E-Letter on Systems, Control, & Signal Processing
Issue 391, March 2021—The Final Issue

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Welcome to Issue 391 of the CSS E-letter available here.

This will be the **final issue of the E-Letter**, as we are moving to the CSS State-Space Forum which replaces this letter.

We hope to see your posts and discussions on the CSS State-Space Forum. Please sign up here to receive the society's updates and much more!

Contents

1 IEEE CSS Headlines

1.1. CSS Technically Cosponsored Events

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

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

- 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/

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

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

1.2. 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

1.3. IEEE Transactions on Automatic Control

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

IEEE Transactions on Automatic Control
Volume 66 (2021), Issue 2 (February)

Papers:

Technical Notes and Correspondence:

Back to the contents

1.4. IEEE Transactions on Control Systems Technology

Contributed by: Michelle Colasanti, ieeetcst@osu.edu

IEEE Transactions on Control Systems Technology
Volume 29 (2021), Issue 2 (March)

Regular Papers:

Brief Papers:

Erratum:

Back to the contents

1.5. The 60th IEEE Conference on Decision and Control, Austin, USA

Contributed by: Sergio Galeani, sergio.galeani@uniroma2.it

The 60th IEEE conference on Decision and Control will be held Monday through Wednesday, December 13-15, 2021 at the Fairmont Hotel, Austin, Texas, USA. The conference will be preceded by workshops on Sunday, December 12, 2021.

The CDC is recognized as the premier scientific and engineering conference dedicated to the advancement of the theory and practice of systems and control. The CDC annually brings together an international community of researchers and practitioners in the field of automatic control to discuss new research results, perspectives on future developments, and innovative applications relevant to decision making, systems and control, and related areas.

The 60th CDC will feature contributed and invited papers, as well as workshops and tutorial sessions. It is hosted by the IEEE Control Systems Society (CSS) in cooperation with the Society for Industrial and Applied Mathematics (SIAM), the Japanese Society for Instrument and Control Engineers (SICE), and the European Control Association (EUCA).

The conference will take place in the Fairmont Hotel in Austin, Texas. Austin is known as the "Live Music Capital of the World" and is the home to the University of Texas at Austin as well as the Texas State Capital. The city features many high-tech companies and start-ups and is renown for its vibrant food and and culture scenes. As Austin's unofficial slogan is "Keep Austin Weird", the 60th CDC has embraced this aspect of the host city and has incorporated a number of non-traditional elements in the program.

IMPORTANT NOTICE: The working assumption for now is that CDC'21 will be an in-person event and we are proceeding with the plans for the conference under that assumption.

At the same time, we are looking at ways in which partial conference attendance could be possible virtually as well for those unable or unwilling to travel. And, of course, as this is a highly uncertain, dynamically evolving system, the plans may have to be revisited as we get closer to the conference dates.

Don't miss future updates on CDC2021! Follow us on Twitter: #IEEECDC2021

Back to the contents

1.6. CFP: IEEE Trans. on Automatic Control Special Issue on Learning/Control

Contributed by: George J. Pappas, pappasg@seas.upenn.edu

IEEE Transactions on Automatic Control
Special Issue on Learning and Control
Deadline: May 1, 2021

Special Issue Scope: Over the past two decades, advances in computing and communications have resulted in the creation, transmission and storage of data from all sectors of society. Over the next decade, the biggest generator of data is expected to be Internet-of-Things devices which sense and control the physical world. This explosion of data requires a rapprochement of areas such as machine learning, control theory, and optimization. The availability and scale of data, both temporal and spatial, brings a wonderful opportunity for our community to both advance the theory of control systems in a more data-driven fashion, as well as have a broader industrial and societal impact.

There are various challenges on the interface between the control community and the machine learning community. The aim of this special issue is to bring together some of the significant developments on the interface between machine learning, dynamics, and control systems. Our special issue welcomes both regular papers and technical notes on topics that include but are not limited to:

- Foundations of learning of dynamics models
- System identification
- Episodic learning, online learning, and adaptive control
- Optimization for machine learning
- Data-driven optimization for dynamical systems
- Distributed learning over distributed systems
- Reinforcement learning for physical systems
- Safe reinforcement learning and safe adaptive control
- Statistical learning for dynamical and control systems
- Bridging model-based and learning-based dynamical and control systems
- Robustness of data-driven and learning-based control systems
- Physics-constrained learning
- Physical learning in dynamical and control systems applications in robotics, autonomy, transportation systems, cognitive systems, neuroscience, etc.

Special Issue Guest Editors

- Anuradha Annaswamy, MIT aanna@mit.edu
- Manfred Morari, University of Pennsylvania morari@seas.upenn.edu
- George J. Pappas, University of Pennsylvania pappasg@seas.upenn.edu
- Claire Tomlin, UC Berkeley tomlin@eecs.berkeley.edu
- Rene Vidal, Johns Hopkins University rvidal@jhu.edu
- Melanie Zellinger, ETH Zurich mzeilinger@ethz.ch

Special Issue Schedule

- Submission Site Opens March 1, 2021
- Paper Submission Deadline May 15, 2021
- Author Notification November 1, 2021
- Final Manuscript Submissions January 1, 2022
- Special Issue Publication Summer 2022 (tentative)

More information:

http://ieeecss.org/publication/transactions-automatic-control/special-issues

*Note: The Paperplaza submission link given below will allow submission to this special issue after March 1, 2021. When submitting the paper, the system will prompt the user to select submission to the special issue.

Back to the contents

1.7. CFP: IEEE Trans. on Ctrl. of Network Sys. Special Issue on Smart Networks

Contributed by: Michela Robba, michela.robba@unige.it

Deadline Extension: Special Issue of IEEE Transactions on Control of Network Systems on Smart city-networks

Scope: In recent years, there is a growing interest on sustainable and smart cities in which advanced technologies for data collection and elaboration are being developed together with technologies for mitigating greenhouse gas emissions reduction (such as renewables, electric vehicles, high efficiency production plants, etc.). Cities need more efficient water, transportation, and energy systems to address various challenges including a growing population, environmental and economical sustainability, and resiliency to natural disasters and/or unpredicted events. The focus of this special issue is to assemble new advances in the study of smart city-networks. Network control methods that enable optimization and resiliency constitute one example. The use of data-driven techniques, including many that are based on machine learning, is another. Graph-theoretic and game-theoretic solutions that help understand these networks and interface between these networks are essential. Tradeoffs regarding problems with smart city-networks (such as resiliency and privacy, performance and computational complexity of various algorithms, etc.) need to be suitably characterized.

Challenges precipitated due to large amounts of data and the scale of these networks need to be addressed. Both theoretical and practical explorations of this topic are necessary. Specific topics include (but not limited to):

• Distributed control and optimization for smart city networks (traffic, transportation, water, energy, telecommunication, gas, smart grids, supply chains and production systems, etc.)
• Fault detection and state estimation of water, transportation and energy networks
• Machine learning-based control and optimization for smart city's networks
• Optimal control of smart city networks
• Control, optimization, and communication interconnected Smart city networks.
• Resiliency and privacy of smart city networks

• Issues related to big-data and their connection to analysis and synthesis of efficient networks
• Cyber-physical security and cyber-physical human systems of large-scale networks
• Applications to real smart city networks (water, energy, transportation, traffic, energy communities, etc.)
• Applications to interconnected smart city networks (e.g., power grid and electric mobility, water networks and district heating, energy communities including smart buildings and distributed generation, integration with the ICT network, etc.)

Important Dates

• Paper submission deadline: March 1, 2021
• Completion of the first round review: July 2021
• Completion of the second round review: December 2021
• Final submission due: April 2022
• Tentative publication date: June 2022

Guest Editors

- Michela Robba, Associate Professor, Department of Informatics, Bioengineering, Robotics and Systems Engineering, University of Genoa, Genoa, Italy
- Giulio Ferro, Assistant Researcher, PhD, Department of Informatics, Bioengineering, Robotics and Systems Engineering, University of Genoa, Genoa, Italy
- Rong Su, Associate Professor, School of Electrical and Electronic Engineering, Nanyang Technological University (NTU), Singapore
- Anuradha Annaswamy, Senior Research Scientist, Department of Mechanical Eng., Director, Active-adaptive Control Laboratory, Massachusetts Institute of Technology (MIT), Cambridge, MA
- Christos Cassandras, Professor, Head, Division of Systems Engineering, Center for Information and Systems Engineering (CISE), Boston University, Boston, MA
- Karl Johansson, Professor, School of Electrical Engineering and Computer Science, KTH Royal Institute of Technology, Stockholm, Sweden

Back to the contents

1.8. Roadmap 2030: Call for Vision Statement for Control for Societal Challenges

Contributed by: Anuradha Annaswamy, aanna@mit.edu

Open Call for Vision Statement for Control for Societal-Scale Challenges: Roadmap 2030
Virtual Workshop, June 4-5, 2021
Physical Workshop, Stockholm, June 2022
Organizers: A.M. Annaswamy, K. H. Johansson, and G.J. Pappas

The IEEE Control Systems Society would like to develop a scientific roadmap for the future of our discipline, Control for Societal-Scale Challenges: Roadmap 2030. The objectives of the roadmap are to lay out new societal areas where our discipline can have impact over the next decade, propose novel scientific challenges that the community should pursue, and investigate workforce education and training curricula in order to address these challenges. Our plan is also to ensure that the roadmap has a broad scope including new technological drivers, new infrastructures for control systems, and legal, organizational and regulatory

factors that are prevalent in societal-scale systems.

In support of this effort, we will conduct a workshop in two parts, the first during June 4-5, 2021, in a virtual format, and the second during June 2022 in Stockholm, in an in-person format. The workshop discussions will be centered around six identified themes, with elements of real-time decision making, machine learning, autonomy, data-driven and physics-driven approaches, security and privacy, and big-data pervading all six themes. Short descriptions of all theme abstracts can be found in the appendix.

We would like to invite the broader control community to submit vision statements towards this roadmap, describing your personal view about the future of the discipline. Your written input can address any of the following issues: (a) Novel or existing domains where control systems can have a critical role, (b) scientific challenges or exciting scientific directions for the future, (c) innovative ideas about workforce development and control systems curriculum, (d) organizational, regulatory, economic or infrastructure challenges or drivers that we should be considering in the future, and (e) anything else you think is critical for the future of our discipline. Please note that all inputs should be forward looking, broad, and thematically linked to the objectives of the roadmap. We are not looking for specific approaches, technical solutions, or results, but rather future directions that our community should be exploring to solve grand societal challenges.

We would like your vision statement to be in the form of an abstract, not exceeding 300 words, and either in a doc or pdf format. All statements will be reviewed by the theme leaders (see appendix), and some may be chosen for presentation at the workshops, or invited for further articulation in the roadmap. Selected submissions will be included the final roadmap report, which will be posted on the IEEE CSS homepage and related websites.

Please email your abstracts to any of the three organizers listed above (aanna@Mit.edu, kallej@kth.se, pappasg@seas.upenn.edu) no later than March 1, 2021.

Appendix

Panel 1: Decision making with real-time and distributed data (Leads: Anders Rantzer and Na Li)

Recent radical evolution in distributed sensing, computation, communication, and actuation has revolutionized the way systems operate and fostered the emergence of real-time decision making with large and distributed data. Examples cut across a broad spectrum of engineering and societal fields such as energy systems, transportation systems, Internet, sensor networks, social networks, epidemics and many others. In most of applications, established models from one or more disciplines need to be combined with blackbox models built from data. A good example is in autonomous driving, where the existing extensive experience of control technology such as ABS braking, cruise control and ESP systems for vehicle stabilization needs to be combined with machine learning methods to analyse traffic situations and human behavior. To do this in a safe and robust manner, it is essential to understand how learning algorithms for sequential decision-making can interact with continuous physics based dynamics. Similarly, in power systems, well established control solutions are increasingly being combined with learning algorithms correlating consumer behavior with weather forecasts, to minimize costs and optimize efficiency. This panel will focus on the challenges related to learning in a real-time setting in combination with distributed data, with a focus on challenges

that common to a variety of aforementioned applications. Examples include 1) how to develop physics-aided learning methods that exploit both the known-physics, historical data, and real-time data? 2) how to develop scalable solutions which could handle the large size of the system and the large amount of data generated from different locations? 3) how to balance the tradeoff between solution efficiency, computation speed, and communication quality for real-time operation by prioritizing the information and tasks? 4) how to ensure system safety while providing enough flexibility and robustness for running the system under various (nonstationary or even adversarial) environment?

Panel 2: Safety-critical autonomous systems with ML (Leads: Claire Tomlin and Angela Schoellig)

Advances in machine learning have accelerated the introduction of autonomy in our everyday lives. However, ensuring that these autonomous systems act safely is an immense challenge. Today, when self-driving vehicles, or collaborative robots, operate in real-world uncertain environments, it is impossible to guarantee safety at all times. The key challenge stems from the uncertainty of the environment itself, and the inability to predict all possible situations that could confront the system. Machine learning, and its potential ability to generalize, may be a solution. For example, a learning-based perception system for a self-driving vehicle, must be able to generalize beyond the scenes that it has observed in training. Yet today, these algorithms are producing solutions that are not easy to understand, are brittle to faults and possible cyber-attacks. The purpose of this Panel is to explore the scope of safe autonomy, to present the challenges, and to explore current research developments which help us move towards a solution.

Panel 3: Resilient infrastructure-systems with AI and IoT (Leads: Dan Work and Carlos Canudas de Wit)

Monitoring and control for large-scale critical infrastructure systems is accelerated by low cost sensing, communication, computation, and actuation technologies that underpin the internet of things. Enabled by the large volumes of data produced by these systems, a new generation of mobility, energy, water, and health networks are increasingly adopting artificial intelligence-enabled components that further increase the richness of these systems. As the scale and complexity of these systems continues to grow, so do the challenges to provide robustness and resilience. For example, attacks on the cyber infrastructure can lead to cascading failures that dramatically degrade or cripple the physical systems. Allowing pervasive sensing and guaranteeing privacy remains open in many application domains. This panel will establish the challenges to enable monitoring and control for infrastructure systems that are smart, resilient, secure, and privacy preserving.

Panel 4: Control in Human-automation, Health, and Networked Systems (Leads: Sandra Hirche and Aaron Ames)

Control has the unique ability to transform society across a spectrum of application domains that can positively impact quality of life. In many of these domains the interaction between the human and the automation system plays an important role and requires an in-depth understanding for the development of novel control technologies. This panel is devoted to future directions in control for human-automation systems, that can positively address societal-scale challenges at multiple levels, from direct physiological interaction, to human collaborations with robotic and autonomous systems, to networked population-wide interactions.

At the direct interaction level, the goal is to understand interactions with the human body and its processes, from neurocontrol to physiological control mechanisms. This can directly infuse control theory to positively improve human function, mitigate against disease, and augment performance. There is ever increasing interaction with humans and control systems via robotic and autonomous systems, and understanding this has important ramifications to everything from robotic assistive devices to ever increasing autonomous features in automotive systems. Finally, at the human population level, control can inform and drive the evolution of systems from local community to global scales. This includes traffic management, power and general infrastructure systems, economics and epidemics.

In all application domains and all levels of interaction, key challenges from a control theory perspective include understanding safety and uncertainty in the context of human decision making. Safety considerations are central due to the direction interactions with humans. Exploring notions of safety from a theoretic and dynamic point of view, and characterizations thereof, will be essential in deploying theoretic solutions into real-world applications. These notions of safety, and guarantees obtained via control theory more generally, will involve human models that may be difficult to ascertain. As such, methods that are robust to uncertainty will need to be developed–these likely could include data-driven approaches for mitigating this uncertainty that learn and adapt.

Panel 5: Systems and Control Opportunities for Climate Change Mitigation and Adaptation (Leads: Pramod Khargonekar and Tariq Samad)
There is international consensus that global warming and the resulting climate change represent an extremely important grand challenge for the next several decades. Experts in the field of systems and control can make valuable contributions to several key strategies for climate change mitigation and adaptation. Indeed, because of the large scope of this topic, this panel will only address a subset of possible directions. In fact, two topics will be of primary focus, although these are broad enough to incorporate numerous opportunities for impact.

The first is energy system decarbonization. In general, we will emphasize "system-level" aspects—large-scale renewable generation from diverse sources; integration of renewables and storage in transmission and distribution networks; microgrid optimization and control; and energy markets for products and services.

The second broad topic is adaptation to climate change: How can the control community contribute to ensuring a habitable planet if, as seems highly likely now, mitigation efforts are, at best, only partially successful? Adverse impacts will be manifold—including increasing frequencies of storms, dramatic sea-level rise, droughts and flooding, and deterioration of agricultural lands and yields. However, we will target a general problem that we believe the controls community is ideally suited to take a leadership role in: What novel methodologies can be developed for facilitating strategic decision making under deep uncertainty?

Our objective for the panel is to develop a set of recommendations for the controls community, its leadership, and funding agencies. These recommendations will include promising new opportunities for research, collaborations with other fields, new R&D programs at national and international levels, workshops and other events, and publications for motivating and promoting the role of control science and engineering in the defining grand challenge for the future of humanity and its ecosystem.

Panel 6: Education and Training (Leads: Christos Cassandras and Joao Hespanha)

The panel's scope is designed to cover the following five areas:
1) Academic curriculum: Design the ideal undergraduate curriculum for Systems and Control over the next decade in terms of (i) material covered, (ii) blend of theory/applications, (iii) blend of paper-pencil exercises/simulation/experiments. Identify explicit changes with respect to a typical current curriculum: What should be eliminated/downplayed? What should be added?

2) Outreach: Identify opportunities (and create them if possible) to incorporate Systems and Control concepts in pre-college education. Specifically identify concepts, ideas, or grand challenges that can provide inspirational value to pre-college students.

3) Driving Areas: Identify the technical areas that should drive Systems and Control education. Differentiate between areas based on principles which transcend technological and societal changes and new areas that need to be introduced to Systems and Control education.

4) Industry: Explore the role that academic institutions could/should have in Industry training, as well as the role that Industry should have in academic education. Find ways to improve the interaction between universities and industry, in the educational and training context. Explore the role that internships or apprenticeships can play in bringing students closer to real industrial application problems.

5) Building bridges with other science/engineering fields: It has often been said that control is a "hidden technology" one that "enables" other technologies but does not stand out by itself. Discuss the accuracy (or not) of this statement. If the statement is true, explore how to best incorporate systems and control into a college curriculum (e.g., what department does it belong to?) If the statement is not true, find new ways to change this perception through education or outreach.

Back to the contents

1.9. IEEE CSS Outreach Fund Solicitation

Contributed by: Oscar González, ogonzale@odu.edu

The IEEE Control Systems Society (CSS) Outreach Fund provides grants for projects that will benefit CSS members and the control community in general. Since its inception in 2011, the Fund has funded more than 78 grants on behalf of a diverse group of CSS member-led activities.

The CSS Outreach Task Force is pleased to announce that the window for proposal submission for its 2021 spring solicitation will be held from **March 22 to April 16 2021**. IEEE CSS Outreach Fund Solicitation
The maximum amount that can be requested for an Outreach project is **USD$20K**.

Because of the time needed for grant approval and processing, a CSS member with an institutional affiliation interested in pursuing an Outreach-funded project starting in 2022 should apply during this solicitation.

Information regarding the program, which includes proposal requirements descriptions, a list of current and past funded projects, and a 2017 informative 10-minute video overview is found at:

http://ieeecss.org/activities/control-systems-society-outreach-fund

The CSS Outreach Fund is also featured in an article appearing in the August 2019 issue of the IEEE Control Systems Magazine:

https://ieeexplore.ieee.org/stamp/stamp.jsp?tp=&arnumber=8764655

Inquiries, notices of intent, and requests for application materials need to be made directly to Oscar González, Outreach Task Force Chair, at ogonzale@odu.edu

Back to the contents

2 Miscellaneous

2.1. Introducing the List of BIPOC in MDSS Research

Contributed by: Kwesi Rutledge, krutledg@umich.edu

Introducing the List of BIPOC (black, indigenous and people of color) in MDSS Research

Dear Colleagues,

In an effort to broaden visibility for BIPOC academic scholars in the Mathematics of Data, Signals, and Systems (MDSS), we have created a list for scholars to self-identify and share their research areas with the community. We especially encourage young scholars to join who have recently received or soon expect to receive their PhD. The list and sign-up can be found here:

https://us-mdss-research-lists.github.io/us-BIPOC-in-MDSS-research/

We were inspired by the Women in US Academic Research in Robotics list, and like them we hope that many such lists will be created to recognize the diversity of contributors to all fields of research and development.

The areas of signal processing, machine learning, control, computer vision, and communications require math-heavy expertise and span electrical engineering and computer science as well as other disciplines. We believe these specialities are not currently covered by other similar lists, though we expect to overlap with lists of researchers in computing, AI, robotics, and STEM more generally.

Please feel free to share this email widely so that people can sign up.
warm regards,
the organizers
BIPOC scholars:
Marco Duarte
Marcella Gomez
Matthew Johnson-Roberson
Sanmi Koyejo
Nathan Louis
Kwesi Rutledge
Allies:
Laura Balzano
Amanda Bower
Jason Corso
Jeff Fessler
Necmiye Ozay
Alexander Ritchie

Back to the contents

2.2. Spring 2021 FoRCE Online Seminars

Contributed by: Kadriye Merve Dogan, dogank@erau.edu

Spring 2021 FoRCE Online Seminars by Drs. Sofge, Chowdhary, Del Vecchio, Gregory, and Casbeer

We are pleased to announce the following Spring 2021 online seminars at FoRCE (http://force.eng.usf.edu/):

Seminar 1. March 12 (12:00p Eastern Time): Swarm Robotics Research at the U.S. Naval Research Laboratoryby Dr. Donald Sofge (U.S. Naval Research Laboratory)
Seminar 2. April 9 (12:00p Eastern Time): Deep Learning and Adaptive Control by Dr. Girish Chowdhary (University of Illinois at Urbana-Champaign)
Seminar 3. April 23 (12:00p Eastern Time): Control Theory for Engineering Biology by Dr. Domitilla Del Vecchio (Massachusetts Institute of Technology)
Seminar 4. May 14 (12:00p Eastern Time): Urban Air Mobility: A Control-Centric Approach to Addressing Technical Challenge by Dr. Irene M. Gregory (National Aeronautics and Space Administration)
Seminar 5. May 28 (12:00p Eastern Time): Control and Optimization as a Foundation for Multi-UAV Coordination by Dr. David Casbeer (Air Force Research Laboratory)
WebEx links for each talk as well as seminar abstracts and biographies are given at the bottom of this email.
We cordially hope that you will enjoy these seminars!

K. Merve Dogan, Embry-Riddle Aeronautical University, dogank@erau.edu
Tansel Yucelen, University of South Florida, yucelen@usf.edu

Seminar 1: Swarm Robotics Research at the U.S. Naval Research Laboratory (Dr. Donald Sofge)
WebEx Link: https://force.my.webex.com/force.my/j.php?MTID=m247f8b749f22b9e7d55bd782a3922618
Meeting number (access code): 182 758 5700
Meeting password: iJQ7KHXf5N5 (45775493 from phones and video systems)

Abstract: Swarm robotics, a subfield of both robotics and artificial swarm intelligence, focuses on the development of teams composed of large numbers of autonomous robotic agents. Like swarm intelligence, swarm robotics arises from the study of the phenomenology of biological systems in which large numbers of individuals collaborate in joint collective actions for the benefit of the community as a whole. However, whereas swarm intelligence often utilizes the means and mechanisms of bio-inspired swarms for numerical optimization, the goals of bio-inspired robot swarms are generally concerned with the use of large numbers of low-cost physically embodied agents, acting together in a real-world environment, to achieve a common purpose. This talk will discuss key methods and bio-inspired algorithms for use in programming and controlling robotic swarms, and potential applications of these swarms.

Biography: Don Sofge is a Roboticist at the U.S. Naval Research Laboratory (NRL) with 31 years of experience in Artificial Intelligence and Control Systems R&D. He leads the Distributed Autonomous Systems Group in the Navy Center for Applied Research in Artificial Intelligence (NCARAI), where he develops nature-inspired computing paradigms to challenging problems in sensing, artificial intelligence, and control of autonomous robotic systems. His current research focuses on control of autonomous teams or swarms of robotic systems for Navy relevant missions. He has served as PI on dozens of federally funded R&D programs, and has more than 150 peer-reviewed publications on autonomy, intelligent control, quan-

tum computing, and related topics. He has served as an advisor on autonomous systems to DARPA, ONR, OSD, ARL, NSF, and NASA, as well as US representative on international TTCP and NATO technical panels on autonomous systems, and has participated as a member of the National Science and Technology Council (NSTC) Networking and Information Technology Research and Development (NITRD) Program Interagency Working Groups: Intelligent Robotics and Autonomous Systems (IRAS), Machine Learning and Artificial Intelligence (MLAI), and the AI R&D Ad Hoc Group. Don also occasionally serves as an Adjunct Faculty Member at the University of Maryland where teaches graduate-level courses in Robotics.

Seminar 2: Deep Learning and Adaptive Control (Dr. Girish Chowdhary)
WebEx Link: https://force.my.webex.com/force.my/j.php?MTID=mcb3641e862639f345b1a28fe9a23620b
Meeting number (access code): 182 131 0237
Meeting password: Pyb93tavHW5 (79293828 from phones and video systems)

Abstract: Recent results in deep learning have left no doubt that it is amongst the most powerful modeling tools that we possess. The real question is how can we utilize deep learning for control without losing stability and performance guarantees. Even though recent successes in deep reinforcement learning (DRL) have shown that deep learning can be a powerful value function approximator, several key questions must be answered before deep learning enables a new frontier in robotics. DRL methods have proven difficult to apply on real-world robotic systems where stability matters and safety is critical. In this talk, I will present our recent work in bringing deep learning based methods to provably stable adaptive control and expand upon possibilities of using concepts from adaptive control to create safe and stable reinforcement learning algorithms. I will put our theoretical work in context by discussing several applications in flight control and agricultural robotics. I will also bring to light our recent work in understanding how the octopus brain works and how it can inspire future learning and distributed control tools.

Biography: Girish Chowdhary is an associate professor and Donald Biggar Willet Faculty Fellow at the University of Illinois at Urbana-Champaign. He is the director of the Field Robotics Engineering and Science Hub (FRESH) at UIUC and the Chief Scientist on the Illinois Autonomous Farm. Girish holds a joint appointment with Agricultural and Biological Engineering and Computer Science, he is a member of the UIUC Coordinated Science Lab, and holds affiliate appointments in Aerospace Engineering and Electrical Engineering. He holds a PhD (2010) from Georgia Institute of Technology in Aerospace Engineering, was a postdoc at the Laboratory for Information and Decision Systems (LIDS) of the Massachusetts Institute of Technology (2011-2013), and an assistant professor at Oklahoma State University (2013-2016). He also worked with the German Aerospace Center's (DLR's) Institute of Flight Systemsfor around three years (2003-2006). Girish's work on AI and adaptive flight control has led to several key advances to flight-control and a Dave Ward memorial award by Aerospace Guidance and Controls committee. Girish is the author of over 100 publications in adaptive control, autonomy, and robotics, and PI on NSF, AFOSR, NASA, ARPA-E, and DOE grants, and an ONR MURI. He is the winner of the Air Force Young Investigator Award, and several best paper awards, including a best systems paper award at RSS 2018 for his recent work on the agricultural robot TerraSentia. He is the co-founder of EarthSense Inc. (www.earthsense.co), working towards making sustainable farming profitable with ultralight field robots.

Seminar 3: Control Theory for Engineering Biology (Dr. Domitilla Del Vecchio)
WebEx Link: https://force.my.webex.com/force.my/j.php?MTID=m077fd39532be8e6d721d7828e4d08ed6
Meeting number (access code): 182 818 8385

Meeting password: QiqP6VceS57 (74776823 from phones and video systems)

Abstract: Genetic circuits control every aspect of life and thus the ability to engineer them de-novo opens exciting possibilities, from revolutionary drugs and green energy, to bugs that recognize and kill cancer cells. The robustness of natural gene networks is the result of million years of evolution and is in contrast with the fragility of today's engineered circuits. A genetic module's input/output behavior changes in unpredictable ways upon inclusion into a larger system. Therefore, each component of a system is usually redesigned every time a new piece is added. Rather than relying on such ad-hoc design procedures, control theoretic approaches may be used to engineer "insulation" of circuit components from context, thus enabling modular composition through specified input/output connections. In this talk, I will give an overview of modularity failures in genetic circuits, focusing on problems of loads, and introduce a control-theoretic framework, founded on the concept of retroactivity, to address the insulation question. Within this framework, insulation can be mathematically formulated as a disturbance rejection problem; however, classical solutions are not directly applicable due to bio-physical constraints. I will thus introduce solutions relying on time-scale separation, a key feature of biomolecular systems, which were used to build two devices: the load driver and the resource decoupler. These devices aid modularity, facilitate predictable composition of genetic circuits, and show that control theoretic approaches may be suitable to address pressing challenges in engineering biology.

Biography: Domitilla Del Vecchio received the Ph. D. degree in Control and Dynamical Systems from the California Institute of Technology, Pasadena, and the Laurea degree in Electrical Engineering (Automation) from the University of Rome at Tor Vergata in 2005 and 1999, respectively. From 2006 to 2010, she was an Assistant Professor in the Department of Electrical Engineering and Computer Science and in the Center for Computational Medicine and Bioinformatics at the University of Michigan, Ann Arbor. In 2010, she joined the Department of Mechanical Engineering at the Massachusetts Institute of Technology (MIT), where she is currently Professor and member of the Synthetic Biology Center. She is a IEEE Fellow and a recipient of the Newton Award for Transformative Ideas during the COVID-19 Pandemic (2020), the 2016 Bose Research Award (MIT), the Donald P. Eckman Award from the American Automatic Control Council (2010), the NSF Career Award (2007), the American Control Conference Best Student Paper Award (2004), and the Bank of Italy Fellowship (2000). Her research focuses on developing techniques to make synthetic genetic circuits robust to context and on applying these to biosensing and cell fate control for regenerative medicine applications.

Seminar 4: Urban Air Mobility: A Control-Centric Approach to Addressing Technical Challenge (Dr. Irene M. Gregory)
WebEx Link: https://force.my.webex.com/force.my/j.php?MTID=m57ea82432c42e3e86ab4df910933de7a
Meeting number (access code): 182 878 5141
Meeting password: M2QeJTSHa67 (62735874 from phones and video systems)

Abstract: Urban Air Mobility (UAM) is an emerging aviation sector and is playing an integral part in the on-demand mobility revolution. UAM is powered by the convergence of advances in distributed electrical propulsion (DEP) and vehicle autonomy. The complexity of operations in the urban environment and the unconventional vehicle configurations designed to take advantage of new propulsion technologies, result in numerous challenges that benefit from a control-centric approach. In this talk we outline some of these challenges and present our current approach to addressing them. For example, in order to achieve full

market potential and access to UAM, vehicle autonomous flight is required. A key barrier to autonomous flight in a large multi-agent system is dealing with off-nominal situations and contingencies in a safe and predictable manner. We present our approach to intelligent contingency management, and share recent results and open problems. Additionally, we discuss another major barrier to ubiquitous UAM – the noise signature produced by vehicles with multiple rotors. We present our approach to minimizing such noise within the framework of the acoustically-aware vehicle.

Biography: Dr. Irene M. Gregory is the NASA Senior Technologist for Advanced Control Theory and Applications. Dr. Gregory received a S.B, in Aeronautics and Astronautics form MIT and a Ph.D. in Control and Dynamics Systems from Caltech. Her research has spanned the entire flight regime from hypersonic vehicles to slow subsonic UAVs with unconventional configurations. She is an author of over 100 referenceable publications. Her current interests are in the areas of robust autonomous systems, self-aware vehicle intelligent contingency management, acoustically-aware vehicles, and resilient control for advanced, unconventional configurations with particular focus on Urban Air Mobility and autonomous cargo. She is a Fellow of the AIAA, a senior member of IEEE and a member of IFAC; and, serves on IEEE Control Systems Society Aerospace Control and Intelligent Control Technical Committees as well as on AIAA Guidance, Navigation, and Control Technical Committee.

Seminar 5: Control and Optimization as a Foundation for Multi-UAV Coordination (Dr. David Casbeer)
WebEx Link: https://force.my.webex.com/force.my/j.php?MTID=mff686ca99351a8667e55da862aaba992
Meeting number (access code): 182 211 1784
Meeting password: eZuy9TYpx25 (39899897 from phones and video systems)

Abstract: In this talk we will discuss how optimization and control theory play a fundamental, and often overlooked, role in multi-UAV coordination. We will see how the solutions of optimal control problems are essential in combinatorial assignment algorithms. Using intuition gained by solving these problem, one can intuit how results dealing with static task assignment extend to cases where the tasks are dynamic in nature. The concepts discussed in this talk will be highlighted with specific problems that are relevant to defense applications.

Biography: David Casbeer is the Team Lead over Cooperative & Intelligent UAV Control with the Control Science Center of Excellence, Aerospace Systems Directorate, Air Force Research Laboratory. In this capacity, he conducts and leads basic research in cooperative control and decision making of autonomous UAVs, with a particular emphasis on high-level decision making and planning under uncertainty. He received B.S. and Ph.D. degrees in Electrical Engineering from Brigham Young University in 2003 and 2009, respectively. He is a former chair of the AIAA Intelligent Systems technical committee. He currently serves as a Senior Editor for the Journal of Intelligent and Robotic Systems and an Associate Editor for the AIAA Journal of Aerospace Information Systems.

Back to the contents

2.3. Marie Curie PhD Fellowship

Contributed by: Fabrizio Dabbene, fabrizio.dabbene@ieiit.cnr.it

Marie Curie PhD Fellowship, Politecnico di Torino and IEIIT-CNR

The IEIIT-CNR institute opened a PhD position for Spring 2021 within the BANYAN EID project funded by HORIZON 2020/ Marie Skłodowska-Curie Action, in the field of data analytics and machine learning approaches for the deployment and proactive optimization of 5G and multi-RAT networks.

The recruited Early Stage Researcher (ESR) will be enrolled in "PhD in Electrical, Electronics and Communications Engineering" of PoliTo (http://dottorato.polito.it/en/doctoral school). They will participate in an exciting multidisciplinary research programme that will enhance their career perspectives in both the academic and non-academic sector. In addition to their individual projects, the recruited ESRs will benefit from a dedicated training programme consisting of local and network wide training activities aimed at improving their scientific knowledge and transferable skills.

The selected ESR will work on the spatial-temporal characterization of patterns of users' demands for individual mobile services at macroscopic (citywide) scales, and he will experience an intersectoral training programme encompassing 18-month internship in a company (Ranplan Wireless Network Design Ltd.an, Cambridge UK and Orange, FR), and 18 months in academic institute (CNR and PoliTo).

Interested applicants should have most of the following qualifications:
- a master's or undergraduate 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.

ESRs will receive a Monthly Living Allowance plus a Mobility Allowance compliant with the applicable EC Marie Skłodowska - Curie Actions – ITN. In particular, the overall gross remuneration will include:
- a living allowance of 40,966.56 €/year, that will be paid in monthly installments (3,413.88 €/month)
- a mobility allowance of 7,200.00 €/year (600 €/month)
- a family allowance of 500.00€/month (only in case the winner is married or has a similar legal situation).

The official call is posted in https://bandi.urp.cnr.it/assegni/faces/pubblica/RisultatoCercaAssegniPubblica.jsp (reference nr. IEIIT-002-2021-TO).

Interested candidates can send their transcripts and brief resume at fabrizio.dabbene@ieiit.cnr.it alongside any previously published papers, and copies of GRE/TOEFL scores.

Fabrizio Dabbene
Director od Research
CNR IEIIT

Back to the contents

3 Books

3.1. Riemannian Optimization and Its Applications

Contributed by: Oliver Jackson, oliver.jackson@springer.com

Title: Riemannian Optimization and Its Applications
Author: Hiroyuki Sato
Publisher: Springer
ISBN: 978-3-030-62389-0 (Softcover); 978-3-030-62391-3 (e-book)
Extent: 138 pages.
Month of Publication: February 2021
Price: $59.99/€49.99 (Softcover); $44.99/€39.99 (e-book)
Available from: https://www.springer.com/book/9783030623890

This brief describes the basics of Riemannian optimization – optimization on Riemannian manifolds – introduces algorithms for Riemannian optimization problems, discusses the theoretical properties of these algorithms, and suggests possible applications of Riemannian optimization to problems in other fields.

To provide the reader with a smooth introduction to Riemannian optimization, brief reviews of mathematical optimization in Euclidean spaces and Riemannian geometry are included. Riemannian optimization is then introduced by merging these concepts. In particular, the Euclidean and Riemannian conjugate gradient methods are discussed in detail. A brief review of recent developments in Riemannian optimization is also provided.

Riemannian optimization methods are applicable to many problems in various fields. This brief discusses some important applications including the eigenvalue and singular value decompositions in numerical linear algebra, optimal model reduction in control engineering, and canonical correlation analysis in statistics.

Contents:

Back to the contents

4 Journals

4.1. CFP: Frontiers in Robotics and AI

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

Frontiers in Robotics and AI: call for participation (Research Topic: Safety in Collaborative Robotics and Autonomous Systems)

Frontiers in Robotics and AI has launched a new Research Topic, Safety in Collaborative Robotics and Autonomous Systems. As a leading expert in your field, we would like you to participate by submitting your research.

This is a great chance to have your research published in Frontiers in Robotics and AI. With a CiteScore of 4.7 and indexed on ESCI (Web of Science), the journal investigates the theory and integration of robotics, bringing the latest technology and artificial intelligence to the modern world.

Frontiers is a leading Open Access Publisher and Open Science Platform Our journals are led and peer-reviewed by editorial boards of over 100,000 top researchers. Covering more than 900 academic disciplines, we are one of the largest and highest-cited publishers in the world. To date, our freely accessible research articles have received over 1 billion views and downloads and 1.6 million citations.

Topic Editors
Ashwin Dani
University of Connecticut Mansfield, United States
Zhen Kan
University of Science and Technology of China Hefei, China
Rushikesh Kamalapurkar
Oklahoma State University Stillwater, United States
Nicholas Gans
University of Texas at Arlington Arlington, United States

Visit the homepage for this Research Topic for a full description of the project. If you wish to participate, please let us know using the link: https://bit.ly/3sB8n70

The submission deadline for this Research Topic is 16 July 2021
More about Research Topics: Frontiers' Research Topics are collections of peer-reviewed articles around an emerging or cutting-edge theme. As a contributing author, you will benefit from:
• high visibility and the chance to be included in a downloadable eBook
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• We collaborate with leading institutions to make open access publishing even more accessible for authors. See whether your institution is collaborating with us.

I look forward to your response.
Kind Regards,
Ashwin Dani
Topic Editor,
Robotic Control Systems Section, Frontiers in Robotics and AI
On behalf of the Topic Editors.

Back to the contents

4.2. IEEE/CAA Journal of Automatica Sinica

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

IEEE/CAA Journal of Automatica Sinica
Volume 8 (2021), Issue 1 (January)
https://ieeexplore.ieee.org/xpl/tocresult.jsp?isnumber=9272696&punumber=6570654

Reviews:

- Big Data Analytics in Healthcare–A Systematic Literature Review and Roadmap for Practical Implementation. S. Imran, T. Mahmood, A. Morshed, and T. Sellis, page 1
- An Overview of Calibration Technology of Industrial Robots. Z. B. Li, S. Li, and X. Luo, page 23

Papers:

- An Eco-Route Planner for Heavy Duty Vehicles. M. P. Fanti, A. M. Mangini, A. Favenza, and G. Difilippo, page 37
- Towards a Theoretical Framework of Autonomous Systems Underpinned by Intelligence and Systems Sciences. Y. Wang, M. Hou, K. N. Plataniotis, S. Kwong, H. Leung, E. Tunstel, I. J. Rudas, and L. Trajkovic, page 52
- A Novel Automatic Classification System Based on Hybrid Unsupervised and Supervised Machine Learning for Electrospun Nanofibers. C. Ieracitano, A. Paviglianiti, M. Campolo, A. Hussain, E. Pasero, and F. C. Morabito, page 64
- Novel Stability Criteria for Linear Time-Delay Systems Using Lyapunov-Krasovskii Functionals With A Cubic Polynomial on Time-Varying Delay. X.-M. Zhang, Q.-L. Han, and X. Ge, page 77
- Adaptive Control of a Two-Link Robot Using Batch Least-Square Identifier. M. Bagheri, I. Karafyllis, P. Naseradinmousavi, and M. Krstic, page 86
- A Multi-Layered Gravitational Search Algorithm for Function Optimization and Real-World Problems. Y. R. Wang, S. C. Gao, M. C. Zhou, and Y. Yu, page 94
- Dynamic Hand Gesture Recognition Based on Short-Term Sampling Neural Networks. W. J. Zhang, J. C. Wang, and F. P. Lan, page 110

Back to the contents

4.3. IET Control Theory & Applications

Contributed by: Jessica Jones, jessicajones@theiet.org

IET Control Theory & Applications
Volume 15, Issue 3
https://ietresearch.onlinelibrary.wiley.com/toc/17518652/2021/15/3

Research Article:

- Nikou, Alexandros; Verginis, Christos K.; Heshmati-alamdari, Shahab; Dimarogonas, Dimos V., A robust non-linear MPC framework for control of underwater vehicle manipulator systems under high-level tasks, https://doi.org/10.1049/cth2.12045
- Zhao, Tianyi, Duan, Guangren, Interconnection structure preservation design for a type of port-controlled hamiltonian systems—A parametric approach, https://doi.org/10.1049/cth2.12046
- Subramaniyam, Ramasamy; Joo, Young Hoon, Memory-based ISMC design of DFIG-based wind turbine model via T-S fuzzy approach, https://doi.org/10.1049/cth2.12047
- Li, Xiehuan; Ye, Dan, Membership-function-dependent security control for networked T-S fuzzy-model-based systems against DoS attacks, https://doi.org/10.1049/cth2.12048
- Yang, Ning; Chen, Dongyan; Hu, Jun, Quantised control of delayed Markovian jump systems with partly known transition probabilities, https://doi.org/10.1049/cth2.12049

- Ashraf, Muhammad Ammar; Ijaz, Salman; Zou, Yao; Hamayun, Mirza Tariq, An integral sliding mode fault tolerant control for a class of non-linear Lipschitz systems, https://doi.org/10.1049/cth2.12050
- Du, Shengli; Zhao, Xudong; Qiao, Junfei; Zong, Guangdeng;, Guaranteed cost stabilization control of discrete-time switched systems, https://doi.org/10.1049/cth2.12051
- Esmaeilani, Leili; Ghaisari, Jafar; Bagherzadeh, Mohammad Ali, Hammerstein–Wiener identification of industrial plants: A pressure control valve case study, https://doi.org/10.1049/cth2.12052
- Hernández-González, O.; Ramírez-Rasgado, F.; Astorga-Zaragoza, C. M.; Guerrero-Sánchez, M. E.; Valencia-Palomo, G.; Rodriguez-Mata, A. E., Observer for non-linear systems with sampled measurements: Application to the friction factor estimation of a pipeline, https://doi.org/10.1049/cth2.12053
- Lu, Junjie; She, Zhikun; Liao, Fucheng;, Necessary and sufficient conditions for stabilisability of discrete-time time-varying switched systems, https://doi.org/10.1049/cth2.12054
- Sakthivel, Rathinasamy; Harshavarthini, Shanmugam; Tatar, Nasser-Eddine, Disturbance estimation based tracking control for periodic piecewise time-varying delay systems, https://doi.org/10.1049/cth2.12055
- El-Hawwary, Mohamed I., Hierarchic distributed stabilization of a class of three-dimensional formations for underactuated agents, https://doi.o

Back to the contents

4.4. Unmanned Systems

Contributed by: Unmanned Systems, unmannedsystems@yeah.net

Unmanned Systems
Volume 09, Issue 01 (January 2021)
https://www.worldscientific.com/toc/us/current

Papers:

-Danger-Aware Adaptive Composition of DRL Agents for Self-Navigation. Wei Zhang, Yunfeng Zhang and Ning Liu, Pages:1–9
https://doi.org/10.1142/S2301385021500011
- Effect of Sensor Sensitivity on Autonomous Aerial Vehicle Target Localization. Nate Quirion and Dahai Liu, Pages:11–21
https://doi.org/10.1142/S2301385021500023
- Practical Fixed-Time Event-Triggered Time-Varying Formation Tracking Control for Disturbed Multi-Agent Systems with Continuous Communication Free. Xiaofeng Chai, Jian Liu, Yao Yu, Jianxiang Xi and Changyin Sun, Pages:23–34
https://doi.org/10.1142/S2301385021500035
- Longitudinal Flight Modes Natural Frequencies of Glider Type Small UAVs. M. El-Salamony and S. Serokhvostov, Pages:35–43
https://doi.org/10.1142/S2301385020500211
- Design and Fabrication of a Dual Rotor-Embedded Wing Vertical Take-Off and Landing Unmanned Aerial Vehicle. Seng Man Wong, Hann Woei Ho and Mohd Zulkifly Abdullah, Pages:45–63
https://doi.org/10.1142/S2301385021500096
- Investigation of Alternative Parameters for Immunity-based UAV Navigation in GNSS-denied Environment. Mohanad Alnuaimi and Mario G. Perhinschi, Pages:65–72
https://doi.org/10.1142/S2301385021500059

- Modeling and Control of Swing Oscillation of Underactuated Indoor Miniature Autonomous Blimps. Qiuyang Tao, Tun Jian Tan, Jaeseok Cha, Ye Yuan and Fumin Zhang, Pages:73–86
https://doi.org/10.1142/S2301385021500060

Back to the contents

4.5. IMA Journal of Mathematical Control and Information

Contributed by: Emily Richardson, emily.richardson@oup.com

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

Papers:

- Necessary and sufficient conditions for multi-agent controllability of path and star topologies by exploring the information of second-order neighbours
Yongcui Chao, Zhijian Ji
https://academic.oup.com/imamci/article/38/1/1/2669884
- Reachability of discrete time ARMA representations
Lazaros Moysis, Nicholas P Karampetakis
https://academic.oup.com/imamci/article/38/1/15/2669887
- On the controllability of networks with nonidentical nodes
A Arreola-Delgado, J G Barajas-Ramírez
https://academic.oup.com/imamci/article/38/1/39/2739346
- Polynomial matrix equivalences: system transformations and structural invariants
S Vologiannidis, E N Antoniou, N P Karampetakis, A I G Vardulakis
https://academic.oup.com/imamci/article/38/1/54/2739342
- Pursuit of a moving target with bounded speed on a directed acyclic graph under partial information
Krishnamoorthy Kalyanam, David Casbeer, Meir Pachter
https://academic.oup.com/imamci/article/38/1/74/2670298
- Observer-based output feedback control design for a coupled system of fractional ordinary and reaction-diffusion equations
Shadi Amiri, Mohammad Keyanpour, Asadollah Asaraii
https://academic.oup.com/imamci/article/38/1/90/5807632
- Robust stabilization of non-linear non-autonomous control systems with periodic linear approximation
V I Slyn'ko, Cemil Tunç, V O Bivziuk
https://academic.oup.com/imamci/article/38/1/125/5807630
- Positive observers for linear positive systems in a Hilbert lattice space
Abdellaziz Binid, Mohammed Elarbi Achhab, Mohamed Laabissi
https://academic.oup.com/imamci/article/38/1/143/5819217
- H-Infinity output tracking bumpless transfer control for switched linear systems
Ying Zhao, Jun Zhao
https://academic.oup.com/imamci/article/38/1/159/5819796
- Chattering of proxy-based sliding mode control in the presence of parasitic dynamics
Ryo Kikuuwe, Pablo J Prieto, J A López-Rentería

https://academic.oup.com/imamci/article/38/1/177/5819793
- Approximate controllability of second order nonlocal neutral differential evolution inclusions
V Vijayakumar, R Udhayakumar, C Dineshkumar
https://academic.oup.com/imamci/article/38/1/192/5739943
- Controllability results of fractional intefro-differential equation with non-instantaneous impulses on time scales
Vipin Kumar, Muslim Malik
https://academic.oup.com/imamci/article/38/1/211/5831969
- Robust integrated covariance intersection fusion Kalman estimators for networked mixed uncertain time-varying systems
Yuan Gao, Zili Deng
https://academic.oup.com/imamci/article/38/1/232/5836491
- A pseudo-spectrum based characterization of the robust strong H-infinity norm of time-delay systems with real-valued and structured uncertainties
Pieter Appeltans, Wim Michiels
https://academic.oup.com/imamci/article/38/1/267/5998838
- A class of optimal control problems governed by singular systems via Balakrishnan's method
Abed Makreloufi, Mohammed Benharrat
https://academic.oup.com/imamci/article/38/1/297/6018429
- New results on robust sliding mode control for linear time-delay systems
Jothiappan Palraj, Kalidass Mathiyalagan, Peng Shi
https://academic.oup.com/imamci/article/38/1/320/6025510
- Finite-time control of uncertain time-varying systems in p-normal form
Kanya Rattanamongkhonkun, Radom Pongvuthithum, Chulin Likasiri
https://academic.oup.com/imamci/article/38/1/337/6025509
- Do generalized draw-down times lead to better dividends? A Pontryagin principle-based answer
Florin Avram, Dan Goreac
https://academic.oup.com/imamci/article/38/1/361/6032263
- An efficient approximate method for solving two-dimensional fractional optimal control problems using generalized fractional order of Bernstein functions
Ali Ketabdari, Mohammad Hadi Farahi, Sohrab Effati
https://academic.oup.com/imamci/article/38/1/378/6032264
- On perturbation range in the feedback synthesis problem for a chain of integrators system
V I Korobov, T V Revina
https://academic.oup.com/imamci/article/38/1/396/6041783

Back to the contents

4.6. International Journal of Control, Automation, and Systems

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

International Journal of Control, Automation, and Systems
Vol. 19, No. 3, March 2021

Papers:

- Stabilization of Delayed Fuzzy Neutral-type Systems Under Intermittent Control R. Vadivel, S. Saravanan, B. Unyong, P. Hammachukiattikul, Keum-Shik Hong, and Gyu M. Lee, pp.1408-1425
- Event-triggered Iterative Learning Control for Perfect Consensus Tracking of Non-identical Fractional Order Multi-agent Systems Liming Wang and Guoshan Zhang*, pp.1426-1442
- Classification of Hand Gestures Based on Multi-channel EMG by Scale Average Wavelet Transform and Convolutional Neural Network Do-Chang Oh* and Yong-Un Jo, pp.1443-1450

Back to the contents

4.7. European Journal of Control

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

European Journal of Control
Volume 58, March 2021

Papers:

- H. Zengin, N. Zengin, B. Fidan, A. Khajepour., Blending based multiple-model adaptive control of multi-variable systems with application to lateral vehicle motion control, pg.1-10
- Márcia L.C. Peixoto, Pedro H.S. Coutinho, Reinaldo M. Palhares., Improved robust gain-scheduling static output-feedback control for discrete-time LPV systems, pg.11-16
- Supeng Zhu, Tao Xu, Caisheng Wei, Zheng Wang., Learning-based adaptive fault tolerant control for hypersonic flight vehicles with abrupt actuator faults and finite time prescribed tracking performance, pg.17-26
- Federica Garin, Sebin Gracy, Alain Y. Kibangou., Strong structural input and state observability of linear time-invariant systems: Graphical conditions and algorithms, pg.27-42
- Sergio Galeani, Corrado Possieri, Mario Sassano., Output tracking for a class of non-minimum phase nonlinear systems: A two-point boundary value problem formulation with a hybrid regulator, pg. 43-52
- S. Łagosz, P. Śliwiński, P. Wachel., Identification of Wiener–Hammerstein systems by L1–constrained Volterra series, pg.53-59
- Maciej Marcin Michałek, Dariusz Pazderski., Reconstruction of admissible joint-references from a prescribed output-reference for the non-standard and generalized N- trailers, pg.60-73
- Natália A. Keles, Cristiano M. Agulhari, Márcio J. Lacerda., Stability analysis and robust performance of periodic discrete-time uncertain systems via structured Lyapunov functions, pg.74-81
- Freddy Valderrama, Fredy Ruiz., Limited-complexity controller tuning: A set membership data-driven approach, pg. 82-89
- Changxiong Chen, Liping Chen, Xianjuan Cheng., An efficient method for determining fault isolability properties based on an augmented system model, pg. 90-100
- G. Yu. Kulikov, M.V. Kulikova., Ito-Taylor-based square-root unscented Kalman filtering methods for state estimation in nonlinear continuous-discrete stochastic systems, pg.101-113
- Ryo Kikuuwe., Sliding motion accuracy of proxy-based sliding mode control subjected to measurement noise and disturbance, pg.114-122
- Wenbin Chen, Fang Gao, Guobao Liu., New results on delay-dependent stability for nonlinear systems with two additive time-varying delays, pg.123-130
- M. Ayman, M. Soliman., Robust multi-objective PSSs design via complex Kharitonov's theorem, pg.131-142

Back to the contents

4.8. Automatica

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

Automatica
Volume 124, February 2021

Regular Papers:

- Maxim Kristalny, Jang Ho Cho., Admittance parameterization in linear networked bilateral teleoperation control
- Afshin Mesbahi, Jingjing Bu, Mehran Mesbahi., Nonlinear observability via Koopman Analysis: Characterizing the role of symmetry
- Mohamed Maghenem, Ricardo G. Sanfelice., Sufficient conditions for forward invariance and contractivity in hybrid inclusions using barrier functions

Brief Papers:

- Jun Shen, James Lam., Improved reachable set estimation for positive systems: A polyhedral approach
- Karthik Elamvazhuthi, Shiba Biswal, Spring Berman., Controllability and decentralized stabilization of the Kolmogorov forward equation for Markov chains
- Fabrizio Padula, Augusto Ferrante, Lorenzo Ntogramatzidis., Eigenstructure assignment in linear geometric control

Technical Communiques:

- Yingjie Wang, Yuan Yuan, Jinguo Liu., Finite-time leader-following output consensus for multi-agent systems via extended state observer
- Juan G. Rueda-Escobedo, Jaime A. Moreno., Strong Lyapunov functions for two classical problems in adaptive control
- Mikhail Ivanov Krastanov, Margarita Nikolaeva Nikolova., A necessary condition for small-time local controllability
- Weijiu Liu., Independence of convergence rate of the wave tracking error on structures of feedforward controllers
- Cuong M. Nguyen, Chee Pin Tan, Hieu Trinh., Sliding mode observer for estimating states and faults of linear time-delay systems with outputs subject to delays
- Yang Liu, Zhaocong Liu, Xiang Yin, Shaoyuan Li., An improved approach for verifying delayed detectability of discrete-event systems
- Lucas Brivadis, Ludovic Sacchelli, Vincent Andrieu, Jean-Paul Gauthier, Ulysse Serres., From local to global asymptotic stabilizability for weakly contractive control systems
- Jinhui Zhang, Danni Shi, Yuanqing Xia., Design of sliding mode output feedback controllers via dynamic sliding surface
- Xiaodi Li, Peng Li., Stability of time-delay systems with impulsive control involving stabilizing delays
- Alberto Castillo, Pedro García., Predicting the future state of disturbed LTI systems: A solution based on high-order observers

- Sven Brüggemann, Robert R. Bitmead., Exponential convergence of recursive least squares with forgetting factor for multiple-output systems

Correspondence Items:

- Xiang Yin, Stéphane Lafortune., Authors' Reply to "Comments on "A new approach for the verification of infinite-step and K-step opacity using two-way observers" [Automatica, 2017(80)162-171]"

Back to the contents

4.9. Journal of Process Control

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

Journal of Process Control
Volume 98, February 2021

Regular Articles:

- Hao Jie, Meichen Yuan, Weirong Hong., A quasi-sequential algorithm for PDE-constrained optimization based on space–time orthogonal collocation on finite elements, pg.1-9
- Chun-Qing Huang, Chen-Bing Zheng, Fan Yang, Chun-Yi Su., Performance assessment of multivariate process using time delay matrix, pg.10-17
- Jiayao Chen, Weihua Gui, Jiayang Dai, Zhaohui Jiang, Xu Li., A hybrid model combining mechanism with semi-supervised learning and its application for temperature prediction in roller hearth kiln, pg.18-29
- Junyao Xie, Stevan Dubljevic., Discrete-time modeling and output regulation of gas pipeline networks, pg.30-40
- Pappa Natarajan, Rohollah Moghadam, S. Jagannathan., Online deep neural network-based feedback control of a Lutein bioprocess, pg.41-51
- Pulkit Mathur, Christopher L.E. Swartz, Danielle Zyngier, Francois Welt., Robust online scheduling for optimal short-term operation of cascaded hydropower systems under uncertainty, pg.52-65
- Wei Chen, Jiusun Zeng, Xiaobin Xu, Shihua Luo, Chuanhou Gao., Structured sparsity modeling for improved multivariate statistical analysis based fault isolation, pg.66-78
- Xue Xu, Jinliang Ding., Decentralized dynamic process monitoring based on manifold regularized slow feature analysis, pg.79-91
- Xin-Gang Guo, Pei-Ying Hong, Taous-Meriem Laleg-Kirati., Calibration and validation for a real-time membrane bioreactor: A sliding window approach, pg.92-105
- Hong-Gui Han, Li-Xin Dong, Jun-Fei Qiao., Data-knowledge-driven diagnosis method for sludge bulking of wastewater treatment process, pg.106-115

Back to the contents

4.10. Systems and Control Letters

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

Systems and Control Letters
Volume 148, February 2021

Regular Articles:

- Wei Lin, Jiwei Sun., New results and examples in semiglobal asymptotic stabilization of nonaffine systems by sampled-data output feedback
- Lijing Zhai, Kyriakos G. Vamvoudakis., Data-based and secure switched cyber–physical systems
- Amaury Hayat., Global exponential stability and Input-to-State Stability of semilinear hyperbolic systems for the L2 norm
- Sergei Avdonin, Nina Avdonina, Julian Edward, Karlygash Nurtazina., Control and inverse problems for the heat equation with strong singularities
- Jingying Ma, Yuanshi Zheng, Likai Zhou., Game-based coalescence in multi-agent systems
- Tobias Breiten, Karl Kunisch., Neural network based nonlinear observers
- Andrey Polyakov., Homogeneous Lyapunov functions for homogeneous infinite dimensional systems with unbounded nonlinear operators
- Mohammad Pirani, Joshua A. Taylor, Bruno Sinopoli., Strategic sensor placement on graphs
- Daniele Astolfi, Luca Zaccarian, Marc Jungers., On the use of low-pass filters in high-gain observers
- Félix A. Miranda-Villatoro, Rodolphe Sepulchre., Differential dissipativity analysis of reaction–diffusion systems
- Zhi Li, Liping Xu, Liguang Xu., Global attracting sets and exponential stability of stochastic partial functional differential equations
- Man Zheng, Yoshito Ohta., Bayesian positive system identification: Truncated Gaussian prior and hyperparameter estimation
- Wentuo Fang, Mohsen Zamani, Zhiyong Chen., Secure and privacy preserving consensus for second-order systems based on Paillier encryption
- Linlin Shi, Ronghao Zheng, Meiqin Liu, Senlin Zhang., Distributed circumnavigation control of autonomous underwater vehicles based on local information

Special Issue on Recent Advances on Infinite Dimensional Systems - Dedicated to Ruth F. Curtain:

- Jean-Michel Coron, Hoai-Minh Nguyen., Null-controllability of linear hyperbolic systems in one dimensional space

Back to the contents

4.11. Control Engineering Practice

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

Control Engineering Practice
Volume 108, March 2021

Frontiers in Control Engineering Practice:

-T. Hägglund., A feedforward approach to mid-ranging control

Regular Papers:

- Hossein Parastvand, Airlie Chapman, Octavian Bass, Stefan Lachowicz., Graph automorphic approaches to the robustness of complex networks
- Zihao Liu, Arash M. Dizqah, Jose M. Herreros, Joschka Schaub, Olivier Haas., Simultaneous control of NOx, soot and fuel economy of a diesel engine with dual-loop EGR and VNT using economic MPC
- Mahshad Valipour, Kathryn M. Toffolo, Luis A. Ricardez-Sandoval., State estimation and sensor location for Entrained-Flow Gasification Systems using Kalman Filter
- Shengquan Li, Chaowei Zhu, Qibo Mao, Jinya Su, Juan Li., Active disturbance rejection vibration control for an all-clamped piezoelectric plate with delay
- Yuhua Qi, Yang Zhu, Jianan Wang, Jiayuan Shan, Hugh H.T. Liu., MUDE-based control of quadrotor for accurate attitude tracking
- Roya Firoozi, Xiaojing Zhang, Francesco Borrelli., Formation and reconfiguration of tight multi-lane platoons
- Abdul-Basset A. Al-Hussein, Fadhil Rahma Tahir, Viet-Thanh Pham., Fixed-time synergetic control for chaos suppression in endocrine glucose–insulin regulatory system
- Manne Held, Oscar Flärdh, Jonas Mårtensson., Experimental evaluation of a look-ahead controller for a heavy-duty vehicle with varying velocity demands
- Haoran Tan, Yaonan Wang, Hang Zhong, Min Wu, Yiming Jiang., Coordination of low-power nonlinear multi-agent systems using cloud computing and a data-driven hybrid predictive control method
- Dzung Tran, Tansel Yucelen, Selahattin Burak Sarsilmaz., Finite-time control of multiagent networks as systems with time transformation and separation principle

Virtual Special Section on Machine Learning and Advanced Data Analytics in Control Engineering Practice; Edited by Aditya Tulsyan, Manabu Kano, Margret Bauer and Zhiqiang Ge.

- Yongxiang Lei, Hamid Reza Karimi, Lihui Cen, Xiaofang Chen, Yongfang Xie., Processes soft modeling based on stacked autoencoders and wavelet extreme learning machine for aluminum plant-wide application

Back to the contents

4.12. ISA Transactions

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

ISA Transactions
Volume 109, March 2021
Research Articles:

- Krzysztof Łakomy, Rafal Madonski., Top of FormCascade extended state observer for active disturbance rejection control applications under measurement noise, pg.1-10
- Bismark C. Torrico, René D.O. Pereira, Andresa K.R. Sombra, Fabrício G. Nogueira., Simplified filtered Smith predictor for high-order dead-time processes, pg.11-21
- Li Li, Yaofeng Zhang., Distributed preview control for large-scale systems with time-varying delay, pg.22-33
- Arunava Banerjee, Joyjit Mukherjee, Mashuq un Nabi, Indra Narayan Kar., An artificial delay based robust guidance strategy for an interceptor with input saturation, pg.34-48
- Yuanhong Ren, Wuneng Zhou, Zhiwei Li, Ling Liu, Yuqing Sun., Prescribed-time cluster lag consensus control for second-order non-linear leader-following multiagent systems,pg. 49-60

- Manchun Tan, Zhiqiang Song, Xuemei Zhang., Robust leader-following consensus of cyber–physical systems with cyber attack via sampled-data control, pg.61-71
- Xuan-Toa Tran, Hyondong Oh., A modified generic second order algorithm with fixed-time stability, pg.72-80
- Wentao Liu, Tong Zhao., An active disturbance rejection control for hysteresis compensation based on Neural Networks adaptive control, pg.81-88
- Erlong Kang, Hong Qiao, Jie Gao, Wenjing Yang., Neural network-based model predictive tracking control of an uncertain robotic manipulator with input constraints, pg.89-101
- Yu-wei Wan, Bo Zhu., Abnormal patterns recognition in bivariate autocorrelated process using optimized random forest and multi-feature extraction, pg.102-112
- Jean-Michel A. Sarr, Timothée Brochier, P. Brehmer, Y. Perrot, S. El Ayoubi., Complex data labeling with deep learning methods: Lessons from fisheries acoustics, pg.113-125
- Adriano M.C. Rezende, Vinicius M. Gonçalves, Luciano C.A. Pimenta., Safe coordination of robots in cyclic paths, pg.126-140
- Tadej Krivec, Gregor Papa, Juš Kocijan., Simulation of variational Gaussian process NARX models with GPGPU, pg.141-151
- Ramesh Devarapalli, Biplab Bhattacharyya, Nikhil Kumar Sinha, Bishwajit Dey., Amended GWO approach based multi-machine power system stability enhancement, pg.152-174

Practice Articles:

- Xiaowei Yang, Jianyong Yao, Wenxiang Deng., Output feedback adaptive super-twisting sliding mode control of hydraulic systems with disturbance compensation, pg.175-185
- Surender Hans, Felix Orlando Maria Joseph., Control of a flexible bevel-tipped needle using super-twisting controller based sliding mode observer, pg.186-198
- Xuanju Dang, Xiaoan Zhao, Chao Dang, Hui Jiang, Lantian Zha., Incomplete differentiation-based improved adaptive backstepping integral sliding mode control for position control of hydraulic system, pg.199-217
- Rafael Pérez-San Lázaro, Ivan Salgado, Isaac Chairez., Adaptive sliding-mode controller of a lower limb mobile exoskeleton for active rehabilitation, pg.218-228
- Xiao-Han Zhang, Yuan Xu, Yan-Lin He, Qun-Xiong Zhu., Novel manifold learning based virtual sample generation for optimizing soft sensor with small data, pg.229-241
- Alireza Naderi Akhormeh, Hoomaan MoradiMaryamnegari, Abdol Majid Khoshnood, Ahmad Samiee., Velocity estimation of flexible dynamics systems using virtual sensing, pg.242-258
- Suhua Yao, Guoqin Gao, Zhiqiang Gao., On multi-axis motion synchronization: The cascade control structure and integrated SMC–ADRC design, pg.259-268
- Zhiyuan He, Guo Chen, Tengfei Hao, Xiyang Liu, Chunyu Teng., An optimal filter length selection method for MED based on autocorrelation energy and genetic algorithms, pg. 269-287
- Kui Yi, Jianda Han, Xiao Liang, Yuqing He., Contact transition control with acceleration feedback enhancement for a quadrotor, pg.288-294
- Younes Azzoug, Mohamed Sahraoui, Remus Pusca, Tarek Ameid, Antonio J. Marques Cardoso., High-performance vector control without AC phase current sensors for induction motor drives: Simulation and real-time implementation, pg.295-306
- José Angel Cano González, Oscar Salas-Peña, Jesus De León-Morales., Observer-based super twisting design: A comparative study on quadrotor altitude control, pg.307-314

- Zhenjian Yao, Zhongyu Wang, Xiaojun Liu, Chenchen Wang, Zhendong Shang., An improved low-frequency noise reduction method in shock wave pressure measurement based on mode classification and recursion extraction, pg.315-326
- Jianwen Guo, Xiaoyan Li, Zhiyuan Liu, Shaohui Zhang, Jianyu Long., A novel doublet extreme learning machines for Delta 3D printer fault diagnosis using attitude sensor, pg.327-339
- Yu Wei, Yuantao Yang, Minqiang Xu, Wenhu Huang., Intelligent fault diagnosis of planetary gearbox based on refined composite hierarchical fuzzy entropy and random forest, pg.340-351
- V. Fernandez-Cavero, J. Pons-Llinares, O. Duque-Perez, D. Morinigo-Sotelo., Detection and quantification of bar breakage harmonics evolutions in inverter-fed motors through the dragon transform, pg.352-367
- Lei Chen, Shuting Wan., Intelligent fault diagnosis of high-voltage circuit breakers using triangular global alignment kernel extreme learning machine, pg.368-379
- Hemant Saxena, Alka Singh, Jitendra Nath Rai., Analysis of SOGI-ROGI for synchronization and shunt active filtering under distorted grid condition, pg.380-388
- T. Ran, L. Yuan, J.b. Zhang., Scene perception based visual navigation of mobile robot in indoor environment, pg.389-400

Back to the contents

4.13. Mechatronics

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

Mechatronics
Volume 73, February 2021

Papers:

- Pedro Outeiro, Carlos Cardeira, Paulo OliveiraTop of Form., Multiple-model control architecture for a quadrotor with constant unknown mass and inertia
- Wenfu Xu, Liang Han, Xin Wang, Han Yuan., A wireless reconfigurable modular manipulator and its control system
- Nauman Masud, Dario Senkic, Christian Smith, Magnus Isaksson., Modeling and control of a 4-ADOF upper-body exoskeleton with mechanically decoupled 3-D c compliant arm-supports for improved-pHRI
- Zhao Ding, Li Chen, Dongxiao Miao., Decoupling internal model control for the robust engagement of clutches
- Alexander Keck, Christoph Schwarz, Thomas Meurer, Andreas Heckmann, Gustav Grether., Estimating the wheel lateral position of a mechatronic railway running gear with nonlinear wheel–rail geometry
- Myungsung Kang, Seonggun Joe, Taeyoung An, Hoon Jang, Byungkyu Kim., A novel robotic colonoscopy system integrating feeding and steering mechanisms with self-propelled paddling locomotion: A pilot study
- Joey Z. Ge, Longlong Chang, Néstor O. Pérez-Arancibia., Preisach-model-based position control of a shape-memory alloy linear actuator in the presence of time- varying stress
- Hamidreza Hoshyarmanesh, Kourosh Zareinia, Sanju Lama, Garnette R. Sutherland., Structural design of a microsurgery-specific haptic device: neuroArmPLUSHD prototype
- Junjie Pan, Amir Khajepour, Yangtao Li, Jing Yang, Weiqiang Liu., Performance and power consumption optimization of a hydraulic variable valve actuation system
- Jason N. Greenberg, Xiaobo Tan., Sensitivity-based data fusion for optical localization of a mobile robot

- Shahin Rouhani, Tsu-Chin Tsao, Jason L. Speyer., Integrated MIMO fault detection and disturbance observer-based control

Back to the contents

4.14. Journal of the Franklin Institute

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

Journal of the Franklin Institute
Volume 358, Issue 3
February 2021

Control Systems:

- Arman Sehatnia, Farzad Hashemzadeh, Mahdi Baradarannia., Extended hybrid control scheme for asynchronous switching, pg.1693-1714
- Renato Borba Teixeira, Tiago Roux Oliveira, Ramon Romankevicius Costa, Liu Hsu., Output-feedback binary adaptive control of MIMO systems using monitoring function, pg.1715-1742
- Yafeng Li, Ju H. Park, Changchun Hua, Qing Geng., Global output feedback tracking control for switched nonlinear systems with deferred prescribed performance, pg.1743-1764
- Yafeng Guo., Stability and stabilization of Markov jump systems with generally uncertain transition rates, pg. 1765-1781
- Dacai Liu, Zhi Liu, C.L. Philip Chen, Yun Zhang., Prescribed-time containment control with prescribed performance for uncertain nonlinear multi-agent systems, pg.1782-1811
- Tito L.M. Santos, Taniel S. Franklin, Bismark C. Torrico., Anti-windup strategy for processes with multiple delays: A predictor-based approach, pg.1812-1838
- Yunfei Wang, Jiyun Zhao, Haigang Ding, He Zhang., Output feedback control of electro-hydraulic asymmetric cylinder system with disturbances rejection, pg.1839- 1859
- Ximing Yang, Tieshan Li, Yue Wu, Yang Wang, Yue Long., Fault estimation and fault tolerant control for discrete-time nonlinear systems with perturbation by a mixed design scheme, pg.1860-1887
- Han Sol Kim, Kwangil Lee, Young Hoon Joo., Decentralized sampled-data fuzzy controller design for a VTOL UAV, pg. 1888-1914
- Zehua Ye, Dan Zhang, Zheng-Guang Wu., Adaptive event-based tracking control of unmanned marine vehicle systems with DoS attack, pg. 1915-1939
- Edgar Estrada, Wen Yu, Xiaoou Li., Stable bilateral teleoperation with phase transition and haptic feedback, pg.1940-1956
- Jianhua Wang, Yan Song, Guoliang Wei, Yuying Dong., Resilient distributed MPC for systems under synchronous round-robin scheduling, pg.1957-1983
- Wei Kang, Jun Cheng, Xia Zhou, Jinde Cao, Hailing Wang., Asynchronous quantized control of Markovian switching Lur'e systems with event-triggered strategy, pg.1984-1998
-He Zhang, Qian Ma, Junwei Lu, Yuming Chu, Yongmin Li., Synchronization control of neutral-type neural networks with sampled-data via adaptive event-triggered communication scheme, pg.1999-2014

Complex Networks and Dynamic Systems:

- Mian Mohammad Arsalan Asif, Mian Ilyas Ahmad, Peter Benner, Lihong Feng, Tatjana Stykel., Implicit higher-order moment matching technique for model reduction of quadratic-bilinear systems, pg. 2015-2038
- Lingling Lv, Jinbo Chen, Zhe Zhang, Baowen Wang, Lei Zhang., A numerical solution of a class of periodic coupled matrix equations, pg. 2039-2059
- Mengxin Wang, Jia Guo, Sitian Qin, Jiqiang Feng, Wenxue Li., Exponential bipartite synchronization of delayed coupled systems over signed graphs with Markovian switching via intermittent control, pg. 2060-2085
- Yuqing Zhang, Huaiqin Wu, Jinde Cao., Global Mittag-Leffler consensus for fractional singularly perturbed multi-agent systems with discontinuous inherent dynamics via event-triggered control strategy, pg. 2086-2114
- Feng Li, Keming Yao, Bo Li, Li Jia. A novel learning algorithm of the neuro-fuzzy based Hammerstein–Wiener model corrupted by process noise, pg. 2115-2137

Signal Processing and Communication

- Xiaohang Li, Weidong Zhang, Dunke Lu., Zonotopic fault interval estimation for discrete-time Markovin jump systems with generally bounded transition probabilities, pg.2138-2160
- Maykon Renan P. da Silva, Flávio Geraldo C. Rocha., Traffic modeling for communications networks: A multifractal approach based on few parameters, pg.2161-2177
- Zouhair Al-qudah, Ahmad Ababneh., Broadcast diamond channel: Transmission strategies and bounds, pg.2178-2193
- Zijian Qiao, Jian Liu, Xin Ma, Jinliang Liu., Double stochastic resonance induced by varying potential-well depth and width, pg.2194-2211
- Lakhdar Aggoun, Yahya Chetouani., Fault detection strategy combining NARMAX model and Bhattacharyya distance for process monitoring, pg. 2212-2228

Back to the contents

4.15. TWMS Journal of Pure and Applied Mathematics

Contributed by: Mammadova Gamar, twms.aliev@gmail.com

TWMS Journal o Pure and Applied Mathematics
Volume 12, No. 1, 2021

Papers:

“Fuzzy Sets in Dealing with Imprecision and Uncertainty: Past and Future“
Dedicated to the memory of Lotfi A. Zadeh
Lead Guest editor: Prof.Irina Perfilieva
Guest Editors: Prof.Didier Dubois, Prof.Etienne E. Kerre,Prof. Witold Perdycz, Prof. Ali Abbasov
1. On Some Dispersion Measures for Fuzzy Data and their Robustness
Przemyslaw Grzegorzewski, Katarzyna Gladek
2 Mathematical Morphology and Spatial Reasoning: Fuzzy and Bipolar Setting
Isabelle Bloch
3 Fuzzy Modeling in Game AI
Alexander Dockhorn, Rudolf Kruse
4 L.A. Zadeh, the Visionary in Explainable Artificial Intelligence
Bernadette Bouchon-Meunier, Marie-Jeanne-Lesot, Christophe Marsala

5. Manifistation of Fuzzy Topology in other Fuzzy Mathematical Structures
Alexander Šostak, Ingrida Uljane
6 How Visions of Zadeh Led to Formation of New Models of Natural Language
Vilem Novak
7. Definitions of Concepts and Imprecision
Marek Z. Reformat, Ronald R. Yager, Jesse X. Chen
8. Zadeh's Vision, Modern Physics, and the Future of Computing
Vladik Kreinovich and Olga Kosheleva
9. Managing uncertainty and fuzziness through a generalized conditional plausibility model
Giulianella Coletti and Barbara Vantaggi
10. Mathematical Analysis of Fuzzy-valued Functions
Luciano Stefanini, M. Arana-Jimenez, M., L. Guerra, L. Sorini,
11. Multi-adjoint algebras as general structures in fuzzy set theory
Jesus Medina
12. Uniform Convergence of Generalized Probability Mixtures that Represent Combined Fuzzy Systems'
Bart Kosko

Back to the contents

5 Conferences and Workshops

5.1. Symposium on Mathematical Theory of Networks and Systems, Germany

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

MTNS 2022, 12-16 September 2022, Bayreuth, Germany
The 25th International Symposium on Mathematical Theory of Networks and Systems (MTNS 2022) will be held on 12-16 September 2022 in Bayreuth, Germany.

MTNS is a major symposium in the general area of mathematical systems theory, networks and control. The symposium is interdisciplinary and attracts mathematicians, engineers and researchers working in all aspects of systems and control theory and its applications. The symposium is held every two years. Mathematical methods which play a role in the areas mentioned above stem from a broad range of fields of pure and applied mathematics, including ordinary and partial differential equations, real and complex analysis, numerical analysis, optimization, probability theory and stochastic analysis, operator theory, linear and commutative algebra as well as algebraic and differential geometry. Application areas range from biology, communications and mathematical finance to problems in electrical, mechanical, aerospace and chemical engineering, and robotics.

We are looking forward to a stimulating symposium with exciting talks and discussions. For more information see
https://www.mtns2022.uni-bayreuth.de

Back to the contents

5.2. International Conference on Methods in Automation/Robotics, Poland

Contributed by: Paweł Dworak, Pawel.Dworak@zut.edu.pl

25th International Conference on Methods and Models in Automation and Robotics
23-26 August 2021
Amber Baltic Hotel, Miedzyzdroje, Poland

It is our great pleasure to invite You to participate in the 25th International Conference on Methods and Models in Automation and Robotics, MMAR 2021 to be held in Miedzyzdroje, Poland, from August 23th to August 26th, 2021.

The Conference will be a good opportunity for highlighting the new results and directions of Automatic Control theory, technology and applications. As such, it mainly will concentrate on the following key points:
– emphasis on invited lectures including plenaries,
– industry participation promotion,
– attract young people to study and work in the field.

The participants of the 25th International MMAR Conference will have the opportunity to take part in the wide spectrum of categories for technical presentations, including plenary lectures, regular papers of both lecture and poster session types, and panel discussion. We look forward to seeing our old and new friends

in Poland. You are kindly invited to participate in the 25th International MMAR Conference in Miedzyzdroje, Poland.

Topics of interest include, but are not limited to:
– Identification, modelling and simulation
– Signal processing
– Control and systems theory
– Robotics
– Intelligent systems and methods
– Control systems

The proceedings of the conference will be submitted for review and approval for inclusion in the IEEE Xplore Digital Library and will be submitted for inclusion in the Clarivate Analytics Web of Science.

Key Dates (Please check the latest information at www.mmar.edu.pl)
March 5, 2021 - Paper submission
May 21, 2021 - Notification of acceptance
June 21, 2021 - Registration
June 21, 2021 - Camera-ready paper submission

For more information see http://www.mmar.edu.pl

Back to the contents

5.3. Airborne Wind Energy Conference, Italy/Virtual

Contributed by: Lorenzo Fagiano, lorenzo.fagiano@polimi.it

Airborne Wind Energy Conference 2021 - 1-3 September in Milano, Italy

The 9th Airborne Wind Energy Conference (AWEC21, https://awec2021.com/) will take place at Politecnico di Milano as hybrid event (online/in presence) on 1-3 September 2021. Please consider joining the conference and submitting an abstract. The call for abstracts is currently open: https://awec2021.com/call-for-abstracts with deadline on 2 April 2021 for the 1-page-long abstract. You can find more information about AWEC2021 below and at the links above. For enquiries, please contact info@awec2021.com.

Conference description: Airborne Wind Energy (AWE) is an emerging renewable energy technology that aims to replace the use of fossil fuels for energy production on an economical basis. A characteristic feature of the various AWE concepts is the use of tethered flying devices to access wind energy at higher altitudes where the wind is more consistent. Over the past decade the AWE scientific and industrial community has grown considerably. The largest AWE demonstrator system reached so far was a 600 kW system; many other demonstrator systems exist in the electricity output range up to 80 kW.

The 8th Airborne Wind Energy Conference (AWEC 2019) was held on 15-16 October 2019 in Glasgow, United Kingdom. Altogether, more than 220 delegates from 21 countries across Europe and abroad, scientists and engineers, entrepreneurs and investors gathered to share their experiences, findings, opportunities

and visions for airborne wind energy.

The program of the AWEC 2021 will include
- plenary talks by selected experts from international agencies, industry and academia, and
- contributed talk sessions in two parallel tracks, and
- panel discussions covering all aspects of airborne wind energy, and
- poster sessions, preceded by plenary spotlight presentations.

We will see fascinating documentations of industrial developments, ongoing research projects and engaging panel discussions about key themes for the commercialization of the technology. In addition to the learning component, the conference will also be the perfect opportunity to network within the emerging community.

Call for abstracts: If you are interested in presenting your work to other members of this emerging industry, you are kindly requested to write a one-page A4 abstract, in English, about what you want to present, and send it to info@awec2021.com until the submission deadline. Your abstract will be evaluated by the programme committee consisting of international renowned AWE experts. Notice of acceptance is given after peer-review, together with the type of talk (speaker session/poster session).

Accepted abstracts will become part of an illustrated book of abstracts that will be available in open access and distributed at the conference. Check out the existing book series.

The conference is intended as reference for companies, politicians, researchers, scientists, investors, professionals and students interested or active in the innovative field of Airborne Wind Energy. Submitted abstracts will be selected and arranged in such a way that the conference will provide a consistent compilation of existing prototypes and models, fundamental theories, current research and development activities as well as economic, investment and regulatory aspects. Besides the R&D and technical sessions it is of special interest to have an investment & finance session. All investors (VC, family offices, Corporate Ventures, private investors etc.) are welcome to contribute their interest, expectation or existing experience about AWE-financing to the conference. The topics of the conference will include, but are not limited to:
- Historical developments
- Practical experiences and prototypes
- High altitude wind resource
- Wind measurement and weather conditions
- Political issues and requirements
- Drag and traction power conversion
- Performance characterization
- Flight stability, dynamic models and control
- Structural and aerodynamic analysis
- Materials
- Kite and tether design and manufacture
- Generators and electrical subsystems
- Reliability and safety assessment
- Economic potential
- Ecological impacts and footprint

• Sustainability & Climate change
• Financing strategies
• Regulations and insurance
• Investors perspective.

Back to the contents

5.4. International Conference on Intelligent Unmanned Systems, Vietnam

Contributed by: Youmin Zhang, Youmin.Zhang@concordia.ca

International Conference on Intelligent Unmanned Systems (ICIUS 2021), Ho Chi Minh City, Vietnam

Call-for-Papers: The 17th International Conference on Intelligent Unmanned System (ICIUS 2021), Ho Chi Minh City, Vietnam, 25-27th August 2021 (http://dae.dte.hcmut.edu.vn/icius2021/)

On behalf of the ICIUS 2021 Organizing Committee, this is to invite you to submit your contributions to the 17th International Conference of Intelligent Unmanned System (ICIUS 2021), to be held both online and onsite, on August 25-27, 2021 at the Ho Chi Minh City, Vietnam. Vibrating with energy, innovation and traffic – lots of traffic – Ho Chi Minh City, formerly known as Saigon, the Pearl of the Far East, has a prominent history going back more than three hundred years. It is is the economic heart of Vietnam and the main hub of the southern region. A freewheeling, cosmopolitan metropolis, HCMC's dynamic cityscape draws together old and new Vietnam in the most compact of spaces, representing the city's past as well as its future.

ICIUS 2021 offers a unique and interesting platform for scientists, engineers and practitioners throughout the world to present and share their most recent research and innovative ideas in the areas of unmanned systems, mechatronics, robotics, automation, and intelligent systems.

CONFERENCE TOPICS: The conference will focus on all types and all aspects with respect to intelligent unmanned systems. Topics of interest include but are not limited to:
• Unmanned Systems: Micro air vehicle, Micro-satellite, Unmanned aerial vehicle, Underwater vehicle, Multi-agent systems, Autonomous ground vehicle, Blimp, Swarm intelligence
• Mechatronics, Robotics and Biomimetics: Artificial muscle actuators, Smart sensors, Design and applications of MEMS/NEMS system, Intelligent robot systems, evolutionary algorithm, Control of biological systems, Biological learning control systems, Neural networks, Bioinspired systems
• Control and Computation: Distributed and embedded systems, Complex systems, Embedded intelligent control, Pervasive computing, Soft computing, Discrete event systems, Hybrid systems, Networked control systems, Delay systems, Identification and estimation, Nonlinear systems, Precision motion control, Control applications, Control engineering education, Computer Architecture & VLSI, Signal, image and multimedia processing, Computational Fluid Dynamics
• Intelligent Systems: Ubiquitous computing, Algorithms, Distributed intelligence, Distributed/decentralized intelligent control, Fuzzy systems, AI and expert systems, Virtual reality, Wearable computers, Information systems and retrieval, Software engineering, Knowledge data engineering, Data communications and compression
• Space Robots: Aircraft flight dynamics and control, Space navigation and guidance, Spacecraft cooperative and control, Real-time distributed simulation, Orbital servicing technology in space, Traffic manage-

ment and controls

IMPORTANT DATES (Please check the latest information at http://dae.dte.hcmut.edu.vn/icius2021/)
• Abstract submission: March 15, 2021
• Full paper submission: May 1, 2021
• Acceptance notification: June 1, 2021
• Final paper submission: July 1, 2021

PAPER SUBMISSION Prospective authors are invited to submit the abstract and the full paper in PDF format through EasyChair at the ICIUS 2021 Submission Site. Submitted papers should be classified as Contributed or Invited Session. Accepted papers are limited to 6 pages and must be formatted in the standard ICIUS format. Detailed instructions for paper submission are available on the conference website. All papers will be reviewed.

Welcome and look forward to receiving your contributions and attendance to the ICUAS'21! For detailed information please see http://dae.dte.hcmut.edu.vn/icius2021/.

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Thi-Hong-Hieu Le, HCMUT, Vietnam

PROGRAM CHAIRS
Hoang-Vu Phan, Konkuk Univ., Korea
Huy-Hung Nguyen, Saigon Univ., Vietnam
Khanh-Hieu Ngo, HCMUT, Vietnam
Le-Quang Dang, HCMUT, Vietnam
Ngoc-Hien Nguyen, RMIT University, Australia
Quoc-Chi Nguyen, HCMUT, Vietnam
Tat Hien Le, HCMUT, Vietnam

Thanh-Long Le, HCMUT, Vietnam
Thanh-Luan Bui, HCMUT, Vietnam
Trong-Hieu Bui, HCMUT, Vietnam
Van-Tu Duong, HCMUT, Vietnam
Van-Sy Le, PetroVietnam Univ., Vietnam

Back to the contents

5.5. World Congress: Problems in Engineering and Sciences, Czech Republic

Contributed by: Seenith Sivasundaram, seenithi@gmail.com

Article: Rescheduled to June 21-24, 2022
World Congress: Mathematical Problems in Engineering, Aerospace, and Sciences When: Date: June 21-24, 2022
Where: Location: Czech Technical University in Prague, Prague, Czech Republic
Website: http://www.icnpaa.com
http://www.icnpaa.com/index.php/icnpaa/ICNPAA2020

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

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

Co-Sponsored by:
AIAA: American Institute of Aeronautics and Astronautics
IFIP: International Federation of Information Processing
CTU: Czech Technical University in Prague, Prague, Czech Republic

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

AIP Conference Proceedings are indexed in:
- Astrophysics Data System(ADS)
- Chemical Abstracts Service (CAS)
- Crossref
- EBSCO Publishing
- Electronic Library Information Navigator (ELIN), Sweden
- Elsevier – SCOPUS
- International Atomic Energy Agency (IAEA)

• Thomson Reuters (ISI)

Back to the contents

5.6. International Conference on Advanced Intelligent Mechatronics, Virtual

Contributed by: Xu Chen, chx@uw.edu

Extended Deadline: Call for papers for the 2021 IEEE/ASME International Conference on Advanced Intelligent Mechatronics (AIM 2021)

Dear Colleagues,
Hope you are staying warm and safe.
The 2021 IEEE/ASME International Conference on Advanced Intelligent Mechatronics (AIM 2021) will be fully virtual and held on July 12-16, 2021. The motto of the conference is "sustainable mechatronics".
As a flagship conference focusing on mechatronics and intelligent systems, the AIM 2021 aims to bring together an international community of experts to discuss the state of the art, new research results, perspectives of future developments, and innovative applications relevant to the broad field of mechatronics.

The 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 Harvesting, 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 is available at https://aim2021.org. Authors are invited to submit one of the following to the PaperPlaza Conference system http://ras.papercept.net/conferences/scripts/start.pl:

Presentation of Recently Accepted TMECH papers: Authors of TMech papers (regular and short papers) that were accepted between August 1, 2020 and May 1, 2021 will have the option to present their paper at the AIM 2021. At this conference, the TMech authors can promote and highlight their publication to the international mechatronics community on a fast track.

AIM Contributed and Invited Papers: 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 Emerging Topics Focused Section Papers: Submission closed. For more details about submission/review procedures and timelines, please refer to the Call for Papers for TMECH/AIM Focused Section: http://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.

Proposal Template: A Microsoft Word Template is available for the preparation of your proposal at https://aim2021.org/submissions/#tutorials.

Support: Each workshop will receive USD 100 (full-day event) or USD 70 (half-day event) that may be used for honorarium, participation reimbursement, and other expenses necessary for promoting your session.

Contact: Interested organizers are encouraged to contact one of the workshop co-chairs [Profs. Jiajie Guo (jiajie.guo@hust.edu.cn) and Carlos Celemin Paez (C.E.CeleminPaez@tudelft.nl)] for coordination purposes.

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 invited papers. Invited papers are submitted and reviewed following the same process as contributed papers, and are included in the proceedings. Please use the template provided on https://aim2021.org/submissions/

Important Dates:
Submission of Special & Invited Session Proposals: 12 Feb 2021 (closed)
Submission of Tutorial & Workshop Proposals: 22 March 2021
Submission of AIM Contributed & Invited Papers: 10 March 2021
Submission of Accepted TMECH Papers: 1 May 2021
Notification of AIM Paper Acceptance: 1 May 2021
Final Paper Submission AIM 2021: 15 May 2021
Contact: aim2021@aim2021.org Conference Website: https://aim2021.org
AIM 2021 Organizing Committee

Back to the contents

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

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

2021 21st International Conference on Control, Automation and Systems (ICCAS 2021)October 12 15, 2021 Ramada Plaza, Jeju, Korea
http://2021.iccas.org
Hybrid conference of ICCAS 2021
ICCAS 2021 will be organized as a hybrid conference and it will be held on October 12-15, 2021 in Jeju, Korea and online.

We would be honored to invite you at the "The 21st International Conference on Control, Automation and Systems (ICCAS 2021)" on October 12 15, 2021 at Ramada Plaza in Jeju, Korea. Jeju is a very beautiful and relaxing island, and selected as the World Natural Heritage.

ICCAS 2021 is an annual international conference being hosted for the last 20 years by the Institute of Control, Robotics and Systems, Our goal is to provide a challenging forum for researchers and industry practitioners to share their original research results and practical development experiences on new challenges and emerging issues in control, automation, robotics and systems.

IMPORTANT DATES
- May 31, 2021 : Submission of Organized Session Proposals
- June 7, 2021 : Submission of Full Papers
- July 28, 2021 : Notification of Acceptance
- August 25, 2021 : Submission of Final Camera-ready Papers

PAPER SUBMISSION:
The conference invites three types of submission: ”Regular Paper”, ”Research Poster Paper”, and ”Organized (Invited) Session/Mini-symposium Paper”.

Indexed in: IEEE Xplore, EI compendex, and SCOPUS

Topics (not limited to)
- Control Theory and Applications
- Robotics and Mechatronics
- Machining Learning and Big Data
- Information and Network Theories
- Autonomous Vehicle Systems
- Human-Robot Interactions
- Process Control Systems
- Machine Vision and Perception
- Bio & Ecological Systems
- Control Devices and Instruments
- Artificial Intelligent Systems
- Cyber Physical Systems
- Guidance, Navigation, and Control
- Sensors and Actuators
- Human Augmented Robots
- Industrial Applications of Control
- Smart Manufacturing System
- Civil and Urban Control Systems

We look forward to welcoming you at ICCAS 2021.

General Chair: Do Yong Lee (KAIST, Korea)
General Co-Chair: Seul Jung (Chungnam National University, Korea)
Program Co-Chairs: Hyun Myung (KAIST, Korea), H. Jin Kim (Seoul National University)
Organized by Institute of Control, Robotics and Systems (ICROS)
More information on ICCAS 2021 is available at http://2021.iccas.org.

Back to the contents

6 Positions

6.1. PhD: Maynooth University, Ireland

Contributed by: Carrie Anne Barry, CarrieAnne.Barry@mu.ie

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

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

A tax-free stipend of €18,500 is available, and PhD fees are also covered for the project. The project also provides 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 project is described in more detail below: 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. The project will include academic collaborators at Imperial College London.

This project is 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 master's level. The project 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:
https://coer.maynoothuniversity.ie/current-positions/

or contact Carrie Anne; CarrieAnne.Barry@mu.ie

Back to the contents

6.2. PhD: Florida Atlantic University, USA

Contributed by: Zhen Ni, zhenni@fau.edu

PhD positions: Florida Atlantic University, FL, USA

Multiple fully funded Ph.D. scholarship opportunities are available starting at Fall 2021/Spring 2022. Successful candidates are expected to carry out research in one or more of the areas:

- Machine learning and reinforcement learning
- Computational intelligence algorithms and theories
- Smart grid and microgrid energy management
- Cyber physical autonomous systems

We are particularly interested in highly-motivated students with a strong research background and capability. Ideal candidates are expected to have:

1. A M.S. degree in electrical and computer engineering. At least a B.S. degree in related areas
2. Strong mathematical background in modeling, optimization and analysis
3. Hands-on experience in computer programming, such as Python, C++ and/or Matlab/Simulink
4. Good communication and writing skills will be a plus

If you are interested in PhD positions in CEECS @ Florida Atlantic University, FL, please send your CV and transcripts to Prof. Zhen Ni zhenni@fau.edu with subject "Application for Fall 2021/Spring 2022." in email.

Florida Atlantic University (FAU) belongs to the 12-campus State University System of Florida and serves South Florida, which has more than five million people and spans more than 100 miles (160 km) of coastline. The university offers more than 170 undergraduate and graduate degree programs within its 10 colleges. As of 2018, enrollment has grown to over 30,000 students representing 140 countries, 50 states and the District of Columbia. FAU, Boca Raton campus, is within 1.3 miles direct distance to the Atlantic Ocean, and is within one-hour drive to Miami and three-hour drive to Orlando. Boca Raton is the southernmost city in Palm Beach County, Florida and is with warm winter and comfortable summer.

The Department of Computer and Electrical Engineering and Computer Science (CEECS) department has 47 faculty and 5 staff members, and offers baccalaureate (800 students), masters, and PhD degrees (280 students) in Computer Engineering, Electrical Engineering, and Computer Science.

The department's current active funding portfolio is over $7.0M, with support from NSF, NIH, DoD, DoE, DARPA, and Industry. There are multiple prestigious NSF CAREER recipients per year in the department recently. The newly established Center for Connected Autonomy and Artificial Intelligence (CA-AI) provides cutting-edge research and education on autonomous system and AI. More information can be found here: http://eng.fau.edu/research/c2a2/. Dr. Ni has successfully supervised a group of talented students, who recently received best paper/poster and other research awards.

Previous students either landed in leading national laboratories or major industry companies for their career. More information can be found here:
http://www.eng.fau.edu/directory/faculty/ni/index.php.

Back to the contents

6.3. PhD: University of Lille, France

Contributed by: Ying Tang, ying.tang@univ-lille.fr

PhD position at the University of Lille, France

A three years PhD position is available at the University of Lille, France

Topic: Cyber-Physical Systems with multi-time scales

Job description: Autonomous Cyber-Physical Systems (ACPS) combine the physics of motion with advanced cyber algorithms to act on their own without close human supervision. Recently, attention is being focused on understanding and design of such complex systems by Automatic Control community. From the Control Theory point of view, the analysis and design of Cyber-Physical Systems (CPS) imply the study of complex hybrid systems. Cyber- Physical Systems are typically designed as a network of interacting embedded computers with sensors as physical inputs and actuators as outputs. Moreover, by their inherent nature, such systems involve large number of interconnected systems evolving according to different time scales. In this case, standard control techniques do not allow to handle the small time scale and lead to ill-conditioning problems. There is a lack of tractable tools for analysis and design of CPS when taking different time scales into account. It is a challenge today to design control algorithms using reduced modes (taking into account only one time scale at a time) while ensuring the overall behaviour of the system.

Hybrid systems with multi timescales are relevant to the study of sampled-data control systems. In particular, the systems with aperiodic sampling that we can frequently meet in the domain of Robotics. Such classes of hybrid dynamical systems are very interesting from a theoretic point of view since the study of their basic properties is a largely open field. The development of tractable tools for the analysis and the design of switching rule for such systems is theoretically challenging.

In this thesis, we propose to the candidate to develop new theoretical tools of analysis and control for hybrid systems involving multi-time scales. Two main problems will be studied: (1) development of the new stability analysis tools of such systems in order to guarantee certain performance criteria. (2) switching control law design for the reduced subsystems to ensure the stability of the full system. Numerical applications on the experimental facilities in the CO2 group will be subsequently carried out by the candidate.

More details can be found at:
https://bit.ly/3bNZgZN
To apply, please send the following documents to Lotfi Belkoura (lotfi.belkoura@univ-lille.fr), Laurentiu Hetel (laurentiu.hetel@centralelille.fr) and Ying Tang (ying.tang@univ-lille.fr)

-Detailed CV
-Motivation letter

-Transcripts of records (Undergraduate degree and Master degree)
-Recommendation letters
-Research-oriented documents (e.g. thesis, conference/journal publication)

Back to the contents

6.4. PhD: TU Delft, The Netherlands
Contributed by: Manuel Mazo Jr., m.mazo@tudelft.nl

PhD Position on Networked CPS at the Delft Center for Systems and Control (TU Delft)

The vacant position is within the Networked Cyber-Physical Systems (NCPS) research group. This group aims at improving our understanding and control of cyber-physical systems composed of a large number of interconnected and embedded components. Such networks of systems may contain a large number of sensors and actuators that generate a tremendous amount of data to be processed in real-time in order to increase the autonomy of the participating entities, or accomplish a high level of automation. The scientific challenges currently pursued by the team are of multidisciplinary nature and spanning over several application domains such as: distributed and cooperative robotic networks, multi-vehicle systems, aeronautical, space, and automotive applications, thermal-, electricity-, and water.

The current PhD position will investigate the combination of machine learning approaches and formal methods from computer science and control engineering to devise solutions to diverse problems arising in the context of Networked Control Systems. In particular, the project will focus on the synthesis of controllers that while abiding to pre-specified communication patterns, can guarantee correctness w.r.t complex control specifications. The department Delft Center for Systems and Control (DCSC) of the faculty Mechanical, Maritime and Materials Engineering, coordinates the education and research activities in systems and control at Delft University of Technology. The Centers' research mission is to conduct fundamental research in systems dynamics and control, involving dynamic modeling, advanced control theory, optimization and signal analysis. The research is motivated by advanced technology development in physical imaging systems, renewable energy, robotics and transportation systems. http://www.dcsc.tudelft.nl

Requirements: You should preferably have the following qualifications:
• An MSc degree in systems and control, applied mathematics, electrical engineering, computer science, or related fields.
• Basic knowledge of control systems theory (maybe waived if the candidate is particularly skilled on theoretical computer science).
• Strong analytical skills and an ability to work at the intersection of several research domains, in particular control systems theory and computer science.
• Basic programming skills in Python, C/C++ are expected.
• Good command of the English language and good communication skills.

Conditions of employment: TU Delft offers PhD-candidates a 4-year contract, with an official go/no go progress assessment after one year. Salary and benefits are in accordance with the Collective Labour Agreement for Dutch Universities, increasing from €2395 per month in the first year to €3061 in the fourth year. As a PhD candidate you will be enrolled in the TU Delft Graduate School. The TU Delft Graduate School provides an inspiring research environment with an excellent team of supervisors, academic staff and a

mentor. The Doctoral Education Programe is aimed at developing your transferable, discipline related and research skills. The TU Delft offers a customizable compensation package, discounts on health insurance and sport memberships, and a monthly work costs contribution. Flexible work schedules can be arranged. For international applicants we offer the Coming to Delft Service and Partner Career Advice to assist you with your relocation.

Additional information: For more information about this vacancy, please contact Manuel Mazo Espinosa, Associate Professor, email: m.mazo@tudelft.nl or tel: +31 (15) 2788131

For information about the selection procedure, please contact Irina Bruckner, HR advisor, email: application-3mE@tudelft.nl.

Application procedure: Are you interested in this vacancy? Please apply before 15 April 2021 via the application button and upload:
• a detailed curriculum vitae (including contact information of at least 2 references),
• a separate motivation letter stating why the proposed research topic interests you, and other information that might be relevant to your application,
• academic transcripts of both your BSc and MSc degrees.

A pre-employment screening can be part of the selection procedure. You can apply online here. We will not process applications sent by email and/or post. Acquisition in response to this vacancy is not appreciated. You can find additional details of this position (TUD00812) and others at DCSC here:
https://www.tudelft.nl/en/3me/about/departments/delft-center-for-systems-and-control/about-dcsc/vacancies

Back to the contents

6.5. PhD: VITO and Forschungzentrum Jülich, Belgium/Germany

Contributed by: Sajjad Fekriasl, sajjad.fekriasl@vito.be

PhD: Joint VITO and Forschungzentrum Jülich PhD position, Belgium/Germany

PhD position in Fast Modelling of Li-ion Batteries for Advanced Battery Management Systems

A PhD fund is available at VITO Battery Systems Research Center, in collaboration with Forschungzentrum Jülich, to develop advanced BMS for Lithium-ion batteries. Li-ion batteries are used in wider applications, including battery assembly packs that contain large number of cells connected in series and/or parallel. Such battery packs require complex Battery Management Systems (BMS) to secure their safe and reliable operation. An advanced physics-based BMS is capable to accurately capture the dynamics of the Li-ion battery at various charging/discharging cycles. Existing solutions, such as Finite Element Models (FEM), are subjected to a high computational burden that make them unsuitable for practical BMS applications. This PhD research will contribute towards a fast electrochemical modelling of Li-ion batteries to be used in battery packs with sophisticated BMS.

This PhD research will be benefited by the battery test facilities at both VITO and Forschungszentrum Jülich. You will be part of VITO, an organization with international reputation, known for its advanced

technological research and scientific consultancy in the domain of battery systems.

Requirements: You hold a Master degree in Engineering Science or a related field. You have strong analytical skills with good programming skills in programming languages such as MATLAB, Python, Julia and C(++). You are fluent in English, both oral and written.

Additional information: For more information about this vacancy, please visit the job vacancy website at:

https://bit.ly/3kvHXk6

Deadline for submitting applications: 15/07/2021.

Back to the contents

6.6. PhD: KTH Royal Institute of Technology, Sweden

Contributed by: Cristian R. Rojas, crro@kth.se

PhD position: Automatic Control with Focus on Machine Learning

We seek a Doctoral student for an interdisciplinary collaborative project, funded by the Strategic Research Environments ICT-TNG and Digital Futures, which involves KTH, RISE and Stockholm University. The project involves the development of novel machine learning methods, based in particular on tools from linear and nonlinear control theory, Markov decision processes and inverse reinforcement learning, to provide interpretable diagnosis and recommendations of treatments for patients, based on healthcare data. The doctoral studies will include the analysis and design of algorithms, and potentially their use on actual healthcare data.

What we offer:
- The possibility to study in a dynamic and international research environment in collaboration with industries and prominent universities from all over the world.
- A workplace with many employee benefits and monthly salary according to KTH's Doctoral student salary agreement.
- A postgraduate education at an institution that is active and supportive in matters pertaining to working conditions, gender equality and diversity as well as study environment.
- Work and study in Stockholm, close to nature and the water.
- Help to relocate and be settled in Sweden and at KTH.

Eligibility: The applicant must have basic eligibility in accordance with either of the following:
- passed a degree at advanced level,
- completed course requirements of at least 240 higher education credits, of which at least 60 higher education credits at advanced level, or in any other way acquired within or outside the country acquired essentially equivalent knowledge.
- Requirements for English equivalent to English B/6, read more here.
- The successful applicant is expected have received a degree at advanced level, within the last two years, in Electrical Engineering, Engineering Physics, Mathematics or equivalent, with a strong mathematical background.

Having a specialization in Automatic Control or Signal Processing is preferable. Applicants should have an outstanding academic track record, and well developed analytical and problem solving skills, as well as solid mathematical and programming skills. We are looking for a strongly motivated person, who is able to work independently. Good command of English orally and in writing is required to publish and present results at international conferences and in international journals.

Applications must include the following elements (as a single PDF file):
- CV including your relevant professional experience and knowledge.
- Application letter with a brief description of why you want to pursue research studies, about what your academic interests are and how they relate to your previous studies and future goals. (Maximum 2 pages long)
- Copies of diplomas and grades from previous university studies and certificates of fulfilled language requirements (see above). Translations into English or Swedish if the original document is not issued in one of these languages.
- Representative publications or technical reports. For longer documents, please provide a summary (abstract) and a web link to the full text.
For more information, and how to apply through the KTH recruitment system, please see:

https://www.kth.se/en/om/work-at-kth/lediga-jobb/what:job/jobID:380972/where:4/

Back to the contents

6.7. PhD: Lund University, Sweden

Contributed by: Anders Rantzer, rantzer@control.lth.se

PhD positions at Lund University, Sweden

Several PhD positions need to be filled, including one in "Scalable Optimization for Learning in Control" and one in "Dynamics of complex socio-technological network systems". The formal announcement will appear in early March. See http://www.lth.se/english/work.

Back to the contents

6.8. PhD: Delft University of Technology, The Netherlands

Contributed by: Tamas Keviczky, t.keviczky@tudelft.nl

PhD position: Delft University of Technology, The Netherlands.

Two full-time (4-year) PhD positions are available at the Delft Center for Systems and Control (DCSC), Delft University of Technology (TU Delft), The Netherlands, on the following topics:
- Modelling, control, and dynamic scheduling of district heating networks for flexibility
- Optimal control of smart buildings for energy flexibility

For a detailed description of these positions, requirements, and application process, please visit the following link:

https://www.dcsc.tudelft.nl/vacancies.html

Application deadline is April 1, 2021.

For more information please contact Prof. Tamas Keviczky (t.keviczky@tudelft.nl)

Back to the contents

6.9. PhD: Arizona State University, USA

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

Open PhD positions at Arizona State University

A number of PhD assistantships are available in the Control Systems Engineering Laboratory at Arizona State University for research in novel uses of system identification, model predictive control, and ancillary systems methodologies applied to modeling and optimization of mHealth interventions for physical activity. These are funded from three US National Institute of Health (NIH) grants: U01CA229445 "Operationalizing behavioral theory for mHealth: dynamics, context, and personalization," R01LM013107 "SCH: Control systems engineering for counteracting notification fatigue: an examination of health behavior change," and R01CA244777 "Optimizing Individualized and Adaptive mHealth interventions via control systems engineering methods."

Candidates need to be admitted to the PhD programs at Arizona State in either chemical or electrical engineering, and will be working in a highly interdisciplinary environment involving psychologists, behavioral scientists, engineers, and computer scientists.

Inquiries (which should be accompanied by statements of interest and a summary of the candidate's background in control systems and ancillary fields) should be addressed to Professor Daniel E. Rivera, Program Director, Control Systems Engineering Laboratory, at daniel.rivera@asu.edu.

Back to the contents

6.10. PhD: TU Delft, The Netherlands

Contributed by: Sergio Grammatico, s.grammatico@tudelft.nl

PhD position: Game-theoretic Control for Multi-Vehicle Automated Driving

I am looking for 1 talented, outstanding PhD researcher with a Master degree (or close to completion) in Systems and Control, or Applied Mathematics, or related field, with theoretical background and/or interest in System Theory, Automatic Control, Optimization, Game Theory, and with good command of the English language (knowledge of Dutch is not required).

General project description: The candidate will conduct theoretical and algorithmic research on multi-agent control for multi-vehicle multi-lane automated driving. The research will develop and build upon tools from game theory and mixed-integer optimization. The position is in the context of the research project "Artificially Intelligent Multi-Vehicle Automated Driving Systems" (AMADeuS), funded by the Netherlands Organisation for Scientific Research (NWO) domain Applied and Engineering Sciences (TTW).

Conditions of employment: The PhD appointment will be for 4 years. The PhD student will participate in the training and research activities of the TU Delft Graduate School and of the Dutch Institute of Systems and Control (DISC). The PhD students will receive a competitive salary in accordance with the Collective Labour Agreement for Dutch Universities (CAO), from about 2.3k EUR/month (gross, 1st year) to 2.9k EUR/month (gross, 4th year), possibly from 1.8k EUR/month (after taxes, 1st year) to 2.1k EUR/month (after taxes, 4th year), plus holiday allowance (8% of gross annual income) and end-of-year allowance (8.3% of gross annual income), travel budget, secondary benefits, discounts for health insurance and sport membership.

Applications shall include the following documents:
- curriculum vitae;
- statement of motivation and research interests (up to one page);
- transcripts of all exams taken and obtained degrees (in English);
- names and contact information of up to three references (e.g. project/thesis supervisors);
- up to 3 research-oriented documents (e.g. thesis, conference/journal publication).

Applications or inquires shall be emailed to prof. Sergio Grammatico (s.grammatico@tudelft.nl). The call for applications will remain open until the ideal candidate is found. The starting date is flexible.

Back to the contents

6.11. PhD: ETH Zurich, Switzerland

Contributed by: Alisa Rupenyan, ralisa@control.ee.ethz.ch

PhD position, FHNW Brugg Windisch Switzerland / ETH Zurich: Data-driven control for industrial applications
NCCR Automation, Data-driven control with industrial applications

The Institute for Automation at FHNW and the Automatic Control Laboratory at ETH Zurich jointly offer this PhD position based in Brugg, Switzerland, within NCCR Automation.

Research in robotics has seen incredible progress in the last years, driven by the incorporation of sensor data in the control algorithms of the robotic systems. Learning has enabled self-driving, autonomous flight, and humanoid robots to reach milestones that were previously unthinkable. Such exciting development is much slower adopted in modern manufacturing processes. The current state of technology in manufacturing is mature enough to accommodate and benefit from data-driven, learning-based approaches. Incorporating efficient use of predictive models and advanced control using process data opens up new possibilities for emerging manufacturing processes. The research activities within these projects will bring forward the integration of advanced control methods in combination with machine learning. We work towards creating a data-informed automation framework that will be demonstrated on high-end industrial systems, unifying ideas from black-box adaptive control, iterative learning, and predictive control.

The approach consists of three pillars:
1. Scalability: ensuring that multiple parameters can be optimized simultaneously
2. Safety: ensuring that each combination of parameters is within the safe operational bounds of the motion system

3. Efficiency: ensuring that optimal parameters are found with a minimal number of iterations

The research activities in this interdisciplinary field comprise several of the following activities:
• use and comprehension of a system/process model using sensor data and plant parameters
• adaptation or development of an appropriate control algorithm, applying an optimization-based approach
• demonstration on the system

The project is funded by the Swiss National Science Foundation and is part of the NCCR Automation, which means a close interaction with 16 control groups and 42 PhDs and postdocs across Switzerland on this project.

Suitable candidates need a graduate degree in engineering or a related field from a recognized university. Strong background in data modelling, programming (MATLAB, Python, C++), and proven understanding of control methods are essential for the successful completion of the proposed research.

We look forward to receiving your online application with the following documents: CV, 2-3 reference letters/contacts, a short statement of research interests and objectives, one publication/thesis, and transcripts of all degrees in English.

Please note that we exclusively accept applications submitted through our online application portal https://www.jobs.ethz.ch for the corresponding position. Applications via email or postal services will not be considered.
Further information about NCCR Automation can be found on our website and on our lab websites: Institute for automation FHNW , Automatic control laboratory ETHZ .

Questions regarding the position should be directed to Dr. Alisa Rupenyan, email ralisa@control.ee.ethz.ch (no applications).

Back to the contents

6.12. PhD: University of Groningen, The Netherlands

Contributed by: Nima Monshizadeh, n.monshizadeh@rug.nl

PhD Position in Privacy of Cyber-Physical Systems - University of Groningen
A PhD position financed by the Netherlands Organisation for Scientific Research (NWO) is available at the University of Groningen, the Netherlands.

We are looking for candidates with a strong mathematical background willing to develop privacy-aware control and optimization algorithms for cyber-physical systems. A master degree in Applied Mathematics, Control Engineering, Computer Science or a related field is required for the position. Interested candidates are invited to send a complete application to Dr. Nima Monshizadeh, n.monshizadeh@rug.nl , including the following items in a single PDF file:

1. A Curriculum Vitae with contact information of two academic references.
2. A statement of motivation/purpose, listing down relevant research experience (max 1 page).

3. Grade transcripts of obtained degrees/diplomas in English.

Please use "NWO21 Application" as the subject of the email. The deadline for submitting the application is April 11, 2021. Only applicants who are shortlisted for an interview will be contacted.

Back to the contents

6.13. PhD: Lakehead University, Canada

Contributed by: Abdelhamid Tayebi, atayebi@lakeheadu.ca

Ph.D. positions are available in the Electrical and Computer Engineering graduate program at Lakehead University, Canada.

The research topics will be in the areas of control systems, aerial robotics, systems biomedicine. Students with a strong background in applied mathematics and control theory are encouraged to apply. Please send your CV to Prof. Abdelhamid Tayebi (atayebi@lakeheadu.ca). Only selected students will be contacted.

Back to the contents

6.14. PhD: University of Louisiana at Lafayette, USA

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

PhD: University of Louisiana at Lafayette, USA

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

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

The funding covers the cost of full tuition and stipends at a competitive rate and will start in Fall 2021.

Interested individuals should send their detailed curriculum vitae, a copy of their best publication in English to Dr. Afef Fekih (afef.fekih@louisiana.edu).

Back to the contents

6.15. PhD/Postdoc: Technical University of Kaiserslautern, Germany

Contributed by: Naim Bajcinca, mec-apps@mv.uni-kl.de

Ph.D./Postdoc: Technical University of Kaiserslautern, Germany

One Ph.D. or Postdoc position at the Chair of Mechatronics, Technical University of Kaiserslautern (Germany)

The chair of Mechatronics at the University of Kaiserslautern in Germany has a vacancy for one Ph.D. Position in control and stability of partial differential equations (PDEs) and infinite-dimensional systems.

Project Description: The underlying position offers a wide range of theoretical research opportunities, including optimization-based control, in particular, model-predictive control and stability of dynamical systems described by partial differential equations (PDEs). Optionally, the operator formulation of infinite-dimensional systems can be also considered. In addition to theoretical work, application in the context of production systems, energy systems, chemical engineering, and systems biology is possible.

Requirements: Applicants should have completed their studies in Mathematics or Control Engineering with excellent average grades and have demonstrated excellent abstract and mathematical thinking. Experience in control and optimization theory is advantageous. The completion of a doctoral thesis is an expected requirement. PostDocs interested in affiliation for at least three years are welcomed. Short-time stays are not supported.

Conditions of Employment: The position will preferably start on May 1, 2021, and run for at least three years. Candidates in the process of obtaining their M.Sc. degree shall be also considered provided that they complete all the degree requirements no later than the agreed starting date.

The employment contract is governed by the provisions of the collective agreement of the federal states (TV-L) and is limited in time.

About TU Kaiserslautern: The University of Kaiserslautern is a research university in Kaiserslautern, Germany founded on July 13, 1970. TU Kaiserslautern is organized into 12 faculties. Approximately 14,869 students are enrolled at the moment. There are numerous institutes around the university, including two Fraunhofer Institutes (IESE and ITWM), the Max Planck Institute for Software Systems (MPI SWS), the German Research Center for Artificial Intelligence (DFKI all of which cooperate closely with the university.

Application and More Information: Applications must include the following elements (as a single PDF file):
· Cover letter with a brief description of why you want to pursue research studies, about what your academic interests are and how they relate to your previous studies and future goals
· CV including your relevant professional experience and knowledge
· Copies of diplomas and grades from previous university studies

Send an email with the required documents to the address: mec-apps@mv.uni-kl.de

Back to the contents

6.16. PhD/Postdoc: Technical University of Kaiserslautern, Germany
Contributed by: Naim Bajcinca, mec-apps@mv.uni-kl.de

Ph.D./Postdoc: Technical University of Kaiserslautern, Germany

One Ph.D. or Postdoc position at the Chair of Mechatronics, Technical University of Kaiserslautern (Germany)

The Chair of Mechatronics at the University of Kaiserslautern in Germany has a vacancy for one Ph.D. Position on economic model predictive control (MPC).

Project Description: The underlying position is about developing distributed and/or hierarchical MPC-algorithms for large-scale systems. A particular task of interest refers to optimization and scheduling in a hybrid system setting. In addition to theoretical work, real-time implementation in applications of smart grids, energy systems, cooperative autonomous vehicles, cooperative robotics, and production systems are of interest. The projects are funded by various federal ministries in Germany. The successful candidate will cooperate in a group with several researchers and industrial partners.

Requirements: Applicants should have completed their studies in Control Engineering or Mathematics with excellent average grades and have demonstrated abstract and mathematical thinking. Experience in optimization theory and control is requested. The completion of a doctoral thesis is an expected requirement. PostDocs interested in affiliation for at least three years are welcomed. Short-time stays are not supported.

Conditions of Employment: The position will preferably open on May 1, 2021, and run for at least three years. Candidates in the process of obtaining their M.Sc. degree shall be also considered provided that they complete all the degree requirements no later than the agreed starting date.

The employment contract is governed by the provisions of the collective agreement of the federal states (TV-L) and is limited in time.

About TU Kaiserslautern: The University of Kaiserslautern is a research university in Kaiserslautern, Germany founded on July 13, 1970. TU Kaiserslautern is organized into 12 faculties. Approximately 14,869 students are enrolled at the moment. There are numerous institutes around the university, including two Fraunhofer Institutes (IESE and ITWM), the Max Planck Institute for Software Systems (MPI SWS), the German Research Center for Artificial Intelligence (DFKI all of which cooperate closely with the university.

Application and More Information: Applications must include the following elements (as a single PDF file):
· Cover letter with a brief description of why you want to pursue research studies, about what your academic interests are and how they relate to your previous studies and future goals
· CV including your relevant professional experience and knowledge
· Copies of diplomas and grades from previous university studies

Send an email with the required documents to the address: mec-apps@mv.uni-kl.de

Back to the contents

6.17. PhD/Postdoc: Technical University of Munich, Germany

Contributed by: Matthias Althoff, althoff@in.tum.de

PhD/Postdoc Position for Safe Machine Learning for Power Systems

The research group Cyber-Physical Systems of Prof. Matthias Althoff at the Technical University of Munich offers a PhD/Postdoc position in the area of safe machine learning for power systems. The Technical University of Munich is one of the top research universities in Europe fostering a strong entrepreneurial spirit and international culture.

More information can be found here:

https://portal.mytum.de/jobs/wissenschaftler/NewsArticle_20210219_190716

Back to the contents

6.18. Postdoc: Arizona State University, USA

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

Open postdoctoral position at Arizona State University

We are seeking applicants for an open postdoctoral position in the Control Systems Engineering Laboratory at Arizona State University for projects related to the use of system identification, model predictive control, and related technologies for modeling and optimizing mHealth behavioral interventions, with an emphasis on interventions to promote physical activity. The funding sources are three US National Institute of Health (NIH) grants (noted in the entry on PhD positions at ASU in this issue of the e-letter).

Qualified applicants will have an earned doctorate in chemical, electrical, mechanical engineering or related field, and show evidence (through dissertation work and publications) of being able to contribute to areas of relevance to these projects at a high level of proficiency. Preference will be given to applicants who wish to use the postdoctoral position as a means to develop credentials for an academic career.

The position is available immediately for one year, but may be renewed for a second year based on performance and continued availability of funds.

Candidates should submit, via email to Prof. Daniel E. Rivera (daniel.rivera@asu.edu), the following: 1) a curriculum vitae, including educational background and a list of publications, 2) two publications representing the applicant's research work, and 3) contact information for two references.

Back to the contents

6.19. Postdoc: Horizon Europe Work Programme, Belgium

Contributed by: Sajjad Fekriasl, sajjad.fekriasl@vito.be

Postdoc Position: Embedding Physics-Based Modelling in Battery Management Systems to Improve Battery State Estimation and Control
MSCA-PF2021 Call: Embedding Physics-Based Modelling in Battery Management Systems to Improve Battery State Estimation and Control
Location: VITO/EnergyVille, Belgium

A postdoctoral scholar position is available under the Horizon Europe MSCA-PF-2021 Work Programme to research on advanced physics-based battery modelling to be embedded in BMS algorithms for real-time battery control applications. More and more applications are getting powered (or supported) by lithium-ion batteries, including EVs, e-bikes, e-buses and e-trucks, many commercial applications such as ships, cranes and forklifts, and wider stationary energy storage systems for high penetration of renewable energy integration into the power grids. However, the operation of li-ion batteries is inherently subjected to safety risks as these batteries contain flammable materials, and thus must be retained outside their Safe Operating Area (SOA). In nowadays applications, the SOA and its limits are (at the best) set in a dynamic way and dependent on the actual use of the battery, the operating conditions, and the state of the battery, including State of Charge (SoC) and State of Health (SoH); these states are often estimated by the BMS using simple battery models (with low computational burden) embedded in the BMS processors. However, with various uncertainties on the actual state estimation of the battery, the SOA limits, or boundaries, are chosen in a conservative way - this will limit the intrinsic possibilities of the battery in terms of maximum charge power limit and/or energy capabilities. Such limiting factor ultimately has an impact on the economic viability of the battery based solutions.

The fellowship postdoctoral research will focus on the following tasks:
* Reduction on the computational burden of the physics-based battery model on a BMS leading towards improved battery state estimation, SoC, SoH and SOA.
* Support of the battery control based on the models so that eventually a closed-loop control can be hosted for accurate state estimation.
* Adaptation of the model based on the comparison of battery monitoring and model prediction to continuously improve the model.

Required Qualifications:
* Applicants should have a PhD degree in Engineering/Science, or related fields;
* Interested applicants will be invited to propose a more detailed and focused research approach within the scope of this MSCA-PF Fellowship as a part of their application. We would provide you with our initial assistance in developing competitive Marie Curie Individual Fellowship proposal;
* We are primarily looking for experienced researchers who wish to use this period as an opportunity to further develop their research and skills, and to develop longer-term research collaborations with VITO and other research institutions;
* The candidates as in principle must be eligible for a Marie Curie Postdoctoral Fellowship

– please refer to the conditions to be set-out in the Horizon Europe MSCA-PF-2021 Work Programme, including taking into account the new MSCA Green Charter principles.

Desired Qualifications:
* An excellent track record in research is necessary to propose a competitive Marie Curie Fellowship application;
* Already published relevant research work in prestigious scientific journals;
* An open and cooperation-oriented nature, but with strong abilities for independent research work;
* Highly proficient in spoken and written English.

How to Apply:

With this call, we invite researchers to submit their resume (including track-record) and a one-page project description, that will be the basis for selecting candidates with whom we would collaborate toward a competitive MSCA-PF proposal.

Deadline for Applications:
Interested candidates should submit their resume (including track record) with one-page note describing the project for which a Marie Curie grant would be applied, no later than Friday 2 April 2021 17:00 (Brussels time).

Deadline for MSCA-PF 2021 Fellowship: Wednesday 15 September 2021 17:00 (Brussels time)

Target Start Date: The EU informs the results on the MSCA-PF applications in February 2022. Successful candidates are expected to be available to start within the following two months and no later than summer 2022.

Further information can be obtained from Dr. Sajjad Fekriasl via e-mail: sajjad.fekriasl@vito.be

For more information, please visit:
https://bit.ly/3dV1rNZ

Back to the contents

6.20. Postdoc: Linköping University, Sweden

Contributed by: Daniel Axehill, daniel.axehill@liu.se

Postdoc in Automatic Control with focus on motion planning under uncertainty

The Division of Automatic Control at Linköping University has a vacant post-doctoral position in the area of methods for motion planning under uncertainty for autonomous systems. The research aims at developing improved methods for motion planning that better maintain safety and performance also in cases when non-negligible disturbances and model errors are present. To achieve this, the project will investigate parameterized robust primitives, real-time optimization as an integrated part of the planning, learning from previously visited environments and from other agents, and to use high-performance computations on clusters to solve more advanced problem formulations. The position is financed by the strategic research environment ELLIIT. The position is a full-time research position.

The applicant should have good knowledge in automatic control, optimal control, and optimization. Furthermore, good programming skills are required, preferably including Python and C++. Knowledge in motion planning is desirable. The applicant should have good cooperation skills, should be able to present research well both orally and in writing, and be able to work independently. The position requires a doctorate or an equivalent degree from a foreign university. The doctorate shall have been obtained no longer than three years before the expiration date of the application.

For more information and a link to the application form, please visit

https://bit.ly/3pXUIoI

Your application must be received at latest March 25.

Back to the contents

6.21. Postdoc: Ecole Centrale Nantes, France

Contributed by: Bogdan Marinescu , bogdan.marinescu@ec-nantes.fr

Postdoctoral researcher in Advanced Centralized and Decentralized Control of Future Power Systems in H2020 RIA POSYTYF project

Key words: advanced/robust control, centralized/decentralized/structured implementations, power converters, renewable energy, inter-area oscillations, small-signal/transient stability

Context: Ecole Centrale Nantes (ECN) is fully involved in Renewable Energies (RE) technologies such offshore and onshore wind, wave and solar. Dynamics of Smart Grids team of LS2N-ECN tackles some important thematics of control of modern power systems. In particular, this team has, from 2020 to 2023, the lead of the H2020 POSYTYF project. This project is a Research and Innovation action of the EC focused on the development of an innovatory concept of Dynamic Virtual Power Plant (DVPP). The latter is supposed to allow an optimal portfolio of dispatchable and non dispatchable RE sources. Dynamics in the sense of stability assessment and control for RE sources participation to ancillary services are in the center of the project.

Research subjects: DVPP are a collection of heterogeneous power generation sources (including solar, wind, bio, etc.) in a power park all with their own individual constraints (variable or dispatchable, limited in energy or power). One should investigate how to control and coordinate the individual devices in a DVPP and several DVPPs at the transmission grid level (so-called secondary level) subject to their individual constraints and so that their aggregated output to the grid provides ancillary services all temporal and spatial scales: from fast frequency response to voltage support, and from high-voltage transmission grids to low-voltage distribution systems. At this stage, we envision solutions that trade-off between optimality - when centralized approaches are taken - and resilience (i.e., maintaining a good level of performance in case of failure of one or more units of the DVPP) for decentralized approaches.

The candidate will:
• Develop and compare control methodologies
• Validate these controls in simulation
• Help power system researchers and engineers to implement and test the new controls in hardware-in-the loop (HIL) benchmark
• Present and publish the main findings at peer-reviewed conferences and in top journals

Competences needed: The candidate should have background and experience in advanced (robust) automatic control. Both centralized and decentralized/structured controls will be investigated. Ideally, the candidate should have (up to 3 years) postoctoral research experience. Please provide the names and contacts of 2 or 3 referees (if possible, not exclusively the PhD advisors).

Schedule:
Recruitement: asap
Duration : 12months with possibility of 2 years extension
Work will take place in ECN, Nantes-France.

Contact:
B. Marinescu, Ecole Centrale Nantes, head of the Dynamics of Smart Grids team of LS2N-ECN, Project Coordinator of the H2020 POSYTYF project,
Bogdan.Marinescu@ec-nantes.fr, (33) 2 40 37 69 46

Back to the contents

6.22. Postdoc: Universite de Lorraine, France

Contributed by: Prof. D. Theilliol, didier.theilliol@univ-lorraine.fr

Postdoctoral Position at Universite de Lorraine, CNRS, CRAN in collaboration with the National Centre for Space Studies (CNES), France.

A postdoctoral position on Health Aware Control System development for Reusable Cryogenic Liquid Rocket Engines is open and available at Universite de Lorraine, CNRS, CRAN in collaboration with CNES at the intersection of control and system heath management. Contributions are expected to span across both basic theoretical as well as applied domains.

Please note all applications must be made via our Online CNES Recruitment Portal at the following link
https://recrutement.cnes.fr/en/annonce/1121627-222-health-aware-control-system-development-for-reusable-cryogenic-liquid-54506-vandoeuvre-les-nancy

Postdoctoral application is open until April 2nd, 2021

Candidates should also submit, via email to Prof. Didier THEILLIOL (didier.theilliol@univ-lorraine.fr), the following: 1) a curriculum vitae, including educational background and a list of publications, 2) two publications representing the applicant's research work, and 3) contact information for two references.

Back to the contents

6.23. Postdoc: University of California, Berkeley, USA

Contributed by: Javad Lavaei, lavaei@berkeley.edu

Postdoctoral Position

A postdoctoral position is available at the University of California, Berkeley. The position is on optimization theory and machine learning, and is jointly supported by Profs. Lavaei and Sojoudi. The appointment can be either in the Department of Electrical Engineering & Computer Sciences or in the Department of Industrial Engineering & Operations Research.

To apply, please email a CV along with sample publications to lavaei@berkeley.edu and sojoudi@berkeley.edu.

Back to the contents

6.24. Postdoc: University of Toronto, Canada

Contributed by: Lacra Pavel, pavel@ece.utoronto.ca

Postdoc position at the University of Toronto

A Post-doctoral position is open at the University of Toronto. The successful candidate should have a PhD degree (or close to completion) in Systems and Control, Applied Mathematics, or related field, theoretical background and interest in System Theory, Automatic Control, Game Theory, and good command of English.

General project description: The candidate will conduct theoretical and algorithmic research on distributed equilibrium seeking of (non)cooperative games, involving multi-agent reinforcement learning combined with network models. Multi-agent systems are finding applications in a wide variety of domains including distributed control, resource management, communication networks, and recently, in artificial intelligence. In their multi-player form, games offer a suitable framework for modeling complex multi-agent systems and reasoning about them. One of the major appeals of using game theory for multi-agent systems is that it provides a hierarchical decomposition between the design of the interaction and the design of the algorithms. The research will develop and build upon tools from game theory, dynamical systems and operator theory, and will explore how to combine the interaction models of game theory with network models. This has the potential to yield a much richer, more accurate model of complex networks, where issues such as incomplete information, local information could be addressed. The research will focus on both theoretical aspects of game theory, involving algorithms for their exact resolutions and heuristics, to their applications in verification and in synthesis of multi-agent systems, as well as in artificial intelligence.

Conditions of employment: The position is a one-year research appointment, renewable for one or two years, based upon annual performance. The researcher will receive a competitive salary in accordance with postdoctoral salaries at the University of Toronto and with Canada's postdoctoral awards.

Applications shall include the following documents:
- curriculum vitae;
- statement of motivation and research interests (up to two pages);
- transcripts of all exams taken and obtained degrees (in English);
- names and contact information of up to three references (e.g. project/thesis supervisors);
- up to 3 research-oriented documents (e.g. thesis, conference/journal publication).

Applications or inquires to be emailed to Prof. Lacra Pavel (pavel@control.utoronto.ca, pavel@ece.utoronto.ca or pavel@control.toronto.edu).

The call for applications will remain open until the ideal candidate is found. The starting date is flexible.

Back to the contents

6.25. Postdoc: Paris-Saclay University, France

Contributed by: Alessio Iovine, alessio.iovine@l2s.centralesupelec.fr

Open Post-Doctoral position on "Advanced nonlinear control for Microgrids" at L2S, CentraleSupélec, Paris-Saclay University
Subject: Development and implementation of advanced control laws for new generation power systems with high penetration of power electronic interfaced power sources.
Keywords: large-signal analysis, power systems, stability region, optimisation, multi-agent systems.
Duration: 12 months
Gross Salary: approximately 2700 €monthly.

The successful postdoc will be expected to work on the utilization of different nonlinear control techniques to improve power systems stability analysis with a System of Systems approach. Contributions are expected to span both theory and the application domain. Main target is to improve power quality and enlarge the microgrids' stability regions with respect to power variations due to renewables. Either advances on classical control techniques as droop control or the development of new ones are of interest. AC or DC microgrids, and their interaction also in terms of grid forming or grid following control problems, are equally considered. More information are available on https://l2s.centralesupelec.fr/job/post-doctoral-position-advanced-nonlinear-control-for-microgrids/

Desired experience:
1) PhD in control, possibly with experience in smart energy application domains, or viceversa;
2) Experience in the design and analysis of networked control systems;
3) Experience in publishing high quality research papers;
4) Familiarity with the SymPowerSystem software, or similar.
The position is available immediately and applications will be accepted until this position is filled. A National Security clearance is needed, and it can require approximately 2 months.

Interested applicants should contact Houria Siguerdidjane (email houria.siguerdidjane@l2s.centralesupelec.fr) and Alessio Iovine (email alessio.iovine@l2s.centralesupelec.fr), and provide in PDF format (a) a CV, (b) the names of three or more references, (c) a one page description of their earlier work and (d) a one paragraph statement about their interest in the advertised position.

Back to the contents

6.26. Postdoc: Bangor University, Wales

Contributed by: Hafiz Ahmed, hafiz.h.ahmed@ieee.org

Postdoctoral Research Associate in Nuclear Control and Instrumentation

Applications are invited for this full time, fixed-term post, working in Bangor University's Nuclear Futures Institute as a Postdoctoral Research Officer in Nuclear Control and Instrumentation.This post is part-funded by the European Regional Development Fund (ERDF) through the Welsh Government. EU Funds: Investing in Wales.

Duties will include conducting cutting-edge research into control and instrumentation for nuclear facilities such as power stations, reprocessing plants, fuel factories and waste repositories. This may include control systems, electrical control & instrumentation, data acquisition systems, signal processing, data analytics and sensor system development.

The successful candidate will have a PhD (or be near completion) in Electrical/Control/Mechanical Engineering or related to instrumentation or other related disciplines. Relevant industrial experience will also be viewed positively. The successful candidate will be expected to commence as soon as possible and the post is available until 31/12/2022.

For more information about the post, please contact hafiz.h.ahmed@ieee.org

Advertisement Link:

https://jobs.bangor.ac.uk/details.php.en?id=QLYFK026203F3VBQB7V68LOTX&nPostingID=5386&nPostingTargetID=5769&mask=stdext&lg=UK

Back to the contents

6.27. Postdoc: Lund University, Sweden

Contributed by: Anders Robertsson, Anders.Robertsson@control.lth.se

Postdoc position in Automatic Control for Autonomous Radiation Mapping with UAVs

The Department of Automatic Control, LTH, Lund University, Sweden, has opened a 2-year postdoc position related to Optimization, Filtering and Control for Autonomous Vehicle within the ELLIIT-project "Autonomous Radiation Mapping and Isotope Composition Identification by Mobile Gamma Spectroscopy".

The postdoc will work in a cross-disciplinary project which concerns the estimation of radiation fields from spectrometers mounted on UAVs, and involves two main components:
- The first relates to machine learning and concerns the development of algorithms for Bayesian inference. These methods should incorporate (i) known geometries in the environment, (ii) known attenuation of radiation with distance, and (iii) modeled dynamics of the UAV and sensor.
- The second part of the project concerns the implementation and experimental validation of these methods in field experiments.

We seek candidates with a strong background of relevance for control, robotics and autonomous systems, in combination with a willingness to collaborate and communicate across disciplines. Good knowledge of filtering and control theory, relevant methods in machine learning, and experience with C++, Python, Julia, or Matlab is highly desirable. Also experience from research in experimental robotics is desirable.

Please apply online at latest on March 8, 11:59 PM CET, following the instructions on

https://lu.varbi.com/en/what:job/jobID:371447/type:job/where:4/apply:1

Anders Robertsson
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http://www.control.lth.se

Back to the contents

6.28. Postdoc: Queen's University Belfast, Northern Ireland

Contributed by: Nikolaos Athanasopoulos, n.athanasopoulos@qub.ac.uk

Postdoc position in Autonomous Vehicle Control, Queen's University Belfast

The School of Electronics, Electrical Engineering and Computer Science (EEECS) and the multidisciplinary centre for Intelligent Autonomous Manufacturing Systems (i-AMS) at Queen's University Belfast offer a postdoc position in the area of autonomous collision avoidance strategies for maritime vehicles.

The duration of the post is 35 months. Application closing date: March 15.

The position is offered as part of the £33m UKRI-funded Belfast Maritime Consortium led by Artemis Technologies which is the flagship programme for the UK Department for Transport's Maritime 2050 strategy, aiming to produce the world's first fully autonomous electric hydrofoiling vessel. The research in our group will focus on (i) developing new theoretical and algorithmically efficient solutions to the collision detection and avoidance problem for maritime vehicles, (ii) providing formal safety and correctness guarantees of the decision algorithms and (iii) implementing the developed framework in a prototype vessel manufactured by the industrial partners.

The ideal candidate will:
- Have or shortly expect to obtain a PhD in Electrical, Electronics, Mechanical Engineering, Computer Science, Applied Maths or other related discipline.
- A minimum of three years relevant experience on the topic of the project, or in the broader area of Systems and Control theory, autonomous navigation, development and analysis of Cyber-Physical Systems.

- Have a record of publishing (commensurate with career stage) in the proceedings of high quality international conferences and journals (such as IEEE, IFAC, ACM).
- Have extensive programming experience.-
The successful candidate will be offered substantial opportunities to build their career, including training in innovation, commercialization and soft skills, travelling to research conferences and visits within the group's research network.-
For all details regarding the position and how to apply, please visit:-
https://hrwebapp.qub.ac.uk/tlive_webrecruitment/wrd/run/ETREC107GF.open?VACANCY_ID=553886EOoh&WVID=6273090Lgx&LANG=USA
The Research Fellow will be an active member of a wider community, contributing to world leading research outputs and new research initiatives in the broader area of autonomous planning, decision theory, maritime navigation, and cyber-physical systems. Applications are invited from highly motivated researchers of any nationality to join a vibrant, multidisciplinary team.

Informal enquiries can be made to Dr Wasif Naeem (w.naeem@ee.qub.ac.uk) and/or Dr Nikolaos Athanasopoulos (n.athanasopoulos@qub.ac.uk).

Back to the contents

6.29. Postdoc: TU Delft, The Netherlands
Contributed by: Sergio Grammatico, s.grammatico@tudelft.nl

PostDoc position: Game-theoretic Control for Systems of Hybrid Systems

I am looking for 1 talented, outstanding PostDoc researcher with a PhD degree (or close to completion) in Systems and Control, or Applied Mathematics, or related field, with theoretical background and/or interest in System Theory, Automatic Control, Optimization, Game Theory, and with good command of the English language (knowledge of Dutch is not required).

General project description: The candidate will conduct theoretical and algorithmic research on complex multi-agent hybrid systems controlled by strategic agents. The research will develop and build upon tools from game theory and operator theory. The main application areas are distributed control for smart power systems and multi-vehicle automated driving. The position is in the context of the research project "Game theoretic Control for Complex Systems of Systems" (COSMOS), funded by the European Research Council as an ERC Starting Grant.

Conditions of employment: The PD appointment will be for 3 years. The researcher will receive a competitive salary in accordance with the Collective Labour Agreement for Dutch Universities (CAO), from about 2.9k EUR/month (gross, 1st year) to 3.2k EUR/month (gross, 3rd year), possibly from 2.5k EUR/month (after taxes, 1st year) to 2.7k EUR/month (after taxes, 3rd year), plus holiday allowance (8% of gross annual income) and end-of-year allowance (8.3% of gross annual income), travel budget, secondary benefits, discounts for health insurance and sport membership.

Applications shall include the following documents:
- curriculum vitae;
- statement of motivation and research interests (up to one page);

- transcripts of all exams taken and obtained degrees (in English);
- names and contact information of up to three references (e.g. project/thesis supervisors);
- up to 3 research-oriented documents (e.g. thesis, conference/journal publication).

Applications or inquires shall be emailed to prof. Sergio Grammatico (s.grammatico@tudelft.nl). The call for applications will remain open until the ideal candidate is found. The starting date is flexible.

Back to the contents

6.30. Faculty: Peng Cheng Laboratory, China

Contributed by: Xinyu Ye, xinyu.ye@foxmail.com

Research Assistant Professor: Peng Cheng Laboratory (PCL), China

Research Assistant Professor of Cooperative Multi-Robot System: The Robotics Research Center @ Peng Cheng Laboratory, Shenzhen, China

Overview: Peng Cheng Laboratory (PCL) is a new type of scientific research institution in the field of network communications in China. PCL focuses on the strategic, forward-looking, original scientific research and core technology development in the related fields. PCL is headquartered in Shenzhen, Guangdong, with main research themes in network communication, cyberspace and network intelligence.

As an integral part of China's national strategic scientific and technological initiatives, PCL is committed to serving China's national developmental scheme in broadband communications, future network, as well as serving its key role in establishing the Guangdong-Hong Kong-Macao Greater Bay Area, and helping Shenzhen building itself towards a pioneering demonstration zone with Chinese characteristics. The Robotics Research Center (RRC) focuses on the marine applications of the heterogeneous underwater swarm robots. The first key project is Collaborative Operation Platform for Smart Underwater Robots (COPSUR).

The critical scientific technologies include environmental perception, controlling, driving and communication systems in underwater robots. Through the specialized capabilities, the multidisciplinary research extends to the leading-edge exploration and fundamental research on ocean and marine engineering technologies related to ocean observation, ocean oil and gas, offshore wind turbines, marine fisheries and underwater security, etc.

Job Description: Your primary responsibility will be conducting research studies on the cooperative multi-robot system to address relevant challenges in the field of multi-robot system.

Current research areas include multi-robot cooperative control, cooperative decision making, game theory based control, etc. You will help provide technical vision for the project planning and implementation of the key projects at the Robotics Research Center.

Required Qualifications:
- Have (or will soon receive) a Ph.D from the top universities of China or the top 300 universities worldwide in the QS Rankings; have demonstrated record of publications in the top journals/conferences in the past 5 years;

- Have proven research experiences in the related fields, including Robotic Control, Decision Making, Path Planning, Game Theory, Reinforcement Learning, Control Theory & Control Engineering, Pattern Recognition & Intelligent System, etc;
- Have proven ability in defining robotics research problems and identifying possible solutions and excellent written and oral communication skills.

Salary and other welfare: Annual Salary: above 450,000 CNY. For the candidate who meets the criteria of overseas high-level personnel program of Shenzhen (the Peacock Plan Program), you can apply for the personal allowance (1.6 million CNY) if qualified (current policy).

Research supports: the research group has a technical supporting team consisting of full-time experienced engineers in terms of mechanical engineering, embedded system, control algorithm, computer vision, navigation and positioning, etc;

Long-term collaboration with the renowned professors from the top universities in China, including Shanghai Jiao Tong University, Southern University of Science and Technology, Northwestern Polytechnical University, Northeastern University, etc. Other welfares: High-standard social insurance and housing fund; Provide proper assistances in housing and children's education; Annual aid leave, annual health checkups and other subsidies; Staff canteen, free company bus, free gym, etc.

Please send your personal resume, including personal education/work/research experiences, major research achievements and contact information, to Mr. Ye. Email: yexy@pcl.ac.cn; or ye.yexinyu@hotmail.com
The official recruitment channels in
Chinese are linked below: https://jobs.51job.com/shenzhen-nsq/127363216.html?s=04

Back to the contents

6.31. Faculty: Queen's University, Canada

Contributed by: Rianna Lewis, rianna.lewis@queensu.ca

Assistant Professor, Mathematics and Engineering

The Department of Mathematics and Statistics, Faculty of Arts and Science at Queen's University invites applications for a 3-year Non-Renewable faculty position at the rank of Assistant Professor with specialization in Mathematics and Engineering with a preferred starting date of July 1, 2021.

Accomplished researchers in all areas of Mathematics and Engineering are invited to apply. The main criteria for selection are research and teaching excellence. The successful candidate will be expected to work in an area of study that complements areas already represented within the department, and to work in an interdisciplinary, collaborative environment.

The Mathematics and Engineering Program, and the Department of Mathematics and Statistics more broadly, offers an excellent environment for research and teaching with very high standards and a collaborative environment. In Mathematics and Engineering there are presently groups in Control Theory, Fluid Mechanics, and Information and Communication Theory. For more information about the Mathematics and Engineering Program, please see https://www.queensu.ca/mathstat/mthe. The successful candidate will

be expected to work in an area of study that complements areas already represented within the department.

For the full position announcement and information on how to apply, please, visit
https://www.queensu.ca/mathstat/department/employment, or
https://www.mathjobs.org/jobs/list/17344.

Back to the contents

6.32. Faculty: Oslo Metropolitan University, Norway

Contributed by: Vahid Hassani, Vahid.Hassani@OsloMet.no

Faculty Position in Marine Robotics at Oslo Metropolitan University, Norway (Deadline March 8)
Oslo Metropolitan University (OsloMet): Faculty Positions in Marine Robotics

The Department of Mechanical, Electronic and Chemical Engineering (MEK) at Oslo Metropolitan University (OsloMet) invites applications for a vacant position as Associate Professor in Marine Robotics with an anticipated start date of August 1, 2021.

The successful candidate must have a PhD in Robotics, Electrical Engineering, Mechanical Engineering, Mechatronics, Control Engineering, or a closely related discipline. The position will involve teaching basic robotic courses on Bachelor level and advanced robotic courses on Master and PhD level. The position also involves research in one or more of the following areas of marine robotics: development of innovative marine robotic vehicles and systems, underwater communication using optics/acoustics, energy harvesting solutions for small marine robotic systems, underwater simultaneous localization and mapping (SLAM), underwater intervention and manipulation, and computer vision for underwater robotic systems.

OsloMet – Oslo Metropolitan University is the third largest university in Norway, with more than 20,000 students and 2,000 employees. OsloMet delivers knowledge to solve societal challenges, in close cooperation with the society and employers. OsloMet is an urban and diverse university with a clear international profile, and an attractive place to work and study with campuses in Oslo city center and at Kjeller in the Municipality of Lillestrøm. Our location in the metropolitan area gives us good opportunities to understand and benefit from the city's diverse population.

For full details of the job announcement please visit:

https://www.oslomet.no/en/work/job-openings/associate-professor-in-marine-robotics

Deadline for full consideration is March 8, 2021.

Back to the contents

6.33. Engineer/Researcher: Reykjavik University, Iceland

Contributed by: Elias August, eliasaugust@ru.is

Engineer with Background in Dynamical Systems Theory, Doctoral Researcher Reykjavik University is looking for specialised staff and students for the Horizon 2020 project Sleep Revolution, sponsored by the European Commission. The project is led by Reykjavik University (RU), in collaboration with 36 other

partners in Europe and Australia. The research partners are academic, industry and health institutions. The work is highly inter-disciplinary with involvement at RU from four departments; Department of Engineering, Computer Sciences, Sport Science and Psychology.

POSITION RESPONSIBILITIES
We are looking for one PhD student to work on signal processing of sleep data. The ideal candidate should be truly interested in:
- Biological systems/signals and, particularly, sleep data.
- Data Analysis / Signal Processing.
- Dynamical Systems Theory.

The candidate will work on robust event detection in sleep data, particularly, electrodermal activity (EDA) data, and on determining correlations with other sleep signals. Moreover, different measures, such as entropy, have been currently proposed to distinguish between different sleep stages using EEG data. The candidate will extend the approach to other sleep signals, possibly, also to detect additional events, and investigate whether significant differences in those measures exist and whether they provide meaningful information.

QUALIFICATIONS
- The candidate should hold an MSc degree in Mechanical Engineering, Electrical Engineering, or an equivalent Engineering MSc degree, with focus on Control Theory and / or Signal Processing.
- Preferably, the candidate should have previous experience in Systems Biology or Mathematical Biology.
- Good MATLAB skills or, alternatively, good programming skills and the willingness to use MATLAB.
- Thorough knowledge of and experience in data analysis / signal processing.
- Excellency in dynamical systems theory.
- Self-organised with a strong ability to work autonomously.
- Flexible, result-oriented, willing to learn and to work in a dynamic environment with a diverse team.
- Dynamic and communicative personality with high social competence.
- Strong ability to communicate in English (oral and written) is essential.
- Be located in Reykjavik, Iceland or willing to locate on short notice on own expense.

The deadline for applications is February 28th 2021. The position is project-related and, thus, temporary for 4 years. Start is as soon as possible or by agreement. All inquiries and applications will be treated as confidential. Any questions regarding working in Iceland or about Reykjavik University should be sent to mannaudur@ru.is. Questions regarding the research work may be sent to Elias August: eliasaugust@ru.is

- Applications are only accepted through the recruitment website.
- All applications and inquiries about jobs are treated as confidential.
- Applications are confirmed by e-mail and if the applicant is eligible for the job in question, the applicant will be contacted.
- A detailed curriculum vitae is requested with information about previous jobs, education, referrers, etc.
- Include a Cover letter stating the reason of interested in being a part of the Sleep Revolution project.
- Please note that all applications will be answered once the process is finalised.

Reykjavik University (RU)

Reykjavík University has around 3.700 students and 250 faculty and employees in addition to numerous adjunct faculty in two schools: Technology and Social Sciences. We offer a welcoming and stimulating environment in which to work and live. The University is centrally located in Reykjavík, the capital city of Iceland. The role of Reykjavik University is to create and disseminate knowledge to enhance the competitiveness and quality of life for individuals and society, guided by good ethics, sustainability and responsibility. Education and research at RU are based on strong ties with industry and society. We emphasize interdisciplinary collaboration, international relations and entrepreneurship.

Back to the contents