused Section is intended to expedite publication of novel and significant research results or technology breakthrough of emerging topics within the scopes of TMECH (www.ieee-asme-mechatronics.org). It also provides the rapid access to the state-of-the-art of TMECH publications within the mechatronics community. The submitted paper must not exceed 8 TMECH published manuscript pages, excluding photos and bios of authors, and will be subject to a normal peer review process in the standard of TMECH. All accepted papers from submissions to the Focused Section will be published in August Issue of TMECH in 2021 and will be presented in the 2021 IEEE/ASME International Conference on AIM. The rejected papers from submissions will be transferred to the Program Committee of AIM 2021 to be further reviewed and considered as contributed conference papers.

The review process for submissions to the Focused Section will be conducted with one round of Major/Minor Revision allowed, and the final decision falls into one of the following two categories:

1. Accept for publication in Focused Section. In this case, the paper will be accepted by AIM 2021 concurrently for presentation only with full information of the paper to be included in the preprinted proceeding of AIM 2021. The final publication in TMECH, however, will be subject to the completion of presentation in AIM 2021 with paid full registration fee.
2. Reject for publication in Focused Section (in the first and second round). In this case, the paper, as well as all review comments, will be forwarded to the Program Committee of AIM 2021 for further consideration. A final Accept/Reject decision will then be made by the Committee as a contributed conference paper for AIM 2021.

Manuscript preparation: Papers must contain original contributions and be prepared in accordance with the journal standards. Instructions for authors are available online on the TMECH website.

Manuscript submission: Manuscripts should be submitted to TMECH online at mc.manuscriptcentral.com/tmech-ieee, selecting the track 'TMECH/AIM Emerging Topics'. The cover letter should include the following statement: This paper is submitted to the Second Edition of Focused Section on TMECH/AIM Emerging Topics. The full information of the paper should be submitted concurrently to AIM 2021 online at: ras.papercept.net/conferences/scripts/start.pl., noted with the given TMECH manuscript number.

Submission/Review/Decision Timeline (tentative):

- Opening Date of TMECH/AIM FS Submission Site (first submission): November 1, 2020
- Closing Date of TMECH/AIM FS Submission Site (first submission): December 5, 2020
-Full Information of TMECH/AIM FS Paper Submitted to AIM Site: December 5, 2020
-First Decision for TMECH/AIM FS Submission: March 1, 2021
-Revised TMECH/AIM FS Submission Due by: March 26, 2021
-Final Decision for TMECH/AIM FS Submission: May 1, 2021
-Final Version of TMECH/AIM FS Submission Due by: May 15, 2021
-Publication of Focused Section in TMECH: August 2021

Contacts: Send enquiries about this Announcement to
Xiang Chen, xchen@uwindsor.ca, Senior Editor of TMECH
Bram Vanderborght, Bram.Vanderborght@vub.be, Program co-Chair of AIM

Back to the contents

4.6. CFP: Annual Reviews in Control

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

Call for Annual Reviews in Control Special Section proposals Annual Reviews in Control
https://www.journals.elsevier.com/annual-reviews-in-control

The aim of Annual Reviews in Control is to provide comprehensive and visionary views of the field of Systems & Control, by publishing, Survey Article (review papers on main methodologies or technical advances), Vision Article (cutting-edge and emerging topics with visionary perspective on the future of the field or how it will bridge multiple disciplines), and Tutorial research Article (fundamental guides for future studies).

Volume 49 just came out:
https://www.sciencedirect.com/journal/annual-reviews-in-control/vol/49/suppl/C
ARC also publishes Special Sections on hot topics. A Special Section contains 5 to 8 articles, mainly of the above type, with possibly 1 or 2 Full Length Articles. The Special Section begins with a short editorial from the guest editor(s).

ARC welcomes proposals for Special Sections au fil de l'eau. As a first step, send your proposal with title, abstract and some potential authors to a member of the ARC Editorial Board.

Back to the contents

4.7. Control Theory and Technology

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

Control Theory and Technology
(formerly entitled Journal of Control Theory and Applications)
Vol. 18, No. 2, May 2020
ISSN: 2095-6983 CODEN: CTTOAM

https://www.springer.com/journal/11768

Editorial:

- Special issue on multiagent-based system modeling and control practices T. Nakakuki, T. Shen, S. Kanae P.113

Papers:

- Cooperative control and communication of intelligent swarms: a survey K. Hou, Y. Yang, X. Yang, J. Lai P.114
- Analysis of finite-time regulation property of biomolecular PI controller P. Rong, T. Nakakuki P.135
- Robust network structures for conserving total activity in Boolean networks S. Azuma P.143
- Multi-agent graphical games with input constraints: an online learning solution T. Wang, B. Wang, Y. Liang P.148
- Diffusion logistic regression algorithms over multiagent networks Y. Du, L. Jia, S. Kanae, Z. Yang P.160
- Finite-time non-fragile filtering for nonlinear networked control systems via a mixed time/event-triggered transmission mechanism Z. Lu, J. Lu, J. Zhang, F. Xu P.168
- Real-time optimization of energy consumption under adaptive cruise control for connected HEVs J. Zhang, F. Xu P.182
- Distributed optimal energy consumption control of HEVs under MFG-based speed consensus Q. Fu, F. Xu, T. Shen, K. Takai P.193
- Energy-efficient receding horizon trajectory planning of high-speed trains using real-time traffic information D. He, L. Zhou, Z. Sun P.204

Back to the contents

4.8. IEEE/CAA Journal of Automatica Sinica

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

IEEE/CAA Journal of Automatica Sinica
Volume 7 (2020), Issue 3 (May)
http://ieeexplore.ieee.org/xpl/RecentIssue.jsp?punumber=6570654

Review:

- Urban Sensing Based on Mobile Phone Data: Approaches, Applications, and Challenges. M. Ghahramani, M. C. Zhou, and G. Wang, page 627

Papers:

- Scalable Distributed Sensor Fault Diagnosis for Smart Buildings. P. M. Papadopoulos, V. Reppa, M. M. Polycarpou, and C. G. Panayiotou, page 638
- Recursive Approximation of Complex Behaviours With IoT-Data Imperfections. K. Bekiroglu, S. Srinivasan, E. Png, R. Su, and C. Lagoa, page 656

Back to the contents

4.9. Automatica

Contributed by: Kay Tancock, k.tancock@elsevier.com

Automatica
Vol. 116, June 2020

Papers:

- Katz R., Margaliot M., Fridman E., Entrainment to subharmonic trajectories in oscillatory discrete-time systems
- Deptula P., Bell Z.I., Doucette E.A., Curtis J.W., Dixon W.E., Data-based reinforcement learning approximate optimal control for an uncertain nonlinear system with control effectiveness faults
- Egidio L.N., Daiha H.R., Deaecto G.S., Global asymptotic stability of limit cycle and H2/H-Infinity performance of discrete-time switched affine systems
- Saadaoui I., Li Z., Wu N., Current-state opacity modelling and verification in partially observed Petri nets
- Showkatbakhsh M., Shoukry Y., Diggavi S.N., Tabuada P., Securing state reconstruction under sensor and actuator attacks: Theory and design
- Zhu Y., Fridman E., Predictor methods for decentralized control of large-scale systems with input delays
- Liu J., Wang L., Bai Y., New estimates of upper bounds for the solutions of the continuous algebraic Riccati equation and the redundant control inputs problems
- Li X., Tang Y., Karimi H.R., Consensus of multi-agent systems via fully distributed event-triggered control
- Dutra D.A.A., Uncertainty estimation in equality-constrained MAP and maximum likelihood estimation with applications to system identification and state estimation
- Zhu Y., Krstic M., Su H., Delay-adaptive control for linear systems with distributed input delays
- Dong F., You K., Song S., Target encirclement with any smooth pattern using range-based measurements
- Yerudkar A., Del Vecchio C., Glielmo L., Feedback stabilization control design for switched Boolean control networks
- Mo Y., Chen W., Qiu L., Varaiya P., Market implementation of multiple-arrival multiple-deadline differentiated energy services
- Seeber R., Reichhartinger M., Conditioned Super-Twisting Algorithm for systems with saturated control action
- Wang H., Han Q.-L., Liu J., He D., Discrete-time filter proportional–integral–derivative controller design for linear time-invariant systems
- Lhachemi H., Shorten R., Boundary feedback stabilization of a reaction–diffusion equation with Robin boundary conditions and state-delay
- Mei Z.-D., Disturbance estimator and servomechanism based performance output tracking for a 1-d Euler–Bernoulli beam equation
- Xue M., Tang Y., Ren W., Qian F., Practical output synchronization for asynchronously switched multi-agent systems with adaption to fast-switching perturbations

- Lee D., Dullerud G.E., Hu J., Graph Lyapunov function for switching stabilization and distributed computation
- Du B., Han Q.-L., Xu S., Yang F., Shu Z., On joint design of intentionally introduced delay and controller gain for stabilization of second-order oscillatory systems
- Suzuki M., Hirata M., Star-shaped control-vector sets of second-order systems with PWM-type input
- Efimov D., Aleksandrov A., On estimation of rates of convergence in Lyapunov–Razumikhin approach
- Anfinsen H., Aamo O.M., Stabilization and tracking control of a time-variant linear hyperbolic PIDE using backstepping
- Balandin D.V., Biryukov R.S., Kogan M.M., Ellipsoidal reachable sets of linear time-varying continuous and discrete systems in control and estimation problems
- Xu J., Tao Q., Li Z., Xi X., Suykens J.A.K., Wang S., Efficient hinging hyperplanes neural network and its application in nonlinear system identification

Back to the contents

4.10. International Journal of Control, Automation, and Systems

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

International Journal of Control, Automation, and Systems (IJCAS)
ISSN: 1598-6446
http://www.springer.com/engineering/robotics/journal/12555
Indexed in: Science Citation Index Expanded (SciSearch), Journal Citation Reports/Science Edition, SCOPUS, INSPEC, Google Scholar, ProQuest, Academic OneFile, Current Contents/Engineering, Computing and Technology, EI-Compendex, OCLC, SCImago, Summon by Serial Solutions
Vol. 18, No. 7, July 2020

Papers:

- The Structure-preserving Doubling Numerical Algorithm of the Continuous Coupled Algebraic Riccati Equation Juan Zhang* and Shifeng Li, pp.1641-1650
- Model Reference Robust Adaptive Control of Control Element Drive Mechanism in a Nuclear Power Plant Bae-Jeong Park, Phuong-Tung Pham, and Keum-Shik Hong*, pp.1651-1661
- An H-Infinity Design of Disturbance Observer for a Class of Linear Time-invariant Single-input/Single-output Systems Hyung-Tae Seo, Soohyun Kim, and Kyung-Soo Kim*, pp.1662-1670
- Robust Integral Sliding Mode Control Design for Stability Enhancement of Under-actuated Quadcopter Safeer Ullah, Adeel Mehmood, Qudrat Khan, Sakhi Rehman, and Jamshed Iqbal*, pp.1671-1678
- A Singularity-free Steering Law of Roof Array of Control Moment Gyros for Agile Spacecraft Maneuver Henzeh Leeghim, Chang-Yull Lee, Jaehyun Jin, and Donghoon Kim*, pp.1679-1690
- Moment Matched Gaussian Kernel and Region Representative Likelihood for Performance Improvement of PMF-based TRN Chang-Ky Sung* and Sang Jeong Lee, pp.1691-1704
- Asynchronous Switching Control of Discrete-time Linear System Based on Mode-dependent Average Dwell Time Jinjie Huang*, Xianzhi Hao, and Xiaozhen Pan, pp.1705-1714
- An Air Pressure Control Method for Fast and Precise Inspection on Triple Action Pressure Sensors Dong-Gyu Kim*, Kwang-Woo Chung, and Kwang-Seok Hong, pp.1715-1727
- Distributed Containment Control of Fractional-order Multi-agent Systems with Double-integrator and

Nonconvex Control Input Constraints Xiao-Lin Yuan, Li-Po Mo*, Yong-Guang Yu, and Guo-Jian Ren, pp.1728-1742

- Feedback Linearization of Nonlinear Singularly Perturbed Systems with State-dependent Coefficients Aleksey A. Kabanov, pp.1743-1750

- Asynchronously Input-output Finite-time Control of Positive Impulsive Switched Systems Leipo Liu*, Hao Xing, Yifan Di, Zhumu Fu, and Shuzhong Song, pp.1751-1757

- Design of the PID Controller for Hydro-turbines Based on Optimization Algorithms Jau-Woei Perng, Yi-Chang Kuo*, and Kuan-Chung Lu, pp.1758-1770

- Barrier Lyapunov Function Based Adaptive Cross Backstepping Control for Nonlinear Systems with Time-varying Partial State Constraints Chun-xiao Wang*, Lu Qi, Jia-yun Liu, and Jia-li Yu, pp.1771-1781

- Mechanism Design of a Robotic Leg for Running Considering Radial Force Producibility and Tangential Mobility Jungsoo Cho and Kyoungchul Kong*, pp.1782-1791

- Intuitive Bilateral Teleoperation of a Cable-Driven Parallel Robot Controlled by a Cable-driven Parallel Robot Hongseok Choi, Jinlong Piao, Eui-Sun Kim, Jinwoo Jung, Eunpyo Choi, Jong-Oh Park*, and Chang-Sei Kim*, pp.1792-1805

- A Nonlinear Model-based Variable Impedance Parameters Control for Position-based Impedance Control System of Hydraulic Drive Unit Kai-xian Ba, Guo-liang Ma, Bin Yu*, Zheng-guo Jin, Zhi-peng Huang, Jun-xiao Zhang, and Xiang-dong Kong, pp.1806-1817

- On-line Self Tuning of Contouring Control for High Accuracy Robot Manipulators under Various Operations Kelin Li, Sudchai Boonto*, and Thanana Nuchkrua, pp.1818-1828

- Lyapunov Self-triggered Controller for Nonlinear Trajectory Tracking of Unicycle-type Robot Carlos Santos*, Felipe Espinosa, Enrique Santiso, and David Gualda, pp.1829-1838

- Variable Impedance Control of Cable Actuated Continuum Manipulators Guangping He*, Yanan Fan, Tingting Su, Lei Zhao, and Quanliang Zhao, pp.1839-1852

- Improved Results on Stability Analysis for Delayed Neural Network Jian-An Wang*, Li Fan, and Xin-Yu Wen, pp.1853-1862

- A Neural Network Technique of Compensating for an Inertia Model Error in a Time-delayed Controller for Robot Manipulators Seul Jung, pp.1863-1871

- Stability Analysis and Robust H-Infinity Controller Synthesis with Derivatives of Membership Functions for T-S Fuzzy Systems with Time-varying Delay: Input-output Stability Approach Redouane Chaibi*, Hicham El Aiss, Ahmed El Hajjaji, and Abdelaziz Hmamed, pp.1872-1884

- Leaderless Consensus of Non-linear Mixed delay Multi-agent Systems with Random Packet Losses via Sampled-data Control M. Syed Ali*, R. Agalya, Sumit Saroha, and Tareq Saeed, pp.1885-1893

- Exponential Stabilization of Delayed Complex-valued Neural Networks with Aperiodic Sampling: A Free-matrix-based Time-dependent Lyapunov Functional Method Lan Yao, Zhen Wang*, Qingbiao Wang, Jianwei Xia, and Hao Shen, pp.1894-1903

- Non-fragile Suboptimal Set-membership Estimation for Delayed Memristive Neural Networks with Quantization via Maximum-error-first Protocol Yu Yang, Jun Hu*, Dongyan Chen, Yunliang Wei, and Junhua Du, pp.1904-1914

Back to the contents

4.11. IMA Journal of Mathematical Control and Information

Contributed by: Hannah Cherry, hannah.cherry@oup.com

IMA Journal of Mathematical Control and Information
Links to all articles in this issue are available online at:
https://academic.oup.com/imamci/issue/37/2

Papers:

- A rapid-based improvement on some mesh refinement strategies in solving optimal control problems
Maedeh Souzban, Omid Solaymani Fard, Akbar H Borzabadi
- Chaotic dynamics from a pseudo-linear system
Hamed Ghane, Alef E Sterk, Holger Waalkens
- On sensor quantization in linear control systems: Krasovskii solutions meet semidefinite programming
Francesco Ferrante, Frédéric Gouaisbaut, Sophie Tarbouriech
- Robust mixed H2 and passive switching control for uncertain discrete switched systems with time delay
Chang-Hua Lien, Ker-Wei Yu, Hao-Chin Chang
- Constrained controllability of second order retarded nonlinear systems with nonlocal condition
Suman Kumar, R Sakthivel
- A Lyapunov-based design of dynamic feedback compensator for linear parabolic MIMO PDEs
Ya-Qiang Liu, Jun-Wei Wang, Chang-Yin Sun
- A new unbiased minimum variance observer for stochastic LTV systems with unknown inputs
Luc Meyer, Dalil Ichalal, Vincent Vigneron
- Adaptive control parameterization method by density functions for optimal control problems
Nastaran Ejlali, Seyed Mohammad Hosseini
- Discrete-time sliding mode control for a class of nonlinear process
Luning Ma, Dongya Zhao, Shuzhan Zhang, Jiehua Feng, Lei Cao
- Consensus control of singular multi-agent systems based on iterative learning approach
Panpan Gu, Senping Tian
- Uniform continuity and delay robustness of an adaptive controller for Lagrangian systems
Kim-Doang Nguyen
- An implicit class of continuous dynamical system with data-sample outputs: a robust approach
Raymundo Juarez, Vadim Azhmyakov, A Tadeo Espinoza, Francisco G Salas
- Linear algebra-based controller for trajectory tracking in mobile robots with additive uncertainties estimation
G J E Scaglia, M E Serrano, S A Godoy, F Rossomando
- Second-order consensus of multi-agent systems with mixed delays and uncertain parameters via adaptive pinning aperiodically intermittent control
Boling Zhou, Yongqing Yang, Xianyun Xu
- Asynchronous repetitive control of switched systems via periodic event-based dynamic output feedback
Guoqi Ma, Xinghua Liu, Prabhakar R Pagilla, Shuzhi Sam Ge
- Dynamic backstepping control for pure-feedback non-linear systems
Sheng Zhang, En-Mi Yong, Yu Zhou, Wei-Qi Qian

Back to the contents

4.12. IET Control Theory & Applications

Contributed by: Faraz Alam, farazalam@theiet.org

IET Control Theory & Applications
Volume 14, July 2020, Issue 10
https://digital-library.theiet.org/content/journals/iet-cta/14/10

Papers:

- Yuxuan Shen ; Zidong Wang ; Bo Shen ; Fuad E. Alsaadi, H-Infinity filtering for multi-rate multi-sensor systems with randomly occurring sensor saturations under the p-persistent CSMA protocol, Issue 10, p. 1255 –1265
- Shuai Zhang ; Yang Guo ; Shicheng Wang ; Zhiguo Liu ; Xiaoxiang Hu , Finite-time bounded stabilisation for linear systems with finite-time H 2-gain constraint, Issue 10, p. 1266 –1275
- Ling Xu ; Feng Ding ; Xian Lu ; Lijuan Wan ; Jie Sheng , Hierarchical multi-innovation generalised extended stochastic gradient methods for multivariable equation-error autoregressive moving average systems, Issue 10, p. 1276 –1286
- Da-Ke Gu and Da-Wei Zhang , Parametric control to a type of descriptor quasi-linear systems based on dynamic compensator and multi-objective optimisation, Issue 10, p. 1287 –1299
- Qingyuan Qi ; Peijun Ju ; Huanshui Zhang ; Peng Cui , Optimal control and stabilisation for large-scale systems with imposed constraints, Issue 10, p. 1300 –1307
- Xiaonan Xia ; Guanpeng Kang ; Tianping Zhang ; Yu Fang , Adaptive quantised control of uncertain non-linear systems with state constraints and time-varying delays, Issue 10, p. 1308 –1320
- Lakshmanan Shanmugam ; Prakash Mani ; Young Hoon Joo , Stabilisation of event-triggered-based neural network control system and its application to wind power generation systems, Issue 10, p. 1321 –1333
- Shahin Tasoujian ; Saeed Salavati ; Matthew A. Franchek ; Karolos M. Grigoriadis , Robust delay-dependent LPV synthesis for blood pressure control with real-time Bayesian parameter estimation, Issue 10, p. 1334 –1345
- Jiasheng Shi and Qingling Zhang , Robust stabilisation for a class of stochastic T–S fuzzy descriptor systems via dynamic sliding-mode control, Issue 10, p. 1346 –1357
- Rui-Yang Cai ; Hua-Cheng Zhou ; Chun-Hai Kou , Kalman rank criterion for the controllability of fractional impulse controlled systems, Issue 10, p. 1358 –1364
- Yu Wang and Haibo Ji , Input-to-state stability-based adaptive control for spacecraft fly-around with input saturation, Issue 10, p. 1365 –1374
- David Cruz-Ortiz ; Isaac Chairez ; Alexander Poznyak , Robust control for master–slave manipulator system avoiding obstacle collision under restricted working space, Issue 10, p. 1375 –1386

Brief Papers:

- Marlen Meza-Sánchez ; Maria del Carmen Rodríguez-Liñán ; Eddie Clemente , Family of controllers based on sector non-linear functions: an application for first-order dynamical systems, Issue 10, p. 1387 –1392
- Jae-Gyeong Lee ; Minh Hoang Trinh ; Hyo-Sung Ahn ; Byung-Hun Lee , Distributed formation control of the special Euclidean group SE(2) via global orientation control, Issue 10, p. 1393 –1399

Back to the contents

4.13. International Journal of Applied Mathematics and Computer Science

Contributed by: , amcs@uz.zgora.pl

International Journal of Applied Mathematics and Computer Science (AMCS)
2020, Volume 30, Number 2 (June)
Regular issue
www.amcs.uz.zgora.pl
Publisher: University of Zielona Góra, Poland
ISSN: 1641-876X (print), 2083-8492 (online)
Frequency: Quarterly
Editor-in-Chief: Józef Korbicz
Website: www.amcs.uz.zgora.pl
E-mail: amcs@uz.zgora.pl
Scope: modern control theory and practice; artificial intelligence methods and their applications; applied mathematics and mathematical optimisation techniques; mathematical methods in engineering, computer science, and biology
Indexation: ACM Digital Library, Applied Mechanics Reviews, Current Mathematical Publications (AMS), DBLP Computer Science Bibliography, EBSCO, Elsevier, Google Scholar, Inspec, Mathematical Reviews (MathSciNet), ProQuest, Clarivate Analytics (formerly Thomson Reuters), Zentralblatt Math, and others.
Impact Factor: 1.504 (2018) / 5-Year IF: 1.553 (2018)

Papers:

Back to the contents

4.14. Asian Journal of Control

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

Asian Journal of Control
Vol. 22, No. 3 May, 2020
https://onlinelibrary.wiley.com/toc/19346093/2020/22/3

Regular Papers:

1. Paper Title: Reduction of H-infinity state feedback control problems for the MIMO servo systems
Authors: Hayato Waki and Noboru Sebe
2. Paper Title: A Decentralized Multivariable Controller for Hydrostatic Wind Turbine Drivetrain
Authors: Sohel Anwar, Majid Deldar and Afshin Izadian
3. Paper Title: Computation of controllability and observability Gramians in modeling of discrete-time noncommensurate fractional-order systems
Author: Marek Rydel and Rafa? Stanis?awski
4. Paper Title: A Recursive Hierarchical Parametric Estimation Algorithm for Nonlinear Systems Described by Wiener-Hammerstein Models
Authors: Afef Marai, Mourad Elloumi, Houda Salhi and Samira Kamoun
5. Paper Title: Impulsive Semilinear Heat Equation with Delay in Control and in State
Authors: Hugo Leiva and Oscar Camacho
6. Paper Title: Sliding Mode Control as Binary-based Quantizers
Authors: Dhafer J. Almakhles
7. Paper Title: Sub-optimal Time Management of Manufacturing Systems with Uncontrollable Events Modeled by PETRI Nets
Authors: Abbas Dideban and Mojtaba Yazdani
8. Paper Title: A computational method for solving two-dimensional nonlinear variable-order fractional optimal control problems
Authors: Mohammad Hossein Heydari and Zakieh Avazzadeh
9. Paper Title: Design of functional interval observers for non-linear fractional-order systems
Authors: Huong Dinh
10. Paper Title: Numerical solution of optimal control problems governed by integro-differential equations
Authors: Hamid Reza Marzban
11. Paper Output Feedback Control of Three-Phases Four-Wire Unified Power Quality Conditioner
Authors: Bouchaib Benazza, Ouadi Hamid and Giri Fouad
12. Paper Title: Fuzzy Adaptive Nonlinear Sensor-Fault Tolerant Control for A Quadrotor Unmanned Aerial Vehicle
Authors: Chaofang Hu, Lei Cao, Xianpeng Zhou, Binghan Sun and Na Wang

13. Paper Title: Recursive Bayesian State Estimation Method for Run to Run Control in High-mixed Semiconductor Manufacturing Process
Authors: Tianhong Pan, Fei Tan, Jun Bian, Haiyan Wang and Weiran Wang
14. Paper Title: Improved Recurrent Neural Networks for Online Solution of Moore-Penrose Inverse Applied to Redundant Manipulator Kinematic Control
Authors: Xuanjiao Lv, Zhiguo Tan, Ke Chen and Zhi Yang
15. Paper Title: Command Filtered Path Following Control of Saturated ASVs Based on Time-Varying Disturbance Observer
Authors: Zhenyu Gao and Ge Guo
16. Paper Title: Impact Time and Angle Constrained Integrated Guidance and Control with Application to Salvo Attack
Authors: Xianghua Wang, Chee Pin Tan and Li Ping Cheng
17. Paper Title: Control of the VTOL aircraft with Position State Constraints Using Barrier Lyapunov Function
Authors: Dongfang Zhao and Jinkun Liu
18. Paper Title: Fault-Tolerant Path-Following Control for In-Wheel-Motor-Driven Autonomous Ground Vehicles with Differential Steering
Authors: Yulei Wang, Changfu Zong, Hongyan Guo and Hong Chen
19. Paper Title: A Graphical Approach for Stability and Robustness Analysis in Commensurate and Incommensurate Fractional-order Systems
Authors: Shen Yaohua, Wang Yunjian and Yuan Nana
20. Paper Title: Distributed Delay-dependent Filtering for Markovian Jump Systems Interconnected Over an Undirected Graph with Time-delay
Authors: Xiaojuan Xue, Li Xu and Huiling Xu
21. Paper Title: Backstepping Control of Flexible Joint Manipulator Based on Hyperbolic Tangent Function with Control Input and Rate Constraints
Authors: Jinkun Liu, Lijun Wang, Qiuyue Shi and Dan Zhang
22. Paper Title: Torque tracking control of electric load simulator with active motion disturbance and nonlinearity based on T-S fuzzy model
Authors: Xudong Pan, Chengcheng Li and Guanglin Wang
23. Paper Title: A novel modeling and controlling approach for high-order nonlinear systems
Authors: Lei Chen, Yan Yan and Changyin Sun
24. Paper Title: Estimation of stability region for discrete-time linear positive switched systems with multiple equilibrium points
Authors: Zhi Liu, Xianfu Zhang and Haitao Li
25. Paper Title: Adaptive Fault-Tolerant Formation Control for Quadrotors with Actuator Faults
Authors: Ke Zhang, Wan-Zhang Liu, Bin Jiang and Xing-Gang Yan
26. Paper Title: Robust PID Controller for Flexible Satellite Attitude Control under Angular Velocity and Control Torque Constraint
Authors: Li You and Dong Ye
27. Paper Title: Optimal Fractional Order PIλDμ Controller for Stabilization of Cart-inverted Pendulum System: Experimental Results
Authors: Arindam Chakraborty, Reetam Mondal, Jayati Dey and Suman Halder

Brief Papers:

1. Paper Title: A Risk-Sensitive Stochastic Maximum Principle for Fully Coupled Forward-Backward Stochastic Differential Equations with Applications
Authors: CHALA Ade and Rania Khallout
2. Paper Title: Nonlinear Sequential Fusion Estimation for Clustered Sensor Networks
Authors: Wenan Zhang, Kang Zhou, You Teng and Dan Zhang

Back to the contents

4.15. Control Engineering Practice

Contributed by: Kay Tancock, k.tancock@elsevier.com

Control Engineering practice
Volume 100
July 2020

Papers:

- Vicent Rodrigo Marco, Jens Kalkkuhl, Jörg Raisch, Wouter J. Scholte, Thomas Seel., Multi-modal sensor fusion for highly accurate vehicle motion state estimation
- Aravind M.A., Dinesh N.S., K. Rajanna., Application of EMPC for precise position control of DC-motor system with Backlash
- Rafal Madonski, Momir Stanković, Sally Shao, Zhiqiang Gao, Shihua Li., Active disturbance rejection control of torsional plant with unknown frequency harmonic disturbance
- Hongquan Ji, Donghua Zhou., Incipient fault detection of the high-speed train air brake system with a combined index
- Ningjun Zeng, Lihui Cen, Yongfang Xie, Shaohui Zhang., Nonlinear optimal control of cascaded irrigation canals with conservation law PDEs
- Alırıza Kaleli., Development of the predictive based control of an autonomous engine cooling system for variable engine operating conditions in SI engines: design, modeling and real-time application
- Haitao Gao, Zhigang Chen, Mingwei Sun, Jian Huang, Zengqiang Chen., An efficient fast altitude control for hypersonic vehicle
- Nupur Rathore, Deepak Fulwani, Akshay K. Rathore., Event-triggered Sliding Mode Control for light load efficiency improvement in Power Converters
- Molong Duan, Keval S. Ramani, Chinedum E. Okwudire., Energy optimal control of an over-actuated hybrid feed drive under variable-frequency disturbances with application to machining
- Ning He, Chao Shen., Frequency constrained predictive control for large scaled spatially distributed systems
- Xiaoxia Chen, Ting Lan, Xuhua Shi, Chudong Tong., A semi-supervised linear–nonlinear least-square learning network for prediction of carbon efficiency in iron ore sintering process
- Yuri V. Mitrishkin, Artem A. Prokhorov, Pavel S. Korenev, Mikhail I. Patrov., Plasma magnetic time-varying nonlinear robust control system for the Globus-M/M2 tokamak
- Jinwu Gao, Kai Feng, Yulei Wang, Yuhu Wu, Hong Chen., Design, implementation and experimental verification of a compensator-based triple-step model reference controller for an automotive electronic throttle

- Dongchen Liu, Junzheng Wang, Shoukun Wang, Dawei Shi., Active disturbance rejection control for electric cylinders with PD-type event-triggering condition
- Durgesh Singh, Saikrishna P.S., Ramkrishna Pasumarthy, Diwakar Krishnamurthy., Decentralized LPV-MPC controller with heuristic load balancing for a private cloud hosted application
- Lucian Buşoniu, Vineeth S. Varma, Jérôme Lohéac, Alexandru Codrean, Samson Lasaulce., Learning control for transmission and navigation with a mobile robot under unknown communication rates

Back to the contents

4.16. Journal of Process Control

Contributed by: Kay Tancock, k.tancock@elsevier.com

Journal of Process Control
Vol. 90
June 2020

Papers:

- Jean Auriol, Roman J. Shor, Ulf Jakob F. Aarsnes, Florent Di Meglio, Closed-loop tool face control with the bit off-bottom, P. 35-45
- Yankai Cao, Seong Beom Lee, Venkat R. Subramanian, Victor M. Zavala, Multiscale model predictive control of battery systems for frequency regulation markets using physics-based models, P. 46-55
- Yannick Fürst, Stefan Brandt, Martin Kriegel, Thermal modelling of three-way mixing valves using Bézier curves for parameter estimation applications, P. 56-62
- Decomposition of integrated scheduling and dynamic optimization problems using community detection, Ilias Mitrai, Prodromos Daoutidis, P. 63-74
- Ranjeet Kumar, Michael J. Wenzel, Mohammad N. ElBsat, Michael J. Risbeck, ... Victor M. Zavala, Stochastic model predictive control for central HVAC plants, P. 1-17
- Atharv Bhosekar, Marianthi Ierapetritou, Modular Design Optimization using Machine Learning-based Flexibility Analysis, P. 18-34

Back to the contents

4.17. Systems & Control Letters

Contributed by: Kay Tancock, k.tancock@elsevier.com

Systems & Control Letters
Vol. 140
June 2020

Papers:

- Guangchen Wang, Tianxiao Wang., Time inconsistent asset–liability management with partial information
- Quanxin Zhu, Tingwen Huang., Stability analysis for a class of stochastic delay nonlinear systems driven by G-Brownian motion
- Bao Wang, Quanxin Zhu., Stability analysis of discrete-time semi-Markov jump linear systems with partly unknown semi-Markov kernel

- Van Thiem Pham, Nadhir Messai, Dinh Hoa Nguyen, Noureddine Manamanni., Robust formation control under state constraints of multi-agent systems in clustered networks
- Fang Wang, Guanyu Lai., Fixed-time control design for nonlinear uncertain systems via adaptive method
- Tomas Co., On the control of a class of non-strongly stabilizable SISO plants
- Wen Kang, Emilia Fridman., Constrained control of 1-D parabolic PDEs using sampled in space sensing and actuation
- Lassi Paunonen, David Seifert., Asymptotics and approximation of large systems of ordinary differential equations

Back to the contents

4.18. ISA Transactions

Contributed by: Kay Tancock, k.tancock@elsevier.com

ISA Transactions
Vol. 101
June 2020

Papers:

- Deepika Deepika, Sandeep Kaur, Shiv Narayan., Integral terminal sliding mode control unified with UDE for output constrained tracking of mismatched uncertain non-linear systems, p. 1-9
- Panpan Zhang, Jun Hu, Hongxu Zhang, Dongyan Chen., Sliding mode control for Markovian jump systems with randomly occurring uncertainties and repeated scalar nonlinearities via delay-fractioning method, p. 10-22
- Mehdi Heydari Shahna, Mostafa Abedi., An anti-unwinding finite time fault tolerant sliding mode control of a satellite based on accurate estimation of inertia moments, p. 23-41
- Chuan Zhang, Xingyuan Wang, Xiaolin Ye, Shuang Zhou, Le Feng., Robust modified function projective lag synchronization between two nonlinear complex networks with different-dimensional nodes and disturbances, p. 42-49
- Sandeep Tripathi, Ashish Shrivastava, Kartick C. Jana., Self-Tuning fuzzy controller for sun-tracker system using Gray Wolf Optimization (GWO) technique, p. 50-59
- Qidan Zhu, Yongchao Liu, Guoxing Wen., Adaptive neural network output feedback control for stochastic nonlinear systems with full state constraints, p. 60-68
- Zahoor Ahmed, Muhammad Mansoor Khan, Muhammad Abid Saeed, Weidong Zhang., Consensus control of multi-agent systems with input and communication delay: A frequency domain perspective, p. 69-77
- Mina Yavari, Alireza Nazemi., On fractional infinite-horizon optimal control problems with a combination of conformable and Caputo–Fabrizio fractional derivatives, p. 78-90
- María F. Villa-Tamayo, Michelle A. Caicedo, Pablo S. Rivadeneira, Offset-free MPC strategy for nonzero regulation of linear impulsive systems., p. 91-101
- Bijan Moaveni, Fatemeh Rashidi Fathabadi, Ali Molavi., Supervisory predictive control for wheel slip prevention and tracking of desired speed profile in electric trains, p.102-115
- Amir Gheibi, Amir Rikhtehgar Ghiasi, Sehraneh Ghaemi, Mohammad Ali Badamchizadeh., Interconnection and damping assignment control based on modified actor–critic algorithm with wavelet function approximation, p. 116-129

- Baoxiang Wang, Yuhe Liao, Chuancang Ding, Xining Zhang., Periodical sparse low-rank matrix estimation algorithm for fault detection of rolling bearings, p. 366-378
- Tongyang Pan, Jinglong Chen, Jinsong Xie, Yuanhong Chang, Zitong Zhou., Intelligent fault identification for industrial automation system via multi-scale convolutional generative adversarial network with partially labeled samples, p. 379-389
- Hasmat Malik, Rajneesh Sharma, Sukumar Mishra., Fuzzy reinforcement learning based intelligent classifier for power transformer faults, p. 390-398
- Lei Kou, Chuang Liu, Guo-wei Cai, Zhe Zhang, Xue-mei Wang., Fault diagnosis for three-phase PWM rectifier based on deep feedforward network with transient synthetic features, p. 399-407
- Junchao Guo, Dong Zhen, Haiyang Li, Zhanqun Shi, Andrew D. Ball., Fault detection for planetary gearbox based on an enhanced average filter and modulation signal bispectrum analysis, p. 408-420
- Chunlin Zhang, Yuling Liu, Fangyi Wan, Binqiang Chen, Bingbing Hu., Adaptive filtering enhanced windowed correlated kurtosis for multiple faults diagnosis of locomotive bearings, p. 421-429
- Yuting Bai, Xiaoyi Wang, Xuebo Jin, Tingli Su, ... Baihai Zhang., Adaptive filtering for MEMS gyroscope with dynamic noise model, p. 430-441
- Zhidan Yan, Guo Chen, Chaoyu Xu, Wenyi Xu., Design and experimental study of a sensitization structure with fiber grating sensor for nonintrusive pipeline pressure detection, p. 442-452
- Muhammad N. Albezzawy, Mohamed G. Nassef, Nader Sawalhi., Rolling element bearing fault identification using a novel three-step adaptive and automated filtration scheme based on Gini index, p. 453-460
- Ramzi Ben Messaoud., Reduced nonlinear unknown inputs observer using MVT and GA, p. 461-470
- H. Amiri, G.R. Arab Markadeh, N. Mahdian Dehkordi, F. Blaabjerg., Fully decentralized robust backstepping voltage control of photovoltaic systems for DC islanded microgrids based on disturbance observer method, p. 471-481
- Chunqiang Liu, Guangzhao Luo, Zhe Chen, Wencong Tu., Measurement delay compensated LADRC based current controller design for PMSM drives with a simple parameter tuning method, p. 482-492
- Chao Liu, Yan He, Yulin Wang, Yufeng Li, Yan Wang., Effects of process parameters on cutting temperature in dry machining of ball screw, p.493-502
- Chenyang Zhao, Chi Fai Cheung, Peng Xu., High-efficiency sub-microscale uncertainty measurement method using pattern recognition, p. 503-514

Back to the contents

4.19. Journal of the Franklin Institute

Contributed by: Kay Tancock, k.tancock@elsevier.com

Journal of the Franklin Institute
Volume 357, Issue 9
June 2020

Papers:

- Changchun Hua, Rui Meng, Kuo Li, Xinping Guan., Full state constraints-based adaptive tracking control for uncertain nonlinear stochastic systems with input saturation, pg. 5125-5142
- Samir Ladjouzi, Said Grouni., PID controller parameters adjustment using a single memory neuron, pg. 5143-5172

- Zhipeng Zhang, Zengqiang Chen, Xiaoguang Han, Zhongxin Liu., Stabilization of probabilistic finite automata based on semi-tensor product of matrices, pg. 5173-5186
- Irina Bashkirtseva, Lev Ryashko, Guanrong Chen., Stochastic sensitivity synthesis in nonlinear systems with incomplete information, pg. 5187-5198
- Xiaonan Xia, Yu Fang, Tianping Zhang., Adaptive quantized DSC of output-constrained uncertain nonlinear systems with quantized input and input unmodeled dynamics, pg. 5199-5225
- Yong Zhao, Tianliang Zhang, Weihai Zhang., Asynchronous H-Infinity control for uncertain singular stochastic Markov jump systems with multiplicative noise based on hidden Markov mode, pg. 5226-5247
- Myoung Hoon Lee, Jun Moon., Partially observed decentralized optimal control for large population two-wheeled vehicles: A differential game approach, pg. 5248-5276
- Yuchen Sun, Shuping Ma., Observer-based asynchronous H-Infinity control for a class of discrete time nonlinear switched singular systems, pg. 5277-5301
- Deqing Huang, Kang Wang, Yaolei Wang, Hejia Sun, Tao Meng., Precise control for the size of droplet in T-junction microfluidic based on iterative learning method, pg. 5302-5316
- Fenglan Sun, Yunhao Shen, Jürgen Kurths, Wei Zhu., Mean-square consensus of multi-agent systems with noise and time delay via event-triggered control, pg. 5317-5339
- Jingang Zhao, Minggang Gan, Guoliang Chen., Optimal control of discrete time switched linear systems, pg. 5340-5358
- Jun Sun, Shuang Li, Jing Huang, Dongfang Zhu., Robust coordinated control for large flexible spacecraft based on consensus theory, pg. 5359-5379
- Xiuhua Liu, Jian Han, Xinjiang Wei, Huifeng Zhang, Xin Hu., Intermediate variable observer-based fault estimation and fault-tolerant control for nonlinear stochastic system with exogenous disturbance, pg. 5380-5401
- Sayyed Mohammad Hoseini., Optimal control of linear pantograph-type delay systems via composite Legendre method, pg. 5402-5427
- Chao He, Sanyang Liu, Junmin Li, Jinsha Li., Boundary iterative learning control for a class of first-order hyperbolic system with non-local terms, pg. 5428-5459
- Ye Liu, Zhijun Fang, Yuanyuan Li., Global decentralized output feedback control for interconnected time delay systems with saturated PI hysteresis, pg. 5460-5484
- Sheng Zhai, Jianying Yang., Piecewise analytic optimized ascent trajectory design and robust adaptive finite-time tracking control for hypersonic boost-glide vehicle, pg. 5485-5501
- Marzieh Najariyan, Yi Zhao., On the stability of fuzzy linear dynamical systems, pg. 5502-5522
- Yuanhua Wang, Daizhan Cheng., On coset weighted potential game, pg. 5523-5540
- Ziyun Wang, Shuai Zhang, Ju H. Park, Yan Wang, Zhicheng Ji., Multi-objective linear-programming-based four-judgment algorithm for linear bounded noise system modeling, pg. 5541-5555
- Wanli Guo, Wen Sun, Xiaoqing Lu., Distributed input observer-based finite-time consensus for the leader-following multi-agent systems, pg. 5556-5569
- Xinrui Jiang, Sitian Qin, Xiaoping Xue., A subgradient-based continuous-time algorithm for constrained distributed quadratic programming, pg. 5570-5590
- Feng Ding, Lijuan Wan, Yunze Guo, Feiyan Chen., The filtering based auxiliary model generalized extended stochastic gradient identification for a multivariate output-error system with autoregressive moving average noise using the multi-innovation theory, pg. 5591-5609
- Ziyun Wang, Guixiang Xu, Zixing Liu, Yan Wang, Zhicheng Ji., Orthotopic-filtering-based fault diagnosis algorithms for nonlinear systems with slowly varying faults, pg. 5610-5639

- Lijuan Liu, Haibo Liu, Feng Ding, Ahmed Alsaedi, Tasawar Hayat., Data filtering based maximum likelihood gradient estimation algorithms for a multivariate equation-error system with ARMA noise, pg. 5640-5662
- Zoran Perić, Nikola Simić, Jelena Nikolić., Design of single and dual mode companding scalar quantizers based on piecewise linear approximation of the Gaussian PDF, pg. 5663-5679
- Xia Hong, Junbin Gao, Sheng Chen., Semi-blind joint channel estimation and data detection on sphere manifold for MIMO with high-order QAM signaling, pg. 5680-5697

Back to the contents

4.20. Mechatronics

Contributed by: Kay Tancock, k.tancock@elsevier.com

Mechatronics
Volume 68
June 2020

Papers:

- Zhizheng Wu, Fanfan Qian, Yuanyuan Wang, Junqiu Wu, Zhu Zhang., Decentralized Youla parameterized adaptive regulation with application to surface shape control for magnetic fluid deformable mirrors
- Foeke Vanbecelaere, Stijn Derammelaere, Niko Nevaranta, Jasper De Viaene, Michael Monte., Online Tracking of Varying Inertia using a SDFT Approach
- Xin Cheng, Bai-xin Cheng, Shuai Deng, Rou-gang Zhou, Bo Wang., State-feedback decoupling control of 5-DOF magnetic bearings based on α-order inverse system
- Cheng-Tang Pan, Chun-Chieh Chang, Yu-Sheng Yang, Chung-Kun Yen, Yow-Ling Shiue., Development a multi-loop modulation method on the servo drives for lower limb rehabilitation exoskeleton
- Amin Talaeizadeh, Duarte Antunes, Hossein Nejat Pishkenari, Aria Alasty., Optimal-time quadcopter descent trajectories avoiding the vortex ring and autorotation states
- Shivesh Kumar, Hendrik Wöhrle, José de Gea Fernández, Andreas Müller, Frank Kirchner., A survey on modularity and distributivity in series-parallel hybrid robots
- Chuanzheng Li, Yanran Ding, Hae-Won Park., Centroidal-momentum-based trajectory generation for legged locomotion
- Matthias Hofer, Raffaello D'Andrea., Design, fabrication, modeling and control of a fabric-based spherical robotic arm
- Lu Xiong, Wei Han, Zhuoping Yu., Adaptive sliding mode pressure control for an electro-hydraulic brake system via desired-state and integral-antiwindup compensation
- Michele Gabrio Antonelli, Pierluigi Beomonte Zobel, Andrea De Marcellis, Elia Palange., Autonomous robot for cleaning photovoltaic panels in desert zones
- Lixin Tu, Donghong Ning, Shuaishuai Sun, Wenxing Li, Haiping Du., A novel negative stiffness magnetic spring design for vehicle seat suspension system
- Binxiang Xu, Seong Young Ko., 3D Feedback control using fuzzy logic for a curvature-controllable steerable bevel-tip needle
- Sangtae Kim, SangJoo Kwon., Robust transition control of underactuated two-wheeled self-balancing vehicle with semi-online dynamic trajectory planning

- Yan Cai, Guangan Ren, Jinchun Song, Nariman Sepehri., High precision position control of electro-hydrostatic actuators in the presence of parametric uncertainties and uncertain nonlinearities
- Jasper Brown, Daobilige Su, He Kong, Salah Sukkarieh, Eric C. Kerrigan., Improved noise covariance estimation in visual servoing using an autocovariance least-squares approach
- Michael Ringkowski, Oliver Sawodny, Simon Hartlieb, Tobias Haist, Wolfgang Osten., Estimating dynamic positioning errors of coordinate measuring machines

Back to the contents

4.21. European Journal of Control

Contributed by: Kay Tancock, k.tancock@elsevier.com

European Journal of Control
Volume 54
July 2020

Papers:

- Lorenzo Zino, Alessandro Rizzo, Maurizio Porfiri., Analysis and control of epidemics in temporal networks with self-excitement and behavioral changes, p. 1-11
- Meirong Zhang, Ali Saberi, Anton A. Stoorvogel., Semi-global state synchronization for discrete-time multi-agent systems subject to actuator saturation and unknown nonuniform input delay, p. 12-21
- Mien Van, Xuan Phu Do., Optimal adaptive neural PI full-order sliding mode control for robust fault tolerant control of uncertain nonlinear system, p. 22-32
- Barmak Baigzadehnoe, Zahra Rahmani, Alireza Khosravi, Behrooz Rezaie., Adaptive decentralized fuzzy dynamic surface control scheme for a class of nonlinear large-scale systems with input and interconnection delays, p. 33-48
- Andrea Iannelli, Andrés Marcos, Rocco Bombardieri, Rauno Cavallaro., Linear Fractional Transformation co-modeling of high order aeroelastic systems for robust flutter analysis, p. 49-63
- A. Buscarino, R. Caponetto, S. Graziani, E. Murgano., Realization of fractional order circuits by a Constant Phase Element, p. 64-72
- Anton A. Stoorvogel, Donya Nojavanzadeh, Zhenwei Liu, Ali Saberi., Squared-down passivity-based H-Infinity and H2 almost synchronization of homogeneous continuous-time multi-agent systems with partial-state coupling via static protocol, p. 73-86
- Zhiyuan Liu, Ming Yue, Lie Guo, Yongshun Zhang., Trajectory planning and robust tracking control for a class of active articulated tractor-trailer vehicle with on-axle structure, pg. 87-98
- Masoomeh Azizi, Majid Amirfakhrian, Mohammad Ali Fariborzi Araghi., A fuzzy system based active set algorithm for the numerical solution of the optimal control problem governed by partial differential equation, p. 99-110
- Jitesh Mohanan, Naveen Kothuri, Bharath Bhikkaji., The Target Guarding Problem: A real time solution for noise corrupted measurements, p. 111-118
- Xian-Xia Zhang, Han-Yu Yuan, Han-Xiong Li, Shi-Wei Ma., A spatial multivariable SVR method for spatiotemporal fuzzy modeling with applications to rapid thermal processing, p. 119-128
- Bowen Yi, Romeo Ortega, Houria Siguerdidjane, Juan E. Machado, Weidong Zhang., On generation of virtual outputs via signal injection: Application to observer design for electromechanical systems, p. 129-139

- Jesus Barradas-Berglind, Rafael Wisniewski, Bayu Jayawardhana., Model predictive control with fatigue-damage minimization through the dissipativity property of hysteresis operators, p. 140-151

Back to the contents

4.22. IFAC Journal of Systems and Control

Contributed by: Kay Tancock, k.tancock@elsevier.com

IFAC Journal of Systems and Control
Volume 12
June 2020

Papers:

- Jonas Umlauft, Sandra Hirche., Learning stochastically stable Gaussian process state–space models
- L.D. Hashan Peiris, Andreas Bartl, Jonathan L. du Bois, Andrew Plummer., Passivity control with adaptive feed-forward filtering for real-time hybrid tests
- Najmeh Ghaderi, Mohammad Keyanpour., Output feedback stabilization for 1-D unstable wave equations with boundary control matched disturbance and van der Pol nonlinear boundary
- Daniel Rubin, Pedro Mercader, Per-Olof Gutman, Hoai-Nam Nguyen, Alberto Bemporad., Interpolation based predictive control by ellipsoidal invariant sets
- Roberto Santos, Tiago Roux Oliveira., Trajectory tracking for uncertain (non)minimum phase systems by monitoring function and time-scaling based sliding mode control
- Evan Gravelle, Sonia Martínez., Using time-inconsistent wait-time functions for cycle-free coordinated traffic intersections

Back to the contents

4.23. Annual Reviews in Control

Contributed by: Kay Tancock, k.tancock@elsevier.com

Annual Reviews in Control
Volume 49
2020

Vision papers:

- Tariq Samad, Margret Bauer, Scott Bortoff, Stefano Di Cairano, Raye Sosseh., Industry engagement with control research: Perspective and messages, p. 1-14
- Panos Antsaklis., Autonomy and metrics of autonomy, p. 15-26

Review Papers:

- Lei GUO., Feedback and uncertainty: Some basic problems and results, p. 27-36
- A. Bisoffi, R. Beerens, W.P.M.H. Heemels, H. Nijmeijer, L. Zaccarian., To stick or to slip: A reset PID control perspective on positioning systems with friction, p. 37-63
- Marcelo M. Morato, Julio E. Normey-Rico, Olivier Sename.m., Model predictive control design for linear parameter varying systems: A survey, p. 64-80

Tutorial Papers:

Back to the contents

4.24. Nonlinear Analysis: Hybrid systems

Contributed by: Kay Tancock, k.tancock@elsevier.com

Nonlinear Analysis: Hybrid systems
Volume 37
August 2020

Regular papers:

- Jinling Wang, Jinling Liang, Jianlong Qiu., Asynchronous control for 2D switched positive systems with parametric uncertainties and impulses
- Xiaohong Wang, Huaiqin Wu, Jinde Cao., Global leader-following consensus in finite time for fractional-order multi-agent systems with discontinuous inherent dynamics subject to nonlinear growth
- Jinghui Suo, Zidong Wang, Bo Shen., Pinning synchronization control for a class of discrete-time switched stochastic complex networks under event-triggered mechanism
- Ying Sun, Derui Ding, Hongli Dong, Guoliang Wei., Resilient - filtering with dwell-time-based communication scheduling
- Jia-Jiang Lin, Xiong-Lin Luo., Hybrid parametric minimum principle
- Yaonan Shan, Xinzhi Liu, Kun She, Shouming Zhong, Xiaojun Zhang., Extended dissipative asynchronous filtering for T–S fuzzy switched systems with partial transition descriptions and incomplete measurements
- Yiwen Qi, Xindi Xu, Shaowei Lu, Yongtao Yu., A waiting time based discrete event-triggered control for networked switched systems with actuator saturation
- Ke Li, Xiaowu Mu., Necessary and sufficient conditions for leader-following consensus of multi-agent systems with random switching topologies
- Kexue Zhang., Integral input-to-state stability of nonlinear time-delay systems with delay-dependent impulse effects
- Xiaoyu Zhang., Robust integral sliding mode control for uncertain switched systems under arbitrary switching rules
- Li Ma, Ning Xu, Xin Huo, Xudong Zhao., Adaptive finite-time output-feedback control design for switched pure-feedback nonlinear systems with average dwell time
- Boyu Wang, Yijun Zhang, Baoyong Zhang., Exponential synchronization of nonlinear complex networks via intermittent pinning control on time scales
- Bo Pang, Qingling Zhang., Observer-based passive control for polynomial fuzzy singular systems with time-delay via sliding mode control
- Qunxian Zheng, Shengyuan Xu, Zhengqiang Zhang., Asynchronous nonfragile filtering for discrete-time nonlinear switched systems with quantization

Special Issue on Advances in Analysis and Design of Hybrid Systems:

- I.C. Morărescu, V.S. Varma, L. Buşoniu, S. Lasaulce., Space–time budget allocation policy design for viral marketing

Back to the contents

4.25. Institute of Applied Mathematics

Contributed by: Fikret Aliev, proceedings.IAM@gmail.com

Proceedings of the Institute of Applied Mathematics Volume 9, Number 1, 2020
- Aliev Fikret A., Aliev N.A, Parametrizations larina v.b. for the solving the problem of analytical design of the optimal regulator of oscillatory systems with liquid dampers
- Mohammed A. Abdlhusein and Manal N. Al-Harere, Pitchfork domination and its inverse for complement graphs
- Ismayilova A.F., Isayev F.A, Multi-sublinear operators generated by Multilinear fractional integral operators on Product generalized morrey spaces
- Yuldashev T.K., On a non-local inverse problem for a benney-luke type multidimensional integro-differential equation with spectral parameters
- Mostafa A. O., -Hawsh G. M. El, Differential subordination applications to a class of p- valent functions associated with mittag-leffler function
- Varadharajan S., Lakshmi S., Selvaraj C., Certain results of analytic function associated with conic sections and quasi subordination using q-derivative
- Magerramov I.A., Numerical algorithms for solving the optimization problem with unseparated boundary conditions
- Sadulla Jafarov, Direct and converse theorems of the theory of approximation in morrey spaces
- Mutallimov M.M., Review of the textbook Maharramov Z.T., Veliyev G.P. "Data Structures and Algorithms"

Back to the contents

4.26. Applied and Computational Mathematics an International Journal

Contributed by: ACMIJ, chief_ed@acmij.az

Applied and Computational Mathematics an International Journal
Vol.19, No.2, June 2020
www.acmij.az

Papers:

- Weight Enumerators and MacWilliams Identities for Linear Codes Over F2, Minjia Shi, Liqin Qian, pages:151-161
- Sinc-Chebyshev Collocation Method for Time-Fractional Order Telegraph Equation N.H. Sweilam , A.M. Nagy, A.A. El-Sayed, pages:162-174
- Stability Estimates for Delay Parabolic Differential and Difference Equations A. Ashyralyev, D. Agirseven, R.P. Agarwal, pages:175-204
- Quadratic Programming Problems on Time Scales Rasheed Al-Salih, Martin Bohner, pages:205-219
- An Efficient Evolutionary Algorithm for a Shape Optimization Problem M. Nachaoui, A. Chakib, A. Nachaoui, pages:220-244
- Spectral Analysis for Discontinuous Conformable Sturm-Liouville Problems with Spectral Parameter Contained in Boundary Conditions A. Ercan, E.S. Panakhov, pages:245-254
- Decision Making Analysis Based on Sine Trigonometric Operational Laws For Single-Valued Neutrosophic Sets and their Applications Harish Garg, pages:255-276

Back to the contents

5 Conferences and Workshops

5.1. Submission to IEEE Control Systems Letters with ACC 2021

Contributed by: Francesca Bettini, bettini@dei.unipd.it

Submission to IEEE Control Systems Letters with ACC (2021) option starting July 1, 2020, is possible

For the first year the IEEE Control Systems Letters (L-CSS) offers the opportunity for authors to not only publish a paper in the journal but also to present the same paper at the annual conference of the American Automatic Control Council (AACC): the American Control Conference (ACC).

The joint submission to IEEE Control Systems Letters and ACC 2021 will be possible from July 1 to September 1, 2020.

Manuscripts submitted to the L-CSS with the ACC option will undergo a regular review as papers submitted to the Letters (so they should be submitted only to the L-CSS and not to the ACC). At the end of the first round of review, the reviews and the Associate Editor's report will be forwarded to the ACC Program Committee, which will use them to decide on the inclusion of these manuscripts in the program of the Conference.

After the first cycle of review, the decisions about the acceptance or rejection of the manuscript for the L-CSS and for the ACC will be independent of each other. In particular, reviews and reports collected during a possible second round of review will not be forwarded to the ACC Program Committee.

Note that you can submit your paper through the Letters also if the paper will be part of an Invited Session at ACC 2021. In that case you should select "L-CSS and ACC Invited", as submission type.

For more information about joint submission to L-CSS and ACC see, specifically, https://bit.ly/2zPYVqC section "L-CSS and CDC/ACC".

For more information about the L-CSS, please check the website at
http://ieee-cssletters.dei.unipd.it/index.html.

Back to the contents

5.2. IEEE/ASME International Conference on Advanced Intelligent Mechatronics

Contributed by: Xiang Chen, xchen@uwindsor.ca

First Announcement of Call for Papers: 2021 IEEE/ASME International Conference on Advanced Intelligent Mechatronics (AIM 2021)

The 2021 IEEE/ASME International Conference on Advanced Intelligent Mechatronics (AIM 2021) will be held on July 12-16, 2021 in Delft, the Netherland. The motto will be "Sustainable Mechatronics".

As a flagship conference focusing on mechatronics and intelligent systems, the AIM 2021 will bring together an international community of experts to discuss the state of the art, new research results, perspectives of

future devel-opments, and innovative applications relevant to mechatronics, robotics, automation, industrial electronics, and related areas, not limited to the conference motto.

The sponsors and organizers of AIM 2021 invite submissions of high-quality mechatronics research papers describing original work, including but not limited to the following topics: Actuators, Automotive Systems, Bioengineering, Control, Data Storage Systems, Energy Har-vesting, Energy-Saving Technology, Electronic Packaging, Fault Diagnosis, Human-Machine Interfaces, Industry Applications, Information Technology, Intelligent Systems, Machine Vision, Manufacturing, Micro-Electro-Mechanical Systems, Micro/Nano Technology, Modeling and Design, System Identification and Adaptive Control, Motion Control, Vibration and Noise Control, Opto-Electronic Systems, Optomechatronics, Prototyping, Real-Time and Hardware-in-the-Loop Simulation, Robotics, Sensors, Smart Materials and Structures, Sustainability in Mechatronics, System Integration, Transportation Systems, and frontier fields.

Detailed information about paper submission will be published on https://aim2021.org. All topics are welcome within the scopes of TMech: www.ieee-asme-mechatronics.org and AIM 2021.

Authors are invited to submit one of the following:

- AIM Contributed and Invited Papers: All papers go through a rigorous review process. Accepted papers will be presented by their authors at the conference. All accepted peer-reviewed manuscripts will be published in the conference proceedings, and will be submitted for inclusion in IEEEXplore, subject to formatting and copyright requirements.

- TMECH/AIM Focused Section Papers: Submissions to the Second Edition of the Focused Section on TMECH/AIM Emerging Topics (renamed from previously TMECH/AIM Concurrent Submission) are done through the TMECH site https://mc.manuscriptcentral.com/tmech-ieee. Accepted TMECH/AIM Focused Section papers will be presented at AIM 2021 and published in the Second Edition of TMECH/AIM Focused Section in the August Issue of TMECH in 2021. The publication in the dedicated Issue of TMECH, however, will be subject to the presentation of the paper at AIM 2021 with paid registration fee. Papers rejected for publication in TMECH will still be considered by the Program Committee of AIM 2021, which makes a final acceptance/rejection decision for AIM 2021. For more details about submission/review procedures and timelines, please refer to the Call for Papers for TMECH/AIM Focused Section: https://www.ieee-asme-mechatronics.info/focus-sections/

- Tutorials & Workshops: Proposals are invited for half-day or full-day tutorials and workshops. Workshops explore the frontiers of recent or emerging topics in mechatronics, while tutorials provide a foundation for future self-study in important areas of mechatronics. Tutorial and workshop proposals must include: (1) a statement of objectives, (2) a description of the intended audience, (3) a list of speakers with an outline of their planned presentations. Unless specifically requested, individual tutorial and workshop presentations are not peer-reviewed and do not appear in the proceedings.

- Invited & Special Sessions: Proposals are invited for invited and special sessions. Invited sessions consist of 4 to 6 thematically related invited papers. Invited session proposals consist of a brief statement of purpose and extended abstracts of the included invited papers. Invited papers are submitted and reviewed following the same process as contributed papers, and are included in the proceedings.

- All contributed and invited papers, tutorial and workshop proposals, and invited and special session proposals for AIM2021 must be uploaded through https://ras.papercept.net according to the deadlines below.

Conference Website: https://aim2021.org

Important Dates:

- Opening Date of TMECH/AIM Emerging Topics Focused Section Submission Site: 1 Nov 20
- Closing Date of TMECH/AIM Emerging Topics Focused Section Submission Site: 5 Dec 20
- Submission of Special & Invited Session Proposals: 15 Jan 21
- Submission of Tutorial & Workshop Proposals: 15 Jan 21
- Submission of AIM Contributed & Invited Papers: 1 Feb 21
- Notification of AIM Paper Acceptance: 1 May 21
- Final Paper Submission AIM 2021: 15 May 21

Contacts: Send enquiries about this announcement to Heike Vallery, h.vallery@tudelft.nl, General Chair of AIM2021 Bram Vanderborght, Bram.Vanderborght@vub.be, Program Co-Chair and Publication Chair of AIM 2021

Back to the contents

5.3. ACC 2020 Workshop: Extremum Seeking Control in Biomedical Applications

Contributed by: Nicholas R. Gans, nrgans@uta.com

American Controls Conference 2020 Workshop on "Extremum Seeking Control in Biomedical Applications"
Date: June 30, 2020
Location: Online

Description: Biomedical systems are notoriously difficult to model. This difficulty stems from the variation in physiology between subjects. Furthermore, an individual subject will often vary over the course of a day, a week, etc. This difficulty in modeling makes it difficult to implement optimal control solutions. Extremum Seeking Control (ESC) is a method of model-free adaptive control that modifies the arguments of a cost function to guide them to a local maximum or minimum. The versatility and model-free nature of ESC makes them very well suited for biomedical control applications.

We will present ten recent results in applying ESC to a wide variety of biomedical problems, including powered prosthetics and orthotics, medication delivery, rehabilitation therapy, and assistive heart pumps. We seek to highlight the strengths of ESC in biomedical applications and spur further research and development in the community who may not have considered this powerful approach.

The speakers are:
• Victor Duenas, Syracuse University
• Hosam Fathy, The University of Maryland
• Nicholas Gans, The University of Texas at Arlington
• Robert Gregg, The University of Michigan
• Martin Guay, Queen's University

• Saurav Kumar, The University of Texas at Dallas,
• Peiman Naseradinmousavi, The University of California at San Diego
• Miroslav Krstic, The University of California at San Diego
• Tiago Roux Oliveira, State University of Rio de Janeiro
• Ying Tan, The University of Melbourne

More information on the workshop can be accessed at: https://sites.google.com/view/esc4biomed

For workshop registration please visit: https://css.paperplaza.net/registration/index.php

For questions, please contact the organizers: Nick Gans – ngans@uta.edu, Saurav Kumar - saurav@utdallas.edu, Robert Gregg - rdgregg@umich.edu

Back to the contents

5.4. ACC 2020 Workshop: The Confluence of Vision and Control

Contributed by: Ashwin Dani, ashwin.dani@uconn.edu

American Controls Conference 2020 Workshop on "The Confluence of Vision and Control"
Date: June 30, 2020
Location: Online

Description: The use of visual sensors in feedback control has been an active topic of research for decades. As the cost of hardware lowers and computational capabilities increase, vision-based control is reaching new levels of capability and application. Recent innovations in computer vision can provide greater capabilities to control applications such as autonomous vehicles and robots. At the same time, open problems in computer vision can be solved through control theory, such as nonlinear and adaptive control. We present eleven discussions on recent work in vision-based control, the application of control to computer vision, and topics in which vision and control are uniquely intertwined. We seek to highlight recent developments and open problems that exist at the intersection of vision and control and spur further research and development in the community.

The confirmed speakers are:
• Warren Dixon, University of Florida
• Ashwin Dani, University of Connecticut
• Kaveh Fathian, MIT
• Nicholas Gans, UT – Arlington Research Institute
• Guoqiang Hu, Nanyang Technological University
• Roberto Tron, Boston University
• Romeil Sandhu, Stony Brook University
• Patricio Vela, Georgia Tech
• Randy Beard, Brigham Young University
• Eddie Tunstel, United Technology Research Center
• Takeshi Hatanaka, Osaka University

Detailed agenda of the workshop is available at:

https://sites.google.com/view/2020accworkshop

For the workshop registration please visit: https://css.paperplaza.net/registration/index.php.

For questions, please contact the organizers: Nick Gans – ngans@uta.edu or Ashwin Dani – ashwin.dani@uconn.edu

Back to the contents

5.5. Soft Robotics Workshop

Contributed by: Hao Su, hao.su@ccny.cuny.edu

Soft Robotics Workshop July 6, at IEEE/ASME International Conference on Advanced Intelligent Mechatronics (AIM)

Dear Colleagues,

I hope you are staying safe and healthy during this challenging time. We cordially invite you to attend the online Soft Robotics workshop that is part of the IEEE/ASME International Conference on Advanced Intelligent Mechatronics (AIM). It will take place July 6th, Monday, 2020, 8:45AM-1:30PM EST. The workshop is free but requires pre-registration.

Event: Soft Robotics Workshop, IEEE/ASME International Conference on Advanced Intelligent Mechatronics (AIM)
Date: July 6th, Monday, 2020
Time: 8:45AM-1:30PM, Eastern Standard Time (New York Time)
Location: Zoom Online Meeting
Website: https://haosu-robotics.github.io/aim-soft-robot-workshop.html
Registration: https://bit.ly/2NwobVT

Invited speakers:

- Katia Bertoldi, Harvard University
- Xuanhe Zhao, MIT
- Gregory Chirikjian, National University of Singapore and Johns Hopkins University
- Hao Su, City University of New York
- Kevin Chen, MIT
- Vikram Kapila, NYU
- Josh Bongard, University of Vermont
- Shu Yang, University of Pennsylvania
- Elliot W. Hawkes, University of California

Organizers

- Hao Su, City University of New York
- Kevin Chen, MIT

- Antonio Di Lallo, City University of New York

Hao Su, Ph.D.
Irwin Zahn Endowed Assistant Professor
Director, Lab of Biomechatronics and Intelligent Robotics (BIRO)
Lab Web: https://haosu-robotics.github.io
Director, Center of Assistive and Personal Robotics for Independent Living (APRIL)
APRIL Center Web: https://assistiverobotcenter.github.io
Department of Mechanical Engineering
City University of New York, City College
Email: hao.su@ccny.cuny.edu
Phone: 212.650.5228
Office: Steinman Hall, Room 225
275 Convent Avenue New York, NY 10031
Lab: Marshak Science Building, Room 705
160 Convent Avenue New York, NY 10031

Back to the contents

6 Positions

6.1. PhD: French-German Research Institute of Saint-Louis, France

Contributed by: Robert Fonod, robert.fonod@isl.eu

PhD position: Guidance strategies for a class of long range guided projectiles

A fully funded PhD position on guidance of guided projectiles is available in the Guidance, Navigation, and Control (GNC) group of the French-German Research Institute of Saint-Louis (ISL), a leader in Europe in research on guided projectiles.

The anticipated starting date is Fall 2020. Only candidates with EU citizenship will be considered. ISL offers an attractive remuneration, a multidisciplinary and multinational working environment, state-of-the-art research and experimentation facilities, and a remarkable location in the Basel metropolitan area, the regional hub of three countries (D/F/CH).

To apply for this position, send an academic CV, a cover letter, and grade transcripts to R. Fonod (robert.fonod@isl.eu). For detailed information on the position, see:

https://www.isl.eu/en/jobs/thesis/1044-phd-thesis-guidance-strategies-for-a-class-of-long-range-guided-projectiles

Back to the contents

6.2. PhD: University of Groningen, The Netherlands

Contributed by: Bayu Jayawardhana, b.jayawardhana@rug.nl

PhD project title: Physics-guided learning algorithm in control

In this project, we will develop recursive regression methods that combines tools from informatics and from nonlinear systems & control theory. In particular, integrated models, where first-principle models (e.g., Euler-Lagrange, port-Hamiltonian or thermodynamics models) are complemented with machine learning models (e.g., support vector machine models), will be studied. The PhD student will be embedded in the Engineering and Technology Institute Groningen at the University of Groningen and will collaborate with the Leiden Institute of Advanced Computer Science (LIACS) at the University of Leiden.

This PhD project is part of the Dutch NWO AES Perspectief programme on DIGITAL TWIN

The development of reliable and agile digital twins of high-tech systems and materials is key to enabling shorter time-to-market, zero-defect and flexible manufacturing systems with accurate predictive maintenance. This crucial development is currently hampered by the lack of synergy between model-based engineering and data-driven/artificial intelligence approaches. The DIGITAL TWIN program will develop key-enabling technologies for full digitization of the value chain of high-tech systems and materials by the integration of data-driven learning approaches and model-based engineering methods.

This NWO AES Perspectief programme is a five-year comprehensive research programme on the development of digital twin and digital twinning methods, financed by the Dutch Research Council (NWO) within the domain of Applied and Engineering Sciences (AES). This collaborative programme involves six universities: University of Groningen, Eindhoven University of Technology, TU Delft, University of Twente, Leiden University and Tilburg University and twelve industrial partners.

Interested candidates please send your inquiries together with your detailed CV and a 1-page letter of motivation or research statement to: Bayu Jayawardhana (email: b.jayawardhana@rug.nl). Please specify the following text in the subject: Physics-guided learning algorithm in control - PhD application

Back to the contents

6.3. PhD: Eindhoven University of Technology, The Netherlands

Contributed by: Mircea Lazar, m.lazar@tue.nl

PhD position on Physics-guided neural controllers for high-precision mechatronics

This project focuses on the design of artificial intelligence based controllers for high-precision linear and rotary motors, utilized in lithography and industrial printing machines. This involves research in design and training of neural networks based on physical insight, neural feedforward control and stability analysis of neural-driven control systems. The research will be conducted within the Control Systems (CS) group of the Department of Electrical Engineering, TU/e, in cooperation with several high-tech companies: ASML, Océ, Philips, IBS Precision Engineering and Prodrive.

PhD position on Advanced digital control of ultra-high frequency power converters

This project focuses on the design and implementation of advanced digital controllers for high precision power converters with ultra-high effective switching frequency. This involves research in nonlinear (switched and multi-rate) control structures, stabilizing, predictive and self-learning control theory, and real-time controller implementation. The research will be conducted within the Control Systems (CS) group of the Department of Electrical Engineering, TU/e, in cooperation with the Electromechanics and Power Electronics group and the high-tech companies ASML and Prodrive.

More details about these positions can be found at:
https://jobs.tue.nl/en/vacancies.html

Back to the contents

6.4. PhD: University of Houston, USA

Contributed by: Rose Faghih, rtfaghih@uh.edu

Ph.D. Opening (The position is available immediately and applicants will be considered until the vacancy is filled.)

The Computational Medicine Laboratory (CML) at the University of Houston is currently looking to recruit one highly motivated and creative Ph.D. student with applied mathematics, signal processing, and/or control theory background to develop mathematical algorithms for biomedical engineering applications with a focus on human subject research. CML mainly focuses on designing control, optimization, estimation,

signal processing, and machine learning algorithms for biomedical and neural engineering applications.

The ideal candidate has obtained their B.S. degree in electrical engineering (or related fields, e.g. mechanical, computer or biomedical engineering, computer science, applied mathematics, statistics, etc.) focusing on control theory and/or signal processing. The projects involve algorithm design and validation in real-time experiments with human recordings.

Interested candidates should email Dr. Rose Faghih (email: rtfaghih@uh.edu) with the required documents listed at:

http://ComputationalMedicineLab.ece.uh.edu/prospective-students/

Back to the contents

6.5. PhD: University of Texas at Arlington, USA

Contributed by: Ali Davoudi, davoudi@uta.edu

PhD position at the University of Texas at Arlington

The Complex Power Electronics Systems laboratory at the University of Texas at Arlington has multiple openings for funded PhD positions for Fall 2020 and Spring 2021 semesters. An ideal candidate should hold a master's degree in electrical engineering, with substantial related course work or an established research record in microgrids, power electronics, distributed control, complex networks, or reinforcement learning.

Working experience with controller/ hardware-in-the-loop setups and strong programming skills are preferred. Qualified applicants should submit their i) CV, ii) unofficial transcripts, and iii) samples of published work, in a single pdf file, to Dr. Ali Davoudi at davoudi@uta.edu.

Back to the contents

6.6. PhD: City University of Hong Kong, Hong Kong

Contributed by: Ehsan Nekouei, enekouei@cityu.edu.hk

PhD position at the Department of Electrical Engineering, City University of Hong Kong.

Description: In this project, we will study the privacy level of human users in networked control systems, e.g., intelligent transportation networks and smart buildings, wherein sensor measurements are accessible by untrusted parties. We will also develop design methodologies to ensure the privacy of users within these systems, based on dynamic programming and reinforcement learning (RL) techniques.

International applicants will be considered for the Hong Kong PhD fellowship scheme which provides an annual stipend of HK$309,600 (approximately US$39,700) and a conference and a research-related travel allowance of HK$12,900 (approximately US$1,700) per year for each awardee for a period up to three years. https://cerg1.ugc.edu.hk/hkpfs/index.html

Requirements:
1. An undergraduate or a master degree from an internationally recognized university

2. Strong background in probability theory and control systems
3. Good programming skills
4. A background in dynamic programming and optimal control is a plus

Contact: Please send the following documents to enekouei@cityu.edu.hk and indicate in the subject "PhD Application"
1. Your CV
2. One-page research statement and motivation
3. A copy of your transcripts

Back to the contents

6.7. PhD: North Carolina A&T State University, USA

Contributed by: Ioannis Raptis, iraptis@ncat.edu

Ph.D. Positions – Motion Planning and Control of Multi-Robot Systems

Applications are invited for several Ph.D. positions in Motion Planning and Control of Multi-Robot Systems. The positions are with the Department of Electrical and Computer Engineering at North Carolina A&T State University, and the students will work under the supervision of Dr. Ioannis Raptis.

The research aims to establish a theoretical and computational framework for the design of motion coordination algorithms for fleets of mobile robots that operate in confined spaces. Applications include traffic management in autonomous intersections, urban aerial mobility, and warehouse automation. The research has analytical, computational, and experimental components. The derived algorithms will be validated using actual aerial and ground mobile robots. Students from all majors relevant to control systems, computer science or engineering, and applied mathematics are encouraged to apply. Preference will be given to candidates with a strong and demonstrated background in at least one of the following topical areas: control theory, discrete mathematics and algorithms, transportation, and programming.

The assistantships include 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 a first-come-first-served basis. The desired start dates are September 2020 and January 2021.

Qualifications:
• M.S. degree in mechanical engineering, electrical and computer engineering, aerospace engineering, mathematics, computer science, or a closely related area.
• Excellent mathematical background preferably in control theory, linear algebra, discrete mathematics, and heuristic algorithms.
• Demonstrated programming experience and experience with embedded systems.
• Good programming skills in MATLAB/SIMULINK.
• Very good English communication skills (written and oral).
• Ability and motivation to conduct independent research.

To Apply: Please email, as a single .pdf document, the following items to iraptis@ncat.edu: (i) a cover letter (clearly indicating expected start date, relevant experience, and motivation); (ii) detailed Curriculum Vita; (iii) copies of unofficial transcripts; (iv) GRE and TOEFL (for international students) scores—these standardized tests are mandatory; and (iv) copies of relevant publications (if any). Note that only interested candidates will be considered and contacted who clearly show to their cover letter (or application email) how their background and research interests align with the position. Shortlisted applicants will be directed to apply to the Department of Electrical and Computer Engineering at North Carolina A&T State University.

Back to the contents

6.8. PhD: University of Oxford, United Kingdom

Contributed by: Alessandro Abate, aabate@cs.ox.ac.uk

Fully Funded Doctoral Scholarship at Oxford

The Department of Computer Science at the University of Oxford is looking for an outstanding candidate to fill one doctoral studentship position available from October 2020 (or, in view of the current contingencies plans related to the pandemic, as soon as possible thereafter) on a 3.5 year fully funded Doctoral Scholarship led by Professor Alessandro Abate.

The scientific underpinnings of the project lie in the areas of Formal Verification and Control Theory, and the project will additionally have core components from the area of Machine Learning (in particular, Reinforcement Learning). The overall grand goal is to contribute to the development of general approaches to integrate learning components within architectures for the formal verification and control of complex engineering systems. We plan to look at applications in the domain of Smart Energy Systems, through an established collaboration with an industrial partner.

The successful candidate will be a DPhil student in the research group of Professor Abate:
http://www.oxcav.org

The OXCAV research group investigates the areas of Formal Verification and Control Theory, and has a keen interest on integrating techniques and tools from Machine Learning (for instance, Reinforcement Learning). OXCAV investigates applications in Safety-Critical Systems, such as the power grid and the energy infrastructure, and beyond. The group is focussed both on theoretical developments, and on generation of usable software, towards technology transfer pursued alongside industrial partners. Further information about Professor Abate's research profile can be found here:
http://www.cs.ox.ac.uk/people/alessandro.abate

We welcome applications from students with a MSc-level degree (first class/distinction) in Maths, Computer Science, Engineering, or related technical degrees. Strong maths foundations are welcome, plus willingness to develop code and to engage in collaborative projects. Applicants must satisfy the usual requirements for studying for a doctorate at Oxford.

You should apply online by 31 July 2020. We expect to invite shortlisted applicants to interview in the month of August. For more details: http://www.cs.ox.ac.uk/news/1821-full.html

Back to the contents

6.9. PhD: University of Kentucky, USA

Contributed by: Xu Jin, xu.jin@uky.edu

Ph.D. Positions in intelligent control (Mechanical Engineering) at the University of Kentucky

Ph.D. openings are available beginning Spring 2021 in the Department of Mechanical Engineering at the University of Kentucky, Lexington, KY, in Dr. Xu Jin's group on the topics of intelligent control. Our group's focus is on adaptive control and iterative learning control with applications to multiagent systems, constrained formation systems, robot manipulation systems, and cyber-physical systems. More research details can be found on Dr. Xu Jin's website: https://www.engr.uky.edu/directory/jin-xu and the external links included.

The positions include stipend, health care, and tuition support. The offers are valid for two years, and renewable for additional years based on performance of the students. Qualifications: The applicants MUST ALREADY HAVE, or will soon have the GRE and TOEFL test scores meeting the departmental minimum requirement. Applicants with a strong background in mathematics, control systems, and/or robotics, and with experience in mathematical analysis, Matlab numerical simulations, hands-on experiences on robotic systems, are encouraged to apply. The applicant must demonstrate competent analysis, experimental skills, and programming ability.

How to apply: Applications should be emailed to Dr. Xu Jin at xu.jin@uky.edu as soon as possible. Please include a full CV (including GRE and TOEFL scores), PDFs of relevant publications, and names of at least three references. Upon initial email discussions, those who are encouraged to apply should then apply to the department as soon as possible, and indicate my name (Dr. Xu Jin) in the application package.

Visiting Ph.D. students and scholars are also very welcomed for self-funded research visit for 6-24 months.

* Short note about the department and the city: Mechanical Engineering is the largest department in the College of Engineering with 35 tenured and tenure-track faculty members, over 1,000 undergraduate students, and over 120 graduate students. The department also has state-of-the-art computational facilities, research labs, and classrooms, including UAV, ground robot, and air table satellite testing facilities. The city of Lexington is ranked # 3 Best City to Raise a Family, #4 City with Best Tech Career Potential, # 8 City with the Lowest Living Cost, # 21 Best Places to Live in America, and # 31 Most Educated Cities in America. Located in the heart of the Bluegrass Region, Lexington is known as the "Horse Capital of the World".

Back to the contents

6.10. PhD: Libera Università di Bolzano, Italy

Contributed by: Karl D von Ellenrieder, kvonellenrieder@unibz.it

PhD at the Libera Università di Bolzano, Italy: 11 positions available, including projects in the research areas of robotics, automatic control (ING-INF/04) and mechatronics (ING-IND/13).

For further information please visit:

https://www.unibz.it/en/faculties/sciencetechnology/phd-advanced-systems-engineering/

or send an e-mail to PhD FaST@unibz.it

Deadline: 13 July, 2020

Back to the contents

6.11. PhD: The University of Texas at San Antonio, USA

Contributed by: Ahmad F. Taha, ahmad.taha@utsa.edu

I have **four** PhD positions for Spring 2021 or Fall 2021 in optimization and control of dynamic networks with applications to renewables-heavy power systems, transportation systems, and water distribution networks at the ECE Department, University of Texas at San Antonio (UTSA). The ECE department at UTSA hosts the largest PhD program in terms of the number of PhD students, and the department has 30+ faculty in various engineering disciplines, with six faculty in systems and controls.

Interested applicants should have **all** of the following qualifications:
- a master's degree in engineering, applied mathematics, or related fields;
- strong background in optimization, linear systems theory, and machine learning (basic)
- a solid set of GPA, TOEFL, and GRE scores

Interested candidates can send me their transcripts and brief resume at ahmad.taha@utsa.edu, alongside any previously published papers, and copies of GRE/TOEFL scores. Emails should indicate that you have seen this ad in this E-Letter.

San Antonio is the seventh largest US city in terms of population, has moderate weather year round, and is very affordable for graduate students.

Back to the contents

6.12. PhD: Maynooth University, Ireland

Contributed by: Carrie Anne Barrry, carrieanne.barry@mu.ie

PhDs: Centre for Ocean Energy Research, Maynooth University Ireland

Funded PhD positions: The Centre for Ocean Energy Research (COER) at Maynooth University, Ireland has further opportunities for well-qualified applicants interested in PhD level research.

PhD1. Estimation and forecasting for wave energy applications, using moment-based methods

PhD2. Real-time control of oscillating water column wave energy devices

A tax-free stipend of €18,500 is available, and PhD fees are also covered for each of the projects. The projects also provide adequate funding for equipment, materials and travel (conferences, courses, secondment, etc) and are tenable for a 4-year structured PhD. Applicants should be well qualified to bachelors or masters degree level in one of the following areas: mechanical/mechatronic engineering, electronic engineering, control engineering, or exceptional students in applied maths or hydrodynamics may be considered. The

project will be supervised by Prof. John Ringwood (http://www.eeng.nuim.ie/jringwood/)

The projects are described in more detail below:

PhD1. Estimation and forecasting for wave energy applications, using moment-based methods

A variety of control algorithms have been developed for wave energy devices (WEDs), which provide optimal load force signals for a WED, given current and future knowledge of the excitation force on the device. However, the wave excitation force cannot be measured directly and future knowledge of the excitation force is required for the majority of WED controllers, which are non-causal.

This project will directly address the problem of excitation force estimation and prediction, by developing estimation and prediction algorithms suitable for both linear and nonlinear WED models, and linear and nonlinear wave descriptions. Recently, moment-based methods have been shown to be useful in a modelling and control context for wave energy systems, and this PhD project will build on these results and extend them to WED estimation and forecasting problems.

PhD2. Real-time control of oscillating water column wave energy devices
Energy maximising control systems have the capability to significantly improve the economic viability of wave energy systems and this project focusses on oscillating water column (OWC) devices, which have achieved some commercial penetration. The project will include control system design, control implementation and experimental analysis. Since the wave energy control problem is, in general, non-causal, with some of the key measurements unmeasurable, the project will also include some estimation and forecasting components.

The project will feature the recently developed moment-based wave energy control analysis and synthesis tools pioneered at COER, in partnership with Prof. Alessandro Astolfi's group at Imperial College, London. The project will include academic collaborators at Dundalk Institute of Technology (experimental wave tank facilities), Imperial College London (moment-domain analysis) and also an industry partner who is developing a commercial OWC device.

Both projects are part of the SFI-funded MaREI (Marine Renewable Energy Ireland) Research Centre (http://www.marei.ie/), of which COER is a constituent partner, and the successful candidate will join a dynamic group of postdoctoral, PhD and other researchers in COER, who work on the development of wave energy technology, involving MaREI-specific projects, and projects funded from other sources. COER has a wide range of industrial and academic collaborators.

Requirements: PhD candidates should be well-qualified academically to bachelors (preferably H1) or masters level. Most of the projects will require a mix of skills, including mathematical modelling, programming and simulation skills, as well as the development of control, state estimation and forecasting algorithms. Applicants should have a background in mechanical, mechatronic or electrical/electronic engineering, fluid mechanics, hydrodynamics, applied mathematics or control systems. Candidates must have excellent written and oral communication skills and programming ability. Further information on COER is available at: http://www.eeng.nuim.ie/coer/ or contact Carrie Anne; CarrieAnne.Barry@mu.ie

Back to the contents

6.13. PhD/Postdoc: City University of New York, USA

Contributed by: Hao Su, hao.su@ccny.cuny.edu

NIH-affiliated Postdoc and PhD Students Positions: Wearable/Humanoid Robots at City University of New York

NIH Clinical Center and The Biomechatronics and Intelligent Robotics Lab at the City University of New York (CUNY), City College is seeking post-doc fellows (available now) with Biomechanics OR Mechanical Design OR Dynamics/Control expertise in the areas of wearable robots or humanoid robots. The postdoc position is in New York City and jointly affiliated with CUNY and National Institutes of Health (NIH). The lab is comprised of 3 postdocs and 5 PhD students. Our research is sponsored by NIH R01, NSF CAREER award, and Toyota Mobility Foundation. We won the Innovation Challenge of Wearable Robotics Association, semi-finalist of Cisco Global Problem Solver Challenge, Toyota Mobility Challenge Discovery Award, and NYC Zahn entrepreneurship competition.

Lab members will work remotely during the pandemic to ensure safety. Our paper on soft robots is published in Science Advances (impact factor 12). The selected candidate will join a multidisciplinary research team to study high-performance motors, design soft wearable robots, and legged robots in collaboration with CMU, Columbia University Medical Center, Cornell University, and several top medical schools in the United States. This is a great opportunity to pioneer research in a new generation of wearable, legged, and soft robot platforms to publish high-impact papers (e.g. Science Translational Medicine) alongside several PIs who have expertise in mechatronics, computer vision, and machine learning.

Postdoc Qualification:
- PhD in Mechanical, or Electrical Engineering, Robotics, Computer Science, or related areas including
- Strong hands-on experience
- Control of wearable robots, soft robots, humanoid, or legged robots
- Dynamics and control, machine learning and model-based control, force control (not required but is plus)
- Strong interpersonal and organizational skills needed to participate as a creative member of a growing research team.

PhD students can be admitted in 2020 fall (deadline 2020 July 20). PhD students will receive tuition scholarship and stipend support. Students are required to have GRE and TOEFL (or IELTS).

** About the lab and City University of New York **

The Biomechatronics lab is a 1500 sq. ft. facility with the latest generation motion capture system, humanoid platforms, state of the art physiology measurement devices, cameras, IMUs, high-performance motors, and more. The lab is a vibrant workplace; students can work on a diverse set of projects, conduct hands-on experiments, and publish high-quality papers.

Applications (assembled as a single PDF file) should contain a CV, a list of publications, and copies of up to four scientific papers. Applications should be emailed to Prof. Hao Su (hao.su at ccny.cuny.edu).

Hao Su, Ph.D.

Irwin Zahn Endowed Assistant Professor
Director, Lab of Biomechatronics and Intelligent Robotics
Department of Mechanical Engineering
City University of New York, City College
275 Convent Avenue New York, NY 10031
Web: haosu-robotics.github.io

Back to the contents

6.14. Postdoc: EPFL, Switzerland

Contributed by: Giancarlo Ferraritrecate, giancarlo.ferraritrecate@epfl.ch

Postdoc position in Automatic Control, Institute of Mechanical Engineering, EPFL, Switzerland

A Postdoc position is available within the Dependable Control and Decision (DECODE) group of EPFL (Switzerland), in the area of structured data-based distributed control. More specifically, the project will focus on the design of distributed reinforcement learning algorithms for the generation of networked controllers. Targeted applications include energy networks and manufacturing processes.

Candidates with a solid methodological background and passionate about research on theory and algorithms are encouraged to apply. The student will work in the collaborative framework of the National Centre of Competence in Research "NCCR Automation", which supports research in automatic control across Switzerland.

Qualifications:
– Ph.D. degree (or close to completion) in Systems and Control, Machine Learning or Applied Mathematics;
– An established track-record of academic publications in top venues;
– Excellent interpersonal, written, and oral communication skills and ability to write peer reviewed papers.

Application procedure: please email (i) detailed curriculum vitae, list of publications, Bachelor/Master transcripts (ii) the names and contact information of three references and (iii) a sample paper to giancarlo.ferraritrecate@epfl.ch

Starting date: very flexible, but probably not earlier than October 1st 2020. The call will remain open until an ideal candidate will be found.

EPFL is a top technical university, ranked 18th in the world (2020). The successful candidate can expect a gross salary starting at 81900 CHF, together with other benefits, depending on civil status.

Back to the contents

6.15. Postdoc: Free University of Bozen-Bolzano, Italy

Contributed by: Karl D von Ellenrieder, kvonellenrieder@unibz.it

Postdoctoral Research Fellow (RTD-A) in Field Robotics, Free University of Bozen-Bolzano

The Faculty of Science and Technology (FaST) at the Free University of Bozen-Bolzano, Italy, is looking to appoint a full-time, post-doctoral, junior researcher (RTD-A) to undertake research in field robotics.

The work will involve the development and experimental testing of techniques and systems for field robots, including unmanned vehicles and human-robot systems. Specifically: Nonlinear control; Dynamic modeling and simulation; Experimental implementation/validation/field testing; and human-robot interaction for unmanned vehicle systems.

The successful candidate will also assist with the publication of scholarly results, proposal writing on topics in field robotics, and the supervision of one or more Ph.D. students.

The position is fixed term, for 36 months. The closing date for applications is 8 August, 2020. Detailed information about the position is available at: https://www.unibz.it/en/home/position-calls/positions-for-academic-staff/4684-systems-and-control-engineering-prof-von-ellenrieder?group=16

Applications are accepted via an on-line application system only: https://bit.ly/3dXJwmW

Back to the contents

6.16. Postdoc: Jinan University, China

Contributed by: Rafal Madonski, rafal.madonski@jnu.edu.cn

Postdoc in Automation and Control

1. INFORMATION ABOUT THE EMPLOYER

Jinan University (JNU) was established in 1906 and is one of the oldest universities in China. Currently, it has over 50,000 students across 27 colleges, including over 13,000 overseas students (largest number of overseas students in a Chinese university). Nine majors at JNU are ranked in the top 1% on the ESI ranking scale. The JNU has academic cooperation with more than 180 universities and research institutes in Asia, the Americas, Europe, and Oceania. The JNU was included in the state's "Project 211" for the development of key universities in China and since 2017 is listed as one of the prestigious "double first-class universities".

Energy and Electricity Research Center is newly established at JNU with a mission of serving two national strategies: "Guangdong-Hong Kong-Macao Greater Bay Area" and "One Belt, One Road". Under these strategic plans, the Center is building strength within three following disciplines: a) Electrical and Electronic Engineering, b) Energy Information and Control System, and c) New Energy Science and Engineering. The Center is committed to attracting, retaining, and developing top national and global talents to realize their full potential and keep a competitive research edge.

The Institute of Energy Information and Control System (EICS) is part of the International Energy College, which is developing high-quality research in automation and control in the area of energy and electricity, including large-scale power generation, distributed energy systems, smart grid, renewable technologies (especially onshore and offshore wind power). The EICS fosters an interactive, collegial, and supportive atmosphere, sharing space and resources between research groups whenever possible, and facilitating cross-disciplinary collaborations. The EICS is part of numerous international research networks and is cur-

rently involved in several research projects with industry partners (including "Fortune500" companies).

Zhuhai City: The open positions are all located in the Zhuhai Campus of JNU in a beautiful Zhuhai city. Zhuhai has a subtropical climate with long summers and short and mild winters. According to a report by the Chinese Academy of Social Sciences, Zhuhai is the most livable city in China.

2. INFORMATION FOR PROSPECTIVE EMPLOYEES

Job description: The EICS invites postdocs that will contribute to its research development, laboratory construction, and teaching excellence. The EICS is especially interested in candidates with potential for interdisciplinary connections in areas including (but not limited to)
• complex distributed parameter system and nonlinear system modeling, identification, analysis, and control application.
• advanced control and industrial application using active disturbance rejection control (ADRC), model predictive control (MPC), robust/adaptive control, nonlinear control, preferably control application and engineering practice in energy and electricity systems.
• leveraging artificial intelligence (AI) for energy and electricity systems, including machine learning, neural network, big data, AI-based automatic control, data-driven identification and control.

Qualifications & Terms of employment

• Post-doctoral Researcher: The duration of the postdoc position is 2-3 years. Applicants holding Ph.D. degree in Control Theory, Applied Mathematics, Computer Science, Power Systems, or similar, from a top university are preferred

Fringe benefits:

• Assistance in applying for Chinese visa, work permit, and residence permit
• Assistance in applying for free university apartment or rent subsidy
• Free annual physical exam and access to quality public healthcare
• Funding for attending international conferences and relevant academic events
• Assistance in arranging school for child/children (under the age of 18) during the contract period

Responsibilities:

• Teaching at undergraduate and graduate levels as well as advising and mentoring Master and Ph.D. students
• Developing internationally recognized research program and establishing collaborations within academia and with industry
• Applying for research funding from national and international institutions
• Participating in other aspects of the College's activities

3. APPLICATION AND CONTACT

Please send your CV to Dr. Rafal Madonski and Dr. Ting He at: oeics@jnu.edu.cn The recruitment is valid all year round. On-line video interviews will be organized on a rolling basis. Please feel free to contact us if you have any questions. We look forward to hearing from you!

Back to the contents

6.17. Postdoc: Kiel University, Germany

Contributed by: Thomas Meurer, tm@tf.uni-kiel.de

Postdoc position in "Estimation and control using PDE models with applications to water administration systems"

The Chair of Automatic Control at the Institute of Electrical Engineering and Information Technology of the Faculty of Engineering at Kiel University, Kiel, Germany is seeking at the earliest possible date an excellent postdoctoral researcher to work on estimation and control problems arising in water distribution systems and networks with models involving partial differential equations (PDEs). Research activities include but are not limited to (i) monitoring and controlling heavy rain events in water transportation networks and (ii) developing an early warning system to predict flooding of urban areas.

Candidates should possess a doctoral degree related to estimation, control or optimization for distributed parameter systems. Strong analytical and problem solving skills are presumed and experience in numerical techniques or scientific computing for approximation and optimization is an advantage. The successful applicant should have an excellent research and publication record. The position and the research activities are embedded in the NEPTUN project (Platform for Innovating Water and Climate Adaptation Technologies and Solutions), which is a collaborative cross-border German-Danish research project on water technology funded by Interreg under the auspices of the European Union. Willingness to work in an inter- and transdisciplinary team together with specialists from geosciences and enterprises in the water technology sector and to independently take over certain organizational responsibilities in addition to research in the NEPTUN project is mandatory. We are looking for a strongly motivated person. Excellent command of the English language (orally and writing) is required. Knowledge of the German language is beneficial.

The position is limited to two years. The salary is competitive according to the German pay scale TVL-13 with experience level depending on previous work experience, including social benefits.

Applications should be submitted before July 31st, 2020. This position is available effective immediately. To apply please submit
• one-page cover letter
• full Curriculum Vitae and list of publications
• names and contact information for at least two professional references as single PDF file to
Prof. Thomas Meurer, tm@tf.uni-kiel.de
Chair of Automatic Control, Kiel University
https://www.control.tf.uni-kiel.de

Back to the contents

6.18. Postdoc: Linköping University, Sweden

Contributed by: Claudio Altafini, claudio.altafini@liu.se

Two-year Postdoc position in "Dynamics and Control of Data-Driven Complex Networks" at Linköping University

The Division of Automatic Control, Department of Electrical Engineering, of Linköping University, Sweden, is seeking candidates for a post-doc position in the framework of the ELLIIT project (https://old.liu.se/elliit?l=en).

The main tasks of the successful candidate will be to interface control systems and network science methodology, with the purpose of investigating the following specific topics:
1. developing network-level graph learning approaches from big data;
2. predicting emerging global dynamical properties (e.g. "opinion" formation, polarization, clustering, etc.) on the resulting multiagent networks;
3. designing network control algorithms.

The applicant is required to have a PhD in Systems & Control theory or in a closely related field, and possibly expertise in complex networks. Candidates must have an excellent track record of high-impact scientific research. Working language in Linköping is English. Good command of both written and spoken English is a prerequisite.

The position is for 2 years, starting in Fall 2020. Salary is competitive on an international scale. For further information on the position and details on the application process, please contact directly Prof. Claudio Altafini at claudio.altafini@liu.se.

Claudio Altafini
Division of Automatic Control
Dept. of Electrical Engineering
Linkoping University, Sweden
http://users.isy.liu.se/rt/claal20/

Back to the contents

6.19. Postdoc: Bundeswehr University Munich, Germany

Contributed by: Gunther Reissig, gunther2016@reiszig.de

Postdoc position: Safe Autonomous Flight (Munich, Germany)
Bundeswehr University Munich, Germany
Department of Aerospace Engineering
Institute of Control Engineering

We invite applications for an EU funded post-doctoral researcher position in the field of safe autonomous flight. The successful candidate is expected to develop, implement and deploy a combination of off-line planning and on-line safety verification and conflict resolution algorithms to formally guarantee safety of

UAVs that fully autonomously operate in densely populated airspace. Results are to be practically evaluated in our indoor UAV lab.

Required qualifications:
* PhD degree in Systems and Control, Mechatronics, Electrical Engineering, or a related field. Exceptionally qualified and experienced candidates with an MSc degree will also be considered.
* Solid experience in modeling and identification of, and in designing low- and high-level feedback controllers for, aerial vehicles such as quad-rotors.
* Efficient communication skills in English.

Additionally, experience in one of the following fields would be an advantage: multi UAV-scenarios; occupancy prediction; conflict detection and resolution strategies; formal methods; large-scale research projects.

The position is full-time and paid according to pay scale "TVOeD Bund, E 14". Actual income depends on marital status and professional experience, and starts from EUR 30750 net p.a. (E-13/EUR 28850 for applicants with an MSc degree). Reimbursement for travel expenses to conferences. No teaching load. The position is available immediately and for a duration until April 2023. It is open to applicants worldwide; no special security clearance necessary.

Your complete application consists of the following documents, which should be sent as a single PDF file to the email address given below (deadline: July 17, 2020):
* CV
* One-page cover letter (clearly indicating available start date as well as relevant qualifications, experience and motivation)
* University certificates and transcripts (BSc, MSc and PhD degrees)
* Up to three letters of recommendation
* List of publications
* Possibly an English language certificate

All documents should be in English or German.

Gunther Reissig
http://www.reiszig.de/gunther/
Email: gunther2016@reiszig.de, Subject: Postdoc ref 9y22x

Back to the contents

6.20. Faculty: KU Leuven, Belgium
Contributed by: Panos Patrinos, panos.patrinos@esat.kuleuven.be

Tenure-Track Assistant Professor Position in Computational Machine Learning, KU Leuven, ESAT-STADIUS

The Faculty of Engineering Science at KU Leuven is seeking to fill the position of a tenure-track assistant professor in "Computational Machine Learning". The candidate will join the STADIUS Center for Dynamical Systems, Signal Processing, and Data Analytics in the Department of Electrical Engineering (ESAT).

ESAT-STADIUS pursues excellence in an explicit and synergistic combination of fundamental and applied research. With core concepts from linear and multi-linear algebra, statistics, optimization, machine learning, and artificial intelligence, its fundamental research is focused on the development of mathematical engineering tools and numerical algorithms. Building upon this foundation, applied research aims to advance the current state of technology across a wide range of relevant application fields, including industrial automation and control, speech and audio signal processing, digital communications, biomedical data analysis and signal processing, bioinformatics and systems biology.

The candidate will establish an impactful mathematical engineering research programme focusing on computational and theoretical aspects of machine learning, further strengthening and complementing the current fundamental research activities within ESAT-STADIUS. His/her research programme will also be relevant to the range of application fields currently covered by ESAT-STADIUS, with preference given to applications in big data and e-health, e.g., clinical diagnostics, decision support and personalized medicine. The candidate will provide high-quality teaching in the Bachelor and/or Master programmes of the Faculty of Engineering Science, including mathematical engineering courses.

KU Leuven seeks to foster an environment where all talents can flourish, regardless of gender, age, cultural background, nationality or impairments.

For detailed information, please visit:

https://www.kuleuven.be/personeel/jobsite/jobs/55579156?hl=en

Application deadline: August 15, 2020.

Back to the contents

6.21. Faculty: Jinan University, China

Contributed by: Rafal Madonski, rafal.madonski@jnu.edu.cn

Faculty positions in Automation and Control (Lecturer / Assistant Professor / Associate Professor / Professor)

1. INFORMATION ABOUT THE EMPLOYER: Jinan University

Jinan University (JNU) was established in 1906 and is one of the oldest universities in China. Currently, it has over 50,000 students across 27 colleges, including over 13,000 overseas students (largest number of overseas students in a Chinese university). Nine majors at JNU are ranked in the top 1% on the ESI ranking scale. The JNU has academic cooperation with more than 180 universities and research institutes in Asia, the Americas, Europe, and Oceania. The JNU was included in the state's "Project 211" for the development of key universities in China and since 2017 is listed as one of the prestigious "double first-class universities".

Energy and Electricity Research Center is newly established at JNU with a mission of serving two national strategies: "Guangdong-Hong Kong-Macao Greater Bay Area" and "One Belt, One Road". Under these strategic plans, the Center is building strength within three following disciplines: a) Electrical and Electronic Engineering, b) Energy Information and Control System, and c) New Energy Science and Engi-

neering. The Center is committed to attracting, retaining, and developing top national and global talents to realize their full potential and keep a competitive research edge.

The Institute of Energy Information and Control System (EICS) is part of the International Energy College, which is developing high-quality research in automation and control in the area of energy and electricity, including large-scale power generation, distributed energy systems, smart grid, renewable technologies (especially onshore and offshore wind power). The EICS fosters an interactive, collegial, and supportive atmosphere, sharing space and resources between research groups whenever possible, and facilitating cross-disciplinary collaborations. The EICS is part of numerous international research networks and is currently involved in several research projects with industry partners (including "Fortune500" companies).

Zhuhai City: The open positions are all located in the Zhuhai Campus of JNU in a beautiful Zhuhai city. Zhuhai has a subtropical climate with long summers and short and mild winters. According to a report by the Chinese Academy of Social Sciences, Zhuhai is the most livable city in China.

2. INFORMATION FOR PROSPECTIVE EMPLOYEES

The EICS invites applications for Lecturers, Assistant Professors, Associate Professors, and Professors that will contribute to its research development, laboratory construction, and teaching excellence. The EICS is especially interested in candidates with potential for interdisciplinary connections in areas including (but not limited to)
• complex distributed parameter system and nonlinear system modeling, identification, analysis, and control application.
• advanced control and industrial application using active disturbance rejection control (ADRC), model predictive control (MPC), robust/adaptive control, nonlinear control, preferably control application and engineering practice in energy and electricity systems.
• leveraging artificial intelligence (AI) for energy and electricity systems, including machine learning, neural network, big data, AI-based automatic control, data-driven identification and control.

2.2 Qualifications & Terms of employment: Available positions
• Chief Scientist: The ideal candidate should have a strong academic leadership experience.
• Professor: The applicant should hold professorship or associate professorship (or equivalent title) from a prominent university or research institution.
• Lecturer / Assistant Professor / Associate Professor: The applicant should hold a doctoral degree from a top university or research institution. The ideal candidate should have a strong record of publishing in high quality journals and/or experience in conducting national-level research projects.

Fringe benefits
• Assistance in applying for Chinese visa, work permit, and residence permit
• Assistance in applying for free university apartment or rent subsidy
• Free annual physical exam and access to quality public healthcare
• Funding for attending international conferences and relevant academic events
• Assistance in arranging school for child/children (under the age of 18) during the contract period

Responsibilities

• Teaching at undergraduate and graduate levels as well as advising and mentoring Master and Ph.D. students
• Developing internationally recognized research program and establishing collaborations within academia and with industry
• Applying for research funding from national and international institutions
• Participating in other aspects of the College's activities

3. APPLICATION AND CONTACT

Please send your CV to Dr. Rafal Madonski and Dr. Ting He at: oeics@jnu.edu.cn The recruitment is valid all year round. On-line video interviews will be organized on a rolling basis. Please feel free to contact us if you have any questions. We look forward to hearing from you!

Back to the contents

6.22. Faculty: University of Groningen, The Netherlands

Contributed by: Kanat Camlibel, m.k.camlibel@rug.nl

Associate or Full Professor in Optimization at the University of Groningen, the Netherlands

The position will be embedded at the Department of Mathematics of the Bernoulli Institute for Mathematics, Computer Science and Artificial Intelligence within the Faculty of Science and Engineering. The current focal research areas of the Mathematics department of the institute are Dynamical Systems and Mathematical Physics, Algebra and Geometry, Probability and Statistics, Systems and Control, and Computational and Numerical Mathematics; keeping a balanced mix of fundamental and applied aspects.

We are looking for an Associate or Full Professor, depending on your profile (see The University of Groningen Career Paths in Science), in a central area of Mathematical Optimization. This includes discrete and continuous optimization, and any subfield such as convex, global, infinite dimensional, distributed, stochastic, or robust optimization. Collaboration with one of the other main research areas of the mathematics department, such as Systems and Control, is stimulated.

You will
• set up and develop your own research line and research group
• supervise PhD students
• acquire external funding
• promote the societal relevance of your research
• teach in and contribute to the development of the degree programs of mathematics and applied mathematics
• develop and participate in the teaching of specialized courses in Optimization
• contribute to the organization of the institute and faculty

As an Associate or Full Professor 40% of your time is for research, 40% for teaching activities and 20% for organizational tasks.

Qualifications: We encourage you to apply if you have:
• a PhD degree in mathematics or a related field
• at least two years of postdoctoral experience outside of the Netherlands, preferably in a different country than where you received your PhD, and a relevant international network
• excellent research qualities, as shown by a publication record in international peer-reviewed journals and proceedings of renowned conferences
• a good track record in teaching, appropriate to your career stage
• independently supervised PhD students
• received substantial research grants from external sources
• demonstrable organizational competences
• cross-cultural sensitivity
• good command of spoken and written English

And you are:
• a clearly visible expert in your field
• an inspiring leader who stimulates his or her group members to get the best out of themselves
• a team player with good communication skills
• able to acquire substantial research grants from external sources
• willing to obtain a University Teaching Qualification within three years
• able to speak the Dutch language or motivated to speak it within five years.

Conditions of employment: Depending on your qualifications we offer you a full-time position as Associate or Full Professor and:
• Associate professor: a salary, dependent on qualifications and work experience, from €5.039 up to a maximum of €6.738 gross per month (scale 13 or 14 CAO Dutch Universities) for a full-time position.
• Full professor: A salary, dependent on qualifications and work experience, from €5.582 up to a maximum of €8.127 gross per month (scale H2 CAO Dutch Universities) for a full-time position.
• holiday allowance and end-of-year bonus of respectively 8% and 8.3% of your yearly salary
• a pension scheme
• maternity and parental leave
• the possibility to work part-time (0,9 fte or 0,8 fte)
• a mentor program and a broad range of opportunities for personal development
• dual career support for partners of new faculty members moving to Groningen

Consider our website for more information about the working conditions at the University of Groningen: https://www.rug.nl/about-us/work-with-us/that-is-why/

Both at the level of Associate Professor and of Full Professor, your position will be tenured from the onset. If you are hired at the level of Associate Professor, 4 to 7 years after being appointed you will be assessed for promotion to the position of Full Professor. Please consider Career Paths in Science for a complete description of our tenure track system as well as the criteria for promotion:
https://www.rug.nl/fse/organization/vacatures/vacatures/career-paths-in-science-edition-4?lang=en.
Application: We invite you to submit a complete application including:
• a cover letter in which you describe your motivation and qualifications for the position

• a curriculum vitae, including a list of your publications and a list with names of references
• a list of five self-selected 'best papers'
• a statement of your teaching goals and experience
• a description of your scientific interest and plans

You can submit your application until 16 August 11:59pm / before 17 August 2020 Dutch local time (CET) by clicking on "Apply" button on the advertisement website:

https://www.rug.nl/about-ug/work-with-us/job-opportunities/?details=00347-02S0007RRP

Back to the contents

6.23. Faculty: University of Groningen, The Netherlands

Contributed by: Kanat Camlibel, m.k.camlibel@rug.nl

Tenure Track Assistant Professor in Data-driven Control

The position will be embedded in the Systems & Control group of the Bernoulli Institute for Mathematics, Computer Science and Artificial Intelligence. Focal research areas of the Mathematics department of the institute are Dynamical Systems and Mathematical Physics, Algebra and Geometry, Probability and Statistics, Systems and Control, and Computational and Numerical Mathematics, keeping a balanced mix of fundamental and applied aspects. The institute participates in the research theme Data Science and Systems Complexity (DSSC) and the Center on Cognitive Systems and Materials (CogniGron) of the Faculty of Science and Engineering. The Systems & Control group at the Bernoulli institute is closely working together with the Systems and Control engineering groups at the neighboring Engineering and Technology Institute Groningen, under the umbrella of the Jan C. Willems Center for Systems and Control.

We are looking for a tenure track Assistant Professor (see the University of Groningen Career Paths in Science) in data-driven control. Whereas much research in Systems & Control Theory works under the assumption that the mathematical model of the to-be-controlled system is known, data-driven control refers to the study of controlling a system by directly using available data. The candidate for the present position should be qualified to establish an extensive research activity on data-driven control that will be recognized both nationally and internationally.

As tenure track Assistant Professor you will:
• set up and develop your own research line and research group
• supervise PhD students, one of which will be funded by the university
• acquire external funding for PhD students and/or postdocs
• promote the societal relevance of your research
• teach in and contribute to the development of the degree programs of mathematics and applied mathematics
• participate in the teaching of specialized courses in Systems and Control theory and related topics
• contribute to the organization of the faculty, for example by participating in working groups and committees, in the domains of teaching, research and management

At the stage of Assistant Professor 60% of your time is for research, 30% for teaching activities and 10% for organizational tasks.

Qualifications: We encourage you to apply if you have:
• a PhD degree in mathematics or a related field
• at least two years of postdoctoral experience outside of the Netherlands, preferably in a different country than where you received your PhD, and a relevant international network
• excellent research qualities, as shown by a publication record in international peer-reviewed journals and proceedings of renowned conferences
• a good track record in teaching, appropriate to your career stage
• demonstrable organizational competences
• cross-cultural sensitivity
• good command of spoken and written English

And you are:
• a clearly visible expert in your field
• an inspiring leader who stimulates his or her PhD students to get the best out of themselves
• a team player with good communication skills
• able to acquire substantial research grants from external sources
• willing to obtain a University Teaching Qualification (Dutch: BKO) within three years
• able to speak the Dutch language or motivated to speak it within five years.

Conditions of employment: We offer you a full-time position as Assistant Professor in our faculty's tenure track system Career Paths in Science and:
• a salary, depending on qualifications and work experience, from €3.637 up to a maximum of €5.656 gross per month (scale 11 or 12 CAO Dutch Universities, depending on your career stage) for a full-time position.
• holiday allowance and end-of-year bonus of respectively 8% and 8.3% of your yearly salary;
• a pension scheme
• maternity and parental leave
• the possibility to work part-time (0,9 fte or 0,8 fte)
• a mentor program and a broad range of opportunities for personal development
• dual career support for partners of new faculty members moving to Groningen

Consider our website for more information about the working conditions at the University of Groningen: https://www.rug.nl/about-us/work-with-us/that-is-why/

As Assistant Professor you will enter a tenure track that, if followed successfully, will lead to a Full Professorship in approximately 10 years. In case of a full-time contract, you will initially be appointed for 7 years and your performance will be assessed after 5 years. This moment may be extended with at most one year in case of a life event (e.g. prolonged illness or maternity leave). If your assessment is positive, you will get a tenured appointment as an Associate Professor. 4 to 7 years after being appointed as Associate Professor you will be assessed for promotion to the position of Full Professor. Please consider Career Paths in Science for a complete description of our tenure track system as well as the criteria for promotion: https://www.rug.nl/fse/organization/vacatures/vacatures/career-paths-in-science-edition-4?lang=en.

Application
We invite you to submit a complete application including:
• a cover letter in which you describe your motivation and qualifications for the position
• a curriculum vitae, including a list of your publications and a list with names of references
• a list of five self-selected 'best papers'
• a statement of your teaching goals and experience
• a description of your scientific interest and plans

You can submit your application until 16 August 11:59pm / before 17 August 2020 Dutch local time (CET) by clicking on "Apply" button on the advertisement website:
https://www.rug.nl/about-ug/work-with-us/job-opportunities/?details=00347-02S0007RSP

Back to the contents

6.24. Faculty: University of Paderborn, Germany

Contributed by: Sybille Hellebrand, sybille.hellebrand@uni-paderborn.de

University of Paderborn, Germany: University Professor (pay scale W 3) of Control and Automation

The Department of Electrical Engineering and Information Technology within the Faculty of Electrical Engineering, Computer Science, and Mathematics at the University of Paderborn, Germany, is seeking to fill the following position:
University Professor (pay scale W 3) of Control and Automation (Successor of Prof. Daniel Quevedo)

We are looking for a candidate who is an internationally recognized expert in one or several current research areas within control and automation and will be able to teach the entire spectrum of courses in this field. Industrial and international experience as well as success with grant funding are advantageous.

We expect the candidate to be willing to collaborate with colleagues in electrical engineering, information technology, and related areas. Furthermore, the candidate is expected to offer courses in our English language degree programs. It is also expected that, after a reasonable transition period, the candidate will be able to offer courses in German.

Hiring requirements: § 36 Abs. 1 Ziff. 1 - 4 HG NW (University law of the State of NRW), in the currently applicable version of 31/10/2006 (completed university degree, pedagogical aptitude, Ph.D. degree and additional research achievements).

The University of Paderborn is seeking to increase the percentage of women among its academic staff and therefore strongly encourages applications from qualified female scientists. In case of equal qualifications and achievements, women will be given preferential consideration according to state law (LGG). Furthermore, applications from qualified handicapped persons are also encouraged.

Further information on this position can be obtained by contacting the Chair of the Search Committee, Prof. Sybille Hellebrand, email: sybille.hellebrand@uni-paderborn.de.

Your application must be received by August 27, 2020. Please attach to your application a single PDF document that contains the complete application materials. Please send your application to:
Leiter des Instituts für Elektrotechnik und Informationstechnik

Prof. Dr. Jens Förstner
bewerbungen@ei.uni-paderborn.de

Back to the contents

6.25. Faculty: The Norwegian University of Science and Technology, Norway
Contributed by: Morten Breivik, morten.breivik@ntnu.no

Professor/Associate Professor in Safety and Assurance of Autonomous Systems

The Norwegian University of Science and Technology (NTNU, http://www.ntnu.edu/) is establishing a new professorship in Safety and Assurance of Autonomous Systems, in collaboration with the leading quality assurance and risk management company DNV GL (https://www.dnvgl.com/).

The position will be affiliated with the Department of Engineering Cybernetics (Institutt for teknisk kybernetikk, ITK – http://www.ntnu.edu/itk) at NTNU's Faculty of Information Technology and Electrical Engineering in Trondheim, Norway.

ITK has 31 professors, 12 adjunct professors, about 15 postdocs and researchers as well as 80 PhD candidates. Approximately 190 candidates graduate annually from the three MSc programs in cybernetics, which comprise over 800 students in total. The department is involved in numerous research projects and centers, including the Centre of Excellence for Autonomous Marine Operations and Systems (NTNU AMOS, http://www.ntnu.edu/amos). Also, a new Centre on Research-based Innovation for autonomous ships (SFI Autoship) has recently been awarded and will start up in late 2020, with ITK as host department.

The position is within the field of Safety and Assurance of Autonomous Systems. Relevant such systems at the department include underwater robots, autonomous marine vessels, unmanned aerial systems, small satellite systems, and other cyber-physical systems.

For both position categories, the following is required:

- Doctoral degree in a relevant area
- Experience with essential areas of Safety and Assurance of Autonomous Systems, such as:
* Autonomous systems
* Artificial intelligence methods, including explainable AI
* Control engineering
* HIL, SIL and software testing
* Safety, reliability, availability and risk engineering
* Systems engineering
- The autonomous vehicle research at NTNU has civilian objectives. However, some of the equipment being used is subject to export regulations or other limitations such as ITAR (International Traffic in Arms Regulations), and the position requires that the applicant has permission to use such equipment. Applicants

who are citizens of Norway, Australia, New Zealand, Japan, Sweden or NATO countries will satisfy the requirements.

The professor is expected to play a leading role in research and research-based education for Safety and Assurance of Autonomous Systems at the department, in particular with impact both on improving the performance of autonomous systems in terms of safety, robustness and reliability, as well as developing a solid foundation for testing, verification and validation of such systems.

The research activities at the department rely mainly on external funding, and the development of educational programs may also receive external funding. The professor is expected to engage extensively in applications for external funding, e.g. from the Research Council of Norway, European research and educational agencies, the industry sector, and other available sources.

MSc and PhD candidates from the cybernetics study programs are expected to be competitive in an international job market. The professor will contribute toward the department's educational profile and promote an excellent learning environment, in collaboration with colleagues, students and external stakeholders. Specifically, the professor is expected to teach a minimum of one course at the department's MSc program and a specialization course at MSc or PhD level, as well as supervising MSc students, PhD candidates and postdoctoral fellows.

In addition to research and education, the professor is expected to disseminate relevant parts of the research to a wider audience. The professor is also expected to participate in the formal management of research, education, innovation and other relevant areas of activity at the department.

The candidate will join a research community at ITK which was rated "excellent from an international perspective" in the last evaluation by the Norwegian Research Council of 53 ICT communities in Norway, as one of only three ICT communities to receive such a rating in the Norwegian university and college sector. Currently, two of ITK's professors are IEEE Fellows.

The full announcement can be found at
https://www.jobbnorge.no/en/available-jobs/job/188932/professor-associate-professor-in-safety-and-assurance-of-autonomous-systems

About NTNU, Trondheim and Norway:
- About NTNU: http://www.ntnu.edu/
- NTNU Facts and Figures: http://www.ntnu.edu/facts
- NTNU International Researcher Support: http://www.ntnu.edu/nirs
- About Trondheim: https://trondheim.com/
- About Norway: https://www.visitnorway.com/?lang=primary
- Working in Norway: https://www.nav.no/en/home
- Practical info about Norway: http://www.nyinorge.no/en/Ny-i-Norge-velg-sprak/New-in-Norway/

Back to the contents

6.26. Faculty: Norwegian University of Science and Technology, Norway

Contributed by: Morten Breivik, morten.breivik@ntnu.no

Professor/Associate Professor in Systems Engineering for Cyber-Physical Systems

The Norwegian University of Science and Technology (NTNU, http://www.ntnu.edu/) is establishing a new professorship in Systems Engineering for Cyber-Physical Systems.

The position will be affiliated with the Department of Engineering Cybernetics (Institutt for teknisk kybernetikk, ITK – http://www.ntnu.edu/itk) at NTNU's Faculty of Information Technology and Electrical Engineering in Trondheim, Norway.

ITK has 31 professors, 12 adjunct professors, about 15 postdocs and researchers as well as 80 PhD candidates. Approximately 190 candidates graduate annually from the three MSc programs in cybernetics, which comprise over 800 students in total. The department is involved in numerous research projects and centers, including the Centre of Excellence for Autonomous Marine Operations and Systems (NTNU AMOS, http://www.ntnu.edu/amos). Also, a new Centre on Research-based Innovation for autonomous ships (SFI Autoship) has recently been awarded and will start up in late 2020, with ITK as host department.

The position is within the field of Systems Engineering for Cyber-Physical Systems. Relevant such applications at the department include sensing and control in underwater robots, autonomous marine vessels, unmanned aerial systems, small satellite systems, and other cyber-physical systems.

For both position categories, the following is required:
- Doctoral degree in a relevant area
- Experience with essential areas of systems engineering for cyber-physical systems, which includes:
* Requirement analysis and specification
* Functional and architectural design
* Hardware and software architecture
* Systems implementation and integration
Regulatory frameworks, certification, safety, reliability, maintenance, verification and validation
* Environmental factors (such as temperature, pressure, humidity, mechanics and vibrations, emissions, radiation, etc.), electromagnetic compatibility and energy management * Packaging, documentation, quality and life-cycle management
- The autonomous vehicle research at NTNU has civilian objectives. However, some of the equipment being used is subject to export regulations or other limitations such as ITAR (International Traffic in Arms Regulations), and the position requires that the applicant has permission to use such equipment. Applicants who are citizens of Norway, Australia, New Zealand, Japan, Sweden or NATO countries will satisfy the requirements

The professor is expected to play a leading role in research and research-based education for Systems Engineering for Cyber-Physical Systems at the department. The research activities at the department rely mainly on external funding, and the development of educational programs may also receive external funding. The professor is expected to engage extensively in applications for external funding, e.g. from the Research Council of Norway, European research and educational agencies, the industry, and other available sources.

MSc and PhD candidates from the cybernetics study programs are expected to be competitive in an international job market. The professor will contribute toward the department's educational profile and promote an excellent learning environment, in collaboration with colleagues, students and external stakeholders. Specifically, the professor is expected to teach a minimum of one course at the department's MSc program and a specialization course at MSc or PhD level, as well as supervising MSc students, PhD candidates and postdoctoral fellows.

In addition to research and education, the professor is expected to disseminate relevant parts of the research to a wider audience.

The professor is also expected to participate in the formal management of research, education, innovation and other relevant areas of activity at the department.

The candidate will join a research community at ITK which was rated "excellent from an international perspective" in the last evaluation by the Norwegian Research Council of 53 ICT communities in Norway, as one of only three ICT communities to receive such a rating in the Norwegian university and college sector. Currently, two of ITK's professors are IEEE Fellows.

The full announcement can be found at
https://www.jobbnorge.no/en/available-jobs/job/188926/professor-associate-professor-in-systems-engineering-for-cyber-physical-systems

About NTNU, Trondheim and Norway:
- About NTNU: http://www.ntnu.edu/
- NTNU Facts and Figures: http://www.ntnu.edu/facts
- NTNU International Researcher Support: http://www.ntnu.edu/nirs
- About Trondheim: https://trondheim.com/
- About Norway: https://www.visitnorway.com/?lang=primary
- Working in Norway: https://www.nav.no/en/home
- Practical info about Norway:
http://www.nyinorge.no/en/Ny-i-Norge-velg-sprak/New-in-Norway/

Back to the contents

6.27. Faculty: Norwegian University of Science and Technology, Norway

Contributed by: Morten Breivik, morten.breivik@ntnu.no

Professor/Associate Professor in Human-Machine Interaction for Cyber-Physical Systems

The Norwegian University of Science and Technology (NTNU, http://www.ntnu.edu/) is establishing a new professorship in Human-Machine Interaction for Cyber-Physical Systems, in collaboration with Statnett, the transmission system operator in Norway (https://www.statnett.no/en/).

The position will be affiliated with the Department of Engineering Cybernetics (Institutt for teknisk kybernetikk, ITK – http://www.ntnu.edu/itk) at NTNU's Faculty of Information Technology and Electrical

Engineering in Trondheim, Norway.

ITK has 31 professors, 12 adjunct professors, about 15 postdocs and researchers as well as 80 PhD candidates. Approximately 190 candidates graduate annually from the three MSc programs in cybernetics, which comprise over 800 students in total. The department is involved in numerous research projects and centers, including the Centre of Excellence for Autonomous Marine Operations and Systems (NTNU AMOS, http://www.ntnu.edu/amos). Also, a new Centre on Research-based Innovation for autonomous ships (SFI Autoship) has recently been awarded and will start up in late 2020, with ITK as host department.

The position is within the field of Human-Machine Interaction for Cyber-Physical Systems. In addition to energy/power systems, such systems encompass applications in the offshore, process, maritime, aquaculture, aerospace and medical industries.

For both position categories, the following is required:
- Doctoral degree in a relevant area
- Experience with essential areas of Human-Machine Interaction for Cyber-Physical Systems, such as:
* Human-machine interfaces
* Human factors
* Interaction design
* Decision support
* Big-data analytics and visualization
* Control engineering
* Safety, risk and security
* Mastering Norwegian or another Scandinavian language
* Communicating well in English both orally and in writing

Statnett operates the main electricity grid in Norway, which is considered to be a critical infrastructure. Statnett is therefore legally bound by safety legislations stated in "Lov om nasjonal sikkerhet" (Sikkerhetsloven). The applicant must therefore qualify for security clearance in Norway The professor is expected to play a leading role in research and research-based education for Human-Machine Interaction for Cyber-Physical Systems at the department. Specifically, it is important to develop new methods for data-driven and model-based decision support in real time, including both new data-analytics methods for interpretation of generated big data, as well as new human-machine interfaces for effective presentation of relevant information to human decision makers. This will enable new solutions for human-machine interaction for cyber-physical systems.

The research activities at the department rely mainly on external funding, and the development of educational programs may also receive external funding. The professor is expected to engage extensively in applications for external funding, e.g. from the Research Council of Norway, European research and educational agencies, the industry sector, and other available sources. Statnett will in particular contribute with project funding and collaboration.

MSc and PhD candidates from the cybernetics study programs are expected to be competitive in an international job market. The professor will contribute toward the department's educational profile and promote an excellent learning environment, in collaboration with colleagues, students and external stakeholders.

Specifically, the professor is expected to teach a minimum of one course at the department's MSc program and a specialization course at MSc or PhD level, as well as supervising MSc students, PhD candidates and postdoctoral fellows.

In addition to research and education, the professor is expected to disseminate relevant parts of the research to a wider audience.

The professor is also expected to participate in the formal management of research, education, innovation and other relevant areas of activity at the department.

The candidate will join a research community at ITK which was rated "excellent from an international perspective" in the last evaluation by the Norwegian Research Council of 53 ICT communities in Norway, as one of only three ICT communities to receive such a rating in the Norwegian university and college sector. Currently, two of ITK's professors are IEEE Fellows.

The full announcement can be found at
https://www.jobbnorge.no/en/available-jobs/job/188948/professor-associate-professor-in-human-machine-interaction-for-cyber-physical-systems

About NTNU, Trondheim and Norway:
- About NTNU: http://www.ntnu.edu/
- NTNU Facts and Figures: http://www.ntnu.edu/facts
- NTNU International Researcher Support: http://www.ntnu.edu/nirs
- About Trondheim: https://trondheim.com/
- About Norway: https://www.visitnorway.com/?lang=primary
- Working in Norway: https://www.nav.no/en/home
- Practical info about Norway: http://www.nyinorge.no/en/Ny-i-Norge-velg-sprak/New-in-Norway/

Back to the contents

6.28. Research Scientist: National University of Singapore, Singapore

Contributed by: Fang Liao, tsllf@nus.edu.sg

Research Scientist: Temasek Laboratories @ National University of Singapore, Singapore

The Fault Tolerant Control group at Temasek Laboratories @ National University of Singapore invites applications for two Research Scientist positions.

Research Scientist #1:

Major duties:
• Develop intelligent fault tolerant control and fault diagnosis algorithms for UAVs
• Research on related topics and publish high-quality academic papers
Qualifications:
• A PhD degree in control field, such as fault tolerant control, fault detection and identification, optimal control via neural network

• Knowledge in analytical and data-driven methods
• Experience in MATLAB, Python, C, C++ and LaTex
• Excellent command of English
• Knowledge of aerodynamics is a plus

Research Scientist #2:

Major duties:
• Develop intelligent health monitoring and fault prognosis system for UAVs
• Research on related topics and publish high-quality academic papers
Qualifications:
• A PhD degree in health monitoring and fault prognosis field
• Knowledge in machine learning, particle filtering, statistical inference, data analysis
• Strong mathematical background is preferred
• Experience in MATLAB, Python, C, C++ and LaTex
• Excellent command of English
• Knowledge of aerodynamics is a plus

Application: Please send questions or your application with a motivation letter, outlining your interest in the position, along with your curriculum vitae which should include the names and contact details of three referees, to Dr Liao Fang (TSLLF@NUS.EDU.SG).

Back to the contents