E-Letter on Systems, Control, & Signal Processing
Issue 382, June 2020

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Welcome to Issue 382 of the CSS E-letter available here.

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

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

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1   IEEE CSS Headlines

1.1. Become a CSS Member
Contributed by: Ahmad Taha, ahmad.taha@utsa.edu

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

1.2. Follow the CSS Social Media Accounts
Contributed by: Ahmad Taha and Ankush Chakrabarty ahmad.taha@utsa.edu, chakrabarty@merl.com

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

1.3. CSS Technically Cosponsored Events
Contributed by: Luca Zaccarian, CSS AE Conferences, zaccarian@laas.fr

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

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

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

- 25th International Conference on Methods and Models in Automation and Robotics (MMAR 2020). Miedzyzdroje, Poland. August 24-27, 2020. http://www.mmar.edu.pl

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

- 28th Mediterranean Conference on Control and Automation (MED 2020). St Raphaël, France. June 16-19, 2020. http://med2020.cran.univ-lorraine.fr/

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

1.4. CSS Publications Content Digest
Contributed by: Kaiwen Chen, kaiwen.chen16@imperial.ac.uk

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

The CSS Publications Content Digest, available at

http://ieeecss.org/publications-content-digest

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

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1.5. IEEE Transactions on Automatic Control
Contributed by: Alessandro Astolfi, ieeetac@imperial.ac.uk

IEEE Transactions on Automatic Control
Volume 65 (2020), Issue 5 (May)

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- Smooth interpolation of covariance matrices and brain network estimation: Part II Lipeng Ning, p. 1901
- Solutions for Multiagent Pursuit-Evasion Games on Communication Graphs: Finite-Time Capture and Asymptotic Behaviors Victor Gabriel Lopez Mejia, Frank L. Lewis, Yan Wan, Edgar N. Sanchez, Lingling Fan, p. 1911
- Stability Analysis of Linear Partial Differential Equations with Generalized Energy Functions Aditya Gahlawat, Giorgio Valmorbida, p. 1924
- Performance Output Tracking for Multi-Dimensional Heat Equation subject to umatched Disturbance and Non-Collocated Control Hua-Cheng Zhou, Bao-Zhu Guo, Shuhuang Xiang, p. 1940
- Guaranteeing Global Asymptotic Stability and Prescribed Transient and Steady State Attributes via Uniting Control George Kanakis, George A. Rovithakis, p. 1956
- Stabilization of Linear Systems by Pulse Width Modulation of Switching Actuators Arash Komaee, p. 1969
- Stochastic Artificial Potentials for Online Safe Navigation Santiago Paternain, Alejandro Ribeiro, p. 1985
- State-Secrecy Codes for Networked Linear Systems Anastasios Tsiamis, Konstantinos Gatsis, George J. Pappas, p. 2001

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2 Miscellaneous

2.1. EMpirical GRamian Framework 5.8: EMGR
Contributed by: Christian Himpe, himpe@mpi-magdeburg.mpg.de

EMGR – EMpirical GRamian framework version 5.8 has been released.

In control and system theory the system Gramian matrices of linear input-output systems have wide-spread use. Empirical Gramian matrices correspond to the system Gramians for linear systems, but extend to parametric and nonlinear systems due to a data-driven computation.

The empirical Gramian framework is an open-source Matlab toolbox, enabling the computation of the following empirical system Gramians:
• Empirical Controllability Gramian
• Empirical Observability Gramian
• Empirical Cross Gramian
• Empirical Linear Cross Gramian
• Empirical Sensitivity Gramian
• Empirical Identifiability Gramian
• Empirical Joint Gramian
and a wrapper front-end for:
• Model reduction (POD, Modified POD, DSPMR, Balanced POD)
• Parameter identification and parameter reduction
• Combined state and parameter reduction
• Decentralized control
• State and parameter sensitivity analysis
• Nonlinearity quantification
• Uncertainty quantification
• Gramian indices (i.e. for Optimal actuator and sensor placement)
• Approximate system norms and system indices
• Tau functions
For more information see: https://gramian.de

2.2. Call for Editor in Chief and Associate Editor Positions
Contributed by: Andrew Alleyne, alleyne@illinois.edu

New Open Call for Editor in Chief and Associate Editor Positions–IEEE DataPort MetaData Review Board

While the deadline is June 1 2020, there will be continued opportunities for Associate Editors to engage. This is an important initiative and different from our current publication avenues of dissemination. CSS representation could be valuable to determine how best to handle the volume and variety of data that our society generates.

Nomination Deadline: 1 June 2020

Technical Activities Board members,
IEEE DataPort invites nominations for the positions of:
1. Editor-in-Chief for the IEEE DataPort MetaData Review Board (DataPort MRB) for a two-year term starting 1 July 2020
2. Associate Editors for the DataPort MRB for a two-year term starting 1 July 2020.

IEEE DataPort is a data platform developed and managed by IEEE that supports data publishing with DOI provisioning, research data management, Open Data initiatives, and research reproducibility. This new IEEE data platform is experiencing exponential growth and the DataPort MRB is being established to ensure quality metadata is provided with published datasets.

The DataPort MRB will review metadata for new dataset submissions to IEEE DataPort starting 1 July 2020. Metadata associated with datasets uploaded prior to 1 July 2020 will be reviewed by the DataPort MRB as time permits. Nominees must be IEEE members in good standing and be active members of one or more IEEE societies. It is preferred that nominees have served in an IEEE editorial capacity and are knowledgeable of good metadata practices. Desirable qualities include: solid technical accomplishments, leadership, integrity and ethical standards, excellent communications skills, organizational and management skills, and a vision for improving IEEE DataPort metadata as the platform grows.

EIC duties include the identification of approximately 8-10 Associate Editors to serve as IEEE DataPort dataset metadata reviewers; participation in the IEEE DataPort Steering Committee; management of the day-to-day operations of the DataPort MRB; monitoring quality and timeliness of metadata reviews by Associate Editors; defining and overseeing communications with individual dataset providers to assist with metadata improvements. The EIC may also be asked to participate in additional teleconferences, contributing to decisions about policies and priorities. The term of service will be from 1 July 2020 to 30 June 2022.

Associate Editor duties include the review of IEEE DataPort dataset metadata, developing suggested improvements to the metadata, communicating the suggested improvements to the dataset owner, tracking metadata reviews and resulting actions by data owners, and reporting results to the EIC on a regular and timely basis (as determined by the EIC). The Associate Editor position is critical to improving the quality of metadata on the IEEE DataPort platform and helping to form a norm for IEEE DataPort metadata that all dataset owners can utilize.

Nominations should be submitted via email to the Chair of the IEEE DataPort Steering Committee, David Belanger, dbelange@stevens.edu, by 1 June 2020.

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Nominations must include:
1. Subject of Email: "DataPort Metadata Review Board Nomination"
2. Name of nominator (self-nominations are accepted)
3. Name of candidate
4. Position for which candidate is nominated (EIC or Associate Editor)

5. Brief biography (up to 200 words), including a listing of the candidate's editorial experience and knowledge of metadata
6. Web address that contains the candidate's CV (do not send a curriculum vitae with the nomination)
7. Brief narrative supporting statement from the nominator(s)
8. Optionally, a statement of interest of up to 500 words stating the nominee's vision for the IEEE DataPort Metadata Review Board.

Thank you for your consideration.
Ray Liu
Chair-TAB Strategic Planning Committee

2.3. Free QLabs Control Trial
Contributed by: Zuzana Fabusova, zuzana.fabusova@quanser.com

Credible, interactive virtual hardware experiences - Free QLabs Control Trial Distance learning is becoming an essential component of modern engineering education, but moving a traditional engineering course online remains challenging. Based on our industry-leading hardware platforms for controls, robotics, and mechatronics, Quanser Interactive Labs can deliver meaningful hardware experiences to your students using a desktop or smart devices.

QLabs Controls is a scalable platform capable of delivering credible, academically appropriate, and high-fidelity lab experiences through interactions with virtual hardware. QLabs Controls is based on Quanser QUBE-Servo 2 and Quanser AERO physical plants and is accompanied by a comprehensive curriculum covering topics such as modelling, speed and position control, and aerospace control, instructor resources, and tools to manage student access and monitor their progress.

QLabs Controls is available as a 12-month subscription and runs on Windows, macOS, iOS, and Android, with no need for any institutional IT infrastructure or resources to integrate the platform. A free trial of the platform is available until the end of June 2020. Download QLabs Controls and request the instructor resources at https://bit.ly/3c88dLx

3   Books

3.1.   Relative Optimization of CT and Continuous-State Stochastic Systems
Contributed by: Laura Burgess, laura.burgess@springer.com

Relative Optimization of Continuous-Time and Continuous-State Stochastic Systems by Xi-Ren Cao
ISBN: 978-3-030-41845-8
May 2020, Springer
Hardcover, 365 pages, $179.99/€155,99
https://www.springer.com/gb/book/9783030418458

This monograph applies the relative optimization approach to time nonhomogeneous continuous-time and continuous-state dynamic systems. The approach is intuitively clear and does not require deep knowledge of the mathematics of partial differential equations. The topics covered have the following distinguishing features: long-run average with no under-selectivity, non-smooth value functions with no viscosity solutions, diffusion processes with degenerate points, multi-class optimization with state classification, and optimization with no dynamic programming.

The book begins with an introduction to relative optimization, including a comparison with the traditional approach of dynamic programming. The text then studies the Markov process, focusing on infinite-horizon optimization problems, and moves on to discuss optimal control of diffusion processes with semi-smooth value functions and degenerate points, and optimization of multi-dimensional diffusion processes. The book concludes with a brief overview of performance derivative-based optimization.

Among the more important novel considerations presented are:
• the extension of the Hamilton–Jacobi–Bellman optimality condition from smooth to semi-smooth value functions by derivation of explicit optimality conditions at semi-smooth points and application of this result to degenerate and reflected processes;
• proof of semi-smoothness of the value function at degenerate points;
• attention to the under-selectivity issue for the long-run average and bias optimality;
• discussion of state classification for time nonhomogeneous continuous processes and multi-class optimization; and
• development of the multi-dimensional Tanaka formula for semi-smooth functions and application of this formula to stochastic control of multi-dimensional systems with degenerate points.

The book will be of interest to researchers and students in the field of stochastic control and performance optimization alike.

Contents

6. Performance-Derivative-Based Optimization

3.2. Nonlinear Industrial Control Systems
   Contributed by: Laura Burgess, laura.burgess@springer.com

Nonlinear Industrial Control Systems by Michael J. Grimble and Pawel Majecki
ISBN: 978-1-4471-7455-4
May 2020, Springer
Hardcover, 764 pages, $249.99/€207,99
https://www.springer.com/gb/book/9781447174554

Nonlinear Industrial Control Systems presents a range of mostly optimisation-based methods for severely nonlinear systems; it discusses feedforward and feedback control and tracking control systems design. The plant models and design algorithms are provided in a MATLAB toolbox that enable both academic examples and industrial application studies to be repeated and evaluated, taking into account practical application and implementation problems.

The text makes nonlinear control theory accessible to readers having only a background in linear systems, and concentrates on real applications of nonlinear control. It covers:
• different ways of modelling nonlinear systems including state space, polynomial-based, linear parameter varying, state-dependent and hybrid;
• design techniques for nonlinear optimal control including generalised-minimum-variance, model predictive control, quadratic-Gaussian, factorised and H-Infinity design methods;
• design philosophies that are suitable for aerospace, automotive, marine, process-control, energy systems, robotics, servo systems and manufacturing;
• steps in design procedures that are illustrated in design studies to define cost-functions and cope with problems such as disturbance rejection, uncertainties and integral wind-up; and
• baseline non-optimal control techniques such as nonlinear Smith predictors, feedback linearization, sliding mode control and nonlinear PID.

Nonlinear Industrial Control Systems is valuable to engineers in industry dealing with actual nonlinear systems. It provides students with a comprehensive range of techniques and examples for solving real nonlinear control design problems.

Contents

1. Introduction to Nonlinear Systems Modelling and Control
2. Review of Linear Optimal Control Laws
3. Open-Loop and Feedforward Nonlinear Control
4. Nonlinear GMV Feedback Optimal Control
5. Nonlinear Control Law Design and Implementation
6. Nonlinear Quadratic Gaussian and H-Infinity Robust Control
7. Linear and Nonlinear Predictive Optimal Control
8. State-Space Approach to Nonlinear Optimal Control

9. State-Space Nonlinear Predictive Optimal Control

10. LPV and State-Dependent Nonlinear Optimal Control

11. LPV/State-Dependent Nonlinear Predictive Optimal Control

12. Nonlinear Estimation Methods: Polynomial Systems Approach

13. Nonlinear Estimation and Condition Monitoring: State-Space Approach

14. Nonlinear Industrial Process and Power Control Applications

15. Nonlinear Automotive, Aerospace, Marine and Robotics

4 Journals

4.1. CFP: Applied and Computational Mathematics Special Issue
Contributed by: Fikret Aliev, chief_ed@acmij.az

CFP: Applied and Computational Mathematics - Special Issue on "Fuzzy logic and its application to modeling epidemies: Coronavirus and beyond"

Infectious diseases have constituted a serious threat to humanity in the last centuries, as they contribute to a great number of deaths amongst humankind. They have potentially shape human story and most of them remain within our environment today. Among them, one can list the 28 devastating infectious diseases that have killed many humans in the last centuries, including: The new coronavirus, which belong to a large class of viruses causing respiratory illnesses that first appeared in Wuhan, China, in December 2019.

The aim of this special issue is devoted to the discussion underpinning the possible application of fuzzy to modelling the dynamic of the spread of devastating infectious diseases, in particular the coronavirus (COVID-19). The issue will therefore collect research papers with novel results focusing but not limited to:
• Fuzzy models including (systems of ordinary differential equations) for Coronavirus
• Fuzzy Spatial models (with partial differential equations), for Coronavirus
• Fuzzy traveling waves and similar topics;
• Fuzzy Agent-based models,
• Fuzzy virus dynamics models
• Fractional intra-host models
• Models based on stochastic approaches
• Fractional-fuzzy and application
• Fractal-Fractional-Fuzzy models for Coronavirus Pandemic
• Fuzzy and Markovian processes with applications in Coronavirus and others
• In general, fuzzy mathematical models for Coronavirus modelling

Lead Guest editor:
• Prof Dr Oscar Castillo, Tijuana Institute of Technology, Mexico.
Guest editors:
• Prof. Dr. Zakia Hammouch, Harran University, Sanliurfa Turkey
• Prof. Dr. Abdon Atangana, University of the Free State, South Africa, Email:
• Prof. Dr. Cruz Vargas De León, Facultad de Matemáticas, Universidad Autónoma de Guerrero, México.
• Prof. Dr. Karam Allali, University Hassan II of Casablanca, PO Box 146, Mohammedia, Morocco.

Guidelines: Authors can submit their manuscripts through the online submission system www.acmij.az . They have to use "Corona-2020" for the submission. Only papers with new and outstanding results related to Coronavirus outbreak within this scope will be considered for review. Routinely submissions and papers with only theoretical values will be directly rejected without being sent to review. Please, however feel free to contact chief_ed@acmij.az, f_aliev@yahoo.com or executive_ed@acmij.az. Please note that papers will have to adhere to the journal space and style requirements.
Important dates:
Opened submission date: 1 June 2020

Submission Deadline: 31 August 2020
Publication of Special Issue: December 2020

4.2. CFP: SIAM Journal on Control and Optimization Special Issue
Contributed by: Francesco Bullo, bullo@ucsb.edu

Call for Papers: SIAM Journal on Control and Optimization Special Section on Mathematical Modeling, Analysis, and Control of Epidemics

SIAM Journal on Control and Optimization (SICON) plans a Special Section to bring together contributions at the intersection of the fields of systems and control theory and the mathematical study of epidemic spread processes. We envision submissions related to COVID-19, but we additionally encourage general topics associated with epidemic processes.

Submissions will be accepted July 1 through October 1, 2020.

The ongoing COVID-19 pandemic has brought to the spotlight the critical importance and danger of complex epidemic processes. The intent of the section is to gather recent developments aimed at addressing the fundamental challenges inherent in the mathematical analysis, estimation, and control of epidemics.

Specific topics addressed in the section include (but are not limited to)
• mathematical modeling and analysis methods, including ordinary and partial differential equations as well as deterministic and stochastic systems,
• closed-loop control design strategies, including triggers for enforcing and relaxing non-pharmaceutical intervention strategies,
• optimization algorithms for intervention scheduling and resource allocation,
• computational methods for stochastic simulation,
• learning methods for early tracking, identification, inference and data-driven analysis.

Submissions: All interested should submit a manuscript and cover letter in PDF format via SICON's online submission site: https://sicon.siam.org. Note the block labeled Special Section (just under the keywords block on your submission screen). From the dropdown select " Mathematical Modeling, Analysis, and Control of Epidemics."

If any questions, contact Mitch Chernoff, SIAM Publications Manager, at chernoff@siam.org, or Brian Fauth, Editorial Associate, at sicon@siam.org. Questions about suitability of content can be directed to Francesco Bullo, guest editor-in-charge, at bullo@engineering.ucsb.edu.

Submit work for consideration July 1 through October 1, 2020.

Guest Editors:
- Carolyn Beck, University of Illinois, Urbana-Champaign
- Francesco Bullo, University of California, Santa Barbara
- Giacomo Como, Politecnico di Torino

- Kimon Drakopoulos, University of Southern California
- Dang H. Nguyen, University of Alabama
- Cameron Nowzari, George Mason University
- Victor M. Preciado, University of Pennsylvania
- Shreyas Sundaram, Purdue University

4.3. CFP: Mathematics Control Signals and Systems Special Issue
Contributed by: Timm Faulwasser, timm.faulwasser@tu-dortmund.de

The Journal "Mathematics Control Signals and Systems" is preparing a special issue on "Optimal Control and Dynamic Games"; detailed information is given below.

Sorry if you receive multiple copies of this call for papers.

The Journal "Mathematics Control Signals and Systems" has a long tradition in publishing seminal papers exploring the interconnections between various aspects of optimal control, game theory and their asymptotic behavior. Many powerful methods have emerged from this fruitful relationship, such as Optimal Feedback Stabilization, Model Predictive Control (MPC), and Mean Field Control theory, and with a number of theoretical and numerical developments and methods. Hence MCSS is inviting mathematically rigorous original research articles for a special issue on "Optimal Control and Dynamic Games: Large Time Behavior and Geometry".
Submissions should address aspects such as:
• the interplay between control problems and large time issues,
• including turnpike phenomena in optimal control,
• links and applications in model predictive control,
• dissipativity properties in optimal control, and time-varying settings,
• all the above both considering finite and infinite-dimensional systems.
At the top of this, the main objective of the special issue is not only to draw a state-of-the-art of the topic but also to provide significant novelties and to identify challenges for the future research.

Submissions can be made beginning June 1st 2020 until November 30th 2020, and will undergo a rigorous peer-review process.

The issue is expected to be published in 2021, in the meantime corrected proofs will be available as Online First.

For further author guidelines, please refer to: https://bit.ly/36hWkBv

If any questions, please contact one of the associate editors:
• Timm Faulwasser timm.faulwasser@tu-dortmund.de
• Dante Kalise dante.kalise@nottingham.ac.uk
• Emmanuel Trélat emmanuel.trelat@sorbonne-universite.fr

4.4. CFP: Asian Journal of Control Special Issue
Contributed by: Li-Chen Fu, lichen@ntu.edu.tw

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

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

The objective of this Special Issue is to present emerging control techniques for mechatronic and transportation systems that can be successfully applied to numerous engineering applications (e.g., control of rolling mills, conveyor belts, unicycles, bicycles, cars, trains, ships, airplanes, drones, missiles, satellites, platoons, manufacturing robots, such as welding, painting, assembly, pick and place for printed circuit boards, packaging and labeling, palletizing, product inspection, and testing ones, and surgical robots).

The topics include but are not limited to:
• Unmanned systems
• Industrial robots
• Remote servomechanisms
• Transportation systems
• Vehicle platoons
• Networked autonomous agents
• Smart sensors and actuators
• Human-machine interaction and human-machine cooperation
• IoT control design
• From research to industry

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

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

A large number of coupled systems in nature and society can be modeled by complex cyber-physical networks, whose normal functioning significantly relies on the tight interactions between its physical and cyber components. Many modern critical infrastructures can be appropriately modelled as complex cyber-physical networks. Typical examples of such infrastructures are power grids, the Internet, WWW, and public transportation systems. The ubiquity of such networked systems leads to many important and fascinating scientific problems concerning how network topologies and parameters affect collective dynamics, and how to control them. Analysis and control of complex cyber-physical networks have received a lot of attention recently, from various scientific and engineering communities.

Furthermore, revealing the fundamental properties and controlling the collective behaviors of networked systems not only can provide a better understanding of the emergence mechanisms for cooperative behaviors, but also can provide benefits to various applications of cyber-physical networked systems, such as smart grids, Internet of Things and unmanned aircraft systems.

The focus of this special issue is on new approaches to analysis and synthesis of complex cyber-physical networks as well as their potential practical applications. The special issue aims to establish a forum for international researchers from different fields of electrical engineering, bioinformatics, systems and control theory, and applied mathematics, to present and evaluate the most recent developments and new ideas on analysis and synthesis of complex cyber-physical networks, regarding both fundamental theory and practical applications.

The topics to be covered include, but are not limited to:
• Analysis and coordination control of complex cyber-physical networks
• Bio-inspired control techniques for networked systems
• Big-data mining and analysis over complex cyber-physical networks
• Controllability and observability of complex cyber-physical networks
• Distributed cognitive architectures in robotic networks
• Distributed control and estimation of multi-agent networks
• Distributed optimization of multi-agent networks
• Deep learning and intelligent control of complex cyber-physical networks
• Distributed machine learning in complex cyber-physical networks
• Distributed reinforcement learning techniques for networked systems
• Energy management and distributed intelligent control of smart grids
• Efficient privacy protection and security of complex cyber-physical networks

- Efficient privacy protection and security of complex cyber-physical networks
- Finite-time and fixed-time control of complex cyber-physical networks
- Game analysis and control over complex cyber-physical networks

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

4.5. IEEE/CAA Journal of Automatica Sinica
Contributed by: Yan Ou, yan.ou@ia.ac.cn

IEEE/CAA Journal of Automatica Sinica
Volume 7 (2020), Issue 2 (March)
http://ieeexplore.ieee.org/xpl/RecentIssue.jsp?punumber=6570654

Reviews:

- Artificial Intelligence Applications in the Development of Autonomous Vehicles: A Survey. Y. F. Ma, Z. Y. Wang, H. Yang, and L. Yang, page 315

Papers:

- Adaptive Output Regulation of a Class of Nonlinear Output Feedback Systems With Unknown High Frequency Gain. Y. Jiang and J. Y. Dai, page 568
- Optimal Neuro-Control Strategy for Nonlinear Systems With Asymmetric Input Constraints. X. Yang and B. Zhao, page 575
- Unified Smith Predictor Based H-Infinity Wide-Area Damping Controller to Improve the Control Resiliency to Communication Failure. M. Sarkar, B. Subudhi, and S. Ghosh, page 584
- Post-Processing Time-Aware Optimal Scheduling of Single Robotic Cluster Tools. Q. H. Zhu, Y. Qiao, N. Q. Wu, and Y. Hou, page 597
- Flue Gas Monitoring System With Empirically-Trained Dictionary. H. Cao, Y. J. Yu, P. P. Zhang, and Y. X. Wang, page 606
- Parallel Reinforcement Learning-Based Energy Efficiency Improvement for a Cyber-Physical System. T. Liu, B. Tian, Y. F. Ai, and F.-Y. Wang, page 617

4.6. IET Control Theory & Applications
Contributed by: Faraz Alam, farazalam@theiet.org

IET Control Theory & Applications
Volume 14, May/ & June 2020, Issues 8 and 9
http://digital-library.theiet.org/content/journals/iet-cta/14/8
http://digital-library.theiet.org/content/journals/iet-cta/14/9

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- Jiepeng Wang, Liangyin Zhang, Michael Z.Q. Chen, Zhiwei Gao, Hyperplane design for discrete-time sliding mode control with event-trigger strategy and disturbance observer, Issue 8, p. 1003 –1011
- Liu Yang, Yabin Gao, Yuxin Zhao, Ligang Wu, Finite-time control of periodic systems with event-triggering mechanisms, Issue 8, p. 1012 –1021
- Zhiguang Feng, Huayang Zhang, Haiping Du, Zhengyi Jiang, Admissibilisation of singular interval type-2 Takagi–Sugeno fuzzy systems with time delay, Issue 8, p. 1022 –1032
- Rajarathinam Vadivel and Young Hoon Joo, Finite-time sampled-data fuzzy control for a non-linear system using passivity and passification approaches and its application, Issue 8, p. 1033 –1045
- Chengwen Wang, Zhenyang Zhang, He Wang, Bin Zhao, Long Quan, Disturbance observer-based output feedback control of hydraulic servo system considering mismatched uncertainties and internal pressure dynamics stability, Issue 8, p. 1046 –1056
- Amine Abadi, Adnen El Amraoui, Hassen Mekki, Nacim Ramdani, Robust tracking control of quadrotor based on flatness and active disturbance rejection control, Issue 8, p. 1057 –1068
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- Zhuping Wang, Lei Wang, Hao Zhang, Qijun Chen, Jingcheng Liu, Distributed regular polygon formation control and obstacle avoidance for non-holonomic wheeled mobile robots with directed communication topology, Issue 9, p. 1113 –1122

- Ramasamy Kavikumar, Rathinasamy Sakthivel, Oh-Min Kwon, Boomipalagan Kaviarasan, Robust model reference tracking control for interval type-2 fuzzy stochastic systems, Issue 9, p. 1123 –1134
- Zhiyong Bao, Kamyar Mehran, Hak Keung Lam, Xiaomiao Li, Membership-dependent stability analysis of discrete-time positive polynomial fuzzy-model-based control systems with time delay, Issue 9, p. 1135 –1146
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- Maja S. Stanković and Dragan S. Antić, Distributed non-linear robust consensus-based sensor calibration for networked control systems, Issue 9, p. 1200 –1208
- Juan Zhang, Huaguang Zhang, Yanzheng Lu, Shaoxin Sun, Event self-triggered leader-following consensus of multi-agent systems with general dynamics, Issue 9, p. 1209 –1219
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- Xiaowu Mu and Xihui Wu, Tracking consensus for stochastic hybrid multi-agent systems with partly unknown transition rates via sliding mode control, Issue 8, p. 1091 –1103
- Yue-E Wang, Di Wu, Ben Niu, Improved conditions for event-triggered control of switched linear systems, Issue 8, p. 1104 –1110
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4.7. International Journal of Control, Automation, and Systems
Contributed by: Keum-Shik Hong, journal@ijcas.com

http://www.springer.com/engineering/robotics/journal/12555

Indexed in: Science Citation Index Expanded (SciSearch), Journal Citation Reports/Science Edition, SCO-PUS, INSPEC, Google Scholar, ProQuest, Academic OneFile, Current Contents/Engineering, Computing and Technology, EI-Compendex, OCLC, SCImago, Summon by Serial Solutions

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Muhammad Yaqoob Javed, and Syed Tahir Hussain Rizvi, pp.1550-1560
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- New Sliding Mode Control of 2-DOF Robot Manipulator Based on Extended Grey Wolf Optimizer Mehran Rahmani*, Hossein Komijani, and Mohammad Habibur Rahman, pp.1572-1580
- Maximum Likelihood Least Squares Based Iterative Estimation for a Class of Bilinear Systems Using the Data Filtering Technique Meihang Li* and Ximei Liu*, pp.1581-1592
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- Characteristic Model-based Adaptive Control with Genetic Algorithm Estimators for Four-PMSM Synchronization System Yang Gao, Yi-fei Wu*, Xiang Wang, and Qing-wei Chen, pp.1605-1616
- Fuzzy Sliding Mode Control of Nonparallel-ground-track Imaging Satellite with High Precision Dong Ye, Hongzhu Zhang, Yingxin Tian, Yue Zhao*, and Zhaowei Sun, pp.1617-1628
- Unactuated Force Control of 5-DOF Parallel Robot Based on Fuzzy PI Shu-Huan Wen*, Wei Zheng, Shi-Dong Jia, Zhi-Xin Ji, Peng-Cheng Hao, and Hak-Keung Lam, pp.1629-1640

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4.8. Systems & Control Letters
Contributed by: Lusia Veksler, lveksler@ucsd.edu

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- Optimal linear and quadratic estimators for tracking from distance measurements, Filippo Cacace, Francesco Conte, Alfredo Germani, Giovanni Palombo, Article 104674
- Lipschitz regularity of the minimum time function of differential inclusions with state constraints, Pierre-Cyril Aubin-Frankowski, Article 104677
- Sampled-data containment control for double-integrator agents with dynamic leaders with nonzero inputs, Yong Ding, Wei Ren, Article 104673
- Memoryless linear feedback control for a class of upper-triangular systems with large delays in the state and input, Congran Zhao, Wei Lin, Article 104679
- Asymptotic properties of linear filter for deterministic processes, Anugu Sumith Reddy, Amit Apte, Sreekar Vadlamani, Article 104676
- Stabilization of constrained switched systems via multiple Lyapunov R-functions, Feiyue Wu, Jie Lian, Article 104686

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

- In memoriam Ruth Curtain, Hans Zwart, Article 104663

- Stabilizability properties of a linearized water waves system, Pei Su, Marius Tucsnak, George Weiss, Article 104672
- L2 and BIBO stability of systems with variable delays, Catherine Bonnet, Jonathan R. Partington, Article 104671
- Funnel control in the presence of infinite-dimensional internal dynamics, Thomas Berger, Marc Puche, Felix L. Schwenninger, Article 104678

4.9. Asian Journal of Control
Contributed by: Li-Chen Fu, lichen@ntu.edu.tw

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

Papers:

1. Reduction of H-infinity state feedback control problems for the MIMO servo systems
Authors: Hayato Waki and Noboru Sebe
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3. Computation of controllability and observability Gramians in modeling of discrete-time noncommensurate fractional-order systems
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4. A Recursive Hierarchical Parametric Estimation Algorithm for Nonlinear Systems Described by Wiener-Hammerstein Models
Authors: Afef Marai, Mourad Elloumi, Houda Salhi and Samira Kamoun
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Authors: Hugo Leiva and Oscar Camacho
6. Sliding Mode Control as Binary-based Quantizers
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Authors: Abbas Dideban and Mojtaba Yazdani
8. A computational method for solving two-dimensional nonlinear variable-order fractional optimal control problems
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9. Design of functional interval observers for non-linear fractional-order systems
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13. Recursive Bayesian State Estimation Method for Run to Run Control in High-mixed Semiconductor Manufacturing Process
Authors: Tianhong Pan, Fei Tan, Jun Bian, Haiyan Wang and Weiran Wang

14. Improved Recurrent Neural Networks for Online Solution of Moore-Penrose Inverse Applied to Redundant Manipulator Kinematic Control
Authors: Xuanjiao Lv, Zhiguo Tan, Ke Chen and Zhi Yang

15. Command Filtered Path Following Control of Saturated ASVs Based on Time-Varying Disturbance Observer
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16. Impact Time and Angle Constrained Integrated Guidance and Control with Application to Salvo Attack
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19. A Graphical Approach for Stability and Robustness Analysis in Commensurate and Incommensurate Fractional-order Systems
Authors: Shen Yaohua, Wang Yunjian and Yuan Nana

20. Distributed Delay-dependent Filtering for Markovian Jump Systems Interconnected Over an Undirected Graph with Time-delay
Authors: Xiaojuan Xue, Li Xu and Huiling Xu

21. Backstepping Control of Flexible Joint Manipulator Based on Hyperbolic Tangent Function with Control Input and Rate Constraints
Authors: Jinkun Liu, Lijun Wang, Qiuyue Shi and Dan Zhang

22. Torque tracking control of electric load simulator with active motion disturbance and nonlinearity based on T-S fuzzy model
Authors: Xudong Pan, Chengcheng Li and Guanglin Wang

23. A novel modeling and controlling approach for high-order nonlinear systems
Authors: Lei Chen, Yan Yan and Changyin Sun

24. Estimation of stability region for discrete-time linear positive switched systems with multiple equilibrium points
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25. Adaptive Fault-Tolerant Formation Control for Quadrotors with Actuator Faults
Authors: Ke Zhang, Wan-Zhang Liu, Bin Jiang and Xing-Gang Yan

26. Robust PID Controller for Flexible Satellite Attitude Control under Angular Velocity and Control Torque Constraint
Authors: Li You and Dong Ye

27. Optimal Fractional Order $PI\lambda D\mu$ Controller for Stabilization of Cart-inverted Pendulum System: Experimental Results
Authors: Arindam Chakraborty, Reetam Mondal, Jayati Dey and Suman Halder

Brief Papers:

5 Conferences and Workshops

5.1. Math Problems in Engineering, Aerospace, and Sciences, Czech Republic
Contributed by: Seenith Sivasundaram, seenithi@gmail.com

World Congress: Mathematical Problems in Engineering, Aerospace, and Sciences
When: Date: June 22-25, 2021
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)

5.2. Online Second Symposium on Machine Learning and Dynamical Systems
Contributed by: Boumediene Hamzi, boumediene.hamzi@gmail.com

Dear all,

I hope you're well.

Given the current circumstances, it was decided that the Second Symposium on Machine Learning and Dynamical Systems will be organised online by the Fields Institute.

Regular speakers can give either a pre-recorded (up to 50 mins) or a live lecture (up to 30mins). Poster presenters can give either a short live presentation (5-10 mins) or give a long pre-recorded lecture (up to 50 mins).

There will be Q/A sessions after each regular lecture (or after each session) and a live poster session. We are still working on all details.

In the meanwhile, please enter your preference for a live vs. prerecorded talk at
https://bit.ly/3g2Lggd
since this will allow us to think about the schedule.

If you were not able to accept the invitation to contribute to the event due to different reasons, please consider contributing to the online symposium through a live or a pre-recorded lecture.

Please register for the event here:
https://bit.ly/2XchAoe

The event page will be updated as details are confirmed:
http://www.fields.utoronto.ca/activities/20-21/dynamical
https://sites.google.com/site/boumedienehamzi/second-symposium-on-machine-learning-and-dynamical-systems

Please let me know if you need further information.
Best wishes,
Boumediene Hamzi (on behalf of the organization committee)

5.3. SmartGridComm 2020, USA
Contributed by: Anuradha Annaswamy, aanna@mit.edu

The 11th IEEE International Conference on Communications, Control, and Computing Technologies for Smart Grids (SmartGridComm 2020)
Tempe, Arizona

IEEE Communications Society and the SmartGridComm 2020 Organizing Committee are closely monitoring developments related to the COVID-19 pandemic. Keeping the health and safety of our community, and COVID-19 related travel restrictions in mind, SmartGridComm Organizing team is in discussions to move the 2020 conference to a *virtual* format and holding it in *early November*. Please stay tuned (https://sgc2020.ieee-smartgridcomm.org/) for further updates.

This will also give more time to the community that is facing delays in preparing and submitting papers owing to COVID-19 situation. The new deadline for paper submission is *July 1, 2020*. The updated time-

line for notification and camera-ready will be announced soon.

Thank you very much for your attention and continued interest. We look forward to seeing your innovative, exciting research efforts at the conference.

Conference link: https://sgc2020.ieee-smartgridcomm.org/

Submission link: https://edas.info/newPaper.php?c=26940

Important Dates:
Paper Submission: 1 July 2020 [Extended]
Acceptance Notification: TBD
Camera-Ready: TBD

The vision of the smart grid has emerged as a response to the challenge of providing a reliable, efficient and sustainable energy supply to modern society. It is widely accepted today that addressing this challenge requires significant advances in the areas of communication, security, control, data analytics and computing, and a careful integration of these advances with power electronics and power systems. The result will be a system that efficiently adapts to the behavior of energy consumers and energy providers, potentially embracing new business models as well.

The 11th IEEE International Conference on Communications, Control, and Computing Technologies for Smart Grids (SmartGridComm 2020) aims to provide a forum for researchers and practitioners from academia, industry, government institutions, and regulators with background in communications, energy, control, signal processing, analytics and information systems to exchange ideas, explore enabling technologies and share experiences related to smart grids.

Prospective authors are invited to submit original papers (standard two-column IEEE format, up to six pages plus one extra page allowed) using EDAS (https://edas.info/newPaper.php?c=26940) on all aspects of communications, control and computing technologies for smart grids covered by the four technical symposia:

1. Communications and Networking
2. Cyber Security and Privacy
3. Control and Operations
4. Grid Analytics and Computation

All accepted papers will be candidates for Best Paper Award and Best Student Paper Award, which will be announced at the conference. Papers whose first author is a student at the time of submission are eligible for the Best Student Paper Award.

ORGANIZING COMMITTEE

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- Symposium Co-Chairs

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Kate Davis, Texas A&M
Binbin Chen, Singapore University of Technology and Design
- Communications and Networking:
Fang Yang, Tsinghua
Sachin Shetty, Old Dominion University
Melike Erol-Kantarci, University of Ottawa, Canada
- Control and Operations:
Hongjian Sun, Durham, UK
Meng Wang, Rensselaer Polytechnic Institute

Henrik Sandberg, KTH
- Grid Analytics and Computation:
Chen Chen, Xi'an Jiaotong University
Baosen Zhang, U. Washington
Jinsub Kim, Oregon State

5.4. Conference on Decision and Game Theory for Security, USA
Contributed by: Juntao Chen, jchen504@fordham.edu

11th Conference on Decision and Game Theory for Security (GameSec 2020)
October 28-30, 2020, College Park, Maryland, USA
https://www.gamesec-conf.org

Scope: Modern societies are becoming dependent on information, automation, and communication technologies more than ever. Managing the security of the emerging systems, many of them safety critical, poses significant challenges. The 11th Conference on Decision and Game Theory for Security will take place from October 28–30 at the University of Maryland - College Park. It focuses on protection of heterogeneous, large-scale and dynamic cyber-physical systems as well as managing security risks faced by critical infrastructures through rigorous and practically relevant analytical methods. GameSec 2020 invites novel, high-quality theoretical and practically relevant contributions, which apply decision and game theory, as well as related techniques such as optimization, machine learning, dynamic control and mechanism design, to build resilient, secure, and dependable networked systems.

The goal of GameSec 2020 is to bring together academic and industrial researchers in an effort to identify and discuss the major technical challenges and recent results that highlight the connections between game theory, control, distributed optimization, machine learning, economic incentives and real-world security, reputation, trust and privacy problems.

Main Topics
• Game theory, control, and mechanism design for security and privacy
• Decision making for cybersecurity and security requirements engineering
• Security and privacy for the Internet-of-Things, cyber-physical systems, cloud computing, resilient control systems, and critical infrastructure
• Pricing, economic incentives, security investments, and cyber insurance for dependable and secure systems
• Risk assessment and security risk management
• Security and privacy of wireless and mobile communications, including user location privacy
• Socio-technological and behavioral approaches to security
• Empirical and experimental studies with game, control, or optimization theory-based analysis for security and privacy
• Adversarial Machine Learning and the role of AI in system security

Special Track on "Machine Learning and Cyber Security": Machine learning provides a set of useful analytic and decision-making tools for a wide range of applications. Security research aims to address the

issue of protecting networks from adversarial behaviors. The confluences between the two are increasingly important as we witness recent advances in adversarial machine learning and machine learning for security big data processing. This special track invites submissions on various data-centric models and approaches.

Abstract submission (optional): June 22, 2020
Paper submission: June 29, 2020
Decision notification: August 10, 2020
Camera-ready submission: September 7, 2020

The conference proceedings will be published by Springer as part of the LNCS series. More information can be accessed at: https://www.gamesec-conf.org

5.5. IFAC World Congress Workshops Reduced Registration Fee, Germany
Contributed by: Rolf Findeisen, rolf.findeisen@ovgu.de

IFAC World Congress pre-conference workshops - reduced registration fee and registration without congress participation

Pre-conference workshops of the IFAC World Congress 2020 will be held virtually. Workshops take place on Saturday, 11 July 2020. The list of proposed workshops is available under
https://www.ifac2020.org/program/workshops.html.
The participation in the workshops is decoupled rom the participation in the congress. Participation in the workshops is now also possible if you do not attend the congress itself. The registration fee has been reduced to 40€for students and participants from developing countries and 70€for standard participation.

The registration is done in a two-stage process. In the pre-registration step, which runs until 7 June 2020, the interest in the different workshops is evaluated via
https://www.rayseven.com/r7/runtime/vdi/ifac2020topics/registration.survey.php.

For workshops with sufficient interest, the registration will start on 8 June 2020. The pre-registration interest decided's which workshops will take place.

Thus, if you plan to attend a workshop, please pre-register via the web site to ensure that the workshop takes place.

Lars Grüne
Pre-conference workshop chair, IFAC World Congress 2020
in the name of the complete IFAC WC organization team

5.6. IFAC World Congress Workshop: MPC of Hybrid Systems, Germany
Contributed by: Berk Altın, berkaltin@ucsc.edu

IFAC WC 2020 (Virtual) Workshop: Model Predictive Control of Hybrid Systems
Model Predictive Control of Hybrid Dynamical Systems

July 11, 2020
Berlin, Germany (Virtual Workshop)
https://hybrid.soe.ucsc.edu/hybridmpcifacwc20

Organizers:
Berk Altın (berkaltin@ucsc.edu), Ricardo G. Sanfelice (ricardo@ucsc.edu)

Pre-registration:
https://www.rayseven.com/r7/runtime/vdi/ifac2020topics/registration.survey.php

Hybrid systems model the behavior of dynamical systems where the states can evolve continuously as well as instantaneously. Such systems arise when control algorithms that involve digital devices are applied to continuous-time systems, or due to the intrinsic dynamics (e.g. mechanical systems with impacts, switching electrical circuits). Hybrid control may be used for improved performance and robustness properties compared to conventional control, and hybrid dynamics may be unavoidable due to the interplay between digital and analog components of a system.

This one day workshop is a complete course on the analysis and design of model predictive control (MPC) schemes for hybrid systems. It presents recently developed results on asymptotically stabilizing MPC for hybrid systems based on control Lyapunov functions. The workshop provides a detailed overview of the state of the art on hybrid MPC, and a short tutorial on a powerful hybrid systems framework (hybrid inclusions) that can model hybrid dynamics described in other frameworks (e.g. switched systems, hybrid automata, impulsive systems). Key analysis tools in this setting are demonstrated, along with several advantages over other frameworks. This background is then used to lay the theoretical foundations of a general MPC framework for hybrid systems, with guaranteed stability and feasibility. The ideas are illustrated in several applications.

The workshop targets a broad audience in academia and industry, including graduate students, looking for an introduction to an active area of research and some modern mathematical analysis tools; control practitioners interested in novel design techniques; researchers in dynamical systems in pursuit of relevant applications; and researchers in industry and labs applying hybrid predictive control methods to engineering systems. The required background is basic familiarity with continuous- and discrete-time nonlinear systems. The lectures are closely related to each other and not meant to be independent research presentations. For more information, please see the workshop website or contact the organizers. A similar workshop was held at the 2019 CDC, see https://hybrid.soe.ucsc.edu/hybridmpccdc19.

Registration Details: If you are interested in attending, please pre-register free of charge until June 7, 2020. Participation in the workshop does not require participation in IFAC WC. Registration is a two-stage process.
1. Pre-registration is free of charge and runs until June 7, 2020. It is used to evaluate interest in the workshop:
https://www.rayseven.com/r7/runtime/vdi/ifac2020topics/registration.survey.php
2. Registration will start on June 8, 2020. The registration fee is €40-70. Details will be available at
https://www.ifac2020.org/program/workshops.html

5.7. IFAC Workshop: Cyber-Physical & Human Systems, China
Contributed by: Mariana Netto, mariana.netto@univ-eiffel.fr

3rd IFAC Workshop on Cyber-Physical & Human Systems (CPHS2020)
3-5 December 2020 (right before the CDC in Jeju Island, Republic of Korea), Shanghai, China www.cphs2020.org
To download the CPHS 2020 Call for Papers please click here:
http://www.cphs2020.org/8e0ca2fa71858d7686d0175c9063a3ed.pdf

Important Dates:
* Invited Session Proposals: By June 15, 2020
* Paper/Abstract Submissions: By June 30, 2020

Scope: "Advances in control and automation, communications, and computing have facilitated the integration of cyber-physical and human systems in a multidisciplinary manner. Human elements form closer ties with the cyber-physical systems through human-in-the-loop controls or interactions with human intentions, emotions, actions and psychological states taken into consideration. Interactions and integrations of cyber-physical systems and human systems have raised a wide range of interdisciplinary challenges and call for new technical advances. This workshop series on Cyber-Physical and Human Systems (CPHS) aims to investigate these cross-disciplinary dimensions and develop new technological solutions."

Whether CPHS 2020 is organized online, in Shanghai, or a mixed online/on-site event, all accepted papers will be published in the open-access IFAC-PapersOnLine journal (hosted on ScienceDirect and indexed by Scopus, Web of Science, and INSPEC).

The CPHS 2020 organizers are closely monitoring COVID-19 developments. We are hopeful that the workshop can proceed as planned. However, we realize that many authors will be unable to travel in December 2020. We will therefore ensure that, wherever necessary, remote presentation facilities will be arranged for papers and sessions. Furthermore, all accepted papers by registered authors will be published in the online proceedings regardless of whether or how they are presented. Further updates will be posted on the web site promptly.

6   Positions

6.1. PhD: Scuola Superiore Meridionale, Italy
Contributed by: Mario di Bernardo, mario.dibernardo@unina.it

Call for Applications for New PhD Program in Modeling and Engineering Risk and Complexity

From climate change and sustainability to seismic engineering and Industry 4.0, all the crucial challenges facing mankind today require the ability to understand, control and engineer ever growing reliable interdependent, complex and interconnected systems and infrastructures.

The Call for Applications for the new 4 year PhD Program in Modeling and Engineering Risk and Complexity of the Scuola Superiore Meridionale (a brand new School for Advanced Studies in Naples) is now out and available at

http://www.ssm.unina.it/en/calls-and-news/

We are looking for bright and ambitious students from any area of Mathematics, Science and Engineering to join this exciting new program.

6 fully funded 4-year scholarships are available this year

Each scholarship includes a stipend of EUR 19,000 per year which is increased by 50% when the student is spending time abroad. Students expected to spend at least 9-12 months abroad during their PhD. Each Scholarship also includes approx EUR 4,000 for research costs/travel per year

Applicants must submit a brief scientific report (description of their MSc thesis work, CV, personal statement and reference letters) following the instructions provided at the website above by no later than 30th June 2020.

Successful candidates will be announced the end of July 2020 with course officially starting on 2nd November 2020.

For any further information contact the PhD Coordinator, Prof Mario di Bernardo, at
merc@unina.it or check out the school website at http://www.ssm.unina.it

6.2. PhD: Eindhoven University of Technology, The Netherlands
Contributed by: Roland Toth, r.toth@tue.nl

PhD position - High-precision Motion Control of Planar Stage Actuators

Description of the position: This PhD position at the Control Systems group of the Electrical Engineering department of Eindhoven University of Technology is part of a research consortium aiming at the development of high-precision planar stage technology as part of an IT2 project together with ASML, Prodrive and

VDL ETG. To enable 2nm node technology and 200 wafer per hours productivity for preserving the leading role of EU in Integrated Circuit (IC) manufacturing, a new generation of ultra-high precision electromagnetic (EM) positioning systems is required that enable precise control of the magnetically levitated stage and its spatial deformations together with complete environmental decoupling (wireless stage). The aim is at establishing a novel moving-magnet planar motor technology that enables single stroke, point-of-interest (POI) positioning of wafers below 0.5nm accuracy with high-acceleration motion profiles.

The objective of this PhD research is making a significant step in advancing high-precision motion control of planar stage actuators to achieve the above specified accuracy and productivity objectives. The research involves significant laboratory work in terms of implementation and experimental verification of the research results on a prototype stage developed at TU/e in collaboration with industrial partners.

Main research directions:
• Intelligent commutation methods: Advanced coil calibration methods (based on the physical understanding of position dependent and dynamical coil-magnet relations) will be performed together with compensation of disturbances beyond physical understanding via self-learning methods (deep recurrent neural networks, Gaussian process, reinforcement learning, etc.).
• High-precision point-of-interest (POI) control via advanced motion control and spatial control: using state-of-the-art MIMO linear parameter-varying (LPV) feedback control for POI tracking together with improved feed-forward control for over-actuation and compensation of parasitic phenomena (e.g. eddy currents).
• Learning based adaptive control augmentation for performance enhancement.

Requirements: We are looking for a candidate who meets the following requirements:
• You are a talented and enthusiastic young researcher.
• You have experience with or a strong background in systems and control, mathematics, signal processing. Preferably you finished a master in Systems & Control, Mechanical Engineering or Electrical Engineering.
• You have good programming skills and experience (Matlab, Python, C/C++, DSpace).
• You have good communicative skills, and the attitude to partake successfully in the work of a research team.
• You are creative and ambitious, hard-working and persistent.
• You have good command of the English language (knowledge of Dutch is not required).

Conditions of employment
• Challenging job in a dynamic and ambitious university and a stimulating internationally renowned research environment.
• Full-time temporary appointment for 4 years.
• Gross salary between €2.325,00 and €2.972,00.
• An extensive package of fringe benefits (e.g. excellent technical infrastructure, the possibility of child care and excellent sports facilities).
Information: For more information contact dr. Roland Toth (r.toth[a]tue.nl) or see
https://jobs.tue.nl/en/vacancy/phd-planar-stage-technology-development-849818.html

More information on employment conditions can be found here:
https://www.tue.nl/en/working-at-tue/why-tue/compensation-and-benefits/

Application: If interested, please visit
https://jobs.tue.nl/en/vacancy/phd-planar-stage-technology-development-849818.html
and use the apply now-button at the top of this page.

You should upload the following:
- a brief letter motivating your interest and suitability for the position,
- a detailed curriculum vitae including research experience,
- transcripts of academic records indicating courses taken (including grades),
- half-page summary of your MSc thesis,
- contact details of two relevant references (email, phone number).

6.3. PhD: Univ. of South Florida and Embry-Riddle Aeronautical Univ., USA
Contributed by: Tansel Yucelen, yucelen@usf.edu

We are searching for three exceptional Ph.D. students with a strong background in control systems to perform high-quality and innovative theoretical and experimental research on resilient autonomous vehicles and cooperative robotics. These students, who will be graduate assistants, are expected to start working at the beginning of August 2020.

Our intention is to give our strong guidance in order to maximize the chances of our students of building a rewarding research career. If you are interested, please send an email to both Tansel Yucelen at yucelen@usf.edu (Assistant Professor of Mechanical Engineering at the University of South Florida) and K. Merve Dogan at k.merve.dogan@gmail.com (soon-to-be Assistant Professor of Aerospace Engineering at the Embry-Riddle Aeronautical University) including:
(1) Your curriculum vitae (applicants with M.S. degree are preferred).
(2) A publication on control systems (applicants with accepted or submitted conference or journal papers are preferred).
(3) A concise paragraph (4-5 sentences maximum) that explains your theoretical and experimental experience on control systems.
(4) A list that shows the undergraduate and M.S. courses the applicant took related to mathematics and control systems.
(5) Three contact information (including name, e-mail, and phone number of the person) for letter of recommendation requests (one of these three contact information must include your current advisor).

Our research is focused on the creation of new information, control, and decision algorithms that reveal advanced systems such as highly capable autonomous vehicles and networked multivehicle systems. These systems are envisioned to elevate our society as well as to perform safety-critical operations with more robots and less humans. We place a strong emphasis both on theoretic research and experimentation for addressing fundamental and open real-world technological problems. Our aim is to be recognized as one of the top research laboratories in the nation by significantly advancing the knowledge, training science-based engineers and professionals, and placing our students in top research places, to shape the future of our society.

All the best,
Tansel Yucelen
K. Merve Dogan

6.4. PhD: University of Agder, Norway
Contributed by: Jing Zhou, jing.zhou@uia.no

Two fully funded Ph.D. Positions are available at University of Agder, Norway – Next Generation Deep Learning for Collaborative Robot Systems

The Faculty of Engineering and Sciences at University of Agder has two joint PhD positions available within the fields of artificial intelligence, cooperative control and collaborative robots. The positions are within the Norwegian Research Council's Long-term research project "Collective Efficient Deep Learning and Networked Control for Multiple Collaborative Robot Systems". Application closing date is 15 June 2020.

Further information can be found at:

https://www.jobbnorge.no/en/available-jobs/job/186893/two-phd-research-fellow-positions-next-generation-deep-learning-for-collaborative-robot-systems

If you are interested in this opportunity, feel free to contact us for more details.

6.5. PhD: Delft University of Technology, The Netherlands
Contributed by: Anahita Jamshidnejad, a.jamshidnejad@tudelft.nl

Two PhD positions on human-AI decision-making and control at Delft University of Technology

Job description: These 2 PhD projects will focus on optimization-based and AI-based decision-making for AI agents (e.g., autonomous robots) in in a team composed of human operators and AI-based agents. The main challenges of human-AI teamwork include obtaining mutual understanding among the team members and coordination of the decisions made by AI-based agents and humans, in such a way that the team's goals are achieved in an optimal way. To tackle these challenges, we will integrate various methods from control theory with knowledge-based methods from AI to develop new real-time control approaches. The main applications for the projects include interactive teams of humans and robots in advanced manufacturing, social assistive robots in healthcare for therapeutic interactions with patients, and search-and-rescue missions with robots.

What do we ask for? We are looking for a candidate with an MSc degree in systems and control, robotics, electrical engineering, or a related field, and with a strong background or interest in control theory, mathematical modeling, and artificial intelligence, particularly fuzzy logic and fuzzy logic control. The candidate is expected to work on the boundary of several research domains. Prior experience with programming and/or with robots is appreciated. A good command of the English language is required. The PhD student is expected to actively participate in the education program of the faculty.

How to apply? Submit your letter of application along with a detailed curriculum vitae, a motivation letter describing why the proposed research topic interests you, your BSc and MSc transcripts, a list of publications, and the names and contact information of two to three reference persons, and all other information that might be relevant to your application to Dr. Anahita Jamshidnejad (email: a.jamshidnejad@tudelft.nl).

The deadline for applying for the positions is July 1, 2020. However the positions will stay open until a suitable candidate has been found.

More information on these positions can be obtained from
https://sites.google.com/site/jamshidnejadanahita/vacancies.

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6.6. PhD: University of Munich, Germany
Contributed by: Matthias Althoff, althoff@in.tum.de

PhD Position for Safe Motion Planning of Autonomous Vehicles

The research group Cyber-Physical Systems of Prof. Matthias Althoff at the Technical University of Munich offers a PhD position in the area of safe motion planning of autonomous vehicles. 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://bit.ly/2zHYKNw

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6.7. PhD: Université de Lyon, France
Contributed by: Federico Bribiesca Argomedo, federico.bribiesca-argomedo@insa-lyon.fr

PhD Position: State Observers for Li-ion Batteries, Fall 2020 PhD Offer: Electrochemical Virtual Sensor Development for Lithium-ion Batteries [1]

Contact information: Federico Bribiesca Argomedo, federico.bribiesca-argomedo@insa-lyon.fr
(https://federico.bribiesca-argomedo.info)
Duration: 3 years (European H2020 project INSTABAT, in final stages of signature)
Starting date: September / October 2020
Thesis grant: about 2000 €/month (gross salary, Teaching Assistant supplement negotiable)
Location: Lyon (Rhône, France)
Primary fields: Control Systems Theory, Applied Mathematics
Application fields: Electrochemistry, Electric Vehicles
Doctoral School: EEA, Université de Lyon, INSA Lyon (https://edeea.universite-lyon.fr, also available in English)

This proposed (36 month) PhD position in the Control Systems Department of Ampère Laboratory[2] at INSA Lyon is a part of the INSTABAT project [3], whose objective is to develop a proof of concept multi-sensor platform (or "lab-on-a-cell") capable of real-time monitoring of key electrochemical and thermal

variables inside a battery cell and of predicting their impact on related physicochemical degradation phenomena taking place. An important component of this platform will be a set of "virtual sensors" (more commonly known in the control-systems literature as "state observers") that will allow the real-time estimation of key internal variables that cannot be directly measured. The information thus obtained should inform the Battery Management System (BMS) in order to improve the accuracy of available State of Charge, State of Health, State of Energy and State of Safety (SoX) indicators, and therefore adapt the charging and discharging strategies to improve the Quality, Reliability and Life (QRL) of the battery.

The retained candidate will have as main objective the development of state estimation algorithms for a class of infinite-dimensional systems (in this case, diffusive partial differential equations) representative of the electrochemical and thermal phenomena occurring inside the battery. In particular, the research will be oriented toward coupling thermal models and reduced Doyle-Fuller-Newman (or extended Single Particle type models), that are simple enough to run in real time but are able to perform adequately at high charge/discharge rates [4]. Some techniques that can be deployed include:
• Backstepping transformations for partial differential equations [5]
• Model reduction techniques (e.g. POD/Galerkin methods, finite differences, etc.)
• Extended Kalman filter techniques / nonlinear observer techniques.
• Optimization and Artificial intelligence techniques in general (e.g. convex optimization, machine learning, clustering techniques, etc.)
The candidate should exhibit a strong mathematical and control systems foundation, and either strong competences or capacity to rapidly acquire them in the following areas are highly desirable:
• Applied Mathematics (Analysis, PDEs, etc.)
• Optimization / AI techniques
• Numerical methods
• Programming using Matlab/Simulink

Furthermore, working knowledge or capacity to rapidly acquire it in basic electrochemistry will be required.

The successful candidate will be integrated into the Control Systems Department (AIS) of the Ampère Laboratory in Lyon and is expected to be able to evolve in a strongly inter-disciplinary team including academic and industrial partners. As a key interlocutor in the European research program, the candidate should be capable of clearly communicating and implementing (or helping, as required, with the implementation) of the developed algorithms for integration in the proof of concept platform by the end of the project.

Some useful information about doing a PhD in France for foreign students:
https://edeea.universite-lyon.fr/ed-160-eea/version-anglaise/navigation/international/foreign-phd-students
https://www.campusfrance.org/en/FAQ-Doctorate-France-questions

Application:
Candidates have to send by email the following documents:
• Curriculum Vitae
• Cover letter
• Master 1 and 2 transcripts (or latest two years of studies)
• The name and contact information of 1 or 2 references (willing and able to provide a recommendation)

[1] Funding: European Commission Horizon 2020 Research and Innovation Framework Programme call H2020-LC-BAT-2020-3, action LC-BAT-13-2020 (RIA).

[2] Ampère Laboratory is a research center regrouping researchers from the Université de Lyon, INSA Lyon, École Centrale de Lyon, Université Claude Bernard Lyon 1 and CNRS (UMR5005) http://www.ampere-lab.fr

[3] Proposal 955930: "Innovative physical/virtual sensor platform for battery cell" (INSTABAT). Participating partners: CEA (FR), BMW (DE), CNRS (FR), Faurecia (FR), Infineon (DE), INSA Lyon (FR), Universidade de Aveiro (PT), Varta (AT)

[4] Moura, S. J., F. Bribiesca Argomedo, R. Klein, A. Mirtabatabaei and M. Krstic. Battery State Estimation for a Single Particle Model with Electrolyte Dynamics. IEEE Transactions on Control Systems Technology. Vol. 25, Issue 2. pp. 453-468. March 2017. doi: 10.1109/TCST.2016.2571663. [Preprint] [Electrochemical Model Simulator (S. Moura)]

[5] Krstic, M. And A. Smyshlyaev. Boundary Control of PDEs: A course on Backstepping Designs. SIAM, Advances on Design and Control, 2008.

6.8. PhD: Lakehead University, Canada
Contributed by: Abdelhamid Tayebi, atayebi@lakeheadu.ca

A Ph.D. position is available in the Electrical and Computer Engineering graduate program at Lakehead University, Canada. The research topic will be in the field of aerial robotics and control systems. Students with strong control, robotics and mathematical background are encouraged to apply. Please send your CV to Prof. Abdelhamid Tayebi (atayebi@lakeheadu.ca).

https://scholar.google.com/citations?user=bZXTyF4AAAAJ

Due to the expected large volume of applications, only selected applicant's will receive a reply.

6.9. PhD: City University of New York, USA
Contributed by: Hao Su, hao.su@ccny.cuny.edu

PhD Student Position Dynamics/Control and Motor Design at City University of New York

Biomechatronics and Intelligent Robotics Lab at the City University of New York (CUNY), City College has one PhD position available for 2020 Fall. The applicant is expected to have research background in Dynamics/Control, Computer Science, or Power Electronics/Electric Motor Design. Our lab is developing high-performance wearable robots and humanoid robots. The lab is comprised of 4 postdocs and 4 PhD students. Our research is sponsored by National Institutes of Health R01, National Science Foundation CAREER award, and Toyota Mobility Foundation. We won the Innovation Challenge of Wearable Robotics Association Conference, semi-finalist of Cisco Global Problem Solver Challenge, and Toyota Mobility Challenge Discovery Award. Our paper on soft robots is published in Science Advances (impact factor 12).

PhD students can be admitted in 2020 fall (deadline June 30, 2020). PhD students will receive tuition scholarship and stipend support. Students are required to have GRE and TOEFL (or IELTS).

The selected candidate will join a multidisciplinary research team to study high-performance motors, design soft wearable robots, and humanoid robots in collaboration with Carnegie Mellon University, Columbia University, and several top medical schools in the United States. This is a great opportunity to pioneer research in a new generation of wearable, legged, and soft robot platforms to publish high-impact papers alongside several PIs who have expertise in mechatronics, computer vision, and machine learning.

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

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

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

6.10. PhD: Delft University of Technology, The Netherlands
Contributed by: Bart De Schutter, b.deschutter@tudelft.nl

PhD position on Constraint-Based Real-Time Scheduling for Manufacturing Systems at Delft University of Technology

Delft University of Technology offers a PhD position on the topic of constraint-based real-time scheduling with application to cyber-physical systems such as contemporary manufacturing systems. The position is offered in the Algorithmics group, department of Software Technology, Faculty of Electrical Engineering, Mathematics and Computer Science, in conjunction with the Delft Center for Systems and Control.

The position will explore a set of related questions: constraint-model learning; design-time and online constraint-model specification and optimisation; adaptive real-time scheduling; and co-design via parametric constraint-based scheduling and reinforcement learning.

Candidates of any background, with expertise or strong interest in machine learning, will be considered. Your MSc degree can be in computer science, mechanical engineering, applied mathematics, or other relevant field. Competence in Python is necessary and C++ is helpful.

More information on this position and on how to apply can be found at
https://www.academictransfer.com/nl/291711/phd-constraint-based-real-time-scheduling-for-manufacturing-
systems/

For additional information and informal enquiries, please contact Dr Neil Yorke-Smith, email: n.yorke-
smith@tudelft.nl

6.11. PhD: Univ. of South Florida and Embry-Riddle Aeronautical Univ., USA
Contributed by: Kadriye Merve Dogan, k.merve.dogan@gmail.com

We are searching for three exceptional Ph.D. students with a strong background in control systems to per-
form high-quality and innovative theoretical and experimental research on resilient autonomous vehicles
and cooperative robotics. These students, who will be graduate assistants, are expected to start working at
the beginning of August 2020.

Our intention is to give our strong guidance in order to maximize the chances of our students of building
a rewarding research career. If you are interested, please send an email to both Tansel Yucelen at yuce-
len@usf.edu (Assistant Professor of Mechanical Engineering at the University of South Florida) and K.
Merve Dogan at k.merve.dogan@gmail.com (soon-to-be Assistant Professor of Aerospace Engineering at
the Embry-Riddle Aeronautical University) including:
(1) Your curriculum vitae (applicants with M.S. degree are preferred).
(2) A publication on control systems (applicants with accepted or submitted conference or journal papers
are preferred).
(3) A concise paragraph (4-5 sentences maximum) that explains your theoretical and experimental experi-
ence on control systems.
(4) A list that shows the undergraduate and M.S. courses the applicant took related to mathematics and
control systems.
(5) Three contact information (including name, e-mail, and phone number of the person) for letter of rec-
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Our research is focused on the creation of new information, control, and decision algorithms that reveal ad-
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of the top research laboratories in the nation by significantly advancing the knowledge, training science-
based engineers and professionals, and placing our students in top research places, to shape the future of
our society.

All the best,

Tansel Yucelen
K. Merve Dogan

6.12. PhD: Libera Università di Bolzano, Italy
Contributed by: Karl von Ellenrieder, kvonellenrieder@unibz.it

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

For further information please visit:

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

or send an e-mail to PhD_FaST@unibz.it

6.13. PhD: The University of Texas at San Antonio, USA
Contributed by: Ahmad F. Taha, ahmad.taha@utsa.edu

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

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

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

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

6.14. PhD/Postdoc: University of Seville, Spain
Contributed by: Fernandez Camacho, efcamacho@us.es

The Automatic Control Department of the University of Seville has three PhD open positions and one post doc position in the following topics:

- Design, Modelling and simulation fleet of mobile sensors
- Dynamic models of solar plants with spatial irradiance estimation.
- Coalitional MPC algorithms for large scale processes
- Primary supervisor: Eduardo F. Camacho.

Duration: Up to three years for PhDs starting September 2020-

Positions funded by the European Research Council under the Advanced Research Grant OCONTSOLAR.-

Context and Objectives: Technology developments in many fields advance much faster than the methodologies needed to apply them in industry. This is the case of many devices used in our daily life such as sensors installed in cell phones or drones. These devices can supply a huge amount of information over extended geographical areas that can be used to extend the capability of control systems to heights unforeseen in the past. OCONTSOLAR aims to develop new control methods using mobile sensors mounted on drones and unmanned ground vehicles (UGV) as an integral part of the control systems. Sensors mounted on vehicles have been used for surveillance and for gathering information, however these mobile sensors have not been used so far as an integral part of control systems. Solar power plants will be used as a case study, with the aim of optimizing their operation using spatial irradiance estimations and predictions. Many results will be applicable to other systems such as traffic control in highways and cities, energy management in buildings, micro-grids, agriculture (irrigation and plague control) and flood control.-

Work description:

- PhD position 1: designing and modelling a fleet of mobile sensors mounted on drones and UGVs and their corresponding docking stations. Different granularity models (ranging from simple models for planning the missions to more precise models for simulating the mobile sensors) of the mobile UGVs, drones and sensors will be developed. The design will be based on proven off-the-shelf products able to provide a technically sound solution to produce a spatially distributed estimation of the irradiance.

- PhD position 2: developing dynamical models of solar plants with a spatially distributed solar irradiance. The modelling stage will require the use of complexity reduction techniques in order to get models that can be used both for simulation and control. A library of elements will be built, and these elements will be validated in two reference plants.

- PhD/Post doc position 3: developing cooperative MPC algorithms for large scale systems formed by dynamically coupled units with changing topologies. Coalitional control ideas will be considered for this purpose. In order to form the different coalitions of cooperating controllers, different approaches will be used.

Background of the candidate:
- PhD positions: The candidate must hold a Master in engineering or computer science with a strong background on control. A prior experience in the technical areas related to the applied PhD position is desired. Programming skills and a good level of English are also needed.

Salary and others:

- PhD positions 20-25 keuros Post doc 25-30 keuros. It is a 1 year position that can be extended to 3 years in total.
- Application closing date is 30th of June 2019 or until finding a suitable candidate. Expected start date is September 2019 or soon thereafter.
- Applications: please submit the following (in PDF format) to Prof. Eduardo F. Camacho (efcamacho@us.es, cc: svallejo@us.es). Indicate in the subject "Application PhD #" or Pos-doc.
a) CV,

b) a one page summary of your research interests and motivation,

c) a copy of your most recent transcript (PhDs),

d) contact information for up to three references to assess your research potential and , and

e) copies of your most relevant publications.

6.15. PhD/Postdoc: Clemson University, USA
Contributed by: Yue Wang, yue6@clemson.edu

Postdoc and Ph.D. Positions at Clemson University-Machine Learning and Control

We are looking for Ph.D. and Postdoc candidates in the Mechanical Engineering Department at Clemson University working on the control theory, robotics, formal methods, and machine learning.

Candidates with very good knowledge in the following areas are invited to respond.

* Control Theory
* Robotics
* Formal Verification
* Symbolic Motion Planning
* Reinforcement Learning
* Unmanned Aerial Vehicles
* Ground Mobile Robots
* Ubuntu and Debian Linux
* Python
* Robot Operating System (ROS)
* Device drivers (e.g., falcon haptic, joystick under Linux OS)

Postdoc applicants should have a PhD degree and background in controls, robotics, verification, and machine learning. Prospective students should be familiar with these areas. The postdoc and student will work on projects funded by the NSF and DoD.

To apply for the positions, please submit a single PDF file to Dr. Yue Wang (yue6@clemson.edu) with

1. current curriculum vitae
2. clear descriptions of your relevant experience in the required fields
3. a brief research statement with career goals
4. a minimum of three references with full contact information.

Please name your attachment as "FirstName.LastName.GradeLevel.pdf" Positions are available as early as Fall 2020.

6.16. Postdoc: Georgetown University, USA
Contributed by: Jonathan Beam, jeb287@georgetown.edu

Georgetown University Fritz Family Postdoctoral Fellow, Massive Data Institute

Description: The Massive Data Institute (MDI) and the Department of Computer Science seek a postdoctoral fellows with research interests at the intersection of privacy, big data, and machine learning to help build up–and be a part of–the research efforts here at MDI and Computer Science. Applicants can hold a Ph.D in computer science or a relevant field, and must conduct research that involves privacy and/or fairness as it relates to large data sets. This position will encompass duties in research, teaching, and administration.

Research: Fellows are expected to engage in their own advanced independent and/or directed research with colleagues and engage in projects with the faculty that are part of the Massive Data Institute and the Department of Computer Science. The Fellow will also look for opportunities to collaborate with faculty and practitioners in other parts of Georgetown and is expected to give at least one seminar presentation based on his/her work while a fellow.

Teaching: Fellows will teach 1 half day tutorial related to a privacy/big data topic each semester to contribute to the intellectual life of the Computer Science Department and the Massive Data Institute.

Administrative: The Postdoctoral fellow will assist the Professors working at this intersection of privacy and fairness in machine learning by helping build a community across campus and helping supervise students working at this intersection.

The Massive Data Institute is an interdisciplinary center focusing on key public policy and analytic issues involving high-dimensional data. It is the expectation that the postdoctoral fellows will assist in building relationships across disciplines and departments within the University. Further, MDI has budding partnerships with numerous external agencies and the fellows will be involved in conversations and interactions with potential partners.

Fellowships are a temporary advanced scholarly appointments for one academic year and summer (August 1, 2019 – July 31, 2020), with the possibility of renewal. Fellows will receive a stipend (around $75,000) plus health insurance coverage, and will be provided working space.

Georgetown University is an Equal Opportunity, Affirmative Action employer fully dedicated to achieving a diverse faculty and staff. All qualified candidates are encouraged to apply and will receive consideration for employment without regard to race, sex, sexual orientation, age, religion, national origin, marital status, veteran status, disability or other categories protected by law.

Application Instructions: Please submit an application at the following link:
https://apply.interfolio.com/75110
Submit the following items to be considered for the position:
• Cover Letter(s) (optional)
• Curriculum Vitae
• Statement of current and proposed work
• Teaching evaluations
• Illustrative publication(s) (optional)
• Two Reference Letters (to be submitted by the reference writers at this site)

Priority will be given to candidates who apply by May 15th.

6.17. Postdoc: Boston University, USA
Contributed by: Michael C. Caramanis, mcaraman@bu.edu

A postdoctoral associate position is open at Boston University's Division of Systems Engineering. Candidates with training in Power Systems, Optimization and Stochastic Processes are particularly welcome. To express interest please visit

https://www.bu.edu/eng/departments/se/about/se-invites-applications-for-post-doctoral-associates/

Thank you
Michael Caramanis,
mcaraman@bu.edu

6.18. Postdoc: KTH Royal Institute of Technology, Sweden
Contributed by: Jana Tumova, tumova@kth.se

KTH Digital Futures is launching a new postdoc fellowship program:

https://www.digitalfutures.kth.se/en/postdoc-fellows-in-technologies-for-a-digital-transformation-1.979128.

The program offers funded two-year positions to talented early career researchers in the broad area of technology for digital transformations and aims to support them in pursuing their research ideas and developing their future career. The core research themes in Digital Futures are "Trust", "Learn", and "Cooperate" cutting across three prioritized societal contexts – Smart society, Digitalized industry, and Rich and healthy life, complemented by Engineering Education. The postdoc fellows' research should fit broadly in that scope.

What we offer:
• Funding to pursue your research ideas and a possibility to conduct research at a leading technical university that creates knowledge and expertise for a sustainable future.
• Network of colleagues and peers with high ambitions in an open, curious, and dynamic environment.
• An international workplace.
• Access to KTH Digital Futures resources, its network of academic and industrial partners, infrastructure and testbeds, events and happenings.
• Mentorship and support in career development and research leadership education.
• Help to relocate and be settled in Sweden and at KTH.

Application deadline: June 15th, 2020.

This is a recurring call, the next round of applications is expected to open in Fall 2020.

6.19. Postdoc: University of South Florida, USA
Contributed by: Tansel Yucelen, yucelen@usf.edu

We are looking for a postdoc to work at the Laboratory for Autonomy, Control, Information, and Systems (LACIS,http://lacis.eng.usf.edu/) at the University of South Florida between October 1, 2020 and September 30, 2021 on an Air Force Research Laboratory project. The qualified candidate should have:

1) A Ph.D. degree in mechanical engineering, aerospace engineering, electrical engineering, or computer science.
2) Solid experience in building and designing lower-level and high-level feedback control systems for aerial vehicles such as quad-copters.
3) Solid experience in programming languages and sensors, actuators, and hardware components utilized in flight control systems.

Interested applicants can directly contact with Dr. Tansel Yucelen at yucelen@usf.edu (please send CV and your top relevant research papers including experimental videos).

Dr. Tansel Yucelen
Department of Mechanical Engineering; Assistant Professor
Lab. for Autonomy, Control, Information, and Systems; Director
Univ. of South Florida, Tampa, Florida 33620, United States of America
813-974-5656; lacis.eng.usf.edu (Research); force.eng.usf.edu (Education)
Tansel.Yucelen (Skype); twitter.com/TanselYucelen; youtube.com/c/tyucelen

6.20. Postdoc: Tsinghua University, USA
Contributed by: Dong Heng and Gao Xize, dh369075881@163.com

Open Call for Postdoc Hiring, Micro-/Nano-Robotics and Artificial Neurons Lab, Tsinghua University

Tsinghua University is one of the premier universities in China, and is strongly supported to position top research programs in Robotics, Artificial Intelligence and Nanobiomaterials. The Micro-/Nano-Robotics and Artificial Neurons lab in Tsinghua University has publications in such journals as Nature Nanotechnology, Nature Communications, Science advances, PNAS, Nano letters, among many others. The highly interdisciplinary research lab focuses on cutting-edge research on peptides nanotechnology, micro-/nano-robots, artificial neurons, game theory, and is committed to make achievements in the early diagnosis, prevention and treatment of Alzheimer's disease and cancer. For lab development, we are recruiting 5 postdocs in peptide nanotechnology, micro-/nano-robots, artificial neurons and game theory.

Requirements: The candidates should possess a PhD degree in Applied Mathematics, Physics, Chemistry, Biomaterials, Nanotechnology, Mechanical or Electrical engineering and be committed to interdisciplinary frontier research. We are particularly interested in applicants having research experiences in peptide self-assembly, game theory, nanobiomaterials, brain-computer interface, robotics, control theory, and applied mathematics. Candidates should have strong interests for future career in interdisciplinary research, hold

high standard for academic integrity, and team-working spirit.

Responsibilities: The candidates should participate in daily activities of the laboratory, including participating in experimental work, analyzing and sorting out research results, writing high-rank journal research papers, assist in mentoring graduate students, assisting in the management of the laboratory and participating in project applications under the guidance of the lab supervisor.

Salary and Compensation: Highly competitive salaries and allowance will be provided according to relevant regulations of Tsinghua University. Outstanding candidates are supported to apply for "Shuimu Tsinghua Scholar" talent project (http://postdoctor.tsinghua.edu.cn/info/zxtz/1776). Postdoctoral scholars are qualified to apply for apartment on campus of Tsinghua university and may enjoy the perks and privileges of faculty and staff of Tsinghua university, including admission to the first-rate kindergarten and primary school associated with Tsinghua University. Candidates are encouraged and supported in applying for national research projects and the position of assistant researcher/associate research professor positions at Tsinghua University to pursue their long-term career interests.

Interested applicants should submit their curriculum vitae, a statement of research interests, selected journal publications and contact information of three referees to dh369075881@163.com or gaoxz3@mail2.sysu.edu.cn and indicate "postdoctoral candidate + name". Qualified candidates will be arranged online interviews as soon as possible.

6.21. Postdoc: KTH, Sweden
Contributed by: Dimos Dimarogonas, dimos@kth.se

Postdoc in hybrid control of multi-robot systems at KTH

A postdoc position in hybrid control of multi-robot systems is available at KTH. The full description can be found here:

https://www.kth.se/en/om/work-at-kth/lediga-jobb/what:job/jobID:333139/where:4/

In case of interest, please contact Prof. Dimos Dimarogonas at dimos@kth.se for further information. The deadline of applications is June 15.

6.22. Postdoc: The University of Texas at Dallas, USA
Contributed by: Mario Rotea, rotea@utdallas.edu

Postdoctoral Research Associate or Research Engineer/Scientist at UT Dallas
The University of Texas at Dallas has been awarded $3.3 million to conceive and develop a Low-Cost Floating Offshore Vertical Axis Wind System Led by UT Dallas, this project involves one academic partner and three industry partners. A major thrust in this project is the control system required to maximize power production while mitigating aerodynamic loads.

A two-year postdoctoral associate position is open to work on the control system for this novel vertical axis wind turbine concept. Required qualifications include:

1. Theoretical knowledge and practical experience with MPC and MHE.

2. Theoretical knowledge and practical experience with robust control.

Preferred qualifications include:

1. Experience with the modeling and control of wind and/or wave energy conversion systems.

2. Experience with the modeling and control of aeroelastic structures.

3. Experience with system identification methods and tools.

The successful candidate will be part of a team supporting the NSF Center WindSTAR (https://www.uml.edu/research/windstar/) and another major DOE/ARPA-E project on aerodynamic load control for wind turbines (https://arpa-e.energy.gov/?q=slick-sheet-project/active-aerodynamic-load-control-wind-turbines). The position could be elevated to a research engineer/scientist depending on qualifications and experience.

If interested, email the following materials to Mario Rotea at rotea@utdallas.edu using the subject: **Control of ATLANTIS VAWT**

1. One-page cover letter with a concise description of required/preferred qualifications.

2. Full Curriculum Vitae.

3. The names and contact information for three professional references.

 This position is available effective immediately.

6.23. Faculty: University of Science and Technology Beijing, China
Contributed by: Xiuyu He, ai@ustb.edu.cn

Faculty: Institute of Artificial Intelligence, University of Science and Technology Beijing (USTB), Beijing, China

Position: professor, associate professor, lecturer and post-doctor in artificial intelligence, Institute of Artificial Intelligence, USTB

Institute of Artificial Intelligence, USTB is established in July, 2018. It has grown to become one of China's leading artificial intelligence institutes rapidly, and has established the first artificial intelligence majors of China. Institute of Artificial Intelligence, USTB is approved to obtain Beijing Top Discipline for Artificial Intelligent Science and Engineering in May, 2019. Around China's major demands in the field of artificial intelligence, Institute of Artificial Intelligence, USTB features intelligent unmanned systems and intelligent manufacturing, for pioneering the researches on fundamental theories of artificial intelligence, key technologies of intelligence unmanned system and engineering applications of intelligent manufacturing. Our research subjects cover many branches of artificial intelligence, including fundamental theories of artificial intelligence, intelligent control, cognitive computing, intelligent communication.

We are looking for internationally oriented talents with an excellent research track record within fundamental theories and applications of artificial intelligence, big data, cognition and computation, machine

vision, robotics, intelligent control, intelligent perception, intelligent communication, 6G techniques, etc. The candidates of these positions are expected to concern research and teaching within the subject fields, and are encouraged to cooperate with researchers within other subject fields. Specially, supervision for the doctoral students and undergraduate students in major of artificial intelligence is an important part of duties. Through annual application, the associate professor and lecturers can apply for promotions, and the excellent post-doctor can apply for lecturer, associate professor, even professor after completing post-doctor project.

Eligibility: An individual who has obtained a PhD degree. The age of candidates for appointment as post-doctor and lecturers needs be under 35 years old.

More information and link to application: http://ai.ustb.edu.cn/rczp/rczpqs.html.

6.24. Faculty: Linköping University, Sweden
Contributed by: Martin Enqvist, martin.enqvist@liu.se

Assistant Professor in Machine Learning to WASP research program

The Wallenberg AI, Autonomous Systems and Software Program (WASP) is Sweden's largest individual research program ever; a major national initiative for strategically motivated basic research, education and faculty recruitment (see https://wasp-sweden.org). WASP comprises five Swedish full partner universities and a substantial part of Swedish industry and commerce. The WASP initiative includes among many instruments an international recruitment program and the present announcement aims to strengthen Linköping University specifically in the field of machine learning within the AI focus area of WASP.

For this purpose, we seek competence in Machine Learning with focus particularly on methods, algorithms, and mathematical analysis. The successful candidate will primarily be engaged in research and PhD mentoring. Assuming a separate decision from WASP the position comes with financing for own salary and expenses for the full duration of the employment, plus salary and expenses for two postdocs (2 years each) and for two PhD students (4 years each). The holder of the position is expected to build a new research group and engage in WASP's graduate school, WASP national meetings and other activities. The holder of the position is also expected to actively engage in applying for external research funding. The duties include also approximately 20 percent teaching.

Detailed information: https://bit.ly/2T678gN

Application deadline: June 23, 2020.

6.25. Faculty: Luleå University of Technology, Sweden
Contributed by: George Nikolakopoulos, geonik@ltu.se

Associate Senior Lecturer - Tenure Track

Luleå University of Technology is experiencing strong growth with world leading competence in several areas of research. Our research is conducted in close collaboration with industries such as Bosch, Ericsson, Scania, LKAB, SKF and leading international universities. Luleå University of Technology has a total turnover of SEK 1.7 billion per year. We currently have 1,650 employees and 15,500 students. We shape the future through innovative education and groundbreaking research. Drawing on our location in the Arctic region, we create global societal benefit.

Control engineering is one of ten research topics at the Department of Computer Science, Electrical and Space Engineering at Luleå University of Technology. We are now looking for an associate senior lecturer to contribute to our growing activities in the area of biorobotics. The group leads and participates in many research projects, both nationally and EU-funded, which deal with, for example, UAVs, UGVs and bio-inspired robots and bio-prosthetics.

As Associate Senior Lecturer, you participate in the development of teaching and research in the field of Control Engineering, with a specific focus on Biorobotics. From humanoid robots for assistance, exoskeletons and prosthetic technology for therapeutic and enhancement purposes, to walking and climbing robots inspired by biology and nature, the group of Control Engineering is seeking to strengthen its expertise in the development of advanced biomimetic systems. The position includes responsibilities for:
- Administrate and teach in courses delivered by the Control Engineering group at the first and second cycle level.
- Supervise Master and PhD students
- Develop research on design, modeling and control of biologically inspired robot mechanisms.
- Initiate and participate in applying for project funding from both national and EU sources.

The applicant is expected to participate in the group's joint development of the field of education and research, as well as collaborate with research groups both within the department, the university and with other universities, colleges and other external parties both nationally and internationally.

Persons are qualified for appointments as Associate Senior Lecturer : If they have been awarded a Degree of Doctor, or have a foreign degree deemed to be equivalent to a Degree of Doctor.

Persons who have been awarded a Degree of Doctor no more than five years before the last date for applications, should firstly be considered for an appointment. The persons who have been awarded a Degree of Doctor or have achieved equivalent skills earlier may also be considered, if there are special reasons. Special reasons include leave of absence due to illness, parental leave and similar circumstances.

Promotion to Senior Lecturer: An associate senior lecturer shall, upon application, be promoted to a senior lecturer and an employment when he / she has the right to an appointment as a senior lecturer when the examination is deemed appropriate for such an appointment according to the assessment reasons given below. When examining, the associate senior lecturer must have completed university pedagogy education equivalent to 7.5 ECTS credits or alternatively acquired equivalent knowledge During the period of employment, the assistant lecturer must also, independently, in a considerable extent and with high quality, have contributed to the university's research and demonstrated good pedagogical skills.

For further information please contact Prof. George Nikolakopoulos, (+46) 920-49 1298, geonik@ltu.se

Online application:
https://www.ltu.se/ltu/Lediga-jobb?l=en (Reference 1652-2020)

6.26. Faculty/Research Engineer: Centro de Investigación en Matemáticas, Mexico
Contributed by: Diego Mercado, diego.mercado@cimat.mx

Tenure-track and two research engineer positions at CIMAT-Zacatecas, Mexico

The Centro de Investigación en Matemáticas (Center for Research in Mathematics - CIMAT) invites applications for a tenure-track and two research engineer positions. CIMAT is a federal research center in Pure and Applied Mathematics, Probability, Statistics, and Computer Science, and depends on the National Council of Science and Technology of Mexico (CONACYT).

CIMAT has a research campus at the UNESCO world heritage city of Zacatecas, in which a young team performs research in human-computer interaction (HCI), robotics and software engineering, with a good incidence in the state. The main economic activity in Zacatecas is based on Mining, Agriculture, Tourism and Sustainable Energy, with a rich cultural activity.

A strategic objective of CIMAT and its computer science department, is to consolidate both the Zacatecas campus and the robotics research team, and hence to expand its influence in the state of Zacatecas. To reach this goal CIMAT is hiring a group leader research scientist and two research engineers with outstanding research and technical skills.

1) Tenure track position in robotics at CIMAT, campus Zacatecas.

The position is aimed to a researcher with a PhD degree working on robotics with a strong component in mathematics and algorithms, particularly in motion planning, control theory or machine learning. It is also suitable that the candidate has experience and interest in human-robot and human-computer interaction. The opportunity corresponds to a tenure track position, which requires performing cutting edge research and being the head of the research activities in the campus of CIMAT at Zacatecas. The candidate should have managing abilities for leading the campus. This position requires interaction with the industry in the region and the government of the state of Zacatecas. He/She should maintain a close collaboration with researchers working in the campus of CIMAT at Guanajuato. It is expected that the candidate has proven experience in robotics research with publications in prestigious journals and conferences in the area e.g. IEEE TRO, IJRR, AURO, RAS, ICRA, WAFR, IROS, etc.. It is also expected that the candidate belongs to the national system of researchers in Mexico (SNI), rank 1 or superior, or having the merits to obtain the award within a year from the hiring date. The candidate should also be capable of advising graduate students working on topics related to robotics research, and teaching courses in the area.

Applicants should send the following information in pdf to coordinacion_cc@cimat.mx
1. Cover letter.
2. Curriculum vitae.
3. A statement describing the planned research. Include a proposed starting date

4.Two letters of recommendation which should be sent directly to coordinacion_cc@cimat.mx

Applications from women candidates are highly welcomed.

Applications will be accepted and reviewed until the available position is given. The first selection round will start on July 1st 2020.

2) Research engineer position in robotics at the Campus Zacatecas of CIMAT The candidate must have a PhD degree (or being close to obtain it) in robotics, human-computer interaction or related areas. Experience in programming languages (C, C++, python, etc.), operating systems and networks is required, but also knowledge about hardware and robots is suitable. The candidate will be in charge of the campus laboratories (e.g. robotics, HCI, etc.) and will give the required maintenance to the robots, their specialized software (e.g. ROS) and the labs' network. The candidate will also be in charge of maintaining operational equipment to perform research in human-robot and human-computer interaction, for instance, Virtual Reality equipment and high performance computers. It is also very important for the candidate to be able to work on technological projects with the industry and implement solutions to complex high tech problems. The candidate should also be capable of teaching courses in the area.

Applicants should send the following information in pdf to coordinacion_zac@cimat.mx
1.Cover letter.
2.Curriculum vitae.
3.Two letters of recommendation which should be sent directly to
coordinacion_zac@cimat.mx

Applications from women candidates are highly welcomed.

Applications will be accepted and reviewed until the available position is given. The first selection round will start on July 1st 2020.

3) Research engineer position in robotics at the Campus Zacatecas of CIMAT The candidate must have an engineering degree in mechatronics with a master degree in a related area and experience working with hardware, particularly with drones and robots in general, and their corresponding hardware and software components. Experience with power supplies, servomotors, sensors, design and manufacturing of mechanical devices (3D printers, CAD and CAM) is desirable. The candidate will be in charge of the hardware in the different laboratories of the campus, for instance, equipping the robots with the required mechanical and electronic devices, or giving maintenance to the human-computer interaction equipment, etc. He/She must also be able to work on technological projects with the industry and implement solutions to complex high tech problems.

Applicants should send the following information in pdf to
coordinacion_zac@cimat.mx:
1.Cover letter.
2.Curriculum vitae.
3.Two letters of recommendation which should be sent directly to
coordinacion_zac@cimat.mx

Applications from women candidates are highly welcomed.

Applications will be accepted and reviewed until the available position is given. The first selection round will start on July 1st 2020.

For up-to-date information, please consult:
https://www.cimat.mx/en/calls-research-position.