59th IEEE Conference on Decision and Control

Program Book

CDC 2020
Jeju Island, Korea

Jeju Island, Republic of Korea

December 14 – 18, 2020

IEEE CSS

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Welcome from the President of the IEEE Control Systems Society

I am delighted to welcome you all to the first ever virtual Conference on Decision and Control, being held during December 2020. CDC, our flagship conference, is an annual event occurring since 1970, and has been held in various locations around the globe, including the United States, Greece, Australia, Japan, China, and Spain. The first non-US location was in 1986, with greater frequency of non-US locations since 2005. It is only befitting that we now have this CDC, the 59th edition of this conference series, being held in cyberspace, with all of us in our own fortresses, in our own time zones, in our own homes, and coming together as a community to participate, celebrate, and exchange our research ideas.

Over the past six decades, the CDC has continued to expand in breadth and depth. It covers a large scope of research topics, continuously evolving so as to best illustrate the frontiers of research in our community. Its excellence is evidenced not only by all of the talks, the tutorial sessions, the plenary lectures, and special sessions, but also through the increased attendance – a 30% increase in the number of registrants compared to a decade ago.

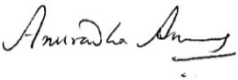
Planning for this CDC began in 2015, starting from the dedicated efforts of Dan Cho and Chung Choo Chung, with thousands of hours from hundreds of volunteers across the globe. The Conference Organizing Committee, the Conference Editorial Board members, and several CSS volunteers have worked tirelessly over the past five years to make this CDC happen. I would like to not only thank them but also every one of the authors who have chosen this CDC as the forum to present their exemplary work!

I would like to thank in particular, General Chairs Richard D. Braatz and Chung Choo Chung, and Program Chairs Jay H. Lee and Luca Zaccarian, for their tireless and dedicated efforts to put together this fantastic CDC, with so many unique facets. Here's a shout out, in particular, to the local volunteers, and the fact that the live components have all been scheduled during local times that are way past midnight so as to facilitate the participation of CDC attendees and their worldwide locations – thank you! I would like to thank our fellow societies, the Society for Industrial and Applied Mathematics (SIAM), the Institute for Operations Research and the Management Sciences (INFORMS), the Society for Instrument and Control Engineers (SICE), and the European Control Association (EUCA), for their continued support and collaboration with the IEEE CSS. I would like to gratefully acknowledge our platinum sponsor, Korea Tourism Organization, and our gold sponsors, MathWorks, LG Electronics, Mando, Jusung Engineering, Koh Young Technology, LG Chem, and ICROS, and our silver sponsors, SIAM, Hyundai Motor Company, LS Electric, RS Automation, and SOS LAB for their support of this CDC, and hope that their support and collaboration will continue in the years to come.

I would like to invite you all to browse through the fantastic program that has been put together. Please make every use of this unique virtual model – browse through the different talks both synchronously and asynchronously. Play and replay the plenaries and talks – you have a great opportunity to control the pace of the information from these talks and fully assimilate their import. Engage in discussions with the authors. Finally, I would like to extend a personal invitation to each and every one to come to the special sessions related to Presidents' panels where you will hear a round-table discussion of several presidents of various scientific organizations about the role of IEEE in general and Control Systems in particular in advancing technology for humanity.

Best regards,

Anuradha Annaswamy
President, IEEE Control Systems Society



Welcome from the 2020 CDC General Chairs

Welcome to the 59th IEEE Conference on Decision and Control!

The CDC is the premier scientific and engineering conference dedicated to advances in systems and control. The CDC brings together an international community of control researchers and practitioners to discuss new research results, perspectives on future developments, and innovative applications.

We were originally organizing this CDC to be held at Jeju Island, Republic of Korea, but the conference became virtual due to the COVID-19 pandemic. The planned venue went from an island of white sand beaches, waterfalls, and a dormant volcano made of atoms and molecules to a virtual realm of photons, electrons, and electromagnetic forces. To help us in this transition, we had the advantage of being able to attend the other virtual control and control-related conferences held in 2020, and learn the best practices from those events while brainstorming and implementing virtual technologies in ways that we think may become the best practices for future virtual control conferences.

Some have asked how a professor at the Massachusetts Institute of Technology became a General Chair of CDC that was originally intended to be located a half a world away in the Republic of Korea. The short version of a long story is that Richard has long had research interactions with faculty at multiple Korean universities including extended stays by students, postdoc, and faculty, and was asked to be a General Chair to draw from his experience in organizing a large IEEE-affiliated control conference. He shared the responsibility with General Chair Chung Choo who drew from extensive experience in organizing control conferences in the Republic of Korea. This close collaboration also received extensive input from the other members of the organizing committee; having many people brainstorm and critically evaluate ideas was important when making the large number of decisions that had not been encountered before at a CDC.

Organizing a conference of the magnitude of a CDC is a huge amount of effort, even when not virtual, and going virtual only increases the amount of work – at least until our community converges to a "best practices" for virtual conferences. The organizing committee performed a huge amount of work, with a high level of professionalism and speed. Especially valuable was that committee members stepped up to rapidly do new jobs which often blurred the lines between the traditional positions to be able to produce high-quality results, basically, to implement tasks in a different way and on a different time scale than a regular CDC. People from outside of the CDC contributed as well. Amir Aghdam (Conference Editorial Board Chair) did the heavily lifting in managing the review process for most submissions. Multiple CSS Officers helped with pushing the various revisions through the system fast

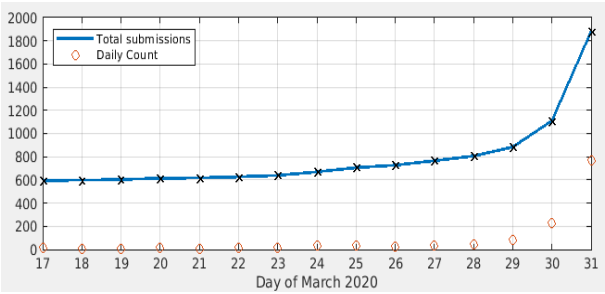
enough that our conference implementation could keep moving forward even during critical times during the summer when many people are on vacation. The General Chairs highly appreciate all of their efforts, and hope to toast our colleagues at a future non-virtual event.

We sincerely hope that you enjoy the first virtual CDC!

Richard D. Braatz and Chung Choo Chung
General Chairs

Welcome from the 2020 CDC Program Chairs

Welcome to the first ever fully virtual IEEE Conference on Decision and Control! It is a challenge to explain in a few words the bumpy path that led to the 2020 CDC virtual program. Our first words of gratitude go to our valuable contributing authors, whose restless passion for research motivated them to finalize their submissions, and the organization of quality invited session proposals, during a disruptive pandemic period in March 2020. A relevant snapshot of the submission numbers after the (extended) March 17 deadline for joint L-CSS and CDC submissions is given in the graph below.



Turning almost 2000 submissions into a quality technical program requires dedicated efforts from a vast group of volunteers. Our first thanks go to Amir Aghdam and his excellent coordination of more than 200 members of the Conference Editorial Board who handled 1450 invited and regular submissions. Parallel to this, we thank Elena Valcher and the editorial board of the Control Systems Letters, who provided a timely evaluation of 431 L-CSS+CDC submissions. This was a record year for the L-CSS+CDC submissions which were only 295 back in 2019. Once the CEB's work had been completed, around late May, a long auditing process started. Our thanks then go to the amazing and endless work of the program vice-chair Zongli Lin (invited and L-CSS-invited papers) who coordinated the activity of 17 members of our IPC, while the remaining regular and LCSS-regular submissions were audited by the remaining IPC members under the direct supervision of Maria Prandini (vice-chair for regular submissions) and us. We owe special gratitude to Maria and six IPC members – C. Lagoa, I. Queinnec, L. Gruene, R. Scattolini, S. Tarbouriech, A. Serrani – who shared with the IPC chairs inordinate amounts of workload in providing a consistent and coordinated auditing of an exceptional number of submissions. Clearly, the whole process would have not been possible without the tireless, kind, continuous support of Amir Aghdam, our Paperplaza guru, under the persistent assistance of Pradeep Misra. As a result of this selfless effort of a large community of volunteers, out of the 1881 contributed and L-CSS submissions, we were able to incorporate 992 papers into the final program, with an acceptance rate of 53%.

Alongside with the regular and invited program, we are deeply indebted to the tutorial vice-chair Christophe Prieur who solicited and handled a set of excellent tutorials and helped coordinate the work behind the organization of our breakthrough COVID-19 focus sessions, whose arrangement was improvised with timely and effective effort by P.E. Pare, H. Sandberg, C. Beck, J. Liu, E. Valcher, F. Dabbene and K. Johansson. Hyungbo Shim did an outstanding job managing and organizing an excellent selection of fascinating pre-conference workshops. Finally, thanks to Carolyn Beck for working so smoothly and patiently on the final program booklet and other publication-related activities.

Organizing a virtual conference without prior experience posed several questions and we would like to thank the general chairs Richard Braatz and Chung Choo Chung for providing advice and insight on several logistic matters, as well as Alessandro Giua, Vice-President for Conference Activities of the IEEE-CSS, for helping us reinvent a new type of session organization. To best accommodate attendees from different time zones, we expanded the conference to five days in order to keep each day's program within 4.5 hours. The virtual program features 17 parallel sessions offered twice each day, one plenary and our distinguished Bode lecture, four semi-plenaries, and 8 pre-conference workshops. Additionally, the program includes five tutorial sessions and five COVID19 focus sessions.

In this unprecedented second phase of the conference organization process, Hyungbo Shim and the two ICT chairs, Jun Moon and Insoon Yang, worked relentlessly to provide the best ICT solutions for a realistic conference experience through our virtual platform. We are confident that you will find the CDC virtual environment to be both convenient and enriching. Although we are disappointed by not being able to welcome you to the beautiful Jeju Island as originally planned, we hope that you will enjoy an inspiring 2020 Virtual IEEE Conference on Decision and Control.

Jay H. Lee and Luca Zaccarian
Program Chairs

Organizing Committee

General Chair
Richard D. Braatz
Massachusetts Institute of Technology, USA
braatz@mit.edu

General Chair
Chung Choo Chung
Hanyang University, Republic of Korea
cchung@hanyang.ac.kr

Advisor
Dong-il Dan Cho
Seoul National University, Republic of Korea
dicho@snu.ac.kr

Program Chair
Jay H. Lee
KAIST, Republic of Korea
jayhlee@kaist.ac.kr

Program Chair
Luca Zaccarian
LAAS-CNRS, France
University of Trento, Italy
luca.zaccarian@laas.fr

Program Vice Chair for Tutorial Sessions
Christophe Prieur
CNRS GIPSA-Lab, France
Christophe.Prieur@gipsa-lab.fr

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Maria Prandini
Politecnico di Milano, Italy
maria.prandini@polimi.it

Program Vice Chair for Invited Sessions
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University of Virginia, USA
zl5y@virginia.edu

Finance Chair
Hyo-Sung Ahn
GIST, Republic of Korea
hyosung@gist.ac.kr

Local Arrangements Chair
PooGyeon Park
PosTech, Republic of Korea
ppg@postech.ac.kr

Local Arrangements Chair
Ho-Chan Kim
Jeju National, Republic of Korea
hckim@jejunu.ac.kr

Local Arrangements Chair
Jong Min Lee
Seoul National University, Republic of Korea
jongmin@snu.ac.kr

Workshop Chair
Hyungbo Shim
Seoul National University, Republic of Korea
hshim@snu.ac.kr

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beck3@illinois.edu

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Pusan National University, Republic of Korea
kshong@pusan.ac.kr

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University of New South Wales, Australia
v.ougrinovski@adfa.edu.au

Publicity Chair
Hideaki Ishii
Tokyo Institute of Technology, Japan
ishii@c.titech.ac.jp

Publicity Chair
Jie Chen
Beijing Institute of Technology, China
chenjie@bit.edu.cn

ICT Solutions Chair
Insoon Yang
Seoul National University, Republic of Korea
insoonyang@snu.ac.kr

ICT Solutions Chair
Jun Moon
Hanyang University, Republic of Korea
junmoon@hanyang.ac.kr

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CSS Technical Committees

Coordinated by Joao Hespanha in his capacities of CSS Vice-President for Technical Activities, the Control System Society Technical Committees (TC) organize focused events around a selected technical area. Typical activities include organizing invited sessions for conferences, special issues in journals, technical meetings (workshops and conferences), maintaining web sites for technical resources, and publishing electronic newsletters that focus on various technical areas.

The current list of technical committees is shown below. For more information, please consult the TC websites at

http://ieeecss.org/activities/css-technical-activities

and contact the TC Chairs directly for additional information. All technical committee meetings are open. It is our hope that you will find the collaborations and resources useful.

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Systems Identification and Adaptive Control	Formentin, Simone
Variable Structure and Sliding Mode Control	Edwards, Christopher

Plenary/Semi-Plenary Lectures and CSS Bode Lecture

Plenary Lecture

Title: Embedded Convex Optimization for Control
Speaker: Stephen P. Boyd, Stanford University, USA
Time and Location: Monday, December 14, 15:10-16:10 (UTC), Auditorium 1 on JVCC

Abstract: Control policies that involve the real-time solution of one or more convex optimization problems include model predictive (or receding horizon) control, approximate dynamic programming, and optimization based actuator allocation systems. They have been widely used in applications with slower dynamics, such as chemical process control, supply chain systems, and quantitative trading, and are now starting to appear in systems with faster dynamics. In this talk I will describe a number of advances over the last decade or so that make such policies easier to design, tune, and deploy. We describe solution algorithms that are extremely robust, even in some cases division free, and code generation systems that transform a problem description expressed in a high level domain specific language into source code for a real-time solver suitable for control. The recent development of systems for automatically differentiating through a convex optimization problem can be used to efficiently tune or design control policies that include embedded convex optimization.

Biography: Stephen P. Boyd is the Samsung Professor of Engineering, Professor of Electrical Engineering in the Information Systems Laboratory, and chair of the Electrical Engineering Department at Stanford University. He has courtesy appointments in the Department of Management Science and Engineering and the Department of Computer Science, and is a member of the Institute for Computational and Mathematical Engineering. He received an AB degree in Mathematics, summa cum laude, from Harvard University in 1980, and a PhD in EECS from U. C. Berkeley in 1985. In 1985 he joined the faculty of Stanford's Electrical Engineering Department. His current research focus is on convex optimization applications in control, signal processing, machine learning, and finance.

Professor Boyd has received many awards and honors for his research in control systems engineering and optimization, including an ONR Young Investigator Award, a Presidential Young Investigator Award, and the AACC Donald P. Eckman Award. He has received the 2013 IEEE Control Systems Award, the 2012 Mathematical Optimization Society's Beale-Orchard-Hays Award. For his extensive education activity he received an ASSU Graduate Teaching Award in 1991, the Perrin Award in 1994 for Outstanding Undergraduate Teaching in the School of Engineering. He received the 2003 AACC Ragazzini Education award, the 2016 Walter J. Gores award, the highest award for teaching at Stanford University. In 2017 he received the IEEE James H. Mulligan, Jr. Education Medal.

Professor Boyd is a Fellow of the IEEE, SIAM, and INFORMS, a Distinguished Lecturer of the IEEE Control Systems Society, a member of the US National Academy of Engineering (NAE), a foreign member of the Chinese Academy of Engineering (CAE), and a foreign member of the National Academy of Engineering of Korea (NAEK). He holds honorary doctorates from Royal Institute of Technology (KTH), Stockholm, and Catholic University of Louvain (UCL).

Semi-Plenary Lectures

Title: Taming Large Scale Control Problems with Compositional and Hierarchical Approaches
Speaker: Murat Arcak, University of California, Berkeley, USA
Time and Location: Tuesday, December 15, 15:10-16:10 (UTC), Auditorium 1 on JVCC

Abstract: Existing control design and verification methods are limited in their ability to address large numbers of interacting agents, multiple layers of feedback, and complex system-level requirements. This talk will demonstrate a strategy for overcoming this limitation with compositional and hierarchical approaches. The compositional approach exposes a complex system as an interconnection of smaller subsystems and derives system-level guarantees from subsystem properties. The hierarchical approach decomposes the synthesis and verification tasks into layers, from high-level decision making to low-level control synthesis.

Taken together, these approaches break apart intractably large design and verification problems into subproblems of manageable size. In addition to broadly applicable methodology, the talk will present numerous motivating applications and experimental results, involving multicellular biological systems, fleets of autonomous vehicles, and a multiscale traffic management system.

Biography: Murat Arcak is a Professor at U.C. Berkeley in the Electrical Engineering and Computer Sciences Department. He received the B.S. degree in Electrical Engineering from the Bogazici University, Istanbul, Turkey (1996) and the M.S. and Ph.D. degrees from the University of California, Santa Barbara (1997 and 2000). His research is in dynamical systems and control theory with applications to synthetic biology, multi-agent systems, and transportation. He received a CAREER Award from the National Science Foundation in 2003, the Donald P. Eckman Award from the American Automatic Control Council in 2006, the Control and Systems Theory Prize from the Society for Industrial and Applied Mathematics (SIAM) in 2007, and the Antonio Ruberti Young Researcher Prize from the IEEE Control Systems Society in 2014. He is a fellow of IEEE and IFAC.

Title: Structural Analysis: The Control Language to Understand Mechanisms
Speaker: Franco Blanchini, University of Udine, Italy
Time and Location: Tuesday, December 15, 15:10-16:10 (UTC), Auditorium 2 on JVCC

Abstract: Mathematics plays a fundamental role in disciplines such as physics, engineering, computer science, and chemistry and has been more recently accepted as a suitable language for solving problems in biology, biochemistry, and medicine. Control theory is part of the mathematical world and has the peculiarity of borrowing tools from different branches of mathematics. Interestingly, many of the techniques conceived and routinely used to solve control problems can be quite successfully adapted to solve new relevant problems, both practical and curiosity-driven, in other fields.

This talk discusses the structural analysis of systems, aimed at explaining how mechanisms work, why they work in a certain way, and to which extent they perform their task properly even in the presence of perturbations and disturbances.

The first part of the talk briefly introduces some preliminary motivating examples of mechanisms, borrowed from other disciplines alien to control theory, to show how a control approach can be very powerful to understand fundamental principles.

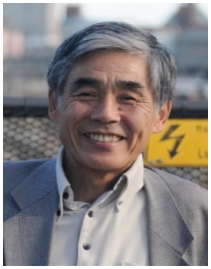
The second part introduces the definitions of structural versus robust properties, discussing paradigmatic case studies from the literature. Robust stability analysis is presented in an inverse form: "We know that this system is stable, but why is the system so incredibly stable?" Other fundamental concepts such as (perfect) adaptation, structural steady-state analysis, graph loop analysis, and aggregation are considered.

The third part discusses application examples from biology and biochemistry, to showcase the potential impact that the mathematical approach of control theory, suitably revised, can have in these disciplines and how interdisciplinary research can bring fresh ideas to control theorists.

Biography: Franco Blanchini was born on December 29, 1959, in Legnano (Italy). He is the Director of the Laboratory of System Dynamics at the University of Udine. He has been involved in the organization of several international events including as Program Vice-Chair of the 2005 Joint IEEE Conference on Decision and Control and European Control Conference (CDC-ECC), 2008 CDC, and 2013 CDC and Program Chair of the 2012 IFAC Symposium on Robust Control Design (ROCOND). He was an Associate Editor for Automatica from 1996 to 2006 and from 2017 to 2019, and for the IEEE Transactions on Automatic Control from 2012 to 2016. He was a Senior Editor for IEEE CSS Letters from 2017 to 2018. He is a co-author of the book "Set Theoretic Methods in Control" published by Birkhäuser.

He received the 2001 ASME Oil & Gas Application Committee Best Paper Award as a co-author of the article "Experimental evaluation of a High-Gain Control for Compressor Surge Instability" and the 2002 Automatica Paper Prize for "Set Invariance in Control - A Survey". He received the IFAC High Impact Paper Award for the latter paper in 2017, the year in which he also received the Nonlinear Analysis and Hybrid Systems Best Paper Award as a co-author of the paper "A Switched System Approach to Dynamic Race Modelling."

Title: Glocal (Global/Local) Control: Theoretical Challenges to Practice
Speaker: Shinji Hara, Tokyo Institute of Technology, Japan
Time and Location: Wednesday, December 16, 15:10-16:10 (UTC), Auditorium 1 on JVCC



Abstract: There are many interesting dynamical systems that can be regarded as hierarchically networked systems in a variety of fields including control. One of the ideas to treat those systems properly is "Glocal (Global/Local) Control," which means that the global purpose is achieved by local actions of measurement and control cooperatively. The key for realization of glocal control is hierarchically networked dynamical systems with multiple resolutions in time and space depending on the layer, which introduce many new theoretical control challenges aiming at practical effectiveness in synthetic biology and engineering. The main issues may include how to achieve synchronization by decentralized control and how to make a compromise of two different objectives, one for global and the other for local operations. The background, the idea, and the concept of glocal control are addressed based on an understanding of Internet of Things (IoT) from the control perspective. This talk presents two research topics, namely, (1) hierarchically decentralized control for networked dynamical systems, and (2) robust instability analysis for a class of uncertain nonlinear networked systems.

Regarding the first topic, we propose a theoretical framework for hierarchically decentralized control of networked dynamical systems that can take account of the tradeoff between the global and local objectives to achieve the desired harmony under change of the environments. Several new ideas, by exploiting the special structure of the target systems, enable us to develop scalable control design methods based on the powerful theory in classical, modern, and robust control. The effectiveness of the new theoretical foundations on the analysis and synthesis is experimentally confirmed by applications to electric vehicle control.

The second topic is quite new. It is on robust instability analysis for guaranteed persistence of nonlinear oscillations in the presence of a dynamic perturbation, which is important in synthetic biology. The problem of robust instability has a very different feature from that of robust stability, and hence a new theoretical setting is needed. We define the instability margin as the infimum of the H-infinity norm of the stable perturbation that stabilizes an equilibrium point for a class of nonlinear networked systems. To this end, we introduce a notion of the robust instability radius (RIR) for linear systems and provide a systematic way of finding the exact RIR. Based on this result, the instability margin can be analyzed exactly, with an additional theoretical investigation on how to properly treat the change of the equilibrium point due to the perturbation. The results are applied to the Repressilator in synthetic biology, and the effectiveness is confirmed by numerical simulations.

Biography: Shinji Hara received the B.S., M.S., and Ph.D. in engineering from the Tokyo Institute of Technology, Japan, in 1974, 1976, and 1981, respectively. In 1984, he joined the Tokyo Institute of Technology as an Associate Professor and served as a Full Professor for ten years. From 2002 to 2017 he was a Full Professor in the Department of Information Physics and Computing at the University of Tokyo. He is Professor Emeritus of the Tokyo Institute of

Technology and the University of Tokyo. His current research interests are in robust control, decentralized cooperative control for large-scale networked dynamical systems, system biology, and glocal control. Dr. Hara has received many awards in control including the George S. Axelby Outstanding Paper Award from the IEEE Control System Society in 2006. He was the President of SICE (Society of Instrument and Control Engineers, Japan) in 2009, a Vice President of the IEEE Control Systems Society in 2009 to 2010, and an IFAC Council member from 2011 to 2017. He is a Fellow of IFAC, IEEE, and SICE.

Title: Learning-based Planning and Control: Opportunities and Challenges
Speaker: Jonathan P. How, Massachusetts Institute of Technology, USA
Time and Location: Wednesday, December 16, 15:10-16:10 (UTC), Auditorium 2 on JVCC

Abstract: Machine learning-based techniques have recently revolutionized nearly every aspect of autonomy. In particular, deep reinforcement learning (RL) has rapidly become a powerful alternative to classical model-based approaches to decision-making, planning, and control. Despite the well-publicized successes of deep RL, its adoption in complex and/or safety-critical tasks at scale and in real-world settings is hindered by several key issues, including high sample complexity in large-scale problems, limited transferability, and lack of robustness guarantees. This talk explores our recently developed solutions that address these fundamental challenges for both single and multiagent RL. In addition, this talk highlights the complementary role that classical model-based techniques can play in synergy with data-driven methods in overcoming these issues. Real experiments with ground and aerial robots will be used to illustrate the effectiveness of the proposed techniques. The talk will conclude with an assessment of the state of the art and highlight important avenues for future research.

Biography: Jonathan P. How is the Richard C. Maclaurin Professor of Aeronautics and Astronautics at the Massachusetts Institute of Technology. He received a B.A.Sc. from the University of Toronto in 1987, and an S.M. and Ph.D. in Aeronautics and Astronautics from MIT in 1990 and 1993, respectively. Prior to joining MIT in 2000, he was an assistant professor in the Department of Aeronautics and Astronautics at Stanford University. He was the Editor-in-Chief of the IEEE Control Systems Magazine from 2015 to 2019 and was elected to the Board of Governors of the IEEE Control System Society (CSS) in 2019. His research focuses on robust planning and learning under uncertainty with an emphasis on multiagent systems. His work has been recognized by many awards, including the 2020 AIAA Intelligent Systems Award, the 2002 Institute of Navigation Burka Award, the 2011 IFAC Automatica Paper Prize, the 2015 AeroLion Technologies Outstanding Paper Award for Unmanned Systems, the 2015 IEEE Control Systems Society Video Clip Contest, the IROS Best Paper Award on Cognitive Robotics (2017 and 2019), and three AIAA Best Paper in Conference Awards (2011 to 2013). He was awarded the Air Force Commander's Public Service Award in 2017. He is a Fellow of IEEE and AIAA.

CSS Bode Lecture

Title: Snake Robots
Speaker: Kristin Y. Pettersen, Norwegian University of Science and Technology, Norway
Time and Location: Thursday, December 17, 15:10-16:10 (UTC), Auditorium 1 on JVCC

Abstract: Snake robots are motivated by the slender and flexible body of biological snakes, which allows them to move in virtually any environment on land and in water. Since the snake robot is essentially a manipulator arm that can move by itself, it has a number of interesting applications including firefighting and search-and-rescue operations. In water, the robot is a highly flexible and dexterous manipulator arm that can swim by itself like a sea snake. This highly flexible snake-like mechanism has excellent accessibility properties, and not only can the snake robot access narrow openings and confined areas, it can also carry out highly complex manipulation tasks at this location since manipulation is an inherent capability of the system.

This talk presents research on modelling, analysis, and control of snake robots, including both theoretical and experimental results. Ongoing efforts are described for bringing the results from university research towards industrial use.

Biography: Kristin Y. Pettersen is a Professor in the Department of Engineering Cybernetics at NTNU where she has been a faculty member since 1996. She was Head of the Department in 2011-2013, Vice-Head of the Department in 2009-2011, and Director of the NTNU ICT Program of Robotics in 2010-2013. She is Adjunct Professor at the Norwegian Defence Research Establishment (FFI). In the period 2013-2022 she is also Key Scientist at the CoE Centre for Autonomous Marine Operations and Systems (NTNU AMOS). She is a co-founder of the NTNU spin-off company Eelume AS, where she was the CEO in 2015-2016.

She received the MSc and PhD in Engineering Cybernetics at NTNU, Trondheim, Norway, in 1992 and 1996, respectively. She has published four books and more than 250 papers in international journals and refereed conferences. Her research interests are in nonlinear control of mechanical systems with applications to robotics, with a special emphasis on marine robotics and snake robotics. She was awarded the IEEE Transactions on Control Systems Technology Outstanding Paper Award in 2006 and in 2017.

She was a member of the Board of Governors of IEEE Control Systems Society 2012-2014 and is currently a member of both the IFAC Council and the EUCA Council. She has also held and holds several board positions in industrial and research companies. She was Program Chair of the IEEE Conference on Control Technology and Applications in 2018 and has served as Associate Editor for several international conferences. She has served as Associate Editor of IEEE Transactions on Control Systems Technology and IEEE Control Systems Magazine, and is currently Senior Editor of Transactions on Control Systems Technology. She is an IEEE CSS Distinguished Lecturer for 2019-2021, IEEE Fellow, member of the Norwegian Academy of Technological Sciences, and member of the Academy of the Royal Norwegian Society of Sciences and Letters.

Special Sessions

Special sessions about the following topics will be presented:

- MathWorks Special Session
- Presidents' Panel 1: The Role of IEEE in Advancing Technology for Humanity
- Presidents' Panel 2: The Role of Control Systems in Science and Technology for Humanity
- Meet the Faculty Candidate Poster Session 1, 2
- Girls in Control Workshop

Title: MathWorks Special Session: Teaching Dynamics and Control with Arduino-based TCLab
Speaker: John D. Hedengren, Chemical Engineering, Brigham Young University
Time and Location: Monday, December 14, 14:00-15:00 (UTC), Event Hall 1 on JVCC

Abstract: The small, inexpensive, and take-home temperature control lab (TCLab) reinforces process dynamics and control theory with real data. A 2015 NSF-sponsored report "Chemical Engineering Academia-Industry Alignment: Expectations about New Graduates" identifies a strong industrial need for practical understanding of process control and system dynamics. Industry feedback also suggests more focus is needed on translating process control theory into practice. At many universities, this need is met by integrating laboratory experiences into the process control course. In-person laboratory resources are difficult to schedule and manage, especially with COVID-19 restrictions. The TCLab hardware consists of an Arduino shield that fits onto a standard Arduino Leonardo or UNO microcontroller. This talk highlights a few examples of how the TCLab can be interfaced with and run from MATLAB live scripts and Simulink. The TCLab module demonstrates many process control modalities such as SISO, MIMO and cascade control. Students implement the control modalities by coding control algorithms including relay, PID, and model predictive control. The lab is integrated at various points in the process dynamics and control course to reinforce theory with a practical application.

Dr. John Hedengren is an Associate Professor at Brigham Young University in the Chemical Engineering Department. He leads the BYU Process Research and Intelligent Systems Modeling (PRISM) group with a current focus on structured machine learning for optimization of energy systems, unmanned aircraft, and drilling. His area of expertise is in process dynamics, control, and optimization with applications in fiber optic monitoring, automation of oil and gas processes, unmanned aerial systems, systems biology, and grid-scale energy systems.

Title: Presidents' Panel 1: The Role of IEEE in Advancing Technology for Humanity
Panelists:
Toshio Fukuda, IEEE President
Jose Moura, IEEE President (2019)
Moderator: Anuradha Annaswamy, IEEE CSS President
Time and Location: Tuesday, December 15, 13:00-13:30 (UTC), Event Hall 1 on JVCC

Abstract: In this unique panel, you will hear the two IEEE Presidents, Toshio Fukuda (2020) and Jose Moura (2019), present, discuss, and expand IEEE's motto, "Advancing Technology for Humanity." In this momentous year, as the entire world has adapted to the singular impact of the pandemic, this motto is more relevant than ever. The session will be a live telecast of the conversation between the panelists and the moderator.

Title: Presidents' Panel 2: The Role of Control Systems in Science and Technology for Humanity
Panelists:
Hajime Asama, President, International Federation of Automatic Control
Jay Farrell, President, American Automatic Control Council
Keum-Shik Hong, President, Asian Control Association
Jacquelien Scherpen, President, European Control Association
Moderator: Anuradha Annaswamy, IEEE CSS President
Time and Location: Tuesday, December 15, 13:30-14:00 (UTC), Event Hall 2 on JVCC

Abstract: Several societal-scale problems are now being tackled using scientific and technological tools. Control Systems is at the heart of many of these efforts. This is exemplified not only through varied application domains but also through efforts that are ongoing at several locations across the globe. The four panelists, who are presidents of various associations of Control Systems in different continents, will discuss the role of systems and control for various societal-scale challenges as exemplified by their association, opportunities, and challenges. The session will be a live stream of both pre-taped segments where you will hear from each panelist and a live conversation between the panelists and the moderator.

Title: Meet the Faculty Candidate Poster Session 1, 2
Organizer: Elisa Franco, University of California
Time and Location: Wednesday, December 16, 12:00-13:00 and 17:30-18.30 (UTC), Event Hall 1 on JVCC

Building on the success of the past several events, the 2020 CDC features an **entirely virtual** "Meet the Faculty Candidates" poster session on Spatial Chat. This poster session will be split in two parts to facilitate participation of candidates and recruiters in different time zones. This is a great opportunity for faculty, search committee members, and recruiters to speak directly with current graduate students and postdoctoral researchers who are seeking faculty positions.

Presenters will likely be more successful providing high-level discussions of their work such as motivation, strategies, unique insights, rather than narrow mathematical detailed discussions, unless asked specifically for those details. Presenters are also encouraged to bring copies of their CV for distribution.

Title: Girls in Control Workshop
Organizer: Steffi Knorn, Otto-von-Guericke University Magdeburg
Time: Saturday, December 12, 2020

What connects robots, diabetes and the stock exchange? What subject will allow you to work in aeronautics, automotive, industrial processes and medical technology? Control Engineering or Control for short is an engineering discipline that moves technical, economic and biological systems!

In this workshop, girls between 10 and 15 years will learn about the principles of control, feedback and program their own solution for playing chase. The workshop will be offered in various languages, including Bangla, English, French German, Hindi, Indonesian, Italian, Japanese, Korean, Norwegian, Portuguese, Romanian, Russian, Swedish, Thai, and Urdu.

Tutorial Sessions

There are five tutorial sessions at the conference on the topics of:

- Model Reduction by Moment Matching: Beyond Linearity - A Review of the Last 10 Years
- Autonomous Vehicles State Estimation for Navigation Purposes
- Direct Transcription for Dynamic Optimization: A Tutorial and Case Study on Dual-Patient Ventilation During the COVID-19 Pandemic
- Risk-Aware Control and Game Theory in Engineering
- Monotone Systems Theory for Reachability and Safety

Title: Model Reduction by Moment Matching: Beyond Linearity - A Review of the Last 10 Years
Organizers: Astolfi, Alessandro (Imperial College & Univ. of Rome), Scarciotti, Giordano (Imperial College London), Simard, Joel David (Imperial College London), Ringwood, John V. (NUI Maynooth, Ireland), Faedo, Nicolas (Maynooth University)
Speakers: Astolfi, Alessandro (Imperial College & Univ. of Rome), Scarciotti, Giordano (Imperial College London), Simard, Joel David (Imperial College London), Ringwood, John V. (NUI Maynooth, Ireland), Faedo, Nicolas (Maynooth University)
Time and Location: Monday, December 14, 13:00-15:00 (UTC), Room 1 on JVCC

Title: Autonomous Vehicles State Estimation for Navigation Purposes
Organizers: Silvestre, Carlos (University of Macau), Hamel, Tarek (Universite De Nice Sophia Antipolis)
Speakers: Reis, Joel (University of Macau), Silvestre, Carlos (University of Macau), Batista, Pedro (Instituto Superior Tecnico / University of Lisbon), Oliveira, Paulo (Instituto Superior Tecnico), Hamel, Tarek (Universite de Nice Sophia Antipolis), Hua, Minh-Duc (I3S UCA-CNRS UMR7271), Samson, Claude (I3s/CNRS), Mahony, Robert (Australian National University), van Goor, Pieter (Australian National University), Pike, Ryan (Australian National University), Zhang, Jun (Australian National University), Ng, Yonhon (Australian National University), Wang, Miaomiao (Western University), Tayebi, Abdelhamid (Lakehead University)
Time and Location: Tuesday, December 15, 13:00-15:00 (UTC), Room 1 on JVCC

Title: Direct Transcription for Dynamic Optimization: A Tutorial and Case Study on Dual-Patient Ventilation During the COVID-19 Pandemic
Organizers: Kerrigan, Eric C. (Imperial College London)
Speakers: Kerrigan, Eric C. (Imperial College London), Nie, Yuanbo (Imperial College London), Faqir, Omar James (Imperial College London), Kennedy, Caroline H. (Evelina Children's Hospital, Guy's and St Thomas' NHS Foundation Trust), Niederer, Steven A. (King's College London), Solis-Lemus, Jose A. (King's College London), Vincent, Peter (Imperial College London), Williams, Steven E. (King's College London)
Time and Location: Wednesday, December 16, 13:00-15:00 (UTC), Room 1 on JVCC

Title: Risk-Aware Control and Game Theory in Engineering
Organizers: Bauso, Dario (University of Groningen), Tembine, Hamidou (NYU), Barreiro-Gomez, Julian (New York University Abu Dhabi), Stella, Leonardo (University of Derby), Colaneri, Patrizio (Politecnico di Milano)
Speakers: Barreiro-Gomez, Julian (New York University Abu Dhabi), Tembine, Hamidou (NYU), Stella, Leonardo (University of Derby), Bauso, Dario (University of Groningen), Colaneri, Patrizio (Politecnico di Milano)
Time and Location: Thursday, December 17, 13:00-15:00 (UTC), Room 1 on JVCC

Title: Monotone Systems Theory for Reachability and Safety
Organizers: Coogan, Samuel (Georgia Institute of Technology), Arcak, Murat (University of California, Berkeley)
Speakers: Coogan, Samuel (Georgia Institute of Technology), Meyer, Pierre-Jean (University of California, Berkeley), Arcak, Murat (University of California, Berkeley), Girard, Antoine (CNRS)
Time and Location: Friday, December 18, 13:00-15:00 (UTC), Room 1 on JVCC

COVID-19 Focus Sessions

The goal of the COVID-19 Focus Sessions is to facilitate discussion as to how the control community has, is, and can contribute to the current pandemic via modeling, estimation, and control in the area of virus spread over networks, testing, vaccine development, etc.
The sessions are organized in five topical areas:

- **Modelling**
- **Testing**
- **Data & Forecasting**
- **Estimation & Mitigation**
- **Vaccines**

Organizers: Paré, Philip E. (Purdue University), Sandberg, Henrik (KTH Royal Institute of Technology), Beck, Carolyn L. (Univ of Illinois, Urbana-Champaign), Liu, Ji (Stony Brook University), Valcher, Maria Elena (Universita' Di Padova), Dabbene, Fabrizio (CNR-IEIIT), Johansson, Karl H. (Royal Institute of Technology)

https://sites.google.com/view/covid-19-focus-sessions

Title: Modelling
Speakers: Bullo, Francesco (Univ of California at Santa Barbara), Giordano, Giulia (University of Trento), Nowzari, Cameron (George Mason University), Leonard, Naomi Ehrich (Princeton University)
Time and Location: Monday, December 14, 16:15-17:35 (UTC), Room 1 on JVCC

Title: Testing
Speakers: Tegling, Emma (Massachusetts Institute of Technology), Crisostomi, Emanuele (Univ. of Pisa), Drakopoulos, Kimon (USC)
Panel Moderators: Beck, Carolyn L. (Univ of Illinois, Urbana-Champaign), Sandberg, Henrik (KTH Royal Institute of Technology)
Time and Location: Tuesday, December 15, 16:15-17:35 (UTC), Room 1 on JVCC

Title: Data & Forecasting
Speakers: Gustafsson, Fredrik (Linkoping University), Yuan, Ye (Huazhong University of Science and Technology), di Bernardo, Mario (University of Naples Federico II)
Panel Moderator: Paré, Philip E. (Purdue University)
Time and Location: Wednesday, December 16, 16:15-17:35 (UTC), Room 1 on JVCC

Title: Estimation & Mitigation
Speakers: Paré, Philip E. (Purdue University), Ye, Mengbin (Curtin University), Roy, Sandip (Washington State University)
Panel Moderators: Johansson, Karl H. (KTH Royal Institute of Technology), Liu, Ji (Stony Brook University)
Time and Location: Thursday, December 17, 16:15-17:35 (UTC), Room 1 on JVCC

Title: Vaccines
Speakers: Hota, Ashish (Indian Institute of Technology (IIT), Kharagpur), Chapman, Airlie (University of Melbourne), Braatz, Richard D. (Massachusetts Institute of Technology)
Panel Moderators: Dabbene, Fabrizio (CNR-IEIIT), Valcher, Maria Elena (Universita di Padova)
Time and Location: Friday, December 18, 16:15-17:35 (UTC), Room 1 on JVCC

Pre-Conference Workshops

The CDC 2020 is offering 5 two-day and 3 one-day workshops addressing current and future topics in control systems from experts of academia, research institutes, and industry. The workshops are fully on-line and scheduled for December 12-13 (Sat-Sun), 2020. For the convenience of the attendees, each workshop runs only 4 hours per day.

Two-Day Workshops: December 12 & 13 (Sat & Sun), 13:00-17:00 (UTC)

T1. Advanced Battery Management: Recent Advances and Future Innovations
T2. Real time NMPC: From Fundamentals to Industrial Applications
T3. Data-driven Control
T4. Dynamics in Social and Economic Networks
T5. Non-linear and adaptive control: A tribute to Laurent Praly for his 65th birthday

Title: T1. Advanced Battery Management: Recent Advances and Future Innovations
Organizers: Huazhen Fang (University of Kansas), Xinfan Lin (University of California Davis), Scott Moura (University of California, Berkeley), Simona Onori (Stanford University)
Time and Location: December 12 & 13 (Sat & Sun), 13:00-17:00 (UTC), Event Hall 1 on JVCC

Abstract: Battery energy storage systems are rising as the backbone of numerous industrial and civilian systems, while playing a key role in moving the world into a clean energy era. Their performance and safety critically rely on advanced battery management, which has attracted considerable research, particularly from the systems and control community, in the past decade. The growing efforts have led to tremendous progress in leveraging control theory to enable complex, high-performing battery systems in a broad range of application domains. The developments in turn continuously stimulate exciting insights into emerging challenges. This two-day workshop is thus proposed to gather veteran researchers in this vibrant field to share up-to-date advances and perspectives about future innovations. It also aims to foster a creative space for open discussions among participants, which will spark innovative ideas and inspirations about future control-theory-driven battery management.

The workshop will feature more than ten speakers working extensively in this field and representing diverse backgrounds across academia and industry. The talks will cover various key dimensions of this field, highlighting a confluence of electrochemical modeling, control theory, machine learning and applications.

The target audience of the proposed workshop includes graduate students, researchers, and professional engineers from academic institutions, companies, and industrial and government laboratories, who want to have an exposure to the cutting-edge developments, new trends and open challenges in the field of battery management.
Webpage: https://cdc-abm.ku.edu

Title: T2. Real time NMPC - From Fundamentals to Industrial Applications
Organizers: Stefano Longo (Embotech AG), Thivaharan Albin (Embotech AG), Craig Buhr (MathWorks Inc.)
Time and Location: December 12 & 13 (Sat & Sun), 13:00-17:00 (UTC), Event Hall 2 on JVCC

Abstract: This workshop gives an overview on Nonlinear Model Predictive Control development concentrating on the industrial perspective. At the beginning, an overview on the topic of real-time Nonlinear MPC is given. Based on this, challenges are outlined for developing NMPC algorithms for serial deployment. Along with that, some best practices and state-of-the-art tools are presented that facilitate the design. Finally, several success stories for application of Nonlinear MPC to real-world systems are given. They range from autonomous driving to the field of robotics. The presenters from Embotech and MathWorks highlight some use cases and experience from their industrial work.

The workshop is an 8-hour workshop (4 hr Sat. + 4 hr Sun). On Saturday we offer pre-recorded videos and then offer Q&A sessions. For Sunday we again first do a session with pre-recoded videos. Additionally, we will hand out some programming exercises and assist during all the scheduled time via Zoom.

Title: T3. Data-driven Control
Organizers: Kanat Camlibel (University of Groningen), Harry Trentelman (University of Groningen), Henk van Waarde (University of Groningen), Jaap Eising (University of Groningen)
Time and Location: December 12 & 13 (Sat & Sun), 13:00-17:00 (UTC), Event Hall 3 on JVCC

Abstract: A great deal of the mainstream systems and control theory is based on the assumption that a mathematical model of the to-be-controlled system is known. An alternative to the model-based approach is to design feedback controllers by using data that are collected from the to-be-controlled system. Data-driven approaches are gaining more and more popularity as the growing complexity of engineering systems makes obtaining accurate mathematical models from first principles more and more difficult.

This workshop aims at portraying the state-of-the-art in data-driven control. In order to provide a significant coverage of the area, the two-day workshop with 12 lectures address diverse topics from linear systems to nonlinear systems and from robust control to predictive control. The diversity of the covered topics, speakers, and audience is expected to initiate cross-fertilization of ideas.

The proposed workshop targets a broad audience from graduate students and researchers looking for an introduction to a new and active area of research to practitioners interested in data-driven design methods. The required background is basic familiarity with systems and control theory as well as optimization. Although the lectures address various different topics, they are closely related to each other in their spirit as well as approach.
Webpage: https://sites.google.com/rug.nl/cdc2020datadrivencontrol

Title: T4. Dynamics in Social and Economic Networks

Organizers: Wenjun Mei (ETH Zurich), Francesca Parise (Cornell University), Ming Cao (University of Groningen), Giacomo Como (Politecnico di Torino), Bahman Gharesifard (Queen's University)

Time and Location: December 12 & 13 (Sat & Sun), 13:00-17:00 (UTC), Event Hall 4 on JVCC

Abstract: Network effects are pervasive in our society and affect many aspects of our life from how we acquire information, how we interact, how we make decisions and what opportunities we are exposed to. This is even more the case since the rise of Internet and online social media, which not only provide a vast number of empirical data for the quantitative study of social systems, but have also deeply changed the patterns of how people interact with each other. In this era of information revolution and dense interactions, our society faces various unprecedented challenges with profound impacts on modern politics and economy, such as opinion polarization, the politicalization of public debates, the effects of echo chambers and filter bubbles. Phenomena such as spreading of contagion (may this be of pathogen or misinformation), coordination of strategic behavior as well as targeted interventions and incentive for efficient use of resources over networks are rapidly becoming of fundamental importance for both the society and its economy. Mathematical modeling plays a fundamental role in understanding how these macroscopic phenomena emerge from certain microscopic mechanisms of social interactions and certain network structures.

Exploiting the progress in complex networks and data mining, the last decades have witnessed a rapid development of the research on the statistical and static features of social networks, in the framework of Social Network Analysis. However, dynamical processes on/of social networks, which are directly related to the aforementioned phenomena, remain to be thoroughly studied. Due to the rapid progress in the study of multi-agent systems, researchers on control theory have recently contributed various useful mathematical tools to the study and control of social network dynamics. These mathematical tools make it possible for us to investigate some fundamental or emerging problems in social science, including: (1) What is the "main factor" that governs opinion dynamics and what mechanisms could drive public opinions to polarization? (2) How do social media and online recommendation system shape the public opinion formation processes? (3) Is there any efficient way to mitigate the spreading of misinformation or the impact of malicious opinion manipulation? (4) How does network structure influence an individual's strategic behavior on social networks? (5) How can one plan targeted interventions or incentives to maximize system performance by exploiting such network effects?

We thus believe this is a perfect timing to bring these socio-economic questions to the attention of the broad audience of control theorists. We organized the workshop by bringing together researchers that work on this rapidly expanding area using different approaches, as for example game theory, complex network analysis, and multi-agent systems so that attendees can have a broad overview of the different techniques that one can use to answer the questions above. The aim is to give a general introduction to dynamics on socio-economic systems, as well as present the latest results on various emerging topics such as social learning and opinion dynamics, network propagation models, coordination of competitive network systems, information design, and interventions under partial information.

Webpage: https://www.meiwenjun.site/2020cdc-workshop-socialnetworks

Title: T5. Non-linear and adaptive control: A tribute to Laurent Praly for his 65th birthday
Organizers: Christophe Prieur (CNRS), Zhong-Ping Jiang (New York University)
Time and Location: December 12 & 13 (Sat & Sun), 13:00-17:00 (UTC), Event Hall 5 on JVCC

Abstract: This workshop is dedicated to Laurent Praly's 65th birthday and to honor his long-lasting pioneering contributions to multiple topics in control: linear adaptive control, nonlinear adaptive control, Lyapunov design, input-to-state stability and stabilization, output feedback control, nonlinear observers, stabilization. The workshop is comprised of six talks by Laurent's colleagues who will speak about the state of the art and progresses in various important topics in the field of systems and control theory. A panel composed of three editors-in-chief of the top-tier journals IEEE Transactions on Automatic Control, Automatica, and Systems & Control Letters will discuss future challenges of control theory. It is expected that the workshop serves as a platform for stimulating discussions among researchers and practicing engineers and will inspire a next generation of students to enter the fascinating field of nonlinear and adaptive control.
Webpage: https://sites.google.com/view/praly65

One-Day Workshops: December 13 (Sun), 13:00-17:00 (UTC)

O1. Control, Optimization, and Learning Methods for Emerging Mobility Systems
O2. Compressed Sensing and Sparse Representation for Systems and Control
O3. Learning and Security for Multi-Agent Systems

Title: O1. Control, Optimization, and Learning Methods for Emerging Mobility Systems
Organizers: Andreas A. Malikopoulos (University of Delaware), Christos G. Cassandras (Boston University)
Time and Location: December 13 (Sun), 13:00-17:00 (UTC), Event Hall 6 on JVCC

Abstract: Emerging mobility systems, e.g., connected and automated vehicles (CAVs), shared mobility, provide the most intriguing opportunity for enabling users to better monitor transportation network conditions and make better operating decisions to improve safety and reduce pollution, energy consumption, and travel delays. Emerging mobility systems are typical cyber-physical systems where the cyber component (e.g., data and shared information through vehicle-to-vehicle and vehicle-to-infrastructure communication) can aim at optimally controlling the physical entities (e.g., CAVs, non-CAVs). The cyber-physical nature of such systems is associated with significant control challenges and gives rise to a new level of complexity in modeling and control. As we move to increasingly complex emerging mobility systems, new control, optimization, and learning approaches are needed to optimize the impact on system behavior of the interplay between vehicles at different traffic scenarios. It is expected that CAVs will gradually penetrate the market, interact with non-CAVs and contend with vehicle-to-vehicle and vehicle-to-infrastructure communication limitations, e.g., bandwidth, dropouts, errors and/or delays. New system approaches are needed to accommodate the challenges associated with the partial penetration of CAVs and communication limitations.

The workshop intends to stimulate a discussion about a feasible research roadmap at the intersection of control, optimization, and learning that would result in new approaches for addressing the following technical challenges in emerging mobility systems. First, any potential limitations in the information (e.g., bandwidth, dropouts, and errors or delays) that CAVs receive from each other and the infrastructure could have a major impact on the performance. Second, different CAV penetration rates can significantly alter mobility system efficiency. Third, managing online vehicle-level operation for the controller can involve significant computational challenges. Finally, improving robustness and safety of CAVs constitutes a major technical challenge which has attracted considerable attention.
Webpage: https://sites.google.com/udel.edu/cdc-workshop-2020/home

Title: O2. Compressed Sensing and Sparse Representation for Systems and Control
Organizers: Masaaki Nagahara (University of Kitakyushu)
Time and Location: December 13 (Sun), 13:00-17:00 (UTC), Event Hall 7 on JVCC

Abstract: This workshop reviews recent advances of compressed sensing and sparse representation for systems and control. Compressed sensing and sparse representation have been receiving a lot of research attention in machine learning, signal processing, and statistics. In recent years, researchers have become increasingly interested in compressed sensing and sparse representation for systems and control.

Sparsity is one of the major topics in machine learning and signal processing. Compressed sensing, also known as sparse representation, refers to the recovery of a high-dimensional but low-complexity vector (or signal) from a limited number of measurements. The notion of sparsity has also been attracting attention in control systems. In control systems, the sparsity in time is proposed for resource-aware control, such as event- (or self-) triggered control, where sensing and actuation is performed when needed. Also, optimal control called maximum hands-off control directly minimizes the time duration on which the control is active (i.e., L_0 norm). Sparsity is also available for model reduction of control systems and networks.

This workshop reviews recent advances of sparsity methods in systems and control, and communications. We give lectures on (1) tradeoffs between performance and complexity in control, (2) L_0 optimal control and control node scheduling, (3) sparsity methods for wireless communications, and (4) maximum hands-off control.
Webpage: https://nagahara-masaaki.github.io/cdc2020ws/

Title: O3. Learning and Security for Multi-Agent Systems
Organizers: Hideaki Ishii (Tokyo Institute of Technology), Quanyan Zhu (New York University)
Time and Location: December 13 (Sun), 13:00-17:00 (UTC), Event Hall 8 on JVCC

Abstract: Machine learning provides a set of useful analytic and decision-making tools for a wide range of applications, including signal processing, vision-based robotics, and data-driven control systems. Security research aims to address the issue of protecting networks from adversarial behaviors. Despite that the two communities focus on different problems, the intersections between learning and security have received a lot of attention. The connections between the two are two-fold. First, security of learning is the center of recent advances in adversarial learning problems. Recent years have witnessed a growing number of adversarial attacks and malicious behaviors aimed at systems built with machine learning and optimization algorithms. There is a need for new theories and models to provide a fundamental understanding of the vulnerabilities of these algorithms and develop methods to safeguard the system from attacks. Second, the growing volume and diversity of data for computing systems have created opportunities to improve the system security and resilience through learning. Learning for security addresses these challenges by developing novel adaptive and data-driven techniques based on ideas and concepts from decision and control theory.

The confluences between security and learning become more apparent and essential for multi-agent systems. Malicious agents can manipulate and mislead the learning by disseminating misinformation and poisoning the data. Data-driven methods are needed to detect such behaviors over the network and prevent cascading failures and mitigate systemic risks. Understanding of the confluences in multi-agent systems will advance federated learning in adversarial settings, designing adaptive cyber defense, and improving the security of cyber-physical systems and the Internet of Things. This workshop brings together experts from the cybersecurity, machine learning, and control communities to highlight recent works that contribute to addressing these challenges. Our agenda features invited talks and a joint academia and funding agency panel discussion to identify open research problems that will be of interest to the broader community.
Webpage: https://sites.google.com/nyu.edu/cdc-learning-security-workshop

Social Program

Welcome Reception	Sunday, December 13, 17:30-18:30 (UTC)	Meeting Place
Newcomers Reception 1, 2	Monday, December 14, 12:00-13:00 and 17:30-18.30 (UTC)	Event Hall 1
Women in Control Event	Tuesday, December 15, 17:30-18:30 (UTC)	Event Hall 1
IEEE Young Professional Meet Up	Thursday, December 17, 17:30-18:30 (UTC)	Event Hall 1
2020 IEEE CSS Awards Ceremony	Friday, December 18, 15:00-16:10 (UTC)	Auditorium 1
Farewell Reception	Friday, December 18, 17:30-18:30 (UTC)	Meeting Place

Newcomers Reception 1, 2

Time and Location: Monday, December 14, 12:00-13:00 and 17:30-18.30 (UTC), Event Hall 1 on JVCC

This social event is organized in particular for participants who registered to IEEE for the first time in 2020, or who attend CDC for the first time. This will be a friendly occasion to meet other participants who have recently arrived in our scientific community. This event will be held virtually using Spatial Chat, and will promote informal interactions among participants based on preferred "interest areas" in the virtual room.

Women in Control Event

Title: Overcoming Hidden Biases that Hinder Our Success
Speaker: Dr. Shawn Andrews
Time and Location: Tuesday, December 15, 17:30-18:30 (UTC), Event Hall 1 on JVCC

Abstract: By now, most of us know that unconscious biases affect the workplace. These hidden, reflexive preferences shape our world views and can profoundly affect how welcoming and open a workplace is to different people and ideas. These predispositions shape the decisions that we make by affecting the way we interpret information and how we interact with others—significantly impacting a whole host of organizational processes from recruitment to retention.

At the same time, we are experiencing significant shifts in global demographic trends which impact age, race, ethnicity, gender, religion, and LGBTQ employees. There is no doubt that our workplace is becoming more diverse, which increases the potential for more biases.

Customized bias scenarios (based on your audience) and real-world cases will be discussed. Several individual and organizational strategies to minimize bias will be provided.
During this interactive presentation, you will learn how to:

- Identify the different types, causes, and impact of bias at work
- Explore the impact of global demographic trends on diversity and bias
- Utilize case studies and stories to communicate potential biases
- Apply individual and organizational strategies to minimize bias

Biography: Dr. Shawn Andrews is a keynote speaker, organizational consultant, business school professor, and author of the best-selling book, *The Power of Perception: Leadership, Emotional Intelligence, and the Gender Divide* (2018 Morgan James Publishing). She is a *Forbes* contributor, quoted in the *Chicago Tribune*, interviewed on dozens of podcast and radio shows, including *NPR*, and is a *Women's Media Center* SheSource expert.

With over two decades of corporate experience in the biopharmaceutical industry, she has helped thousands of leaders improve and develop using presentations, workshops, coaching, and psychological instruments. She serves as professor at both UC Irvine Paul Merage School of Business and Pepperdine Graziadio Business School, teaching courses on Women and Leadership, Organizational Behavior, Diversity in Organizations, and Leadership and Ethics. Her specific areas of focus include Organizational Leadership, Learning & Development, Talent Management, Diversity & Inclusion, and Unconscious Bias.
Shawn is founder and CEO of Andrews Research International.
www.drshawnandrews.com

IEEE Young Professional Meet Up

Time and Location: Thursday, December 17, 17:30-18:30 (UTC), Event Hall 1 on JVCC

"Meet Up" is a social networking event, a place to form new contacts, share ideas and explore collaboration opportunities among Young Professionals. This year's Meet Up has been updated to a casual ***virtual*** ambiance from the comfort of your home and open to all interested visitors: conference participants and IEEE members. This event is organized and sponsored by IEEE Control System Society Young Professionals. Entrance is free, with snacks and drinks provided by your refrigerators. The event will be held on Spatial Chat.

Registration

All conference attendees must register.

The registration categories and rates have changed that CDC 2020 will be in a fully virtual format. First category includes paper uploads and the rates are substantially reduced. Second category, newly introduced for the virtual CDC, does not include paper uploads and is available at rates even further reduced (see the tables below). Both categories include access to the virtual venue, electronic proceedings, live sessions, and on-demand presentations.

A. Conference Registration: Participation with Paper Uploads

Category	Before Oct 1, 2020 Advance Rate	From Oct 2, 2020 Standard Rate	# Paper Uploads
Member	KRW240,000	KRW300,000	3 Included
Non-Member	KRW300,000	KRW375,000	3 Included
Life Member	KRW120,000	KRW150,000	3 Included
Student/ Retiree Member	KRW120,000	KRW150,000	1 Included
Student/Retiree Non-Member	KRW150,000	KRW187,500	1 Included

B. Conference Registration: Participation without Paper Uploads

As the CDC 2020 will be held in fully virtual format, we have introduced additional participation and registration options to make the conference experience available for more attendees.

Category	Rate	# Paper Uploads
Regular	KRW120,000	X
Student/ Retiree Member	KRW60,000	X

C. Workshops Registration

To accommodate attendees from different time zones, the usual Full Day workshops are now provided over two days, with no more than 4 hours per day. Two-day and One-day workshops will be offered from Saturday, December 12 to Sunday, December 13, 2020.

Category	Before Oct 1, 2020 Advance Rate		From Oct 2, 2020 Standard Rate	
	Two-day	One-day	Two-day	One-day
Member/ Non-Member	KRW120,000	KRW60,000	KRW168,000	KRW84,000
Student/ Life Member/Retiree	KRW60,000	KRW30,000	KRW84,000	KRW42,000

General Information

A. Conference Time

The entire program of the Virtual CDC including the workshops will be online during the hours 13:00 - 17:30 UTC (Coordinated Universal Time).

B. About Korea

Korea, the Land of Morning Calm, is a truly remarkable place. There are so many things to see and do in Korea that you are sure to find an attraction that is the perfect match for your requirements. Korea's rugged mountainous terrain and hundreds of miles of coastline provide unlimited scenic beauty and opportunities for outdoor activities throughout the year. But scenic wonders are not the only attraction of Korea. Evidence of Korea's unique 5,000-year-old history and culture can be found everywhere. Every city and village has their share of traditional festivals that preserve the old ways of life but are updated to cater to the comforts of foreign visitors. The unique Korean cuisine has flavors sure to please every palate.

C. Hangeul (Korean Alphabet)

Hangeul, one of the most unique creations of the nation, was introduced in 1443 by King Sejong (r. 1418-1450), the 4th king of the Joseon dynasty. In order to help all commoners to easily read and write this new alphabet, Hunminjeongeum (meaning "Proper sounds to instruct the people" in Korean) was created. The name of the language was changed to the current Hangeul in the 20th century

Hangeul is a series of scientifically designed characters. The alphabet is composed of basic consonants and vowels, each with a set sound, and a dot or a line added to form more sounds. The 5 main consonants (ㄱ, ㄴ, ㅅ, ㅁ, ㅇ) imitate the shape of the lips and tongue make when producing that particular sound, while the 3 main vowel components (ㆍ, ㅡ, ㅣ) symbolize the sky, the earth, and mankind, respectively. Originally composed of 17 consonants and 11 vowels, only 14 consonants and 10 vowels are used in modern Hangeul.

Jeju Island in Korea

Jeju Island is the largest island in Korea and is located in the Pacific Ocean just off the south-western tip of the Korean peninsula. Jeju Island is a volcanic island with a mountainous terrain, a dramatic rugged coastline and spectacular watershed courses. The Island has unique culture as well as natural beauty. It is a living folk village, with approximately 540,000 people. As a result of its isolated location and romantic tropical image, Jeju Island has become a favorite retreat with honeymooners and tourists.

World Natural Heritage Site (Designated on July 2, 2007 by UNESCO)

A. Hallasan Mountain

Hallasan Mountain which rises 1,950 m above sea level is the highest mountain in South Korea. Baengnokdam, the crater lake located at the peak of Hallasan Mountain, and about 40 oreums, a beautiful sight of steep and fantastic rock cliffs, are designated in 2002 as a bio-reserve area by UNESCO. As the peak of Hallasan Mountain is made of diverse volcanic characteristics, depending on the angle of one's view, one can feel its uniqueness.

B. Oreum of the Rising Sun, Seongsan Ilchulbong

On the east coast of Jeju is situated the 182m Seongsan Ilchulbong which looks like a grand old castle. It was formed 5,000 years ago by an underwater eruption on the shallow sea bed. Especially the exquisite inner structure which looks like a bowl formed with crater and slope, excluding the North West side and the repeated process of eating away and depositing by waves, makes a surpassing sight. It is also recognized worldwide as a base for researches in past volcano eruptions and under water volcanoes.

C. 9 Lava Tubes, Geomun Oreum Lava Tube System

Geomun Oreum Lava Tube System was formed by the eruption of a rich basaltic Geomun Oreum volcano and is situated atop an elevation of 456m above sea level. It was formed between 100,000 to 300,000 years ago and has 9 caves altogether. As all the tubes are exceptionally magnificent and ancient, the condition of preservation is commendable.

Virtualization of CDC 2020

When the organizing committee learned that the conference would need to become virtual, the first thought that came to mind was how to best implement such a virtualization, as there was no past virtual CDC that could serve as a template, and other conferences were still testing out various approaches. Just as in solving an optimal control problem, the first step was to define the virtualization's primary objectives, which were to enable the participants to learn new results, exchange ideas, and meet people in an easy and natural manner, i.e., to the best possible extent that virtual meetings can allow. The very large number of decisions on designs and implementations were then made to maximize the chosen objectives within the constraint of a virtual environment. This overall approach demanded significant effort from many individuals, especially given all the traditional CDC programs should be held with maximal interactivity and engagement.

For this, the Committee examined a large number of available communication-over-the-web platforms to select the most suitable for the various programs of the CDC and to work out the implementation details and procedures for the user.

Zoom was finally selected for all technical sessions for its popularity, stability, and proven features. Going with a platform that is familiar to most participants would mean less time wasted in learning a new software platform. As control engineers, our selection of a platform with robust stability and constraint satisfaction, i.e., having all of the necessary features, should be no surprise. On the other hand, internet quality is not the same all around the world, which forced our decision to require the use of pre-recorded videos for all the technical sessions. To enable the session chairs to focus on their sessions rather than battling technology or potential slowness in their local internet connections, we decided to broadcast the pre-recorded presentations through Zoom by technical staff members rather than the presenters or the chairs. This approach enables Q&A between the speaker and the audience through the chat box during the presentation, which is an added benefit of virtual conferences. At the end of each video, the staff member will share the presentation slides to assist the speaker when answering questions.

Organizing humans to effectively manage Zoom links for 17 parallel sessions held twice a day for five days plus the links for other non-technical events would have been challenging. To solve this problem, CDC 2020 uses a new software platform called the **Jeju Virtual Convention Center (JVCC)** which was conceptualized and designed by the Committee. The JVCC is a virtual venue consisting of 17 Rooms, 2 Auditoriums, and 8 Event Halls. In the corner of JVCC, a clock displays the current time in UTC (Coordinated Universal Time), which is used as the standard time for the CDC schedule. The links of the individual rooms automatically appear 10 minutes before the respective schedules as if the door of each room opens 10 minutes before the program starts. The backend of the automation is a JavaScript which contains the conference data and reduces the communications with and demands on the web server once the first loading is completed. JVCC also shows **Twitter** messages from the Committee which are automatically updated in real-time. Please consider this Twitter as the board typically located next to the registration desk in previous CDCs.

Unlike the in-person conference where people receive a printed program book, the virtual CDC provides an electronic version called the **Live Program**. Accessible from the JVCC, the Live Program is the service in which the participants can download the **Proceedings Zip** (previously distributed via a USB memory stick), see the conference program, and obtain the published paper files as well as presentation slides. While participants can watch the pre-recorded presentations in the Live Program, the Committee encourages attending the real-time sessions on time and participating in Q&A with the presenters during and after their video presentations. The Live Program also provides the Zoom links to the sessions to serve a backup to the JVCC. Participants should not confuse the Live Program with the **Online Program**. The latter is what everyone (even people who did not register) can access from PaperPlaza, which is typically used for planning before the conference using the My Program feature.

If help is needed, please visit the **Help Desk** in the JVCC, which is equivalent to the registration desk in prior CDCs. The Help Desk is run by **Slack**, which is a text-based communicator. First-time visitors need to register to use Slack. Once registered, anyone can ask open questions to the Help Desk, and send text messages to other registered users privately (which is called Direct Message in Slack).

A common occurrence in past CDCs is people sitting down and having discussions with their colleagues in a hallway or lobby. In CDC 2020, this interaction is implemented in a virtual way. Participants can arrange private meetings with their colleagues via email, text, or conference Slack (using Direct Message) by simply saying, for example, "Hey, let's meet in the Discussion Room at 16:00 UTC." **Discussion Room** in the form of a single Zoom link is located in the center of JVCC. Once the Discussion Room is entered, a host is waiting for your request for a private room. You can wait until your other colleagues enter the room, and when your group becomes ready, simply ask (using the chat box or your microphone) the host to assign a private room to your group. In the private room, you can discuss with your colleague using your camera and microphone, and you can even share your computer screen.

A major appeal of in-person conferences is meeting new people and making friends. In CDC 2020, such informal interactions occur by visiting the **Meeting Place**, which uses **Spatial.chat**, a digital platform in which participants are represented by their avatars in a virtual space. By controlling the avatars using a computer mouse, people can move in the virtual space, meet people, and chat using their cameras and microphones. Your voice can be heard only by the people near you. Therefore, if you find someone in the Meeting Place who you already know, you should "approach" him/her (by moving your avatar) to say hello. If you want to make a new friend, move yourself to the area with the sign "I want to meet new people." The etiquette is to use your Full Name in the Meeting Place and turn your camera on.

CDC 2020 has all of the traditional events including the Welcome Reception, Newcomer's Reception, Women in Control Meeting, IEEE Young Professional Meet-Up, Meet the Faculty Candidate Poster Session, CSS Awards Ceremony, and Farewell Reception. Please look for their time and location in the CDC homepage. Each event uses the virtualization technology most suited for the type of event.

The JVCC has **virtual booths** for the sponsors. Feel free to stop by their information pages and meet and chat with their representatives. The JVCC also has a link to **CDCTV**, which provides videos of various events and activities of the conference.

We look forward to an engaging and memorable virtual CDC!

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KTO sincerely hopes to contribute to the meaningful work and excitement of the CDC 2020.
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ıat they require strong cooperation among industry, academia
ɔss-fertilization among many closely related disciplines.

Institute of Control, Robotics and Systems

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ICROS hosts the International Conference on Control, Automation and Systems (ICCAS) from 2001. ICCAS is typically attended by about 700 participants from about 30 countries. ICROS also publishes International Journal of Control, Automation and Systems (SCIE indexed). International Journal of Control, Automation and Systems was founded in 2003, and was indexed in SCIE from 2004. In 2019, it published 295 papers (3,200 pages) and had an impact factor of 2.733. All these activities of ICROS clearly show that ICROS and Korea are leading the automatic control activities in Asia.

ICROS is the Korean NMO(National Member Organization) of IFAC.

More information is at

ICROS: http://icros.org

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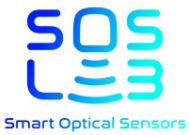

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2020 IEEE CSS Awards

Every year the IEEE and the Control Systems Society recognizes the outstanding contributions of individuals belonging to our technical community by giving a number of awards. The Society is very appreciative of the work that each associated (sub) committee devotes to the selections.

The 2020 IEEE CSS Awards Chair is Tryphon T. Georgiou, and the subcommittee chairs are:

- Alessandro Astolfi — Antonio Ruberti Young Researcher Prize
- Sirish Shah — IEEE Control Systems Society Transition to Practice Award
- Angeliki Pantazi — Control Systems Technology Award
- Malcolm C. Smith — George S. Axelby Outstanding Paper Award
- Jan Tommy Gravdahl — IEEE TCST Outstanding Paper Award
- Sonia Martinez — IEEE Control Systems Magazine Outstanding Paper Award
- George Pappas — IEEE Control Systems Letters Outstanding Paper Award
- Paulo Tabuada — IEEE TCNS Outstanding Paper Award
- Graziano Chesi — IEEE CDC Best Student Paper Award
- Thomas Parisini — Roberto Tempo Best CDC Paper Award
- Kevin Wise — IEEE CSS Award for Technical Excellence in Aerospace Control

More details about the IEEE CSS awards, the nomination process and past recipients can be found on the IEEE CSS web site http://ieeecss.org/awards/awards-program.

CSS Distinguished Member Awards

CSS also annually confers Distinguished Member Awards to selected members of our community who have made significant technical contributions as well as having provided outstanding long-term service to the Control Systems Society. The 2020 awards recognize Warren E. Dixon, Jonathan P. How, Faryar Jabbari, and Kirsten Morris for their significant technical contributions and outstanding long-term service to the Control Systems Society.

Outstanding Chapter Award

This award recognizes a chapter for demonstrating a high level of activity, innovation, or growth. The Vice-President of Member Activities, Magnus Egerstedt, was responsible for this award. The 2020 award went to the Thailand Chapter, chaired by David Banjerdpongchai, in recognition of a broad and strong technical program during 2020 promoting controls research and applications.

CDC Best Student Paper Award

This award recognizes excellence in a paper presented at the IEEE Conference on Decision and Control whose primary author is a student member of the IEEE, judged based on originality, clarity, and potential impact on practical applications or theoretical foundations of control. The finalists for the award are:

Finalist: Julian Berberich
Advisor: Frank Allgöwer
Paper title: Robust Constraint Satisfaction in Data-Driven MPC
Paper co-authors: Julian Berberich, Johannes Köhler, Matthias A. Muller, Frank Allgöwer
Session: MoB15.5

Finalist: Adrian Hauswirth
Advisor: Andrew R. Teel
Paper title: On the Differentiability of Projected Trajectories and the Robust Convergence of Non-convex Anti-Windup Gradient Flows
Paper co-authors: Adrian Hauswirth, Florian Dörfler, Andrew R. Teel
Session: ThA09.6

Finalist: Mohammad Khosravi
Advisor: Roy S. Smith
Paper title: Convex Nonparametric Formulation for Identification of Gradient Flows
Paper co-authors: Mohammad Khosravi and Roy S. Smith
Session: TuA07.1

Finalist: Wei Xiao
Advisor: Christos G. Cassandras
Paper title: Feasibility-Guided Learning for Constrained Optimal Control Problems
Paper co-authors: Wei Xiao, Calin A. Belta and Christos G. Cassandras
Session: TuA13.2

The recipient of the 2020 CDC Best Student Paper award will be announced at the Awards Ceremony. Each remaining finalist will be recognized by an Outstanding Student Paper Award.

IEEE Control Systems Magazine Outstanding Paper Award

This award is given for an article or column published during the two calendar years prior to the year of the award and is based on impact and benefit to CSS members. The 2020 award recognizes Tomonori Sadamoto, Aranya Chakrabortty, Takayuki Ishizaki, and Jun-ichi Imura for "Dynamic Modeling, Stability, and Control of Power Systems with Distributed Energy Resources, " IEEE Control Systems Magazine, vol. 39, no. 2, pages 34-65, 2019.

IEEE Trans. on Control Systems Technology Outstanding Paper Award

This award is given for an outstanding paper published during the two calendar years prior to the year of the award, and is based on originality, relevance of the application, clarity of exposition, and demonstrated impact on control systems technology. The 2020 award recognizes Michele Cucuzzella, Sebastian Trip, Claudio De Persis, Xiaodong Cheng, Antonella Ferrara, and Arjan van der Schaft for "A Robust Consensus Algorithm for Current Sharing and Voltage Regulation in DC Microgrids", IEEE Transactions on Control Systems Technology, vol. 27, no. 4, pages 1583-1595, 2019.

IEEE Control Systems Letters Outstanding Paper Award

This award is given for an outstanding paper published in the IEEE Control Systems Letters during the two calendar years preceding the year of the award, based on originality, potential impact on the theoretical foundations of control, importance and practical significance in applications, and clarity. The 2020 award recognizes Giacomo Baggio, Valbhav Katewa, and Fabio Pasqualetti for "Data-Driven Minimum-Energy Controls for Linear Systems," IEEE Control Systems Letters, vol. 3, no. 3, pages 589-594, 2019.

George S. Axelby Outstanding Paper Award

This award is given for an outstanding paper published in the IEEE Transactions on Automatic Control during the two calendar years prior to the year of the award, and is based on originality, clarity, potential impact on the theoretical foundations of control, and practical significance in applications. The 2020 award recognizes Fulvio Forni and Rodolphe Sepulchre for "Differential Dissipativity Theory for Dominance Analysis," IEEE Transactions on Automatic Control, vol. 64, no. 6, pp. 2340-2351, 2019.

Transactions on Control of Network Systems Outstanding Paper Award

This award is given for a paper published during the two calendar years prior to the year of the award and is based on originality, potential impact on the foundations on network systems, importance and practical significance in applications, and clarity. No award was given in 2020.

Roberto Tempo Best IEEE CDC Paper Award

This award is given in honor of Roberto Tempo, the 44th President of CSS. This award recognizes the best paper from the previous year's CDC based on originality, clarity of writing, and potential impact on any aspect of control theory, technology, or implementation. The 2020 award recognizes Tommaso Menara, Giacomo Baggio, Danielle S. Bassett, and Fabio Pasqualetti for "A Framework to Control Functional Connectivity in the Human Brain," Proceedings of the 58th IEEE Conference on Decision and Control, Nice, France, pages 4697-4704, 2019. doi: 10.1109/CDC40024.2019.9029223.

IEEE CSS Award for Technical Excellence in Aerospace Control

This award recognizes a person or team that performed an aerospace control engineering activity that demonstrates excellence and significant results with demonstrated impact. The 2020 award recognizes Maruthi Akella "for significant contributions to learning and adaptive control for aerospace applications."

Control Systems Technology Award

This award recognizes outstanding contributions to control systems technology either in design and implementation, or in project management. This award can be conferred on an individual or a team. The 2020 award recognizes the team of Malcolm C. Smith, Will Hoult, and Panos Brezas "for the development of the McLaren 720S semi-active suspension control system."

IEEE CSS Transition to Practice Award

This award recognizes outstanding collaborative scientific interactions between industry and/or research laboratories and academic communities that transition basic controls and system theory to practical systems for the benefit of society at large. The 2020 award recognizes Guy Dumont for his "world-leading research in several areas including adaptive control, process control, and biomedical engineering, and its transfer to practical use in industry and society." This award comes with an invitation to deliver a plenary lecture at the IEEE Conference on Control Technology and Applications (CCTA) 2021.

Antonio Ruberti Young Researcher Prize

The Antonio Ruberti Young Researcher Prize recognizes outstanding achievement by a young researcher to the theory or application of systems and control. The 2020 award recognizes Ufuk Topku "for fundamental contributions to the verification and synthesis of nonlinear, hybrid and learning-enabled control systems with applications in autonomy."

Ufuk Topcu received a Ph.D. from the University of California at Berkeley in 2008. He was a postdoctoral scholar at the California Institute of Technology and was with the Department of Electrical and Systems Engineering at the University of Pennsylvania before joining Department of Aerospace Engineering and Engineering Mechanics at the University of Texas at Austin in 2015 where he is currently an associate professor. He was selected for the Young Investigator Research Program from the Air Force Office of Scientific Research in 2012 and for the Faculty Early Career Development Award from the National Science Foundation in 2017. His research focuses on the theoretical, algorithmic, and computational aspects of design and verification of autonomous systems through novel connections between formal methods, learning theory, and controls.

Hendrik W. Bode Lecture Prize

This prize recognizes distinguished contributions to control systems science or engineering. The recipient delivers a plenary lecture at the CDC, evaluating a significant contribution to control systems science or engineering. The 2020 prize recognizes Kristin Y. Pettersen for her contributions "to marine robotics across the gamut of basic research, engineering development and commercialization as well as all of her efforts in support of the field and the profession."

Kristin Y. Pettersen is a Professor in the Department of Engineering Cybernetics at the Norwegian University of Science and Technology (NTNU) where she has been a faculty member since 1996. She was Head of the Department from 2011 to 2013, Vice-Head of the Department from 2009 to 2011, and Director of the NTNU ICT Program of Robotics in from 2010 to 2013. She is Adjunct Professor at the Norwegian Defence Research Establishment (FFI). For 2013 to 2022, she is also Key Scientist at the CoE Centre for Autonomous Marine Operations and Systems (NTNU AMOS). She is a co-founder of the NTNU spin-off company Eelume AS, where she was the CEO from 2015 to 2016.

She received the M.Sc. and Ph.D. in Engineering Cybernetics at NTNU, Trondheim, Norway, in 1992 and 1996, respectively. She has published four books and more than 250 papers in international journals and refereed conferences. Her research interests are in nonlinear control of mechanical systems with applications to robotics, with a special emphasis on marine robotics and snake robotics. She was awarded the IEEE Transactions on Control Systems Technology Outstanding Paper Award in 2006 and 2017. She was a member of the Board of Governors of the IEEE Control Systems Society from 2012 to 2014 and is currently a member of both the IFAC Council and the EUCA Council. She has also held and holds several board positions in industrial and research companies. She was Program Chair of the IEEE Conference on Control Technology and Applications in 2018 and has served as Associate Editor for several international conferences. She has served as Associate Editor of IEEE Transactions on Control Systems Technology and IEEE Control Systems Magazine, and is currently Senior Editor of Transactions on Control Systems Technology. She is an IEEE CSS Distinguished Lecturer for 2019 to 2021, IEEE Fellow, member of the Norwegian Academy of Technological Sciences, and member of the Academy of the Royal Norwegian Society of Sciences and Letters.

IEEE Control Systems Award

This award recognizes outstanding contributions to control systems engineering, science, or technology. The 2020 award recognizes Anders Lindquist, Shanghai Jiao Tong University, "for contributions to optimal filtering, stochastic control, stochastic realization theory, and system identification."

Anders Lindquist received a PhD in Optimization and Systems Theory from the Royal Institute of Technology (KTH), Stockholm, Sweden in 1972. He joined the University of Kentucky as an Associate Professor of Mathematics in 1974, and was promoted to full Professor in 1980. He was appointed to the Chair of Optimization and Systems Theory at the Royal Institute of Technology in 1982 which is held until 2009. He was the Head of the Mathematics Department at the Royal Institute of Technology from 2000 to 2009, and was the Director of the Strategic Research Center for Industrial and Applied Mathematics (CIAM) from 2006 until 2016. Currently Anders Lindquist is Zhiyuan Chair Professor and a Qian Ren Scholar at the Shanghai Jiao Tong University and an Emeritus Professor at the Royal Institute of Technology.

He is a Member of the Royal Swedish Academy of Engineering Sciences, a Foreign Member of the Russian Academy of Natural Sciences, and a Foreign Member of the Chinese Academy of Sciences. Moreover, he is an Honorary Member the Hungarian Operations Research Society, a SIAM Fellow, an IFAC Fellow, and a Life Fellow of IEEE. Honors include the George S. Axelby Outstanding Paper Award of the IEEE Control Systems Society in 2003, the W.T. and Idalia Reid Prize in Mathematics from SIAM in 2009, and an Honorary Doctorate (Doctor Scientiarum Honoris Causa) from Technion, Haifa, in 2010. Lindquist is currently on the editorial boards of the Philosophical Transactions of the Royal Society A and EMS Surveys in Mathematical Sciences. He has served on many other editorial boards of journals, including SIAM Review; Journal of Mathematical Systems, Estimation, and Control (Communicating Editor); Systems and Control Letters; International Journal of Adaptive Control and Signal Processing; Acta Automatica Sinica; and the Chinese Journal of Mathematics, as well as book series, namely, Systems and Control: Foundations and Applications, Applied and Computational Control, Signals, and Circuits; and Progress in Systems and Control Theory. He has been a member of the steering committee for the biennial international symposia on the Mathematical Theory of Networks and Systems (MTNS) since 1983, and was its Chair from 1985 to 1987.

IEEE Fellows

The grade of Fellow recognizes unusual distinction in the profession and is conferred only by invitation of the IEEE Board of Directors on a person with an extraordinary record of accomplishments in any of the IEEE fields of interest. The accomplishments honored by the grade of Fellow contribute significantly to the advancement of engineering science and technology. In 2020, the below individuals were elected Fellows as evaluated by the Control Systems Society:

- **Antonella Ferrara**, for contributions to sliding mode control theory
- **Andrea Garulli**, for contributions to set membership identification and robust analysis of uncertain systems
- **Sonja Glavaski**, for leadership in energy systems2
- **Christoforos Hadjicostis**, for contributions to distributed and discrete event systems
- **Sandra Hirche**, for contributions to human-machine interaction and networked control
- **Kirsten Morris**, for contributions to control and estimator design for infinite-dimensional systems
- **Yasamin Mostofi**, for contributions to control and communications co-optimization in mobile sensor networks
- **Maria Prandini**, for contributions to stochastic, hybrid and distributed control systems theory
- **Sirish Shah**, for contributions to process and performance monitoring
- **Sarah Spurgeon**, for contributions to variable structure control and estimation
- **Jun Zhao**, for contributions to switched systems and dissipativity theory

In addition, Control Systems Society members who were elected IEEE Fellow based on evaluation by other societies are: **Zhongsheng Hou, Bin Jiang, Bradley Lehman, Shihua Li, Yun Li, Jianbo Lu, Claudio Melchiorri, and Yong Song**.

CDCs: Past, Present and Future

The annual IEEE Conference on Decision and Control (CDC) is internationally recognized as the premiere scientific and engineering conference dedicated to the advancement of the theory and practice of systems and control. It brings together an international community of experts to discuss the state-of-the-art, new research results, perspectives of future developments, and innovative applications relevant to decision making, control, automation, and related areas. The CDC is hosted by the IEEE Control Systems Society (CSS) and is organized in cooperation with the Society for Industrial and Applied Mathematics (SIAM), and the Japanese Society for Instrument and Control Engineers (SICE). Below is the complete list of CDCs (including the next one) with titles, chairs and locations. The proceedings of all past conferences can be found at the IEEE Library, 345 47th Street, New York, NY 10017.

60th IEEE Conference on Decision and Control
GC: Magnus Egerstedt, PC: Maria Prandini
Fairmont Hotel, Austin, Texas, USA
13-15 December, 2021

59th IEEE Conference on Decision and Control
GC: Richard D. Braatz and Chung Choo Chung, PC: Jay H. Lee and Luca Zaccarian
Jeju Island, Republic of Korea
14-18 December, 2020

58th IEEE Conference on Decision and Control
GC: Carlos Canudas-de-Wit, PC: Rodolphe Sepulchre
Palais des Congres et des Expositions Nice Acropolis, Nice, France, 11-13 December 2019

57th IEEE Conference on Decision and Control
GC: Andrew R. Teel, PC: Magnus Egerstedt
Fontainebleau Miami Beach, Miami Beach, FL, USA, 17-19 December 2018

56th IEEE Conference on Decision and Control
GCs: Richard Middleton, Dragan Nesic, PC: Mario Sznaier
Melbourne Convention Center, Melbourne, Australia, 12-15 December 2017

55th IEEE Conference on Decision and Control
GC: Alessandro Giua, PC: Francesco Bullo
ARIA Resort & Casino, Las Vegas, NV, USA
12-14 December 2016

54th IEEE Conference on Decision and Control
GC: Yoshito Ohta, PC: Mitsuji Sampei
Osaka International Convention Center
Osaka, Japan, 15-18 December 2015

53rd IEEE Conference on Decision and Control
GC: Faryar Jabbari, PC: Andrew R. Teel
J.W. Marriott Hotel, Los Angeles, CA, USA
15-17 December 2014

52nd IEEE Conference on Decision and Control
GC: Thomas Parisini, Roberto Tempo, PC: André L. Tits
Palazzo dei congress, Florence, Italy
10-13 December 2013

51st IEEE Conference on Decision and Control
GC: Jay A. Farrell, PC: Maria Elena Valcher
Grand Wailea, Maui, Hawaii
10-13 December 2012

Joint 50th IEEE Conference on Decision and Control and European Control Conference
GC: Edwin K.P. Chong, PC: Marios M. Polycarpou
Hilton Orlando Bonnet Creek, Orlando, Florida
12-15 December 2011

49th IEEE Conference on Decision and Control
GC: Mark W. Spong, PC: Fathi Ghorbel
Hilton Atlanta, Atlanta, GA, 15-17 December, 2010

Joint 48th IEEE Conference on Decision and Control Chinese Control Conference
GC: John Bailieul and Lei Guo, PC: Faryar Jabbari and Daizhan Cheng
Shanghai International Convention Center, Shanghai, China, 16-18 December, 2009

47th IEEE Conference on Decision and Control
GC: Chaouki Abdallah, PC: Thomas Parisini
Fiesta American Grand Coral, Cancun, Mexico
9-12 December, 2008

46th IEEE Conference on Decision and Control
GC: David Castañón, PC: Jim Spall
Hilton New Orleans Riverside, New Orleans, LA
12-14 December 2007

45th IEEE Conference on Decision and Control
GC: Pradeep Misra, PC: Rick Middleton
Manchester Grand Hyatt, San Diego, CA
13-15 December 2006

Joint 44th Conference on Decision and Control, and 2005 European Control Conference
GC: Eduardo Camacho, PC: Roberto Tempo
Melia Seville, Seville, Spain
12-15 December 2005

43rd IEEE Conference on Decision and Control
GC: Christos Cassandras, PC: Wei-bo Gong
The Atlantis, Paradise Islands, The Bahamas
14-17 December 2004

42nd IEEE Conference on Decision and Control
GC: Frank Lewis, PC: Chaouki Abdallah
Hyatt Regency Maui, Maui, HI
9-12 December 2003

41st IEEE Conference on Decision and Control
GC: Umit Ozguner, PC: Kenneth Loparo
The Venetian Hotel, Las Vegas, NV
10-13 December 2002

40th IEEE Conference on Decision and Control
GC: Theodore E. Djaferis, PC: Kevin M. Passino
Hyatt Regency Grand Cypress, Orlando, FL
4-7 December 2001

39th IEEE Conference on Decision and Control
GC: Robert R. Bitmead, PC: Cheryl B. Schrader
Sydney Convention and Exhibition Centre, Sydney, NSW Australia, 12-15 December 2000

38th IEEE Conference on Decision and Control
GC: Edward W. Kamen, PC: Christos Cassandras
Crowne Plaza Hotel and Resort, Phoenix, AZ
7-10 December 1999

37th IEEE Conference on Decision and Control
GC: J. Douglas Birdwell, PC: David Castañón
Hyatt Regency Westshore, Tampa FL
16-18 December 1998

36th IEEE Conference on Decision and Control
GC: Anthony Michel, PC: Theodore E. Djaferis
Hyatt Regency San Diego, San Diego, CA,
10-12 December 1997

35th IEEE Conference on Decision and Control
GC: Hidenori Kimura
Co-PCs: Katsuhisa Furuta, J. Douglas Birdwell
Portopia Hotel and International Conference Center, Kobe, Japan, 11-13 December 1996

34th IEEE Conference on Decision and Control
GC: Panos J. Antsaklis, PC: Edward W. Kamen
New Orleans Hilton Riverside, New Orleans, LA
13-15 December 1995

33rd IEEE Conference on Decision and Control
GC: Michael K. Masten, PC: N. Harris McClamroch
Buena Vista Palace, Lake Buena Vista, FL
14-16 December 1994

32nd IEEE Conference on Decision and Control
GC: Raymond A. DeCarlo, PC: Peter Ramadge
Marriott Rivercenter, San Antonio, TX
15-17 December 1993

31st IEEE Conference on Decision and Control
GC: Tamer Basar, PC: Sergio Verdu
Westin La Paloma, Tucson, AZ
16-18 December 1992

30th IEEE Conference on Decision and Control
GC: Derek Atherton, PC: Panos J. Antsaklis
Metropole Hotel, Brighton, ENGLAND
11-13 December 1991

29th IEEE Conference on Decision and Control
GC: Charles J. Herget, PC: Raymond A. DeCarlo
Hilton Hawaiian Village, Honolulu, HI
5-7 December 1990

28th IEEE Conference on Decision and Control
GC: Leonard Shaw, PC: Tamer Basar
Hyatt Regency Tampa Hotel, Tampa, FL
13-15 December 1989

27th IEEE Conference on Decision and Control
GC: Michael P. Polis, PC: William E. Schmitendorf
Hyatt Regency Austin on Town Lake, Austin, TX
7-9 December 1988

26th IEEE Conference on Decision and Control
GC: William S. Levine, PC: John Baillieul
Westin Century-Plaza Hotel, Los Angeles, CA
9-11 December 1987

25th IEEE Conference on Decision and Control
GC: Anthony Ephremides and Spyros Tzafestas, PC: H. Vincent Poor
Atheneum Intercontinental Hotel, Athens, GREECE, 10-12 December 1986

24th IEEE Conference on Decision and Control
GC: Gene F. Franklin, PC: Anthony N. Michel
Bonaventure Hotel & Spa, Ft. Lauderdale, FL
11-13 December 1985

23rd IEEE Conference on Decision and Control
GC: Abraham H. Haddad, PC: Michael P. Polis
Las Vegas Hilton, Las Vegas, NV
12-14 December 1984

22nd IEEE Conference on Decision and Control
GC: James L. Melsa, PC: Steven I. Marcus
Marriott Hotel, San Antonio, TX
14-16 December 1983

21st IEEE Conference on Decision and Control
GC: Alexander H. Levis, PC: William S. Levine
Holiday Inn - International Drive, Orlando, FL
8-10 December 1982

20th IEEE Conference on Decision and Control
including the Symposium on Adaptive Processes
GC: William R. Perkins, PC: Abraham H. Haddad, SC: Kumpati S. Narendra
Vacation Village Hotel, San Diego, CA
16-18 December 1981

19th IEEE Conference on Decision and Control
including the Symposium on Adaptive Processes
GC: Pierre R. Belanger, PC: David L. Kleinman, SC: Richard V. Monopoli
The Regent Hotel, Albuquerque, NM
10-12 December 1980

18th IEEE Conference on Decision and Control
including the Symposium on Adaptive Processes
GC: Stephen Kahne, PC: Alexander H. Levis, SC: Yaakov Bar-Shalom
Galt Ocean Mile Hotel, Ft. Lauderdale, FL
12-14 December 1979

1978 IEEE Conference on Decision and Control
including the 17th Symposium on Adaptive Processes
GC: Robert E. Larson, PC: Alan S. Willsky, SC: Jerry M. Mendel
Islandia Hyatt House Hotel, San Diego, CA
10-12 January 1979

1977 IEEE Conference on Decision and Control
including the 16th Symposium on Adaptive Processes
GC: K. S. Fu, PC: H. Sorenson, SC: T. Pavlidis
Fairmont Hotel, New Orleans, LA
7-9 December 1977

1976 IEEE Conference on Decision and Control
including the 15th Symposium on Adaptive Processes
GC: M. Athans, PC: E. R. Barnes, SC: T. Pavlidis
Sheraton-Sand Key Hotel, Clearwater, FL
1-3 December 1976

1975 IEEE Conference on Decision and Control
including the 14th Symposium on Adaptive Processes
GC: J. B. Cruz, Jr., PC: J. B. Pearson, SC: G. Stein
Hyatt Regency Houston, Houston, TX
10-12 December 1975

1974 IEEE Conference on Decision and Control
including the 13th Symposium on Adaptive Processes
GC: Elliot Axelband, PC: Stephen Kahne, SC: David P. Lindorff
Del Webb's Towne House, Phoenix, AZ
20-22 November 1974

1973 IEEE Conference on Decision and Control
including the 12th Symposium on Adaptive Processes
GC: J. S. Meditch, PC: D. G. Luenberger, SC: L. A. Gerhardt
Sheraton-Harbor Island Hotel, San Diego, CA
5-7 December 1973

1972 IEEE Conference on Decision and Control
including the 11th Symposium on Adaptive Processes
GC: J. M. Mendel, PC: Y. C. Ho, SC: G. N. Saridis
Fontainebleau Motor Hotel, New Orleans, LA
13-15 December 1972

1971 IEEE Conference on Decision and Control
including the 10th Symposium on Adaptive Processes
GC: J. T. Tou, PC: S. K. Mitter, SC: J. M. Mendel
Americana Hotel, Miami Beach, FL
15-17 December 1971

1970 Symposium on Adaptive Processes (9th)
Decision and Control
GC, PC: D. J. Lainiotis
University of Texas at Austin, Austin, TX
7-9 December 1970

IEEE Symposium on Adaptive Processes
GC: J. B. Lewis, PC: G. J. McMurty
Pennsylvania State University, PA
17-19 November 1969

IEEE Symposium on Adaptive Processes
GC, PC: J. M. Mendel
UCLA, Los Angeles, CA
16-18 December 1968

Symposium on Adaptive Processes; part of NEC
GC: F. M. Waltz, PC: P. E. Mayes
International Amphitheater, Chicago, IL
23-25 October 1967

Symposium on Adaptive Processes; part of NEC
GC: F. N. Bailey, PC: J. C. Hancock
McCormick Place, Chicago, IL
3-5 October 1966

Symposium on Adaptive Processes; part of NEC
GC: E. C. Jones, Jr., PC: G. Brown
McCormick Place, Chicago, IL
25-27 October 1965

Symposium on Adaptive Processes; part of NEC
GC: F. J. Mullin
McCormick Place, Chicago, IL
19-21 October 1964

Symposium on Adaptive Processes; part of NEC
GC: L. Kanal
McCormick Place, Chicago, IL
28-29 October 1963

Discrete Adaptive Processes Symposium and Panel Discussion (IEEE); part of 3rd JACC
GC: J. Sklansky
New York University, New York City, NY
29 June 1962

Program at a Glance

CDC 2020 Technical Program Monday December 14, 2020

Track 1	Track 2	Track 3	Track 4	Track 5	Track 6	Track 7	Track 8	Track 9	Track 10	Track 11	Track 12	Track 13	Track 14	Track 15	Track 16	Track 17
13:00-15:00 MoA01 Model Reduction by Moment Matching: Beyond Linearity - a Review of the Last 10 Years	13:00-15:00 MoA02 Energy Systems	13:00-15:00 MoA03 Discrete Event Systems	13:00-15:00 MoA04 Adaptive Control	13:00-15:00 MoA05 Unmanned Aerial Vehicles	13:00-15:00 MoA06 Traffic Control	13:00-15:00 MoA07 Identification I	13:00-15:00 MoA08 Game Theory I	13:00-15:00 MoA09 Optimization I	13:00-15:00 MoA10 Optimal Control I	13:00-15:00 MoA11 Analysis and Control of Large-Scale Autonomous Networks I	13:00-15:00 MoA12 Agents-Based Systems	13:00-15:00 MoA13 Learning for Control	13:00-15:00 MoA14 Distributed Parameter Systems I	13:00-15:00 MoA15 Predictive Control for Nonlinear Systems	13:00-15:00 MoA16 Nonlinear Control Design	13:00-15:00 MoA17 Control Barrier Functions

15:10-16:10 MoP1

Embedded Convex Optimization for Control

Track 1	Track 2	Track 3	Track 4	Track 5	Track 6	Track 7	Track 8	Track 9	Track 10	Track 11	Track 12	Track 13	Track 14	Track 15	Track 16
16:15-17:35 MoB01 Modelling	16:15-17:30 MoB02 Power Converters	16:15-17:30 MoB03 Formal Methods	16:15-17:30 MoB04 Robust Control I	16:15-17:30 MoB05 Mechatronics	16:15-17:30 MoB06 Locomotion	16:15-17:30 MoB07 Identification II	16:15-17:30 MoB08 Mean Field Games	16:15-17:30 MoB09 Optimization II	16:15-17:30 MoB10 Optimal Control II	16:15-17:30 MoB11 Control and Dynamics on Complex Network Systems	16:15-17:30 MoB12 Advanced Optimization Methods in Complex Systems	16:15-17:30 MoB13 Statistical Learning	16:15-17:30 MoB14 Distributed Parameter Systems II	16:15-17:30 MoB15 Predictive Control for Linear Systems I	16:15-17:30 MoB16 Lyapunov Methods

CDC 2020 Technical Program Tuesday December 15, 2020

Track 1	Track 2	Track 3	Track 4	Track 5	Track 6	Track 7	Track 8	Track 9	Track 10	Track 11	Track 12	Track 13	Track 14	Track 15	Track 16	Track 17
13:00-15:00 TuA01 Autonomous Vehicles State Estimation for Navigation Purposes	13:00-15:00 TuA02 Smart Grid	13:00-15:00 TuA03 Temporal Logic Specifications	13:00-15:00 TuA04 Robust Adaptive Control	13:00-15:00 TuA05 Spacecraft and Attitude Dynamics	13:00-15:00 TuA06 Autonomous Robots	13:00-15:00 TuA07 Nonlinear Systems Identification	13:00-15:00 TuA08 Game Theory II	13:00-15:00 TuA09 Optimization III	13:00-15:00 TuA10 Stochastic Optimal Control I	13:00-15:00 TuA11 Analysis and Control of Large-Scale Autonomous Networks II	13:00-15:00 TuA12 Networked Control Systems I	13:00-15:00 TuA13 Reinforcement Learning for Optimal and Constrained Control	13:00-15:00 TuA14 Delay Systems		13:00-15:00 TuA16 Nonlinear Contraction	13:00-15:00 TuA17 Theory and Applications of Control Barrier Functions

15:10-16:10 TuSP1	15:10-16:10 TuSP2
Taming Large Scale Control Problems with Compositional and Hierarchical Approaches	Structural Analysis: The Control Language to Understand Mechanisms

16:15-17:35 TuB01	16:15-17:30 TuB02	16:15-17:30 TuB03	16:15-17:30 TuB04	16:15-17:30 TuB05	16:15-17:30 TuB06	16:15-17:30 TuB07	16:15-17:30 TuB08	16:15-17:30 TuB09	16:15-17:30 TuB10	16:15-17:30 TuB11	16:15-17:30 TuB12	16:15-17:30 TuB13	16:15-17:30 TuB14	16:15-17:30 TuB15	16:15-17:30 TuB16	16:15-17:30 TuB17
Testing	Power Systems I	Formal Methods in Control	Robust Control II	Neural Networks	Randomized Algorithms	Identification for Control	Game Equilibrium Seeking	Recent Advances in Distributed Optimization Algorithms	Optimal Control III	Recent Advances in Networked Systems	Sensor Networks	Learning-Based Control I	Linear Delay Systems	Predictive Control for Linear Systems II	LMI-Based Lyapunov Methods	Pricing and Portfolio

CDC 2020 Technical Program Wednesday December 16, 2020

Track 1	Track 2	Track 3	Track 4	Track 5	Track 6	Track 7	Track 8	Track 9	Track 10	Track 11	Track 12	Track 13	Track 14	Track 15	Track 16	Track 17
13:00-15:00 WeA01 Direct Transcription for Dynamic Optimization: A Tutorial and Case Study on Dual-Patient Ventilation During the COVID-19 Pandemic	13:00-15:00 WeA02 Resource Allocation	13:00-15:00 WeA03 Fault Detection and Handling	13:00-15:00 WeA04 Uncertain Systems	13:00-15:00 WeA05 Formation Control I	13:00-15:00 WeA06 Platooning and Intersections	13:00-15:00 WeA07 Estimation	13:00-15:00 WeA08 Kalman Filtering	13:00-15:00 WeA09 Optimization Algorithms I	13:00-15:00 WeA10 Stochastic Optimal Control II	13:00-15:00 WeA11 Analysis and Control of Large-Scale Autonomous Networks III	13:00-15:00 WeA12 Networked Control Systems II	13:00-15:00 WeA13 Inference and Prediction Using Machine Learning		13:00-15:00 WeA15 Cyber-Physical System Security	13:00-15:00 WeA16 Switched Systems	13:00-15:00 WeA17 Constrained Control

15:10-16:10 WeSP1	15:10-16:10 WeSP2
Glocal (Global/Local) Control: Theoretical Challenges to Practice	Learning-Based Planning and Control: Opportunities and Challenges

16:15-17:35 WeB01	16:15-17:30 WeB02	16:15-17:30 WeB03	16:15-17:30 WeB04	16:15-17:30 WeB05	16:15-17:30 WeB06	16:15-17:30 WeB07	16:15-17:30 WeB08	16:15-17:30 WeB09	16:15-17:30 WeB10	16:15-17:30 WeB11	16:15-17:30 WeB12	16:15-17:30 WeB13	16:15-17:30 WeB14	16:15-17:30 WeB15	16:15-17:30 WeB16	16:15-17:30 WeB17
Data & Forecasting	Power Systems II	Healthcare and Medical Systems	Model Reduction	Problems in Machine Learning	Estimation, Control, and Optimization of Automotive Systems	Advances on Finite-Time Control and Consensus	Game Theory and Learning	Optimization Algorithms II	Markov Processes I	Distributed Optimization and Learning for Networked Systems I	Social Dynamics I	Learning-Based Control II	Iterative Learning Control	Cyber-Physical Security	Switched Linear Systems	Quantum Information and Control

CDC 2020 Technical Program Thursday December 17, 2020

Track 1	Track 2	Track 3	Track 4	Track 5	Track 6	Track 7	Track 8	Track 9	Track 10	Track 11	Track 12	Track 13	Track 14	Track 15	Track 16	Track 17
13:00-15:00 ThA01 Risk-Aware Control and Game Theory in Engineering	13:00-15:00 ThA02 Biological Systems I	13:00-15:00 ThA03 LTV and LPV Systems	13:00-15:00 ThA04 Sliding Mode Control	13:00-15:00 ThA05 Formation Control II	13:00-15:00 ThA06 Path Planning	13:00-15:00 ThA07 Robotics	13:00-15:00 ThA08 Observers for Nonlinear Systems I	13:00-15:00 ThA09 Constrained Optimization	13:00-15:00 ThA10 Stochastic Systems	13:00-15:00 ThA11 Estimation Over Networks	13:00-15:00 ThA12 Distributed Control I		13:00-15:00 ThA14 Estimation and Control of PDE Systems I	13:00-15:00 ThA15 Security, Safety and Resilience of Control Systems	13:00-15:00 ThA16 Monotone Systems and Invariance	13:00-15:00 ThA17 Output Regulation

15:10-16:10 ThP1 Snake Robots

Track 1	Track 2	Track 3	Track 4	Track 5	Track 6	Track 7	Track 8	Track 9	Track 10	Track 11	Track 12	Track 13	Track 14	Track 15	Track 16
16:15-17:35 ThB01 Estimation & Mitigation	16:15-17:30 ThB02 Hybrid Systems in Biology and Medicine	16:15-17:30 ThB03 Periodic Systems	16:15-17:30 ThB04 Large-Scale Optimization for Machine Learning I	16:15-17:30 ThB05 Flight Control	16:15-17:30 ThB06 Cooperative Control of Multi-Agent Systems	16:15-17:30 ThB07 Data-Driven Approaches I	16:15-17:30 ThB08 Filtering	16:15-17:30 ThB09 Optimization Algorithms III	16:15-17:30 ThB10 Markov Processes II	16:15-17:30 ThB11 Distributed Optimization and Learning for Networked Systems II	16:15-17:30 ThB12 Social Dynamics II	16:15-17:30 ThB13 Learning-Based Control III	16:15-17:30 ThB14 Event-Triggered Control I	16:15-17:30 ThB15 Attack Detection	16:15-17:30 ThB16 Port-Hamiltonian Systems

CDC 2020 Technical Program Friday December 18, 2020

Track 1	Track 2	Track 3	Track 4	Track 5	Track 6	Track 7	Track 8	Track 9	Track 10	Track 11	Track 12	Track 13	Track 14	Track 15	Track 16	Track 17
13:00-15:00 FrA01 Monotone Systems Theory for Reachability and Safety	13:00-15:00 FrA02 Biological Systems II	13:00-15:00 FrA03 Linear Systems	13:00-15:00 FrA04 Sampled-Data and Intermittent Control	13:00-15:00 FrA05 Underwater and Maritime Control	13:00-15:00 FrA06 Nonholonomic Systems	13:00-15:00 FrA07 Cooperative Control	13:00-15:00 FrA08 Observers for Nonlinear Systems II	13:00-15:00 FrA09 Encrypted Control and Optimization	13:00-15:00 FrA10 Control Applications	13:00-15:00 FrA11 Network Analysis and Control	13:00-15:00 FrA12 Distributed Control II		13:00-15:00 FrA14 Estimation and Control of PDE Systems II	13:00-15:00 FrA15 Resilient Control Systems	13:00-15:00 FrA16 Hybrid Systems	13:00-15:00 FrA17 Synchronization

Track 1	Track 2	Track 3	Track 4	Track 5	Track 6	Track 7	Track 8	Track 9	Track 10	Track 11	Track 12	Track 13	Track 14	Track 15	Track 16
16:15-17:35 FrB01 Vaccines	16:15-17:30 FrB02 Applications of Control Theory in Systems Biology	16:15-17:30 FrB03 PID Controller Design	16:15-17:30 FrB04 Large-Scale Optimization for Machine Learning II	16:15-17:30 FrB05 Autonomous Systems	16:15-17:30 FrB06 Decentralized Control	16:15-17:30 FrB07 Data-Driven Approaches II	16:15-17:30 FrB08 Observers for Linear Systems	16:15-17:30 FrB09 Optimization Algorithms IV	16:15-17:30 FrB10 Fuzzy Systems	16:15-17:30 FrB11 Distributed Optimization and Learning for Networked Systems III	16:15-17:30 FrB12 Neuronal Systems	16:15-17:30 FrB13 Learning-Based Control IV	16:15-17:30 FrB14 Event-Triggered Control II	16:15-17:30 FrB15 Control Systems Privacy	16:15-17:30 FrB16 Input-To-State Stability

Technical Program

Technical Program for Monday December 14, 2020

MoA01 Coordinated Universal Time (UTC)

Model Reduction by Moment Matching: Beyond Linearity - a Review of the Last 10 Years (Tutorial Session)

Chair: Scarciotti, Giordano — Imperial College London
Co-Chair: Astolfi, Alessandro — Imperial College & Univ. of Rome
Organizer: Astolfi, Alessandro — Imperial College & Univ. of Rome
Organizer: Scarciotti, Giordano — Imperial College London
Organizer: Simard, Joel David — Imperial College London
Organizer: Ringwood, John V. — NUI Maynooth, Ireland
Organizer: Faedo, Nicolás — Centre for Ocean Energy Research, Maynooth University

13:00-13:30 MoA01.1

Model Reduction by Moment Matching: Beyond Linearity - a Review of the Last 10 Years (I), pp. 1-16.

Astolfi, Alessandro — Imperial College & Univ. of Rome
Scarciotti, Giordano — Imperial College London
Simard, Joel David — Imperial College London
Ringwood, John V. — NUI Maynooth, Ireland
Faedo, Nicolás — Centre for Ocean Energy Research, Maynooth University

13:30-14:00 MoA01.2

*Playing with Moments: Time-Delay, Hybrid, Stochastic, Data-Driven and Beyond (I)**.

Scarciotti, Giordano — Imperial College London

14:00-14:30 MoA01.3

*Model Reduction in the Loewner Framework (I)**.

Simard, Joel David — Imperial College London

14:30-15:00 MoA01.4

*Application of Moment-Matching to Optimal Control of Wave Energy Conversion (I)**.

Ringwood, John V. — NUI Maynooth, Ireland
Faedo, Nicolás — NUI Maynooth, Ireland

MoA02 Coordinated Universal Time (UTC)

Energy Systems (Regular Session)

Chair: Ocampo-Martinez, Carlos — Universitat Politècnica De Catalunya (UPC)
Co-Chair: Fragoso, Marcelo — Lncc / Mct

13:00-13:15 MoA02.1

Universal Adaptive Stabilization Based Trend Filtering for Impending Battery Voltage Collapse Detection, pp. 17-22.

Alawnah, Sameer — American University of Sharjah
Mukhopadhyay, Shayok — American University of Sharjah
Sagahyroon, Assim — American University of Sharjah

13:15-13:30 MoA02.2

Nonlinear Dynamical Analysis for an Ethanol Steam Reformer: A Singular Distributed Parameter System, pp. 23-29.

Reyero, Pedro — Universitat Politecnica De Catalunya
Ocampo-Martinez, Carlos — Universitat Politècnica De Catalunya (UPC)
Braatz, Richard D. — Massachusetts Institute of Technology

13:30-13:45 MoA02.3

Comparison of Centralized and Decentralized Approaches in Cooperative Coverage Problems with Energy-Constrained Agents, pp. 30-35.

Meng, Xiangyu — Louisiana State University
Sun, Xinmiao — University of Science and Technology Beijing
Cassandras, Christos G. — Boston University
Xu, Kaiyuan — Boston University

13:45-14:00 MoA02.4

Probabilistic Modeling of Thermal Grids Using Gaussian Processes, pp. 36-41.

Simonsson, Johan — Luleå University of Technology
Atta, Khalid — Luleå University of Technology
Birk, Wolfgang — Luleå University of Technology

14:00-14:15 MoA02.5

A Virtual Battery Model for Packetized Energy Management, pp. 42-48.

Duffaut Espinosa, Luis Augusto — University of Vermont
Khurram, Adil — University of Vermont
Almassalkhi, Mads — University of Vermont

14:15-14:30 MoA02.6

Modeling and Optimal Control of a Hydrogen Storage System for Wind Farm Output Power Smoothing, pp. 49-54.

Abdelghany, Muhammad Bakr — University of Sannio
Shehzad, Muhammad Faisal — University of Sannio
Liuzza, Davide — University of Sannio
Mariani, Valerio — Università Degli Studi Del Sannio
Glielmo, Luigi — University of Sannio

14:30-14:45 MoA02.7

Operational Valuation for Energy Storage under Multi-Stage Price Uncertainties, pp. 55-60.

Xu, Bolun — Columbia University
Korpas, Magnus — Norwegian University of Science and Technology
Botterud, Audun — MIT

14:45-15:00 MoA02.8

Numerical Method for Ergodic Optimal Control Problems of Switching Stochastic Differential Equations with Reflection, pp. 61-66.

Leite, Saul de Castro — Federal University of the ABC Region - UFABC
Fragoso, Marcelo — Lncc / Mct

MoA03 Coordinated Universal Time (UTC)

Discrete Event Systems (Regular Session)

Chair: Komenda, Jan — Czech Academy of Sciences
Co-Chair: Wisniewski, Rafal — Aalborg University

13:00-13:15 MoA03.1

Fault-Tolerant Control of Discrete-Event Systems with Controllability Failures, pp. 67-72.

Raman, Arun — University of Illinois at Urbana Champaign
Sreenivas, Ramavarapu S. — Univ. of Illinois

13:15-13:30 MoA03.2

Maximally Permissive Nonblocking Similarity Control of Nondeterministic Discrete Event Systems, pp. 73-78.

Li, Jinglun	Osaka Univ
Takai, Shigemasa	Osaka Univ

13:30-13:45 MoA03.3

Bounded Consistency of P-Time Event Graphs, pp. 79-85.

Zorzenon, Davide	Technische Universität Berlin
Komenda, Jan	Czech Academy of Sciences
Raisch, Joerg	Technical University Berlin

13:45-14:00 MoA03.4

Deceptive Labeling: Hypergames on Graphs for Stealthy Deception, pp. 86-91.

Kulkarni, Abhishek	Worcester Polytechnic Institute
Luo, Huan	Worcester Polytechnic Institute
Leslie, Nandi	U.S. Army Research Laboratory
Kamhoua, Charles	U.S. Army Research Laboratory
Fu, Jie	Worcester Polytechnic Institute

14:00-14:15 MoA03.5

Event-Driven Receding Horizon Control for Distributed Persistent Monitoring on Graphs, pp. 92-97.

Welikala, Shirantha	Boston University
Cassandras, Christos G.	Boston University

14:15-14:30 MoA03.6

Event-Triggered Dynamic Output Feedback Control for Discrete-Time Polytopic Linear Parameter-Varying Systems, pp. 98-103.

Saadabadi, Hamideh	TUHH
Werner, Herbert	Hamburg University of Technology

14:30-14:45 MoA03.7

A New Product Construction for the Diagnosability of Patterns in Time Petri Net, pp. 104-109.

Lubat, Éric	Laboratoire d'Analyse Et d'Architecture Des Systèmes (LAAS)
Dal Zilio, Silvano	Laboratoire d'Analyse Et d'Architecture Des Systèmes (LAAS)
Le Botlan, Didier	Laboratoire d'Analyse Et d'Architecture Des Systèmes (LAAS)
Pencole, Yannick	LAAS-CNRS, Université De Toulouse
Subias, Audine	LAAS-CNRS University of Toulouse

14:45-15:00 MoA03.8

Model Reduction of Linear Hybrid Systems, pp. 110-117.

Gosea, Ion Victor	Max Planck Institute for Dynamics of Complex Technical Systems
Petreczky, Mihaly	UMR CNRS 9189, Ecole Centrale De Lille
Leth, John	Aalborg University
Wisniewski, Rafal	Aalborg University
Antoulas, Athanasios C.	Rice Univ

MoA04 Coordinated Universal Time (UTC)

Adaptive Control (Regular Session)

Chair: Sandberg, Henrik	KTH Royal Institute of Technology
Co-Chair: Gaudio, Joseph E.	Aurora Flight Sciences, a Boeing Company

13:00-13:15 MoA04.1

Adaptive Control for Linearizable Systems Using On-Policy Reinforcement Learning, pp. 118-125.

Westenbroek, Tyler	University of California, Berkeley
Mazumdar, Eric	UC Berkeley
Fridovich-Keil, David	UC Berkeley
Prabhu, Valmik	University of California, Berkeley
Tomlin, Claire J.	UC Berkeley
Sastry, Shankar	Univ. of California at Berkeley

13:15-13:30 MoA04.2

An Adaptive Controller for a Class of Nonlinear Plants Based on Neural Networks and Convex Parameterization, pp. 126-131.

Patkar, Abhishek	Massachusetts Institute of Technology
Annaswamy, Anuradha M.	Massachusetts Inst. of Tech

13:30-13:45 MoA04.3

Optimal Adaptive Regulation of Uncertain Linear Continuous-Time Systems with State and Input Delays, pp. 132-137.

Moghadam, Rohollah	Arkansas Tech University
Jagannathan, Sarangapani	Missouri Univ of Science & Tech

13:45-14:00 MoA04.4

A Class of High Order Tuners for Adaptive Systems, pp. 138-143.

Gaudio, Joseph E.	Aurora Flight Sciences, a Boeing Company
Annaswamy, Anuradha M.	Massachusetts Inst. of Tech
Bolender, Michael	Air Force Research Laboratory
Lavretsky, Eugene	The Boeing Co
Gibson, Travis E.	Harvard Medical School

14:00-14:15 MoA04.5

On a Phase Transition of Regret in Linear Quadratic Control: The Memoryless Case, pp. 144-149.

Ziemann, Ingvar	KTH Royal Institute of Technology
Sandberg, Henrik	KTH Royal Institute of Technology

14:15-14:30 MoA04.6

Nash Equilibrium Seeking with Arbitrarily Delayed Player Actions, pp. 150-155.

Oliveira, Tiago Roux	State University of Rio De Janeiro
Rodrigues, Victor Hugo Pereira	State University of Rio De Janeiro (UERJ)
Krstic, Miroslav	University of California, San Diego
Basar, Tamer	Univ of Illinois, Urbana-Champaign

14:30-14:45 MoA04.7

Adaptive Boundary Control of Reaction-Diffusion PDEs with Unknown Input Delay, pp. 156-161.

Wang, Shanshan	Donghua University
Qi, Jie	Donghua University
Diagne, Mamadou	Rensselaer Polytechnic Institute

14:45-15:00 MoA04.8

Model-Based Reinforcement Learning for Optimal Feedback Control of Switched Systems, pp. 162-167.

Greene, Max L.	University of Florida
Abudia, Moad	Oklahoma State University
Kamalapurkar, Rushikesh	Oklahoma State University
Dixon, Warren E.	University of Florida

MoA05	Coordinated Universal Time (UTC)
Unmanned Aerial Vehicles (Regular Session)	
Chair: Lee, Taeyoung	George Washington University
Co-Chair: Invernizzi, Davide	Politecnico Di Milano

13:00-13:15 MoA05.1

Anti-Windup Design for Directionality Compensation with Application to Quadrotor UAVs, pp. 168-173.

Ghignoni, Pietro	Politecnico Di Milano
Buratti, Nicolò	Politecnico Di Milano
Invernizzi, Davide	Politecnico Di Milano
Lovera, Marco	Politecnico Di Milano

13:15-13:30 MoA05.2

Air-To-Air Automatic Landing of Unmanned Aerial Vehicles: A Quasi Time-Optimal Hybrid Strategy, pp. 174-179.

Gozzini, Giovanni	Politecnico Di Milano
Invernizzi, Davide	Politecnico Di Milano
Panza, Simone	Politecnico Di Milano
Giurato, Mattia	Politecnico Di Milano
Lovera, Marco	Politecnico Di Milano

13:30-13:45 MoA05.3

Co-Regulated Information Consensus with Delays for Multi-Agent UAS, pp. 180-187.

Fernando, Warnakulasuriya Chandima	University of Nebraska - Lincoln
Detweiler, Carrick	University of Nebraska-Lincoln
Bradley, Justin	University of Nebraska

13:45-14:00 MoA05.4

Target Search and Tracking Using a Fleet of UAVs in Presence of Decoys and Obstacles, pp. 188-194.

Ibenthal, Julius	ONERA
Meyer, Luc	ONERA, Univ Paris Saclay
Piet-Lahanier, Helene	ONERA
Kieffer, Michel	CNRS - Univ Paris-Sud - CentraleSupelec

14:00-14:15 MoA05.5

Integral Reinforcement Learning-Based Multi-Robot Minimum Time-Energy Path Planning Subject to Collision Avoidance and Unknown Environmental Disturbances, pp. 195-200.

He, Chenyuan	University of Texas at Arlington
Wan, Yan	University of Texas at Arlington
Gu, Yixin	The University of Texas at Arlington
Lewis, Frank L.	University of Texas at Arlington

14:15-14:30 MoA05.6

Geometric Control and Experimental Validation for a Quadrotor UAV Transporting a Payload, pp. 201-207.

Yu, Beomyeol	Chungnam National University
Gamagedara, Kanishke	George Washington University
Kim, Seungkeun	Chungnam National University
Lee, Taeyoung	George Washington University
Suk, Jinyoung	Chungnam National University

14:30-14:45 MoA05.7

Beyond Reynolds: A Constraint-Driven Approach to Cluster Flocking, pp. 208-213.

Beaver, Logan E.	University of Delaware
Malikopoulos, Andreas A.	University of Delaware

14:45-15:00 MoA05.8

A Safety Constrained Control Framework for UAVs in GPS Denied Environment, pp. 214-219.

Wan, Wenbin	University of Illinois at Urbana–Champaign
Kim, Hunmin	University of Illinois Urbana-Champaign
Hovakimyan, Naira	University of Illinois at Urbana-Champaign
Sha, Lui	University of Illinois at Urbana Champaign
Voulgaris, Petros G.	Univ of Nevada, Reno

MoA06	Coordinated Universal Time (UTC)
Traffic Control (Regular Session)	
Chair: Pasqualetti, Fabio	University of California, Riverside
Co-Chair: Barreau, Matthieu	KTH

13:00-13:15 MoA06.1

Impact of Disturbances on Mixed Traffic Control with Autonomous Vehicles, pp. 220-225.

Drummond, Ross	University of Oxford
Zheng, Yang	Harvard University

13:15-13:30 MoA06.2

Leading Cruise Control in Mixed Traffic Flow, pp. 226-232.

Wang, Jiawei	Tsinghua University
Zheng, Yang	Harvard University
Chen, Chaoyi	Tsinghua University
Xu, Qing	Tsinghua University
Li, Keqiang	Tsinghua University, Beijing, China

13:30-13:45 MoA06.3

Dynamic Traffic Reconstruction Using Probe Vehicles, pp. 233-238.

Barreau, Matthieu	KTH
Selivanov, Anton	The University of Sheffield
Johansson, Karl H.	Royal Institute of Technology

13:45-14:00 MoA06.4

Open and Closed Loop Traffic Control by Connected Automated Vehicles, pp. 239-244.

Molnar, Tamas Gabor	University of Michigan
Upadhyay, Devesh	Ford
Hopka, Mike	Ford Motor Company
van Nieuwstadt, Michiel J.	Ford Research and Innovation Center
Orosz, Gabor	University of Michigan

14:00-14:15 MoA06.5

Ecological Velocity Planning through Signalized Intersections: A Deep Reinforcement Learning Approach, pp. 245-252.

Pozzi, Andrea	University of Pavia
Bae, Sangjae	University of California, Berkeley
Choi, Yongkeun	University of California, Berkeley
Borrelli, Francesco	Unversity of California at Berkeley
Raimondo, Davide Martino	Università Degli Studi Di Pavia
Moura, Scott	University of California, Berkeley

14:15-14:30 MoA06.6

Routing Apps May Cause Oscillatory Congestions in Traffic Networks, pp. 253-260.

Bianchin, Gianluca	University of California, Riverside
Pasqualetti, Fabio	University of California, Riverside

14:30-14:45 MoA06.7

Path Integral Control for Stochastic Dynamic Traffic Routing Problems, pp. 261-267.

Hibbard, Michael	University of Texas, Austin
Wasa, Yasuaki	Waseda University
Tanaka, Takashi	University of Texas at Austin

14:45-15:00 MoA06.8

The Impact of Autonomous Vehicles' Headway on the Social Delay of Traffic Networks, pp. 268-273.

Li, Ruolin	University of California, Berkeley
Mehr, Negar	University of Illinois Urbana-Champaign
Horowitz, Roberto	Univ. of California at Berkeley

MoA07 Coordinated Universal Time (UTC)

Identification I (Regular Session)

Chair: Ciolek, Marcin	Gdansk University of Technology, Faculty of Electronics, Telecommunications and Informatics
Co-Chair: Zorzi, Mattia	University of Padova

13:00-13:15 MoA07.1

Learning AR Factor Models, pp. 274-279.

Crescente, Francesca	University of Padova
Falconi, Lucia	University of Padova
Rozzi, Federica	University of Padova
Ferrante, Augusto	Universita' Di Padova
Zorzi, Mattia	University of Padova

13:15-13:30 MoA07.2

Image Compression by Means of the Multidimensional Circulant Covariance Extension Problem - Revisited, pp. 280-285.

Benciolini, Tommaso	University of Padova
Grigoletto, Tommaso	University of Padova
Zorzi, Mattia	University of Padova

13:30-13:45 MoA07.3

On the Preestimation Technique and Its Application to Identification of Nonstationary Systems, pp. 286-293.

Niedzwiecki, Maciej	Gdansk University of Technology
Gancza, Artur	Gdansk University of Technology, Faculty of Electronics Telecomm
Ciolek, Marcin	Gdansk University of Technology, Faculty of Electronics, Telecom

13:45-14:00 MoA07.4

A State and Output Sensitivity Controllability Approach for Structural Identifiability of Linear State Space Models, pp. 294-299.

Mendez-Blanco, Carlos Samuel	Eindhoven University of Technology
Ozkan, Leyla	Eindhoven University of Technology

14:00-14:15 MoA07.5

On the Influence of Ill-Conditioned Regression Matrix on Hyper-Parameter Estimators for Kernel-Based Regularization Methods, pp. 300-305.

Ju, Yue	The Chinese University of Hong Kong, Shenzhen, China
Chen, Tianshi	The Chinese University of Hong Kong, Shenzhen, China
Mu, Biqiang	Chinese Academy of Sciences
Ljung, Lennart	Linkoping Univ

14:15-14:30 MoA07.6

Towards Finite Sample Networked System Identification: A Cascade Network Example, pp. 306-311.

Moravej Khorasani, Masoud	Univesity of Melbourne
Weyer, Erik	Univ. of Melbourne

14:30-14:45 MoA07.7

Regularized Estimation with Variable Exponential Forgetting, pp. 312-318.

Dokoupil, Jakub	CEITEC, Brno University of Technology
Vaclavek, Pavel	Brno University of Technology

14:45-15:00 MoA07.8

A Numerically Stable Dynamic Mode Decomposition Algorithm for Nearly Defective Systems, pp. 319-324.

Thitsa, Makhin	Mercer University
Clouatre, Maison	Mercer University
Verriest, Erik I.	Georgia Inst. of Tech
Coogan, Samuel	Georgia Institute of Technology
Martin, Clyde F.	Texas Tech Univ

MoA08 Coordinated Universal Time (UTC)

Game Theory I (Regular Session)

Chair: Pasik-Duncan, Bozenna	Univ. of Kansas
Co-Chair: Zhou, Qingrui	Qian Xuesen Laboratory of Space Technology

13:00-13:15 MoA08.1

Distributed Optimization for Weighted Vertex Cover Via Heuristic Game Theoretic Learning, pp. 325-330.

Sun, Changhao	Qian Xuesen Laboratory of Space Technology, China Academy of Spa
Wang, Xiaochu	China Academy of Space Technology
Qiu, Huaxin	China Academy of Space Technology
Chen, Qian	University of Wisconsin Madison
Zhou, Qingrui	Qian Xuesen Laboratory of Space Technology

13:15-13:30 MoA08.2

Asymmetric Information Acquisition Games, pp. 331-336.

Singh, Vartika	IIT Bombay
Veeraruna, Kavitha	IIT Bombay, India

13:30-13:45 MoA08.3

Decentralized Fictitious Play with Voluntary Communication in Random Communication Networks, pp. 337-342.

Aydin, Sarper	Texas A&M University
Eksin, Ceyhun	Texas A&M University

13:45-14:00 MoA08.4

A Scalar Linear-Quadratic Two Player Stochastic Differential Game with a Rosenblatt Process Noise, pp. 343-347.

Duncan, Tyrone E.	Univ. of Kansas
Pasik-Duncan, Bozenna	Univ. of Kansas

14:00-14:15 MoA08.5

Model-Free Reinforcement Learning for Stochastic Stackelberg Security Games, pp. 348-353.

Mishra, Rajesh K	The University of Texas at Austin

Vasal, Deepanshu	University of Michigan, Ann Arbor
Vishwanath, Sriram	The University of Texas at Austin

14:15-14:30 MoA08.6

Information Extraction from a Strategic Sender Over a Noisy Channel, pp. 354-359.

Vora, Anuj	IIT Bombay
Kulkarni, Ankur A.	Indian Institute of Technology Bombay

14:30-14:45 MoA08.7

Stackelberg Strategy for Uncertain Markov Jump Delay Stochastic Systems, pp. 360-365.

Mukaidani, Hiroaki	Hiroshima University
Ramasamy, Saravanakumar	Hiroshima University
Xu, Hua	Univ. of Tsukuba
Zhuang, Weihua	University of Waterloo

14:45-15:00 MoA08.8

Policy Iteration for Linear Quadratic Games with Stochastic Parameters, pp. 366-371.

Gravell, Benjamin	The University of Texas at Dallas
Ganapathy, Karthik	The University of Texas at Dallas
Summers, Tyler H.	University of Texas at Dallas

MoA09 Coordinated Universal Time (UTC)

Optimization I (Regular Session)

Chair: Tatarenko, Tatiana	TU Darmstadt
Co-Chair: Regruto, Diego	Politecnico Di Torino

13:00-13:15 MoA09.1

Convergence Rate of a Penalty Method for Strongly Convex Problems with Linear Constraints, pp. 372-377.

Nedich, Angelia	Arizona State University
Tatarenko, Tatiana	TU Darmstadt

13:15-13:30 MoA09.2

Constrained Distributed Nonconvex Optimization Over Time-Varying Directed Graphs, pp. 378-383.

He, Zhiyu	Shanghai Jiao Tong University
He, Jianping	Shanghai Jiao Tong University
Chen, Cailian	Shanghai Jiao Tong University
Guan, Xin-Ping	Shanghai Jiao Tong University

13:30-13:45 MoA09.3

A Two-Step Pre-Processing for Semidefinite Programming, pp. 384-389.

Kungurtsev, Vyacheslav	Czech Technical University in Prague,
Marecek, Jakub	IBM Research

13:45-14:00 MoA09.4

To Beam or Not to Beam? Beamforming with Submodularity-Inspired Group Sparsity, pp. 390-395.

Anevlavis, Tzanis	University of California, Los Angeles
Bunton, Jonathan	University of California, Los Angeles
Parayil, Anjaly	Indian Institute of Science
George, Jemin	U.S. Army Research Laboratory
Tabuada, Paulo	University of California at Los Angeles

14:00-14:15 MoA09.5

Sparse Learning with Concave Regularization: Relaxation of the Irrepresentable Condition, pp. 396-401.

Cerone, Vito	Politecnico Di Torino
Fosson, Sophie	Politecnico Di Torino
Regruto, Diego	Politecnico Di Torino
Salam, Abdul	Politecnico Di Torino

14:15-14:30 MoA09.6

Lasso Formulation of the Shortest Path Problem, pp. 402-407.

Dong, Anqi	University of California, Irvine
Taghvaei, Amirhossein	University of California Irvine
Georgiou, Tryphon T.	University of California, Irvine

14:30-14:45 MoA09.7

Implicit Optimization: Models and Methods, pp. 408-415.

Travacca, Bertrand	UC BERKELEY
El Ghaoui, Laurent	Univ. of California at Berkeley
Moura, Scott	University of California, Berkeley

14:45-15:00 MoA09.8

Nonconvex Optimization on Data Manifold by Accelerated Curvature Transport, pp. 416-423.

Jonckheere, Edmond	University of Southern California
Krovi, Hari	Raytheon BBN Technologies
Rompokos, Athanasios A.	University of Southern California

MoA10 Coordinated Universal Time (UTC)

Optimal Control I (Regular Session)

Chair: Frankowska, Helene	CNRS and Sorbonne University, Campus Pierre Et Marie Curie
Co-Chair: Sanfelice, Ricardo G.	University of California at Santa Cruz

13:00-13:15 MoA10.1

Upper Bounds and Cost Evaluation in Dynamic Two-Player Zero-Sum Games, pp. 424-429.

J. Leudo, Santiago	University of California, Santa Cruz
Ferrante, Francesco	GIPSA-lab/CNRS and Université Grenoble Alpes
Sanfelice, Ricardo G.	University of California at Santa Cruz

13:15-13:30 MoA10.2

Approximately Optimal Controllers for Quantitative Two-Phase Reach-Avoid Problems on Nonlinear Systems, pp. 430-437.

Weber, Alexander	Munich University of Applied Sciences
Knoll, Alexander	Munich University of Applied Sciences

13:30-13:45 MoA10.3

A Time-Freezing Approach for Numerical Optimal Control of Nonsmooth Differential Equations with State Jumps, pp. 438-443.

Nurkanović, Armin	Siemens AG
Sartor, Tommaso	KU Leuven
Albrecht, Sebastian	Siemens AG
Diehl, Moritz	University of Freiburg

13:45-14:00 MoA10.4

Optimal Impulsive Control Problems Motivated by Mechanical Systems with Vibrations and Blockable DOFs, pp. 444-449.

Goncharova, Elena	Institute of System Dynamics and Control Theory of the Sb Ras

Staritsyn, Maxim	Faculty of Engineering, University of Porto
Lobo Pereira, Fernando	Porto University

14:00-14:15 MoA10.5

A Hopf-Lax Formula in Hamilton-Jacobi Analysis of Reach-Avoid Problems, pp. 450-455.

Lee, Donggun	University of California, Berkeley
Tomlin, Claire J.	UC Berkeley

14:15-14:30 MoA10.6

An Integral Penalty-Barrier Direct Transcription Method for Optimal Control, pp. 456-463.

Neuenhofen, Martin P.	Imperial College London
Kerrigan, Eric C.	Imperial College London

14:30-14:45 MoA10.7

Necessary Conditions of Optimality in the Gamkrelidze's Form for State Constrained Problems with Differential Inclusion, pp. 464-469.

Lobo Pereira, Fernando	Porto University
T. Khalil, Nathalie	Universidade Do Porto

14:45-15:00 MoA10.8

Mean-Field Optimal Control of Continuity Equations and Differential Inclusions, pp. 470-475.

Bonnet, Benoît	CNRS, Sorbonne Université
Frankowska, Helene	CNRS and Sorbonne University, Campus Pierre Et Marie Curie

MoA11 Coordinated Universal Time (UTC)

Analysis and Control of Large-Scale Autonomous Networks I (Invited Session)

Chair: Noroozi, Navid	Ludwig-Maximilians-Universität München
Co-Chair: Aghdam, Amir G.	Concordia University
Organizer: Noroozi, Navid	Ludwig-Maximilians-Universität München
Organizer: Lazar, Mircea	Eindhoven University of Technology
Organizer: Zamani, Majid	University of Colorado Boulder

13:00-13:15 MoA11.1

Compositional Construction of Abstractions for Infinite Networks of Switched Systems (I), pp. 476-481.

Sharifi, Maryam	Tehran University
Swikir, Abdalla	Technical University of Munich
Noroozi, Navid	Ludwig-Maximilians-Universität München
Zamani, Majid	University of Colorado Boulder

13:15-13:30 MoA11.2

Strong Integral Input-To-State Stability of Nonlinear Networks through Balancing Kinetics (I), pp. 482-487.

Ito, Hiroshi	Kyushu Institute of Technology

13:30-13:45 MoA11.3

Dynamic Quantized Leader-Follower Consensus under Denial-Of-Service Attacks (I), pp. 488-493.

Feng, Shuai	University of Groningen
Ishii, Hideaki	Tokyo Institute of Technology

13:45-14:00 MoA11.4

A Biased Assimilation Model on Signed Graphs (I), pp. 494-499.

Wang, Lingfei	Academy of Systems Science, Chinese Academy of Sciences
Hong, Yiguang	Chinese Academy of Sciences
Shi, Guodong	The Australian National University
Altafini, Claudio	Linkoping University

14:00-14:15 MoA11.5

GNE Seeking in Games with Passive Dynamic Agents Via Inexact-Penalty Methods (I), pp. 500-505.

Romano, Andrew	University of Toronto
Pavel, Lacra	University of Toronto

14:15-14:30 MoA11.6

Decentralized Charging Coordination of Electric Vehicles Using Multi-Population Games (I), pp. 506-511.

Martinez-Piazuelo, Juan	Universidad De Los Andes
Quijano, Nicanor	Universidad De Los Andes
Ocampo-Martinez, Carlos	Universitat Politècnica De Catalunya (UPC)

14:30-14:45 MoA11.7

Reinforcement Learning in Nonzero-Sum Linear Quadratic Deep Structured Games: Global Convergence of Policy Optimization, pp. 512-517.

Roudneshin, Masoud	Concordia University
Arabneydi, Jalal	McGill University
Aghdam, Amir G.	Concordia University

14:45-15:00 MoA11.8

Hybrid Rigidity Theory with Signed Constraints and Its Application to Formation Shape Control in 2-D Space (I), pp. 518-523.

Kwon, Seong-Ho	Gwangju Institute of Science and Technology(GIST)
Sun, Zhiyong	Eindhoven University of Technology (TU/e)
Anderson, Brian D.O.	Australian National University
Ahn, Hyo-Sung	Gwangju Institute of Science and Technology (GIST)

MoA12 Coordinated Universal Time (UTC)

Agents-Based Systems (Regular Session)

Chair: Selmic, Rastko	Concordia University
Co-Chair: Willert, Volker	TU Darmstadt

13:00-13:15 MoA12.1

Robust Consensus of Second-Order Heterogeneous Multi-Agent Systems Via Dynamic Interaction, pp. 524-529.

Capello, Elisa	Politecnico Di Torino, CNR-IEIIT
Fujisaki, Yasumasa	Osaka Univ

13:15-13:30 MoA12.2

The Impact of Message Passing in Agent-Based Submodular Maximization, pp. 530-535.

Grimsman, David	UC Santa Barbara
Kirchner, Matthew	Naval Air Warfare Center Weapons Division
Hespanha, Joao P.	Univ. of California, Santa Barbara
Marden, Jason R.	University of California, Santa Barbara

13:30-13:45 MoA12.3

Potential Function Based Fully Distributed Finite-Time Event-Triggered Consensus for Multi-Agent Systems Over Directed Graphs, pp. 536-541.

Du, Changkun	Beijing Institute of Technology
Liu, Haikuo	Beijing Institute of Technology

Bian, Yougang	Hunan University
Yu, Changbin (Brad)	The Australian National University

13:45-14:00 MoA12.4

Projected Push-Sum Gradient Descent-Ascent for Convex Optimization with Application to Economic Dispatch Problems, pp. 542-547.

Zimmermann, Jan	Technical University of Darmstadt
Tatarenko, Tatiana	TU Darmstadt
Willert, Volker	TU Darmstadt
Adamy, Jürgen	Technische Universität Darmstadt

14:00-14:15 MoA12.5

Neuro-Adaptive Formation Control and Target Tracking for Nonlinear Multi-Agent Systems with Time-Delay, pp. 548-553.

Aryankia, Kiarash	Concordia University
Selmic, Rastko	Concordia University

14:15-14:30 MoA12.6

Agent Independent Probabilistic Robustness Certificates for Robust Optimization Programs with Uncertain Quadratic Cost, pp. 554-559.

Pantazis, George	University of Oxford
Fele, Filiberto	University of Oxford
Margellos, Kostas	University of Oxford

14:30-14:45 MoA12.7

Distributedly Solving Boolean Equations Over Networks, pp. 560-565.

Qi, Hongsheng	AMSS, Chinese Academy of Sciences
Li, Bo	Academy of Mathematics and Systems Science, CAS
Jing, Rui-Juan	Jiangsu University
Proutiere, Alexandre	KTH
Shi, Guodong	The University of Sydney

14:45-15:00 MoA12.8

Strong Structural Controllability of Diffusively Coupled Networks: Comparison of Bounds Based on Distances and Zero Forcing, pp. 566-571.

Yazicioglu, Yasin	University of Minnesota
Shabbir, Mudassir	Information Technology University
Abbas, Waseem	Vanderbilt University
Koutsoukos, Xenofon	Vanderbilt University

MoA13 Coordinated Universal Time (UTC)

Learning for Control (Regular Session)

Chair: Ogren, Petter	KTH Royal Institute of Technology
Co-Chair: Graichen, Knut	University Erlangen-Nürnberg (FAU)

13:00-13:15 MoA13.1

Self-Guided Actor-Critic: Reinforcement Learning from Adaptive Expert Demonstrations, pp. 572-577.

Zhang, Haoran	Beijing Jiaotong University
Yin, Chenkun	Beijing Jiaotong University
Zhang, Yanxin	Beijing Jiao Tong University
Jin, Shangtai	Beijing Jiaotong University

13:15-13:30 MoA13.2

Decentralized Multi-Agent Reinforcement Learning with Multi-Time Scale of Decision Epochs, pp. 578-584.

Wu, Junjie	Tsinghua University
Li, Kuo	Tsinghua University
Jia, (Samuel) Qing-Shan	Tsinghua University

13:30-13:45 MoA13.3

Learning Feedforward Control of a Hydraulic Clutch Actuation Path Based on Policy Gradients, pp. 585-590.

Mesmer, Felix	ZF Friedrichshafen AG
Szabo, Tomas	Universität Ulm
Graichen, Knut	University Erlangen-Nürnberg (FAU)

13:45-14:00 MoA13.4

Online Learning for Job Scheduling on Heterogeneous Machines, pp. 591-596.

Ruan, Yufei	University of Illinois at Urbana-Champaign
Yekkehkhany, Ali	University of Illinois at Urbana-Champaign
Etesami, S. Rasoul	University of Illinois at Urbana-Champaign

14:00-14:15 MoA13.5

Learning Dynamic-Objective Policies from a Class of Optimal Trajectories, pp. 597-602.

Sprague, Christopher Iliffe	KTH Royal Institute of Technology
Izzo, Dario	European Space Agency
Ogren, Petter	KTH Royal Institute of Technology

14:15-14:30 MoA13.6

Online Inverse Reinforcement Learning with Limited Data, pp. 603-608.

Self, Ryan	Oklahoma State University
Mahmud, S M Nahid	Oklahoma State University
Hareland, Katrine	Mechanical and Aerospace Engineering, Oklahoma State University
Kamalapurkar, Rushikesh	Oklahoma State University

14:30-14:45 MoA13.7

Real-Time Learning of Non-Gaussian Uncertainty Models for Autonomous Racing, pp. 609-615.

Wischnewski, Alexander	Technische Universität München
Betz, Johannes	Technische Universität München
Lohmann, Boris	Technische Universität München

14:45-15:00 MoA13.8

Verifying Dissipativity Properties from Noise-Corrupted Input-State Data, pp. 616-621.

Koch, Anne	University of Stuttgart
Berberich, Julian	University of Stuttgart
Allgöwer, Frank	University of Stuttgart

MoA14 Coordinated Universal Time (UTC)

Distributed Parameter Systems I (Regular Session)

Chair: Aarsnes, Ulf Jakob Flø	Norwegian Research Centre
Co-Chair: Guzman, Patricio	Universidad Técnica Federico Santa María

13:00-13:15 MoA14.1

Distributed Kalman Filtering for Spatially-Invariant Diffusion Processes: The Effect of Noise on Communication Requirements, pp. 622-627.

Arbelaiz, Juncal	Massachusetts Institute of Technology
Bamieh, Bassam	Univ. of California at Santa Barbara
Hosoi, Anette E.	Massachusetts Institute of

	Technology
Jadbabaie, Ali	MIT

13:15-13:30 MoA14.2

Control Design of Under-Actuated 2 × 2 PDE-ODE-PDE Systems, pp. 628-633.

Auriol, Jean	CNRS, Centrale Supelec
Aarsnes, Ulf Jakob Flø	Norwegian Research Centre
Di Meglio, Florent	MINES ParisTech
Shor, Roman	University of Calgary

13:30-13:45 MoA14.3

Robust Analysis of Uncertain ODE-PDE Systems Using PI Multipliers, PIEs and LPIs, pp. 634-639.

Das, Amritam	Eindhoven University of Technology
Shivakumar, Sachin	Arizona State University
Peet, Matthew M.	Arizona State University
Weiland, Siep	Eindhoven Univ. of Tech

13:45-14:00 MoA14.4

Forwarding Design for Stabilization of a Coupled Transport equation/ODE with a Cone-Bounded Input Nonlinearity, pp. 640-645.

Marx, Swann	LS2N
Brivadis, Lucas	LAGEPP, Université Lyon 1
Astolfi, Daniele	CNRS - LAGEPP Univ Lyon 1

14:00-14:15 MoA14.5

Unknown Input Observer Design for Coupled PDE/ODE Linear Systems, pp. 646-651.

Cristofaro, Andrea	Sapienza University of Rome
Ferrante, Francesco	GIPSA-lab/CNRS and Université Grenoble Alpes

14:15-14:30 MoA14.6

Control of a Wave Equation with a Dynamic Boundary Condition, pp. 652-657.

Vanspranghe, Nicolas	CNRS, GIPSA-Lab
Ferrante, Francesco	GIPSA-lab/CNRS and Université Grenoble Alpes
Prieur, Christophe	CNRS

14:30-14:45 MoA14.7

Estimating Both Reflection Coefficients of 2X2 Linear Hyperbolic Systems with Single Boundary Measurement, pp. 658-665.

Wilhelmsen, Nils Christian Aars	MINES ParisTech
Di Meglio, Florent	MINES ParisTech

14:45-15:00 MoA14.8

Rapid Stabilization of a Reaction-Diffusion Equation with Distributed Disturbance, pp. 666-671.

Guzmán, Patricio	Universidad Técnica Federico Santa María
Prieur, Christophe	CNRS

MoA15 Coordinated Universal Time (UTC)

Predictive Control for Nonlinear Systems (Regular Session)

Chair: Diehl, Moritz	University of Freiburg
Co-Chair: Worthmann, Karl	Technische Universität Ilmenau

13:00-13:15 MoA15.1

Performance Analysis of Stochastic Model Predictive Control with Direct and Indirect Feedback, pp. 672-678.

Hewing, Lukas	ETH Zürich
Zeilinger, Melanie N.	ETH Zurich

13:15-13:30 MoA15.2

Recursive Feasibility of Continuous-Time Model Predictive Control without Stabilising Constraints, pp. 679-684.

Esterhuizen, Willem Daniël	Technische Universität Chemnitz
Worthmann, Karl	Technische Universität Ilmenau
Streif, Stefan	Technische Universität Chemnitz

13:30-13:45 MoA15.3

Resource-Aware Asynchronous Multi-Agent Coordination Via Self-Triggered MPC, pp. 685-690.

Lian, Yingzhao	EPFL
Wildhagen, Stefan	University of Stuttgart
Jiang, Yuning	ShanghaiTech University
Houska, Boris	ShanghaiTech University
Allgöwer, Frank	University of Stuttgart
Jones, Colin N.	EPFL

13:45-14:00 MoA15.4

A Nonsmooth Newton Method for Linear Model-Predictive Control in Tracking Tasks for a Mobile Robot with Obstacle Avoidance, pp. 691-696.

Britzelmeier, Andreas	Bundeswehr University
Gerdts, Matthias	University of Munchen

14:00-14:15 MoA15.5

Centralized Model Predictive Control with Distributed Adaptation, pp. 697-703.

Mishra, Prabhat Kumar	University of Illinois at Urbana Champaign
Wang, Tixian	University of Illinois at Urbana-Champaign
Gazzola, Mattia	University of Illinois at Urbana-Champaign
Chowdhary, Girish	University of Illinois at Urbana Champaign

14:15-14:30 MoA15.6

Closed-Loop Stabilization of Nonlinear Systems Using Koopman Lyapunov-Based Model Predictive Control, pp. 704-709.

Narasingam, Abhinav	Texas A&M University
Kwon, Joseph	Texas A&M University

14:30-14:45 MoA15.7

Asymptotically Stabilizing Multi-Stage Model Predictive Control, pp. 710-717.

Abdelsalam, Yehia	Technical University of Dortmund (TU Dortmund)
Subramanian, Sankaranarayanan	TU Dortmund
Engell, Sebastian	Technische Universität Dortmund

14:45-15:00 MoA15.8

TuneMPC - a Tool for Economic Tuning of Tracking (N)MPC Problems, pp. 718-723.

De Schutter, Jochem	ALU Freiburg
Zanon, Mario	IMT Institute for Advanced Studies Lucca
Diehl, Moritz	University of Freiburg

MoA16 Coordinated Universal Time (UTC)

Nonlinear Control Design (Regular Session)

Chair: Hirche, Sandra	Technische Universität München

Co-Chair: Jebai, Al Kassem — Schneider Electric

13:00-13:15 MoA16.1

Distributed Optimal Control Over Bit-Rate Constrained Networks with Communication Delay, pp. 724-730.

Causevic, Vedad — Technical University of Munich
Hirche, Sandra — Technische Universität München

13:15-13:30 MoA16.2

Quadratization of Hamilton-Jacobi-Bellman Equation for Near-Optimal Control of Nonlinear Systems, pp. 731-736.

Amini, Arash — Lehigh UNiversity
Sun, Qiyu — University of Central Florida
Motee, Nader — Lehigh University

13:30-13:45 MoA16.3

Learning Min-Norm Stabilizing Control Laws for Systems with Unknown Dynamics, pp. 737-744.

Westenbroek, Tyler — University of California, Berkeley
Castañeda, Fernando — University of California, Berkeley
Agrawal, Ayush — University of California, Berkeley
Sastry, Shankar — Univ. of California at Berkeley
Sreenath, Koushil — University of California, Berkeley

13:45-14:00 MoA16.4

A Matrix Pencil Approach to Efficient Realization of Dynamic Scaling-Based Output-Feedback Controllers for Uncertain Nonlinear Strict-Feedback Systems, pp. 745-750.

Krishnamurthy, Prashanth — NYU Tandon School of Engineering
Khorrami, Farshad — NYU Tandon School of Engineering

14:00-14:15 MoA16.5

Event-Triggered Stabilization for Nonlinear Systems with Center Manifolds, pp. 751-756.

Saradagi, Akshit — Indian Institute of Technology Madras
Mahindrakar, Arun D. — Indian Institute of Technology Madras
Tallapragada, Pavankumar — Indian Institute of Science

14:15-14:30 MoA16.6

A Note on Non Asymptotic Stabilization of Linear Time Delay Systems, pp. 757-762.

Perruquetti, Wilfrid — Ecole Centrale De Lille
Espitia, Nicolas — CRIStAL, CNRS
Dambrine, Michel — Université De Valenciennes Et Du Hainaut-Cambrésis

14:30-14:45 MoA16.7

Path Following Via Kinetic-Potential Energy Shaping, pp. 763-768.

Ferguson, Joel — University of Newcastle
Shima, Ryotaro — Kyoto University
Fujimoto, Kenji — Kyoto University

14:45-15:00 MoA16.8

Higher-Order Singular Perturbations for Control Design with Application to the Control of Induction Motors, pp. 769-776.

Bernard, Pauline — MINES ParisTech, Université PSL
Jebai, Al Kassem — Schneider Electric
Martin, Philippe — MINES ParisTech, PSL Research University

MoA17 — Coordinated Universal Time (UTC)

Control Barrier Functions (Regular Session)

Chair: Clark, Andrew — Worcester Polytechnic Institute
Co-Chair: Zamani, Majid — University of Colorado Boulder

13:00-13:15 MoA17.1

Safe Multi-Agent Interaction through Robust Control Barrier Functions with Learned Uncertainties, pp. 777-783.

Cheng, Richard — Caltech
Khojasteh, Mohammad Javad — Caltech
Ames, Aaron D. — California Institute of Technology
Burdick, Joel W. — California Inst. of Tech

13:15-13:30 MoA17.2

Guaranteed Obstacle Avoidance for Multi-Robot Operations with Limited Actuation: A Control Barrier Function Approach, pp. 784-789.

Chen, Yuxiao — California Institute of Technology
Singletary, Andrew — California Institute of Technology
Ames, Aaron D. — California Institute of Technology

13:30-13:45 MoA17.3

Formal Test Synthesis for Safety-Critical Autonomous Systems Based on Control Barrier Functions, pp. 790-795.

Akella, Prithvi — California Institute of Technology
Ahmadi, Mohamadreza — California Institute of Technology
Murray, Richard M. — California Inst. of Tech
Ames, Aaron D. — California Institute of Technology

13:45-14:00 MoA17.4

Control Barrier Functions for Safe CPS under Sensor Faults and Attacks, pp. 796-803.

Clark, Andrew — Worcester Polytechnic Institute
Li, Zhouchi — Worcester Polytechnic Institute
Zhang, Hongchao — Worcester Polytechnic Institute

14:00-14:15 MoA17.5

Control Barrier Functions for Sampled-Data Systems with Input Delays, pp. 804-809.

Singletary, Andrew — California Institute of Technology
Chen, Yuxiao — California Institute of Technology
Ames, Aaron D. — California Institute of Technology

14:15-14:30 MoA17.6

Multi-Rate Control Design Leveraging Control Barrier Functions and Model Predictive Control Policies, pp. 810-815.

Rosolia, Ugo — Caltech
Ames, Aaron D. — California Institute of Technology

14:30-14:45 MoA17.7

Control Barrier Functions for Abstraction-Free Control Synthesis under Temporal Logic Constraints, pp. 816-823.

Niu, Luyao — Worcester Polytechnic Institute
Clark, Andrew — Worcester Polytechnic Institute

14:45-15:00 MoA17.8

Synthesis of Partially Observed Jump-Diffusion Systems Via Control Barrier Functions, pp. 824-829.

Jahanshahi, Niloofar — Ludwig Maximilian University of Munich
Jagtap, Pushpak — KTH Royal Institute of Technology
Zamani, Majid — University of Colorado Boulder

MoP1 — Coordinated Universal Time (UTC)

Embedded Convex Optimization for Control (Plenary Session)

Chair: Braatz, Richard D. — Massachusetts Institute of

	Technology
Co-Chair: Chung, Chung Choo	Hanyang University

15:10-16:10	MoP1.1

*Embedded Convex Optimization for Control**.

Boyd, Stephen	Stanford University

MoB01	Coordinated Universal Time (UTC)
Modelling (COVID-19 Focus Session)	
Chair: Johansson, Karl H.	Royal Institute of Technology
Co-Chair: Pare, Philip E.	Purdue University
Organizer: Pare, Philip E.	Purdue University
Organizer: Sandberg, Henrik	KTH Royal Institute of Technology
Organizer: Beck, Carolyn L.	Univ of Illinois, Urbana-Champaign
Organizer: Liu, Ji	Stony Brook University
Organizer: Valcher, Maria Elena	Universita' Di Padova
Organizer: Dabbene, Fabrizio	CNR-IEIIT
Organizer: Johansson, Karl H.	Royal Institute of Technology

16:15-16:35	MoB01.1

*Perspectives on Epidemiological Models, Their History and Analysis (I)**.

Bullo, Francesco	Univ of California at Santa Barbara
Cisneros-Velarde, Pedro	University of California, Santa Barbara

16:35-16:55	MoB01.2

*A SIDARTHE Compartmental Model for the COVID-19 Epidemic and the Implementation of Population-Wide Interventions (I)**.

Giordano, Giulia	University of Trento
Blanchini, Franco	Univ. Degli Studi Di Udine
Colaneri, Patrizio	Politecnico Di Milano

16:55-17:15	MoB01.3

*Networked Meta-Population Modeling and Analysis for the Spread of COVID-19 (I)**.

Nowzari, Cameron	George Mason University

17:15-17:35	MoB01.4

*Contagion with Heterogeneous and Variable Immunity and Feedback Controlled Contact (I)**.

Leonard, Naomi Ehrich	Princeton University
Pagliara, Renato	Princeton University
Zhou, Yunxiu	Princeton University
Levin, Simon	Princeton University

MoB02	Coordinated Universal Time (UTC)
Power Converters (Regular Session)	
Chair: Karimi, Alireza	EPFL
Co-Chair: Dörfler, Florian	Swiss Federal Institute of Technology (ETH) Zurich

16:15-16:30	MoB02.1

Almost Globally Stable Grid-Forming Hybrid Angle Control, pp. 830-835.

Tayyebi, Ali	Austrian Institute of Technology & Automatic Control Laboratory,
Anta, Adolfo	Austrian Institute of Technology
Dörfler, Florian	Swiss Federal Institute of Technology (ETH) Zurich

16:30-16:45	MoB02.2

Fully Decentralized Conditions for Local Convergence of DC/AC Converter Network Based on Matching Control, pp. 836-841.

Jouini, Taouba	Lunds University
Sun, Zhiyong	Eindhoven University of Technology (TU/e)

16:45-17:00	MoB02.3

Data-Driven Passivity-Based Current Controller Design for Power-Electronic Converters of Traction Systems, pp. 842-847.

Madani, Seyed	EPFL
Karimi, Alireza	EPFL

17:00-17:15	MoB02.4

Towards Plug-And-Play Converter-Interfaced DC Microgrids, pp. 848-853.

Sadabadi, Mahdieh S.	University of Sheffield

17:15-17:30	MoB02.5

P+leaky I Passivity-Based Control of Power Converters, pp. 854-859.

Zonetti, Daniele	RTE
Bergna, Gilbert	NTNU
Ortega, Romeo	LSS-SUPELEC

MoB03	Coordinated Universal Time (UTC)
Formal Methods (Regular Session)	
Chair: Fränzle, Martin	Carl Von Ossietzky Universität Oldenburg
Co-Chair: Apaza-Perez, W. Alejandro	Université De Bordeaux

16:15-16:30	MoB03.1

Safety Verification of Unknown Dynamical Systems Via Gaussian Process Regression, pp. 860-866.

Jackson, John	University of Colorado, Boulder
Laurenti, Luca	University of Oxford
Frew, Eric W.	University of Colorado, Bolder
Lahijanian, Morteza	University of Colorado Boulder

16:30-16:45	MoB03.2

Inner-Approximating Reach-Avoid Sets for Discrete-Time Polynomial Systems, pp. 867-873.

Xue, Bai	Institute of Software, Chinese Academy of Sciences
Zhan, Naijun	Institute of Software, Chinese Academy of Sciences
Fränzle, Martin	Carl Von Ossietzky Universität Oldenburg

16:45-17:00	MoB03.3

Efficient Safety Control Synthesis with Imperfect State Information, pp. 874-880.

Yang, Liren	University of Michigan
Ozay, Necmiye	Univ. of Michigan

17:00-17:15	MoB03.4

Construction of Continuous Abstractions for Discrete-Time Time-Delay Systems, pp. 881-886.

Shahamat, Mobin	Isfahan University of Technology
Askari, Javad	Isfahan University of Technology
Swikir, Abdalla	Technical University of Munich
Noroozi, Navid	Ludwig-Maximilians-Universität München

Zamani, Majid	University of Colorado Boulder

17:15-17:30 MoB03.5

A Symbolic Approach to Distributed Control of Interconnected Systems, pp. 887-892.

Apaza-Perez, W. Alejandro	Université Paris-Saclay
Combastel, Christophe	University of Bordeaux
Zolghadri, Ali	Universite Bordeaux I

MoB04 Coordinated Universal Time (UTC)

Robust Control I (Regular Session)

Chair: Shim, Hyungbo	Seoul National University
Co-Chair: Mesbah, Ali	University of California, Berkeley

16:15-16:30 MoB04.1

Lemmas on Determination of Minimum Bandwidth of Q-Filter for Robust Stability of Feedback Loop with Disturbance Observers, pp. 893-898.

Chang, Hamin	Seoul National University
Kim, Hyuntae	ASRI, Seoul National University
Shim, Hyungbo	Seoul National University

16:30-16:45 MoB04.2

A Low-Complexity Tube Controller Using Contractive Invariant Sets, pp. 899-904.

Paulson, Joel	The Ohio State University
Mesbah, Ali	University of California, Berkeley

16:45-17:00 MoB04.3

Reduced Conservatism Proof of the Balanced MIMO Gain and Phase Margins, pp. 905-911.

Seiferth, David	Technische Universität München
Afonso, Rubens J. M.	Sao Jose Dos Campos
Holzapfel, Florian	Technische Universität München
Heller, Matthias	Technische Universität München

17:00-17:15 MoB04.4

Five-Full-Block Structured Singular Values of Real Matrices Equal Their Upper Bounds, pp. 912-915.

Troeng, Olof	Lund University

17:15-17:30 MoB04.5

Design of Robust Feed-Through Compensator Via Disturbance Observer, pp. 916-921.

Hyeon, Soojeong	Seoul National University,
Kim, Hyuntae	ASRI, Seoul National University
Shim, Hyungbo	Seoul National University

MoB05 Coordinated Universal Time (UTC)

Mechatronics (Invited Session)

Chair: Al Janaideh, Mohammad	Memorial University
Co-Chair: Oomen, Tom	Eindhoven University of Technology
Organizer: Al Janaideh, Mohammad	Memorial University
Organizer: Oomen, Tom	Eindhoven University of Technology
Organizer: Rakotondrabe, Micky	ENIT Tarbes, INPT, University of Toulouse

16:15-16:30 MoB05.1

Recursive Algorithm for the Control of Output Remnant of Preisach Hysteresis Operator, pp. 922-927.

Vasquez Beltran, Marco Augusto	University of Groningen
Jayawardhana, Bayu	University of Groningen
Peletier, Reynier	University of Groningen

16:30-16:45 MoB05.2

Nonlinear Current Control with Modified Torque Modulation for Permanent Magnet Synchronous Motors (I), pp. 928-933.

Jeong, YongWoo	Hanyang University
Chung, Chung Choo	Hanyang University

16:45-17:00 MoB05.3

Hybrid-MEM-Element Feedforward: With Application to Hysteretic Piezoelectric Actuators (I), pp. 934-939.

Strijbosch, Nard	Eindhoven University of Technology
Oomen, Tom	Eindhoven University of Technology

17:00-17:15 MoB05.4

Output-Feedback Control of a Piezomicropositioning Tube Actuator with Uncertain Nonlinearities (I), pp. 940-945.

Al Janaideh, Mohammad	Memorial University
Boker, Almuatazbellah	Virginia Tech
Rakotondrabe, Micky	ENIT Tarbes, INPT, University of Toulouse

17:15-17:30 MoB05.5

Iterative Feedback Tuning of Cascade Control of Two-Inertia System, pp. 946-951.

Jung, Hanul	DGIST
Jeon, Kiho	DGIST
Kang, Jae-Gu	Ajinextek
Oh, Sehoon	DGIST

MoB06 Coordinated Universal Time (UTC)

Locomotion (Regular Session)

Chair: Zhao, Ye	Georgia Tech
Co-Chair: Belabbas, Mohamed Ali	University of Illinois at Urbana-Champaign

16:15-16:30 MoB06.1

Separable Control Lyapunov Functions with Application to Prostheses, pp. 952-957.

Gehlhar, Rachel	California Institute of Technology
Ames, Aaron D.	California Institute of Technology

16:30-16:45 MoB06.2

Towards Safe Locomotion Navigation in Partially Observable Environments with Uneven Terrain, pp. 958-965.

Warnke, Jonas	Georgia Institute of Technology
Shamsah, Abdulaziz	Georgia Institute of Technology
Li, Yingke	Georgia Tech
Zhao, Ye	Georgia Tech

16:45-17:00 MoB06.3

Coupled Control Systems: Periodic Orbit Generation with Application to Quadrupedal Locomotion, pp. 966-971.

Ma, Wenlong	California Institute of Technogy
Csomay-Shanklin, Noel	California Institute of Technology
Ames, Aaron D.	California Institute of Technology

17:00-17:15 MoB06.4

Abnormal Gait Recognition in Real-Time Using Recurrent Neural Networks, pp. 972-977.

Jinnovart, Thanaporn	UNSW Sydney
Cai, Xiongcai	UNSW Sydney
Thonglek, Kundjanasith	Nara Institute of Science and Technology

17:15-17:30 MoB06.5

Geometric Heat Flow Method for Legged Locomotion Planning, pp. 978-983.

Fan, Yinai	University of Illinois at Urbana-Champaign
Liu, Shenyu	University of California, San Diego
Belabbas, Mohamed Ali	University of Illinois at Urbana-Champaign

MoB07 Coordinated Universal Time (UTC)

Identification II (Regular Session)

Chair: Beck, Carolyn L.	Univ of Illinois, Urbana-Champaign
Co-Chair: Fujimoto, Yusuke	The University of Kitakyushu

16:15-16:30 MoB07.1

Kernel Regularization in Frequency Domain: Encoding High-Frequency Decay Property, pp. 984-989.

Fujimoto, Yusuke	The University of Kitakyushu

16:30-16:45 MoB07.2

On the Consistency of Maximum Likelihood Estimators for Causal Network Identification, pp. 990-995.

Xie, Xiaotian	University of Illinois at Urbana-Champaign, Urbana
Katselis, Dimitrios	University of Illinois, Urbana-Champaign
Beck, Carolyn L.	Univ of Illinois, Urbana-Champaign
Srikant, R	Univ of Illinois, Urbana-Champaign

16:45-17:00 MoB07.3

Finite-Time Identification of Stable Linear Systems: Optimality of the Least-Squares Estimator, pp. 996-1001.

Jedra, Yassir	KTH
Proutiere, Alexandre	KTH

17:00-17:15 MoB07.4

Structural Risk Minimization for Switched System Identification, pp. 1002-1007.

Massucci, Louis	Université De Lorraine
Lauer, Fabien	Université De Lorraine, LORIA, CNRS, Inria
Gilson, Marion	Université De Lorraine

17:15-17:30 MoB07.5

Hamiltonian Identification of Quantum Networks from Sequential Boolean Measurements, pp. 1008-1013.

Mu, Biqiang	Chinese Academy of Sciences
Qi, Hongsheng	AMSS, Chinese Academy of Sciences
Petersen, Ian R.	Australian National University
Shi, Guodong	The University of Sydney

MoB08 Coordinated Universal Time (UTC)

Mean Field Games (Regular Session)

Chair: Le Ny, Jerome	Polytechnique Montreal
Co-Chair: Caines, Peter E.	McGill University

16:15-16:30 MoB08.1

Learning Interaction Dynamics from Particle Trajectories and Density Evolution, pp. 1014-1019.

Mavridis, Christos	University of Maryland, College Park
Tirumalai, Amoolya	University of Maryland, Institute for Systems Research
Baras, John S.	University of Maryland

16:30-16:45 MoB08.2

A Tractable Mean Field Game Model for the Analysis of Crowd Evacuation Dynamics, pp. 1020-1025.

Toumi, Noureddine	Polytechnique Montreal
Malhame, Roland P.	Ecole Poly. De Montreal
Le Ny, Jerome	Polytechnique Montreal

16:45-17:00 MoB08.3

On the Master Equation for Linear Quadratic Graphon Mean Field Games, pp. 1026-1031.

Foguen Tchuendom, Rinel	McGill University
Caines, Peter E.	McGill University
Huang, Minyi	Carleton University

17:00-17:15 MoB08.4

Model-Free Reinforcement Learning for Non-Stationary Mean Field Games, pp. 1032-1037.

Mishra, Rajesh K	The University of Texas at Austin
Vasal, Deepanshu	University of Michigan, Ann Arbor
Vishwanath, Sriram	The University of Texas at Austin

17:15-17:30 MoB08.5

Policy Optimization for Linear-Quadratic Zero-Sum Mean-Field Type Games, pp. 1038-1043.

Carmona, Rene	Princeton University
Hamidouche, Kenza	CentraleSupélec
Lauriere, Mathieu	Princeton University
Tan, Zongjun	Princeton University

MoB09 Coordinated Universal Time (UTC)

Optimization II (Regular Session)

Chair: Kalathil, Dileep	Texas A&M University (TAMU)
Co-Chair: Burke, Kevin	University of Limerick

16:15-16:30 MoB09.1

Bounded Regret for Finitely Parameterized Multi-Armed Bandits, pp. 1044-1049.

Panaganti Badrinath, Kishan	Texas A&M University
Kalathil, Dileep	Texas A&M University (TAMU)

16:30-16:45 MoB09.2

A Stochastic Consensus Method for Nonconvex Optimization on the Stiefel Manifold, pp. 1050-1057.

Kim, Jeongho	Seoul National University
Kang, Myeongju	Seoul National University
Kim, Dohyun	National Institute for Mathematical Sciences
Ha, Seung-Yeal	Seoul National University
Yang, Insoon	Seoul National University

16:45-17:00 MoB09.3

A Generalization of the Classical Kelly Betting Formula to the Case of

Temporal Correlation, pp. 1058-1063.

O'Brien, Joseph D.	University of Limerick
Burke, Kevin	University of Limerick
Burke, Mark E.	University of Limerick
Barmish, B. Ross	Boston University

17:00-17:15 MoB09.4

Optimal Online Algorithms for One-Way Trading and Online Knapsack Problems: A Unified Competitive Analysis, pp. 1064-1069.

Cao, Ying	HKUST
Sun, Bo	HKUST
Tsang, Danny H.K.	HKUST

17:15-17:30 MoB09.5

Optimizing Tail Risks Using an Importance Sampling Based Extrapolation for Heavy-Tailed Objectives, pp. 1070-1077.

Deo, Anand	Tata Institute of Fundamental Research
Murthy, Karthyek	Singapore University of Technology and Design

MoB10 Coordinated Universal Time (UTC)

Optimal Control II (Regular Session)

Chair: Banavar, Ravi N.	Indian Institute of Technology
Co-Chair: Faulwasser, Timm	TU Dortmund University

16:15-16:30 MoB10.1

Hamilton-Jacobi Formulation for State-Constrained Optimal Control and Zero-Sum Game Problems, pp. 1078-1085.

Lee, Donggun	University of California, Berkeley
Keimer, Alexander	UC Berkeley
Bayen, Alexandre	University of California at Berkeley
Tomlin, Claire J.	UC Berkeley

16:30-16:45 MoB10.2

Robust Discrete-Time Pontryagin Maximum Principle on Matrix Lie Groups, pp. 1086-1091.

Joshi, Anant A.	Indian Institute of Technology Bombay
Chatterjee, Debasish	Indian Institute of Technology, Bombay
Banavar, Ravi N.	Indian Institute of Technology

16:45-17:00 MoB10.3

Global Convergence of Policy Gradient Algorithms for Indefinite Least Squares Stationary Optimal Control, pp. 1092-1097.

Bu, Jingjing	University of Washington
Mesbahi, Mehran	University of Washington

17:00-17:15 MoB10.4

On the Solution of Optimal Control Problems Using Parameterized State-Dependent Riccati Equations, pp. 1098-1103.

Jones, Adam Lewis	Imperial College London
Astolfi, Alessandro	Imperial College & Univ. of Rome

17:15-17:30 MoB10.5

Turnpike Properties in Discrete-Time Mixed-Integer Optimal Control, pp. 1104-1109.

Faulwasser, Timm	TU Dortmund University
Murray, Alexander	Karlsruhe Institute of Technology

MoB11 Coordinated Universal Time (UTC)

Control and Dynamics on Complex Network Systems (Invited Session)

Chair: Ye, Mengbin	Curtin University
Co-Chair: Cao, Ming	University of Groningen
Organizer: Ye, Mengbin	Curtin University
Organizer: Zino, Lorenzo	University of Groningen
Organizer: Como, Giacomo	Politecnico Di Torino
Organizer: Cao, Ming	University of Groningen

16:15-16:30 MoB11.1

A Coevolutionary Model for Actions and Opinions in Social Networks (I), pp. 1110-1115.

Zino, Lorenzo	University of Groningen
Ye, Mengbin	Curtin University
Cao, Ming	University of Groningen

16:30-16:45 MoB11.2

Structural Equilibrium Control of Network Systems, pp. 1116-1121.

Azuma, Shun-ichi	Nagoya University

16:45-17:00 MoB11.3

Streisand Games on Complex Social Networks (I), pp. 1122-1127.

Bhatt, Sujay	University of Illinois Urbana-Champaign
Basar, Tamer	Univ of Illinois, Urbana-Champaign

17:00-17:15 MoB11.4

Conditions for Feedback Linearization of Network Systems, pp. 1128-1133.

Menara, Tommaso	University of California, Riverside
Baggio, Giacomo	University of Padova, Italy
Bassett, Danielle	University of Pennsylvania
Pasqualetti, Fabio	University of California, Riverside

17:15-17:30 MoB11.5

Distributed Discontinuous Coupling for Convergence in Heterogeneous Networks, pp. 1134-1139.

Coraggio, Marco	University of Naples Federico II
De Lellis, Pietro	University of Naples Federico II
di Bernardo, Mario	University of Naples Federico II

MoB12 Coordinated Universal Time (UTC)

Advanced Optimization Methods in Complex Systems (Invited Session)

Chair: Xin, Bin	Beijing Institute of Technology
Co-Chair: Yu, Chengpu	Beijing Institute of Technology
Organizer: Xin, Bin	Beijing Institute of Technology
Organizer: Yu, Chengpu	Beijing Institute of Technology

16:15-16:30 MoB12.1

Sign Gradient Descent Method Based Bat Searching Algorithm with Application to the Economic Load Dispatch Problem (I), pp. 1140-1145.

Zhang, Haopeng	University of Louisville
Hui, Qing	University of Nebraska-Lincoln
Moulay, Emmanuel	Université De Poitiers
Coirault, Patrick	ENSIP-LIAS

16:30-16:45 MoB12.2

Identification of State-Space Models with Banded Toeplitz System Matrices (I), pp. 1146-1151.

Yu, Chengpu	Beijing Institute of Technology
Xia, Yinqiu	Beijing Institute of Technology

16:45-17:00 MoB12.3

An Under-Approximation for the Robust Uncertain Two-Level Cooperative Set Covering Problem (I), pp. 1152-1157.

Ding, Shuxin	China Academy of Railway Sciences Corporation Limited
Zhang, Qi	China Academy of Railway Sciences Corporation Limited
Yuan, Zhiming	China Academy of Railway Sciences Corporation Limited

17:00-17:15 MoB12.4

Distributed Noise Covariance Matrices Estimation in Sensor Networks (I), pp. 1158-1163.

Li, Jiahong	Beijing Union University
Ma, Nan	College of Robotics, Beijing Union University
Deng, Fang	Beijing Institute of Technology

17:15-17:30 MoB12.5

Agent-Based Self-Organized Constructive Heuristics for Travelling Salesman Problem (I), pp. 1164-1169.

Lu, Sai	Beijing Institute of Technology
Xin, Bin	Beijing Institute of Technology
Zhang, Hao	Beijing Institute of Technology
Chen, Jie	Beijing Institute of Technology

MoB13 Coordinated Universal Time (UTC)

Statistical Learning (Regular Session)

Chair: Bitar, Eilyan	Cornell University
Co-Chair: Leshem, Amir	Bar-Ilan University

16:15-16:30 MoB13.1

Predictive Bandits, pp. 1170-1176.

Lindståhl, Simon	KTH Royal Institute of Technology
Proutiere, Alexandre	KTH
Johnsson, Andreas	Ericsson

16:30-16:45 MoB13.2

Statistical Learning in Wasserstein Space, pp. 1177-1182.

Karimi, Amirhossein	University of California, Irvine
Ripani, Luigia	University of Cergy-Pontoise
Georgiou, Tryphon T.	University of California, Irvine

16:45-17:00 MoB13.3

Restless Hidden Markov Bandit with Linear Rewards, pp. 1183-1189.

Yemini, Michal	Stanford University
Leshem, Amir	Bar-Ilan University
Somekh-Baruch, Anelia	Faculty of Engineering at Bar-Ilan University, Ramat-Gan, Israel

17:00-17:15 MoB13.4

Bayesian Identification of Hamiltonian Dynamics from Symplectic Data, pp. 1190-1195.

Galioto, Nicholas	University of Michigan
Gorodetsky, Alex	University of Michigian

17:15-17:30 MoB13.5

Nonparametric Estimation of Uncertainty Sets for Robust Optimization, pp. 1196-1203.

Alexeenko, Polina	Cornell University
Bitar, Eilyan	Cornell University

MoB14 Coordinated Universal Time (UTC)

Distributed Parameter Systems II (Regular Session)

Chair: Morris, Kirsten	University of Waterloo
Co-Chair: Epperlein, Jonathan P.	IBM Research

16:15-16:30 MoB14.1

Localization of the LQR Feedback Kernel in Spatially-Invariant Problems Over Sobolev Spaces, pp. 1204-1209.

Jensen, Emily	University of California, Santa Barbara
Epperlein, Jonathan P.	IBM Research
Bamieh, Bassam	Univ. of California at Santa Barbara

16:30-16:45 MoB14.2

Well-Posedness of Extended Kalman Filter Equations for Semilinear Infinite-Dimensional Systems, pp. 1210-1215.

Afshar, Sepideh	University of Waterloo
Germ, Fabian	University of Edinburgh
Morris, Kirsten	University of Waterloo

16:45-17:00 MoB14.3

Linear-Quadratic Optimal Boundary Control of One-Link Flexible Arm, pp. 1216-1221.

Cristofaro, Andrea	Sapienza University of Rome
De Luca, Alessandro	Sapienza Università Di Roma
Lanari, Leonardo	Sapienza University of Rome

17:00-17:15 MoB14.4

Optimal Guidance and Estimation of a 1D Diffusion Process by a Team of Mobile Sensors, pp. 1222-1228.

Cheng, Sheng	University of Maryland
Paley, Derek A.	University of Maryland

17:15-17:30 MoB14.5

Adaptive Stabilization of Time-Delay Feedforward Systems with Unknown Parameters, pp. 1229-1234.

Lin, Wei	Case Western Reserve University
Sun, Jiwei	Case Western Reserve University

MoB15 Coordinated Universal Time (UTC)

Predictive Control for Linear Systems I (Regular Session)

Chair: Allgöwer, Frank	University of Stuttgart
Co-Chair: Pouilly-Cathelain, Maxime	CentraleSupélec

16:15-16:30 MoB15.1

Dynamic Uncertainties in Model Predictive Control: Guaranteed Stability for Constrained Linear Systems, pp. 1235-1241.

Schwenkel, Lukas	University of Stuttgart
Koehler, Johannes	University of Stuttgart
Muller, Matthias A.	Leibniz University Hannover
Allgöwer, Frank	University of Stuttgart

16:30-16:45 MoB15.2

Robust Satisfaction of Nonlinear Requirements in Control Problems, pp. 1242-1247.

Pouilly-Cathelain, Maxime	CentraleSupélec
Feyel, Philippe	Safran Electronics and Defense
Duc, Gilles	Ecole Supérieure D' Electricité
Sandou, Guillaume	Ecole Superieure D Electricite

16:45-17:00 MoB15.3

Distributed Model Predictive Control for Consensus of Constrained Heterogeneous Linear Systems, pp. 1248-1253.

Hirche, Matthias	University of Stuttgart
Koehler, Phillip	University of Stuttgart
Muller, Matthias A.	Leibniz University Hannover
Allgöwer, Frank	University of Stuttgart

17:00-17:15 MoB15.4

Ensemble Model Predictive Control: Learning and Efficient Robust Control of Uncertain Dynamical Systems, pp. 1254-1259.

Pastor, Daniel	California Institute of Technology
Folkestad, Carl	California Institute of Technology
Burdick, Joel W.	California Inst. of Tech

17:15-17:30 MoB15.5

Robust Constraint Satisfaction in Data-Driven MPC, pp. 1260-1267.

Berberich, Julian	University of Stuttgart
Koehler, Johannes	University of Stuttgart
Muller, Matthias A.	Leibniz University Hannover
Allgöwer, Frank	University of Stuttgart

MoB16 Coordinated Universal Time (UTC)

Lyapunov Methods (Regular Session)

Chair: Camlibel, M. Kanat	University of Groningen
Co-Chair: Dai, Hongkai	Toyota Research Institute

16:15-16:30 MoB16.1

Formal Synthesis of Lyapunov Neural Networks, pp. 1268-1273.

Abate, Alessandro	University of Oxford
Ahmed, Daniele	Amazon Inc
Giacobbe, Mirco	University of Oxford
Peruffo, Andrea	University of Oxford

16:30-16:45 MoB16.2

Counter-Example Guided Synthesis of Neural Network Lyapunov Functions for Piecewise Linear Systems, pp. 1274-1281.

Dai, Hongkai	Toyota Research Institute
Landry, Benoit	Stanford University
Pavone, Marco	Stanford University
Tedrake, Russ	MIT

16:45-17:00 MoB16.3

Backward Reachability Using Integral Quadratic Constraints for Uncertain Nonlinear Systems, pp. 1282-1287.

Yin, He	University of California, Berkeley
Seiler, Peter	University of Michigan, Ann Arbor
Arcak, Murat	University of California, Berkeley

17:00-17:15 MoB16.4

On Duality for Lyapunov Functions of Nonstrict Convex Processes, pp. 1288-1293.

Eising, Jaap	University of Groningen
Camlibel, M. Kanat	University of Groningen

17:15-17:30 MoB16.5

Exponential Convergence Rates of Nonlinear Mechanical Systems: The 1-DoF Case with Configuration-Dependent Inertia, pp. 1294-1299.

Calzolari, Davide	Technical University of Munich (TUM), German Aerospace Center (D
Della Santina, Cosimo	TU Delft
Albu-Schaeffer, Alin	German Aerospace Center (DLR)

TuA01	Coordinated Universal Time (UTC)
Autonomous Vehicles State Estimation for Navigation Purposes (Tutorial Session)	
Chair: Silvestre, Carlos	University of Macau
Co-Chair: Hamel, Tarek	Université De Nice Sophia Antipolis
Organizer: Silvestre, Carlos	University of Macau
Organizer: Hamel, Tarek	Université De Nice Sophia Antipolis

13:00-13:30	TuA01.1
Attitude Observers Aided by Implicit Measurements of the Earth Angular Velocity (I), pp. 1300-1305.	
Reis, Joel	University of Macau
Silvestre, Carlos	University of Macau
Batista, Pedro	Instituto Superior Técnico / University of Lisbon
Oliveira, Paulo	Instituto Superior Técnico

13:30-14:00	TuA01.2
Deterministic Observer Design for Vision-Aided Inertial Navigation (I), pp. 1306-1313.	
Hamel, Tarek	Université De Nice Sophia Antipolis
Hua, Minh-Duc	I3s Uca-Cnrs Umr7271
Samson, Claude	I3s/CNRS

14:00-14:30	TuA01.3
Equivariant Visual Odometry in the Wild (I), pp. 1314-1319.	
Mahony, Robert	Australian National University,
van Goor, Pieter	Australian National University
Henein, Mina	Australian National University
Pike, Ryan	Australian National University
Zhang, Jun	Australian National University
Ng, Yonhon	Australian National University

14:30-15:00	TuA01.4
Observers Design for Inertial Navigation Systems: A Brief Tutorial (I), pp. 1320-1327.	
Wang, Miaomiao	Western University
Tayebi, Abdelhamid	Lakehead University

TuA02	Coordinated Universal Time (UTC)
Smart Grid (Regular Session)	
Chair: Lestas, Ioannis	University of Cambridge
Co-Chair: Bernstein, Andrey	National Renewable Energy Lab (NREL)

13:00-13:15	TuA02.1
Online Algorithms for Dynamic Matching Markets in Power Distribution Systems, pp. 1328-1334.	
Muthirayan, Deepan	University of California at Irvine
Parvania, Masood	University of Utah
Khargonekar, Pramod	Univ. of California, Irvine

13:15-13:30	TuA02.2
Model-Free State Estimation Using Low-Rank Canonical Polyadic Decomposition, pp. 1335-1340.	
Zamzam, Ahmed S.	National Renewable Energy Laboratory
Liu, Yajing	National Renewable Energy Laboratory
Bernstein, Andrey	National Renewable Energy Lab (NREL)

13:30-13:45	TuA02.3
Decentralized Stability Conditions for Inverter-Based Microgrids, pp. 1341-1346.	
Laib, Khaled	University of Cambridge
Watson, Jeremy	University of Cambridge
Lestas, Ioannis	University of Cambridge

13:45-14:00	TuA02.4
Framework for Network-Constrained Cooperative Trading of Multi-Microgrid Systems, pp. 1347-1354.	
Lahanda Purage, Mohasha Isuru Sampath	Nanyang Technological University
Krishnan, Ashok	Nanyang Technological University
Foo, Yi Shyh Eddy	Nanyang Technological University
Gooi, Hoay Beng	Nanyang Technological University, Singapore

14:00-14:15	TuA02.5
Strategic Bidding in Extended Locational Marginal Price Scheme, pp. 1355-1360.	
Sun, Jian	Tsinghua University
Gu, Nan	Tsinghua University
Wu, Chenye	Tsinghua University

14:15-14:30	TuA02.6
Risk Trading in a Chance-Constrained Stochastic Electricity Market, pp. 1361-1366.	
Mieth, Robert	TU Berlin / New York University
Roveto, Matthew	New York University
Dvorkin, Yury	New York University

14:30-14:45	TuA02.7
Decentralized Electric Vehicle Charging Control Via a Novel Shrunken Primal-Multi-Dual Subgradient (SPMDS) Algorithm, pp. 1367-1373.	
Huo, Xiang	University of Utah
Liu, Mingxi	University of Utah

14:45-15:00	TuA02.8
Online Residential Demand Response Via Contextual Multi-Armed Bandits, pp. 1374-1379.	
Chen, Xin	Harvard University
Nie, Yutong	Zhejiang University
Li, Na	Harvard University

TuA03	Coordinated Universal Time (UTC)
Temporal Logic Specifications (Regular Session)	
Chair: Dimarogonas, Dimos V.	KTH Royal Institute of Technology
Co-Chair: Sentis, Luis	The University of Texas at Austin

13:00-13:15	TuA03.1
Barrier Functions for Multiagent-POMDPs with DTL Specifications, pp. 1380-1385.	
Ahmadi, Mohamadreza	California Institute of Technology
Singletary, Andrew	California Institute of Technology
Burdick, Joel W.	California Inst. of Tech
Ames, Aaron D.	California Institute of Technology

13:15-13:30	TuA03.2
Control Design for Risk-Based Signal Temporal Logic Specifications,	

pp. 1386-1391.

Safaoui, Sleiman	University of Texas at Dallas
Lindemann, Lars	Royal Institute of Technology, KTH
Dimarogonas, Dimos V.	KTH Royal Institute of Technology
Shames, Iman	The University of Melbourne
Summers, Tyler H.	University of Texas at Dallas

13:30-13:45 TuA03.3

Statistically Model Checking PCTL Specifications on Markov Decision Processes Via Reinforcement Learning, pp. 1392-1397.

Wang, Yu	Duke University
Roohi, Nima	University of Pennsylvania
West, Matthew	Univ of Illinois, Urbana-Champaign
Viswanathan, Mahesh	University of Illinois
Dullerud, Geir E.	Univ of Illinois, Urbana-Champaign

13:45-14:00 TuA03.4

Single-Agent Indirect Herding of Multiple Targets Using Metric Temporal Logic Switching, pp. 1398-1403.

Le, Duc	University of Florida
Luo, Xusheng	Duke University
Bridgeman, Leila Jasmine	Duke University
Zavlanos, Michael M.	Duke University
Dixon, Warren E.	University of Florida

14:00-14:15 TuA03.5

BP-RRT: Barrier Pair Synthesis for Temporal Logic Motion Planning, pp. 1404-1409.

He, Binghan	The University of Texas at Austin
Lee, Jaemin	The University of Texas at Austin
Topcu, Ufuk	The University of Texas at Austin
Sentis, Luis	The University of Texas at Austin

14:15-14:30 TuA03.6

A Smooth Robustness Measure of Signal Temporal Logic for Symbolic Control, pp. 1410-1415.

Gilpin, Yann	University of Notre Dame
Kurtz, Vincent	University of Notre Dame
Lin, Hai	University of Notre Dame

14:30-14:45 TuA03.7

Ensuring Safety for Vehicle Parking Tasks Using Hamilton-Jacobi Reachability Analysis, pp. 1416-1421.

Jiang, Frank J.	Royal Institute of Technology
Gao, Yulong	The Royal Institute of Technology (KTH)
Xie, Lihua	Nanyang Tech. Univ
Johansson, Karl H.	Royal Institute of Technology

14:45-15:00 TuA03.8

Control Barrier Functions for Nonholonomic Systems under Risk Signal Temporal Logic Specifications, pp. 1422-1428.

Lindemann, Lars	Royal Institute of Technology, KTH
Pappas, George J.	University of Pennsylvania
Dimarogonas, Dimos V.	KTH Royal Institute of Technology

TuA04 Coordinated Universal Time (UTC)

Robust Adaptive Control (Regular Session)

Chair: Guay, Martin	Queens University
Co-Chair: Wang, Yang	Shanghai Technology Unversity

13:00-13:15 TuA04.1

Robust-Adaptive Interval Predictive Control for Linear Uncertain Systems, pp. 1429-1434.

Leurent, Edouard	Inria
Efimov, Denis	Inria
Maillard, Odalric-Ambrym	INRIA

13:15-13:30 TuA04.2

Finite-Time Newton Seeking Control for a Class of Unknown Static Maps, pp. 1435-1440.

Guay, Martin	Queens University

13:30-13:45 TuA04.3

Relaxation of Strictly Positive Real Condition for Tuning Feedforward Control, pp. 1441-1447.

Sugimoto, Kenji	Nara Inst. of Science and Technology
Imahayashi, Wataru	Nara Institute of Science and Technology
Arimoto, Ryo	Nara Institute of Science and Technology

13:45-14:00 TuA04.4

Uncertainty Estimation in ESC of Unknown Static Maps, pp. 1448-1453.

Guay, Martin	Queens University

14:00-14:15 TuA04.5

Dynamic Certainty Equivalence Adaptive Control by Nonlinear Parameter Filtering, pp. 1454-1459.

Pin, Gilberto	University of Padua
Wang, Yang	Shanghai Technology Unversity
Serrani, Andrea	The Ohio State University
Parisini, Thomas	Imperial College & Univ. of Trieste

14:15-14:30 TuA04.6

Multi-Model Indirect Adaptive MPC, pp. 1460-1465.

Dhar, Abhishek	Indian Institute of Technology Delhi
Bhasin, Shubhendu	Indian Institute of Technology Delhi

14:30-14:45 TuA04.7

Adaptive Controller Design for Mismatched Interconnected Time Delay Systems, pp. 1466-1471.

Zhang, Zhengqiang	Qufu Normal University
Yang, Chen	Qufu Normal University

14:45-15:00 TuA04.8

Function Approximation Technique Based Immersion and Invariance Control for Unknown Nonlinear Systems, pp. 1472-1477.

Bai, Yang	Ritsumeikan University
Wang, Yujie	University of Illinois Urbana Champaign
Svinin, Mikhail	Ritsumeikan University
Magid, Evgeni	Kazan Federal University
Sun, Ruisheng	Nanjing University of Science and Technology

TuA05 Coordinated Universal Time (UTC)

Spacecraft and Attitude Dynamics (Regular Session)

Chair: Ott, Christian	German Aerospace Center (DLR)
Co-Chair: Weiss, Avishai	Mitsubishi Electric Research Labs

13:00-13:15 TuA05.1

A Near Fuel-Optimal Station-Keeping Strategy for Halo Orbits, pp. 1478-1483.

Subudhi, Chinari Subhechha	Delft University of Technology
Vutukuri, Srianish	Indian Institute of Science
Padhi, Radhakant	Indian Institute of Science

13:15-13:30 TuA05.2

An MPC Strategy for Low-Thrust Space Debris Rendezvous (I), pp. 1484-1489.

Leomanni, Mirko	Università Di Siena
Bianchini, Gianni	Università Di Siena
Garulli, Andrea	Università Di Siena
Giannitrapani, Antonio	Universita' Di Siena
Quartullo, Renato	Universita' Di Siena

13:30-13:45 TuA05.3

Abort-Safe Spacecraft Rendezvous in Case of Partial Thrust Failure (I), pp. 1490-1495.

Aguilar Marsillach, Daniel	University of Colorado
Di Cairano, Stefano	Mitsubishi Electric Research Labs
Weiss, Avishai	Mitsubishi Electric Research Labs

13:45-14:00 TuA05.4

Quadratic Programs for High Relative Degree Spatial Constraints and Spatiotemporal Specifications with Spacecraft Applications, pp. 1496-1502.

Breeden, Joseph	University of Michigan, Ann Arbor
Panagou, Dimitra	University of Michigan, Ann Arbor

14:00-14:15 TuA05.5

Output Feedback Stabilization of an Orbital Robot, pp. 1503-1510.

Mishra, Hrishik	German Aerospace Center (DLR)
De Stefano, Marco	German Aerospace Center (DLR)
Ott, Christian	German Aerospace Center (DLR)
Giordano, Alessandro Massimo	Technical University of Munich (TUM)

14:15-14:30 TuA05.6

Rigid Body Geometric Attitude Estimator Using Multi-Rate Sensors, pp. 1511-1516.

Bhatt, Maulik	Indian Institute of Technology Bombay
Srikant, Sukumar	Indian Institute of Technology Bombay
Sanyal, Amit	Syracuse University

14:30-14:45 TuA05.7

Distributed Fixed-Time Attitude Tracking Consensus for Rigid Spacecraft Systems under Directed Graphs, pp. 1517-1522.

Hong, Huifen	Australian National University
Anderson, Brian D.O.	Australian National University

14:45-15:00 TuA05.8

A Kinematic Hybrid Feedback Controller on the Unit Circle Suitable for Orientation Control of Ships, pp. 1523-1529.

Marley, Mathias	Norwegian University of Science and Technology
Skjetne, Roger	Norwegian Univ of Science and Technology
Teel, Andrew R.	Univ. of California at Santa Barbara

TuA06 Coordinated Universal Time (UTC)

Autonomous Robots (Regular Session)

Chair: Loizou, Savvas	Cyprus University of Technology
Co-Chair: Lin, Zhiyun	Hangzhou Dianzi University

13:00-13:15 TuA06.1

Perimeter-Defense Game between Aerial Defender and Ground Intruder, pp. 1530-1536.

Lee, Elijah S.	University of Pennsylvania
Shishika, Daigo	University of Pennsylvania
Kumar, Vijay	University of Pennsylvania

13:15-13:30 TuA06.2

Robot Navigation on Star Worlds Using a Single-Step Navigation Transformation, pp. 1537-1542.

Constantinou, Nicolas	Cyprus University of Technology
Loizou, Savvas	Cyprus University of Technology

13:30-13:45 TuA06.3

Vector Field Guided Path Following Control: Singularity Elimination and Global Convergence, pp. 1543-1549.

Yao, Weijia	University of Groningen
Garcia de Marina, Hector	Universidad Complutense De Madrid
Cao, Ming	University of Groningen

13:45-14:00 TuA06.4

Distributed Localization for Multi-Robot Systems in Presence of Unlocalizable Robots, pp. 1550-1555.

Lin, Zhiyun	Hangzhou Dianzi University
Han, Zhimin	Hangzhou Dianzi University
Cao, Ming	University of Groningen

14:00-14:15 TuA06.5

Lagrangian Reachtubes: The Next Generation, pp. 1556-1563.

Gruenbacher, Sophie	Vienna University of Technology
Cyranka, Jacek	UCSD
Lechner, Mathias	IST Austria
Islam, Md. Ariful	Texas Tech University
Smolka, Scott	Stony Brook University, Department of Computer Science
Grosu, Radu	Vienna University of Technology

14:15-14:30 TuA06.6

Dynamic Path Generation for Multirotor Aerial Docking in Forward Flight, pp. 1564-1571.

Shankar, Ajay	University of Nebraska-Lincoln
Elbaum, Sebastian	University of Nebraska - Lincoln
Detweiler, Carrick	University of Nebraska-Lincoln

14:30-14:45 TuA06.7

Minimal Time Delivery of Multiple Robots, pp. 1572-1577.

Aguiar, Miguel	University of Porto
Silva, Jorge Estrela	Instituto Superior De Engenharia Do Porto
Sousa, Joao	Universidade Porto - Faculdade Engenharia

14:45-15:00 TuA06.8

Safe Feedback Motion Planning: A Contraction Theory and L1-Adaptive Control Based Approach, pp. 1578-1583.

Lakshmanan, Arun	University of Illinois
Gahlawat, Aditya	Illinois Institute of Technology
Hovakimyan, Naira	University of Illinois at Urbana-Champaign

TuA07	Coordinated Universal Time (UTC)
Nonlinear Systems Identification (Regular Session)	
Chair: Piga, Dario	University of Applied Sciences and Arts of Southern Switzerland
Co-Chair: Mesbah, Ali	University of California, Berkeley

13:00-13:15	TuA07.1

Convex Nonparametric Formulation for Identification of Gradient Flows, pp. 1584-1589.

Khosravi, Mohammad	ETH Zurich, Automatic Control Lab
Smith, Roy S.	ETH Zurich

13:15-13:30	TuA07.2

Nonlinear System Identification with Prior Knowledge on the Region of Attraction, pp. 1590-1595.

Khosravi, Mohammad	ETH Zurich, Automatic Control Lab
Smith, Roy S.	ETH Zurich

13:30-13:45	TuA07.3

Approximations of the Reproducing Kernel Hilbert Space (RKHS) Embedding Method Over Manifolds, pp. 1596-1601.

Guo, Jia	Virginia Tech
Paruchuri, Sai Tej	Virginia Tech
Kurdila, Andrew J.	Virginia Tech

13:45-14:00	TuA07.4

Integrated Neural Networks for Nonlinear Continuous-Time System Identification, pp. 1602-1607.

Mavkov, Bojan	IDSIA-Dalle Molle Institute for Artificial Intelligence Research
Forgione, Marco	SUPSI
Piga, Dario	University of Applied Sciences and Arts of Southern Switzerland

14:00-14:15	TuA07.5

Intrinsic and Extrinsic Approximation of Koopman Operators Over Manifolds, pp. 1608-1613.

Paruchuri, Sai Tej	Virginia Tech
Guo, Jia	Virginia Tech
Kepler, Michael	Virginia Polytechnic Institute and State University
Ryan, Timothy	Virginia Tech
Wang, Haoran	Virginia Tech
Kurdila, Andrew J.	Virginia Tech
Stilwell, Daniel J.	Virginia Tech

14:15-14:30	TuA07.6

Tractable Global Solutions to Bayesian Optimal Experiment Design, pp. 1614-1619.

Rodrigues, Diogo	University of California, Berkeley
Makrygiorgos, Georgios	University of California, Berkeley
Mesbah, Ali	University of California, Berkeley

14:30-14:45	TuA07.7

Recursive Bias-Correction Method for Identification of Piecewise Affine Output-Error Models, pp. 1620-1625.

Mejari, Manas	IDSIA Dalle Molle Institute for Artificial Intelligence
Breschi, Valentina	Politecnico Di Milano
Piga, Dario	University of Applied Sciences and Arts of Southern Switzerland

14:45-15:00	TuA07.8

Shrinkage Strategies for Structure Selection and Identification of Piecewise Affine Models, pp. 1626-1631.

Breschi, Valentina	Politecnico Di Milano
Mejari, Manas	IDSIA Dalle Molle Institute for Artificial Intelligence

TuA08	Coordinated Universal Time (UTC)
Game Theory II (Regular Session)	
Chair: Pavel, Lacra	University of Toronto
Co-Chair: Dán, György	KTH - Royal Institute of Technology

13:00-13:15	TuA08.1

A Game Theoretic Analysis of LQG Control under Adversarial Attack, pp. 1632-1639.

Li, Zuxing	KTH Royal Institute of Technology
Dán, György	KTH - Royal Institute of Technology
Liu, Dong	KTH

13:15-13:30	TuA08.2

A Meta-Learning and Bounded Rationality Framework for Repeated Games in Adversarial Environments, pp. 1640-1645.

Kanellopoulos, Aris	Georgia Institute of Technology
Fotiadis, Filippos	Georgia Institute of Technology
Vamvoudakis, Kyriakos G.	Georgia Inst. of Tech
Gupta, Vijay	University of Notre Dame

13:30-13:45	TuA08.3

A Game-Theoretic Approach for Generative Adversarial Networks, pp. 1646-1651.

Franci, Barbara	Technische Universiteit Delft
Grammatico, Sergio	Delft Univ. of Tech

13:45-14:00	TuA08.4

Disturbance Decoupling for Gradient-Based Multi-Agent Learning with Quadratic Costs, pp. 1652-1657.

Li, Sarah H.Q.	University of Washington
Ratliff, Lillian J.	University of Washington
Acikmese, Behcet	University of Washington

14:00-14:15	TuA08.5

Guarding a Circular Target by Patrolling Its Perimeter, pp. 1658-1665.

Von Moll, Alexander	Air Force Research Laboratory
Pachter, Meir	AFIT/ENG
Shishika, Daigo	University of Pennsylvania
Fuchs, Zachariah E.	University of Cincinnati

14:15-14:30	TuA08.6

The Cost of Denied Observation in Multiagent Submodular Optimization, pp. 1666-1671.

Grimsman, David	UC Santa Barbara
Seaton, Joshua	University of Colorado at Colorado Springs
Marden, Jason R.	University of California, Santa Barbara
Brown, Philip N.	University of Colorado, Colorado Springs

14:30-14:45	TuA08.7

Evolutionary Game Dynamics for Crowd Behavior in Emergency Evacuations, pp. 1672-1677.

Marti Mason, Diego	University of Derby
Stella, Leonardo	University of Derby

Bauso, Dario — University of Groningen

14:45-15:00 — TuA08.8

On the Rate of Convergence of Continuous-Time Game Dynamics in N-Player Potential Games, pp. 1678-1683.

Gao, Bolin — University of Toronto
Pavel, Lacra — University of Toronto

TuA09 — Coordinated Universal Time (UTC)

Optimization III (Regular Session)

Chair: Okano, Kunihisa — Okayama University
Co-Chair: Solo, Victor — University of New South Wales

13:00-13:15 — TuA09.1

A Sufficient Condition for Local Optima to Be Globally Optimal, pp. 1684-1690.

Zhou, Fengyu — California Institute of Technology
Low, Steven — California Institute of Technology

13:15-13:30 — TuA09.2

Convex Model to Evaluate Worst-Case Performance of Local Search in the Optimal Power Flow Problem, pp. 1691-1697.

Glista, Elizabeth — University of California, Berkeley
Sojoudi, Somayeh — UC Berkeley

13:30-13:45 — TuA09.3

Learning Mixed-Integer Convex Optimization Strategies for Robot Planning and Control, pp. 1698-1705.

Cauligi, Abhishek — Stanford University
Culbertson, Preston — Stanford University
Stellato, Bartolomeo — MIT
Bertsimas, Dimitris — Massachusetts Institute of Technology
Schwager, Mac — Stanford University
Pavone, Marco — Stanford University

13:45-14:00 — TuA09.4

Sensor Placement Minimizing the State Estimation Mean Square Error: Performance Guarantees of Greedy Solutions, pp. 1706-1711.

Kohara, Akira — Okayama University
Okano, Kunihisa — Okayama University
Hirata, Kentaro — Okayama University
Nakamura, Yukinori — Okayama University

14:00-14:15 — TuA09.5

Non-Smooth Projected Primal-Dual Dynamical Approach to Solve the Extended Fermat-Torricelli Problem, pp. 1712-1717.

Raveendran, Rejitha — IIT MADRAS
Mahindrakar, Arun D. — Indian Institute of Technology Madras
Vaidya, Umesh — Clemson University

14:15-14:30 — TuA09.6

System Level Synthesis Via Dynamic Programming, pp. 1718-1725.

Tseng, Shih-Hao — California Institute of Technology
Amo Alonso, Carmen — California Institute of Technology
Han, SooJean — California Institute of Technology

14:30-14:45 — TuA09.7

An EM Algorithm for the Time-Variant Vector Hawkes Process, pp. 1726-1731.

Pasha, Syed Ahmed — Air University
Solo, Victor — University of New South Wales
Godoy, Boris I. — Boston University

14:45-15:00 — TuA09.8

Discrete Minimum Time Control Via Iterative Optimization and Sliding Window Algorithm, pp. 1732-1737.

Yang, Yipeng — University of Houston - Clear Lake
Williamson, Andrew — University of Houston - Clear Lake

TuA10 — Coordinated Universal Time (UTC)

Stochastic Optimal Control I (Regular Session)

Chair: Oishi, Meeko — University of New Mexico
Co-Chair: Song, Qingshuo — Worcester Polytechnic Institute

13:00-13:15 — TuA10.1

Solving Elliptic Hamilton-Jacobi-Bellman Equations in a Value Space, pp. 1738-1743.

Qiu, Wenhao — Worcester Polytechnic Institute
Song, Qingshuo — Worcester Polytechnic Institute
Yin, George — Wayne State University

13:15-13:30 — TuA10.2

Lower Bounds for Policy Iteration on Multi-Action MDPs, pp. 1744-1749.

Kumar, Ashutosh — Indian Institute of Technology Bombay
Consul, Sarthak — Indian Institute of Technology Bombay
Dedhia, Bhishma — Indian Institute of Technology, Bombay
Khirwadkar, Parthasarathi — Indian Institute of Technology, Bombay
Shah, Sahil — Indian Institute of Technology, Bombay
Kalyanakrishnan, Shivaram — Indian Institute of Technology Bombay

13:30-13:45 — TuA10.3

Scalable Synthesis of Minimum-Information Linear-Gaussian Control by Distributed Optimization, pp. 1750-1757.

Cubuktepe, Murat — The University of Texas at Austin
Tanaka, Takashi — University of Texas at Austin
Topcu, Ufuk — The University of Texas at Austin

13:45-14:00 — TuA10.4

Chance Constrained Covariance Control for Linear Stochastic Systems with Output Feedback, pp. 1758-1763.

Ridderhof, Jack — Georgia Institute of Technology
Okamoto, Kazuhide — Georgia Institute of Technology
Tsiotras, Panagiotis — Georgia Institute of Technology

14:00-14:15 — TuA10.5

Fast, Convexified Stochastic Optimal Open-Loop Control for Linear Systems Using Empirical Characteristic Functions, pp. 1764-1770.

Sivaramakrishnan, Vignesh — University of New Mexico
Oishi, Meeko — University of New Mexico

14:15-14:30 — TuA10.6

Covariance Steering for Discrete-Time Linear-Quadratic Stochastic Dynamic Games, pp. 1771-1776.

Makkapati, Venkata Ramana — Georgia Institute of Technology
Rajpurohit, Tanmay — Genpact Inc
Okamoto, Kazuhide — Georgia Institute of Technology
Tsiotras, Panagiotis — Georgia Institute of Technology

14:30-14:45 — TuA10.7

Minimax Control of Ambiguous Linear Stochastic Systems Using the

Wasserstein Metric, pp. 1777-1784.

Kim, Kihyun	Seoul National University
Yang, Insoon	Seoul National University

14:45-15:00 TuA10.8

How to Protect Your Privacy? a Framework for Counter-Adversarial Decision Making, pp. 1785-1791.

Lourenço, Inês	KTH Royal Institute of Technology
Mattila, Robert	KTH Royal Institute of Technology
Rojas, Cristian R.	KTH Royal Institute of Technology
Wahlberg, Bo	KTH Royal Institute of Technology

TuA11 Coordinated Universal Time (UTC)

Analysis and Control of Large-Scale Autonomous Networks II (Invited Session)

Chair: Lazar, Mircea	Eindhoven University of Technology
Co-Chair: Giua, Alessandro	University of Cagliari
Organizer: Noroozi, Navid	Ludwig-Maximilians-Universität München
Organizer: Lazar, Mircea	Eindhoven University of Technology
Organizer: Zamani, Majid	University of Colorado Boulder

13:00-13:15 TuA11.1

Social Learning with Sparse Belief Samples (I), pp. 1792-1797.

Salhab, Rabih	MIT
Ajorlou, Amir	Massachusetts Institute of Technology
Jadbabaie, Ali	MIT

13:15-13:30 TuA11.2

Network Lyapunov Functions for Epidemic Models (I), pp. 1798-1803.

Newton, Matthew	University of Oxford
Papachristodoulou, Antonis	University of Oxford

13:30-13:45 TuA11.3

Data-Driven Distributed Control: Virtual Reference Feedback Tuning in Dynamic Networks (I), pp. 1804-1809.

Steentjes, Tom Robert Vince	Eindhoven University of Technology
Lazar, Mircea	Eindhoven University of Technology
Van den Hof, Paul M.J.	Eindhoven University of Technology

13:45-14:00 TuA11.4

Identifying the Connectivity of Feasible Regions for Optimal Decentralized Control Problems (I), pp. 1810-1817.

Bi, Yingjie	University of California, Berkeley
Lavaei, Javad	UC Berkeley

14:00-14:15 TuA11.5

A Hierarchical Approach for the Stochastic Stability Analysis of Evolutionary Dynamics (I), pp. 1818-1823.

Jaleel, Hassan	Lahore University of Management Sciences
Shamma, Jeff S.	KAUST

14:15-14:30 TuA11.6

Exponential Synchronization of Nonlinear Oscillators under Sampled-Data Coupling (I), pp. 1824-1829.

Thomas, Jijju	TU Eindhoven
Steur, Erik	Delft University of Technology
Fiter, Christophe	University of Lille / CRIStAL (UMR CNRS 9189)
Hetel, Laurentiu	CNRS
Van De Wouw, Nathan	Eindhoven University of Technology

14:30-14:45 TuA11.7

Topology-Independent Robust Stability Conditions for Uncertain MIMO Networks, pp. 1830-1835.

Devia, Carlos Andres	Delft University of Technology (TU Delft)
Giordano, Giulia	University of Trento

14:45-15:00 TuA11.8

Distributed Fiedler Vector Estimation with Application to Desynchronization of Harmonic Oscillator Networks, pp. 1836-1841.

Deplano, Diego	University of Cagliari
Franceschelli, Mauro	University of Cagliari
Giua, Alessandro	University of Cagliari
Scardovi, Luca	University of Toronto

TuA12 Coordinated Universal Time (UTC)

Networked Control Systems I (Regular Session)

Chair: Steinberger, Martin	Graz University of Technology
Co-Chair: Wichman, Risto	Aalto University

13:00-13:15 TuA12.1

The Minimal Directed Information Needed to Improve the LQG Cost, pp. 1842-1847.

Sabag, Oron	Caltech
Tian, Peida	Caltech
Kostina, Victoria	California Institute of Technology
Hassibi, Babak	Caltech

13:15-13:30 TuA12.2

Compositional Quantification of Invariance Feedback Entropy for Networks of Uncertain Control Systems, pp. 1848-1853.

Tomar, Mahendra Singh	Ludwig Maximilian University of Munich
Zamani, Majid	University of Colorado Boulder

13:30-13:45 TuA12.3

Time-Based Transmission Power Policies for Energy-Efficient Wireless Control of Nonlinear Systems, pp. 1854-1859.

Satheeskumar Varma, Vineeth	CNRS
Postoyan, Romain	CNRS, CRAN, Université De Lorraine
Quevedo, Daniel E.	Queensland University of Technology
Morarescu, Irinel-Constantin	CRAN, CNRS, Université De Lorraine

13:45-14:00 TuA12.4

Throughput-Maximum Energy-Aware Rate Adaptation in W-NCSs Over Quasi-Static Fading Channels, pp. 1860-1865.

Royyan, Muhammad	Aalto University
Vehkapera, Mikko	VTT Technical Research Centre of Finland
Charalambous, Themistoklis	Aalto University
Wichman, Risto	Aalto University

14:00-14:15 TuA12.5

Stochastic Stabilisation and Power Control for Nonlinear Feedback Loops Communicating Over Lossy Wireless Networks, pp. 1866-1871.

Maass, Alejandro I.	The University of Melbourne
Nesic, Dragan	University of Melbourne
Satheeskumar Varma, Vineeth	CNRS
Postoyan, Romain	CNRS, CRAN, Université De Lorraine
Lasaulce, Samson	Supelec Paris

14:15-14:30 TuA12.6

Optimal Finite-Horizon Control for Networked Control Systems in the Presence of Random Delays and Packet Losses, pp. 1872-1877.

Palmisano, Marijan	Graz University of Technology
Steinberger, Martin	Graz University of Technology
Horn, Martin	Graz University of Technology

14:30-14:45 TuA12.7

A Stability Criterion for Networked Control Systems with Packetized Transmissions, pp. 1878-1883.

Steinberger, Martin	Graz University of Technology
Horn, Martin	Graz University of Technology

14:45-15:00 TuA12.8

Distributed Stabilization by Probability Control for Deterministic-Stochastic Large Scale Systems: Dissipativity Approach, pp. 1884-1889.

Tsumura, Koji	The University of Tokyo
Nguyen, Binh-Minh	Toyota Technological Institute
Wakayama, Hisaya	NEC Corporation
Hara, Shinji	Tokyo Institute of Technology

TuA13 Coordinated Universal Time (UTC)

Reinforcement Learning for Optimal and Constrained Control (Regular Session)

Chair: Del Vecchio, Carmen	Università Del Sannio
Co-Chair: Bai, He	Oklahoma State University

13:00-13:15 TuA13.1

Deep Learning of Koopman Representation for Control, pp. 1890-1895.

Han, Yiqiang	Clemson University
Hao, Wenjian	Clemson University
Vaidya, Umesh	Clemson University

13:15-13:30 TuA13.2

Feasibility-Guided Learning for Constrained Optimal Control Problems, pp. 1896-1901.

Xiao, Wei	Boston University
Belta, Calin	Boston University
Cassandras, Christos G.	Boston University

13:30-13:45 TuA13.3

Computing Stabilizing Linear Controllers Via Policy Iteration, pp. 1902-1907.

Lamperski, Andrew	University of Minnesota

13:45-14:00 TuA13.4

A Control Barrier Perspective on Episodic Learning Via Projection-To-State Safety, pp. 1908-1913.

Taylor, Andrew	California Institute of Technology
Singletary, Andrew	California Institute of Technology
Yue, Yisong	California Institute of Technology
Ames, Aaron D.	California Institute of Technology

14:00-14:15 TuA13.5

Model-Free Reinforcement Learning of Minimal-Cost Variance Control, pp. 1914-1919.

Jing, Gangshan	North Carolina State University
Bai, He	Oklahoma State University
George, Jemin	U.S. Army Research Laboratory
Chakrabortty, Aranya	North Carolina State University

14:15-14:30 TuA13.6

Data Selection for Multi-Task Learning under Dynamic Constraints, pp. 1920-1925.

Capone, Alexandre	Technical University of Munich
Lederer, Armin	Technical University of Munich
Umlauft, Jonas	Technical University of Munich
Hirche, Sandra	Technische Universität München

14:30-14:45 TuA13.7

Reinforcement Learning Approach to Feedback Stabilization Problem of Probabilistic Boolean Control Networks, pp. 1926-1931.

Acernese, Antonio	Università Degli Studi Del Sannio
Yerudkar, Amol	University of Sannio
Glielmo, Luigi	University of Sannio
Del Vecchio, Carmen	Università Del Sannio

14:45-15:00 TuA13.8

Active Task-Inference-Guided Deep Inverse Reinforcement Learning, pp. 1932-1938.

Memarian, Farzan	University of Texas at Austin
Xu, Zhe	University of Texas, Austin
Wu, Bo	University of Texas at Austin
Wen, Min	University of Pennsylvania
Topcu, Ufuk	The University of Texas at Austin

TuA14 Coordinated Universal Time (UTC)

Delay Systems (Regular Session)

Chair: Perruquetti, Wilfrid	Ecole Centrale De Lille
Co-Chair: Jiang, Wei	Aalto University, Finland

13:00-13:15 TuA14.1

Consensus of General Linear Multi-Agent Systems with Heterogeneous Input and Communication Delays, pp. 1939-1944.

Jiang, Wei	Aalto University, Finland
Chen, Yiyang	Soochow University
Charalambous, Themistoklis	Aalto University

13:15-13:30 TuA14.2

Observability of Nonlinear Time–delay Systems and Its Application to Their State Realization, pp. 1945-1950.

Califano, Claudia	Univ. Di Roma
Moog, Claude H.	CNRS

13:30-13:45 TuA14.3

Input-Output Admissibility Analysis of Discrete Descriptor System with Time-Varying Delay, pp. 1951-1956.

El Aiss, Hicham	Santiago University of Chile, Department of Electrical Engineeri
Barbosa, Karina A.	Universidad De Santiago De Chile

13:45-14:00 TuA14.4

Analysis of Predictor Feedback for Time-Varying Delays That May Assume Zero Value, pp. 1957-1962.

Liao, Yonglong	Department of Mathematics and Physics, Beijing Institute of Petr
Tang, Shuxia	Texas Tech University
Liao, Fucheng	University of Science and

	Technology Beijing
Krstic, Miroslav	University of California, San Diego

14:00-14:15 TuA14.5

New Results on Delay Robustness of Consensus Algorithms, pp. 1963-1968.

Proskurnikov, Anton V.	Politecnico Di Torino
Calafiore, Giuseppe C.	Politecnico Di Torino

14:15-14:30 TuA14.6

Stability Analysis for Non-Weakly Reversible Single Linkage Class Chemical Reaction Networks with Arbitrary Time Delays, pp. 1969-1974.

Komatsu, Hirokazu	Kyoto University
Nakajima, Hiroyuki	Kindai University

14:30-14:45 TuA14.7

On Finite-Time Stabilization of a Class of Nonlinear Time-Delay Systems: Implicit Lyapunov-Razumikhin Approach (I), pp. 1975-1980.

Nekhoroshikh, Artem	ITMO University
Efimov, Denis	Inria
Polyakov, Andrey	Inria Lille Nord-Europe
Perruquetti, Wilfrid	Ecole Centrale De Lille
Furtat, Igor	Institute of Problems of Mechanical Engineering Russian Academy

14:45-15:00 TuA14.8

On Stability Analysis of Discrete-Time Systems with Constrained Time-Delays Via Halanay-Type Inequalities, pp. 1981-1986.

Grifa, Maria Teresa	University of L'Aquila
Pepe, Pierdomenico	University of L' Aquila

TuA16 Coordinated Universal Time (UTC)

Nonlinear Contraction (Regular Session)

Chair: Tron, Roberto	Boston University
Co-Chair: Jayawardhana, Bayu	University of Groningen

13:00-13:15 TuA16.1

Adaptive Nonlinear Control with Contraction Metrics, pp. 1987-1993.

Lopez, Brett	MIT
Slotine, Jean-Jacques	Massachusetts Institute of Technology

13:15-13:30 TuA16.2

Robust Adaptive Control Barrier Functions: An Adaptive and Data-Driven Approach to Safety, pp. 1994-1999.

Lopez, Brett	MIT
Slotine, Jean-Jacques	Massachusetts Institute of Technology
How, Jonathan, P.	MIT

13:30-13:45 TuA16.3

On Necessary Conditions of Tracking Control for Nonlinear Systems Via Contraction Analysis, pp. 2000-2005.

Yi, Bowen	The University of Sydney
Wang, Ruigang	The University of Sydney
Manchester, Ian R.	University of Sydney

13:45-14:00 TuA16.4

Global Attitude Control Via Contraction on Manifolds with Reference Trajectory and Optimization, pp. 2006-2013.

Vang, Bee	Boston University
Tron, Roberto	Boston University

14:00-14:15 TuA16.5

Local Contraction Analysis of Stochastic Systems with Limit Cycles, pp. 2014-2019.

Ahbe, Eva	Automatic Control Laboratory, ETH Zurich
Iannelli, Andrea	ETH Zurich
Smith, Roy S.	ETH Zurich

14:15-14:30 TuA16.6

Neural Contraction Metrics for Robust Estimation and Control: A Convex Optimization Approach, pp. 2020-2025.

Tsukamoto, Hiroyasu	California Institute of Technology
Chung, Soon-Jo	California Institute of Technology

14:30-14:45 TuA16.7

Direct Model Reference Adaptive Control for Tracking Contracting Nonlinear Systems, pp. 2026-2031.

Hyun, Nak-seung Patrick	Harvard University
Petersen, Mark	Harvard University
Wood, Robert	Harvard University

14:45-15:00 TuA16.8

Contraction Based Nonlinear Controller for a Laser Beam Stabilization System Using a Variable Gain, pp. 2032-2037.

González Romeo, Lorenzo Lázaro	Benemérita Universidad Autónoma De Puebla
Reyes-Baez, Rodolfo	University of Groningen
Guerrero-Castellanos, Jose Fermi	Benemerita Universidad Autonoma De Puebla
Jayawardhana, Bayu	University of Groningen
Cid Monjaraz, Jaime Julián	Benemérita Universidad Autónoma De Puebla
Félix-Beltrán, Olga	Benemérita Universidad Autónoma De Puebla

TuA17 Coordinated Universal Time (UTC)

Theory and Applications of Control Barrier Functions (Invited Session)

Chair: Panagou, Dimitra	University of Michigan, Ann Arbor
Co-Chair: Reis, Matheus	University of Porto
Organizer: Panagou, Dimitra	University of Michigan, Ann Arbor
Organizer: Ames, Aaron D.	California Institute of Technology

13:00-13:15 TuA17.1

Enforcing Safety at Runtime for Systems with Disturbances (I), pp. 2038-2043.

Abate, Matthew	Georgia Institute of Technology
Coogan, Samuel	Georgia Institute of Technology

13:15-13:30 TuA17.2

Strong Invariance Using Control Barrier Functions: A Clarke Tangent Cone Approach (I), pp. 2044-2049.

Usevitch, James	University of Michigan-Ann Arbor
Garg, Kunal	University of Michigan-Ann Arbor
Panagou, Dimitra	University of Michigan, Ann Arbor

13:30-13:45 TuA17.3

Control Barrier Function-Based Quadratic Programs Introduce Undesirable Asymptotically Stable Equilibria, pp. 2050-2055.

Reis, Matheus	University of Porto
Aguiar, A. Pedro	Faculty of Engineering, University of Porto
Tabuada, Paulo	University of California at Los

Angeles

13:45-14:00 TuA17.4

Provably Safe Control of Lagrangian Systems in Obstacle-Scattered Environments (I), pp. 2056-2061.

Barbosa, Fernando	KTH Royal Institute of Technology
Lindemann, Lars	Royal Institute of Technology, KTH
Dimarogonas, Dimos V.	KTH Royal Institute of Technology
Tumova, Jana	KTH Royal Institute of Technology

14:00-14:15 TuA17.5

Approximate Optimal Control for Safety-Critical Systems with Control Barrier Functions (I), pp. 2062-2067.

Cohen, Max	Boston University
Belta, Calin	Boston University

14:15-14:30 TuA17.6

Distributed Collision-Free Motion Coordination on a Sphere: A Conic Control Barrier Function Approach, pp. 2068-2073.

Ibuki, Tatsuya	Meiji University
Wilson, Sean	Georgia Institute of Technology
Ames, Aaron D.	California Institute of Technology
Egerstedt, Magnus	Georgia Institute of Technology

14:30-14:45 TuA17.7

Integral Control Barrier Functions for Dynamically Defined Control Laws, pp. 2074-2079.

Ames, Aaron D.	California Institute of Technology
Notomista, Gennaro	Georgia Institute of Technology
Wardi, Yorai	Georgia Institute of Technology
Egerstedt, Magnus	Georgia Institute of Technology

14:45-15:00 TuA17.8

Characterizing Safety: Minimal Control Barrier Functions from Scalar Comparison Systems, pp. 2080-2085.

Konda, Rohit	UC Santa Barbara
Ames, Aaron D.	California Institute of Technology
Coogan, Samuel	Georgia Institute of Technology

TuSP1 Coordinated Universal Time (UTC)

Taming Large Scale Control Problems with Compositional and Hierarchical Approaches (Semiplenary Session)

Chair: Prandini, Maria	Politecnico Di Milano
Co-Chair: Ishii, Hideaki	Tokyo Institute of Technology

15:10-16:10 TuSP1.1

*Taming Large Scale Control Problems with Compositional and Hierarchical Approaches**.

Arcak, Murat	University of California, Berkeley

TuSP2 Coordinated Universal Time (UTC)

Structural Analysis: The Control Language to Understand Mechanisms (Semiplenary Session)

Chair: Zaccarian, Luca	LAAS-CNRS and University of Trento
Co-Chair: Lin, Zongli	University of Virginia

15:10-16:10 TuSP2.1

*Structural Analysis: The Control Language to Understand Mechanisms**.

Blanchini, Franco	Univ. Degli Studi Di Udine

TuB01 Coordinated Universal Time (UTC)

Testing (COVID-19 Focus Session)

Chair: Liu, Ji	Stony Brook University
Co-Chair: Dabbene, Fabrizio	CNR-IEIIT
Organizer: Pare, Philip E.	Purdue University
Organizer: Sandberg, Henrik	KTH Royal Institute of Technology
Organizer: Beck, Carolyn L.	Univ of Illinois, Urbana-Champaign
Organizer: Liu, Ji	Stony Brook University
Organizer: Valcher, Maria Elena	Universita' Di Padova
Organizer: Dabbene, Fabrizio	CNR-IEIIT
Organizer: Johansson, Karl H.	Royal Institute of Technology

16:15-16:35 TuB01.1

*The Role of Testing Protocols in Tracking COVID-19 – Can Limited Testing Lead to Useful Data? (I)**.

Dahleh, Munther A.	Massachusetts Inst. of Tech
Deshpande, Yash	MIT
Hosoi, Anette E.	Massachusetts Institute of Technology
Tegling, Emma	Massachusetts Institute of Technology

16:35-16:55 TuB01.2

*COVID-19 Tracking and Testing: Network-Based Methodologies (I)**.

Bin, Michelangelo	Imperial College London
Crisostomi, Emanuele	University of Pisa
Dudkina, Ekaterina	University of Pisa
Ferraro, Pietro	University College Dublin
Murray-Smith, Roderick	University of Glasgow
Parisini, Thomas	Imperial College & Univ. of Trieste
Shorten, Robert	Imperial College London
Stone, Lewi	RMIT University
Yilmaz, Serife	Imperial College London

16:55-17:15 TuB01.3

*Demand Control of Information Products: Why Perfect Tests May Not Be Worth Waiting for During a Pandemic (I)**.

Drakopoulos, Kimon	MIT

17:15-17:35 TuB01.4

*Panel Discussion: What Have We Learned about Testing for Pandemics? (I)**.

Beck, Carolyn L.	Univ of Illinois, Urbana-Champaign
Sandberg, Henrik	KTH Royal Institute of Technology

TuB02 Coordinated Universal Time (UTC)

Power Systems I (Regular Session)

Chair: Hadjicostis, Christoforos N.	University of Cyprus
Co-Chair: Sun, Zhiyong	Eindhoven University of Technology (TU/e)

16:15-16:30 TuB02.1

Co-Control of VaR and CVaR for a Data-Driven Stochastic Demand Response Auction, pp. 2086-2091.

Roveto, Matthew	New York University
Mieth, Robert	TU Berlin / New York University
Dvorkin, Yury	New York University

16:30-16:45	TuB02.2
Differentially Private Distributed Optimal Power Flow, pp. 2092-2097.	
Dvorkin, Vladimir	Technical University of Denmark
Van Hentenryck, P.	Georgia Institute of Technology
Kazempour, Jalal	Technical University of Denmark
Pinson, Pierre	Dtu Electrical Engineering

16:45-17:00	TuB02.3
Stability Analysis of Droop-Controlled Inverter-Based Power Grids Via Timescale Separation, pp. 2098-2104.	
Baros, Stefanos	NREL
Hadjicostis, Christoforos N.	University of Cyprus
O'Sullivan, Francis	MIT

17:00-17:15	TuB02.4
A Hierarchical Control Scheme for Optimal Secondary Frequency Regulation with On-Off Loads in Power Networks, pp. 2105-2110.	
Kasis, Andreas	University of Cyprus
Timotheou, Stelios	University of Cyprus
Polycarpou, Marios M.	University of Cyprus

17:15-17:30	TuB02.5
Performance Analysis and Optimization of Power Systems with Spatially Correlated Noise, pp. 2111-2116.	
Jouini, Taouba	Lunds University
Sun, Zhiyong	Eindhoven University of Technology (TU/e)

TuB03	Coordinated Universal Time (UTC)
Formal Methods in Control (Invited Session)	
Chair: Reissig, Gunther	Bundeswehr University Munich
Co-Chair: Girard, Antoine	CNRS
Organizer: Reissig, Gunther	Bundeswehr University Munich

16:15-16:30	TuB03.1
Towards Traffic Bisimulation of Linear Periodic Event-Triggered Controllers, pp. 2117-2122.	
de Albuquerque Gleizer, Gabriel	TU Delft
Mazo Jr., Manuel	Delft University of Technology

16:30-16:45	TuB03.2
Resilient Abstraction-Based Controller Design (I), pp. 2123-2129.	
Samuel, Stanly	Indian Institute of Science, Bangalore
Mallik, Kaushik	MPI-SWS (Max Planck Institute for Software Systems)
Schmuck, Anne-Kathrin	MPI-SWS
Neider, Daniel	Max Planck Institute for Software Systems

16:45-17:00	TuB03.3
Computing Non-Convex Inner-Approximations of Reachable Sets for Nonlinear Continuous Systems (I), pp. 2130-2137.	
Kochdumper, Niklas	Technische Universität München
Althoff, Matthias	Technische Universität München

17:00-17:15	TuB03.4
Formal Synthesis from Control Programs (I), pp. 2138-2145.	
Sinyakov, Vladimir	CNRS
Girard, Antoine	CNRS

17:15-17:30	TuB03.5
Compositional Verification of Initial-State Opacity for Switched Systems, pp. 2146-2151.	
Liu, Siyuan	Technical University of Munich
Swikir, Abdalla	Technical University of Munich
Zamani, Majid	University of Colorado Boulder

TuB04	Coordinated Universal Time (UTC)
Robust Control II (Regular Session)	
Chair: Horváthová, Michaela	Slovak University of Technology in Bratislava
Co-Chair: Silvestre, Carlos	University of Macau

16:15-16:30	TuB04.1
Robust Closed-Loop Model Predictive Control Via System Level Synthesis, pp. 2152-2159.	
Chen, Shaoru	University of Pennsylvania
Wang, Han	University of Pennsylvania
Morari, Manfred	University of Pennsylvania
Preciado, Victor M.	University of Pennsylvania
Matni, Nikolai	University of Pennsylvania

16:30-16:45	TuB04.2
Real-Time Convex-Lifting-Based Robust Control Using Approximated Control Law, pp. 2160-2165.	
Horváthová, Michaela	Slovak University of Technology in Bratislava
Oravec, Juraj	Slovak University of Technology in Bratislava
Bakosova, Monika	Slovak University of Technology in Bratislava

16:45-17:00	TuB04.3
Global Saturated Tracking Control of a Quadcopter with Experimental Validation, pp. 2166-2171.	
Xie, Wei	University of Macau
Yu, Gan	University of Macau
Cabecinhas, David	Faculty of Science and Technology, University of Macau
Cunha, Rita	Instituto Superior Técnico, Universidade De Lisboa
Silvestre, Carlos	University of Macau

17:00-17:15	TuB04.4
An Alternative Algorithm to the D-K Iterations for Robust Control Design, pp. 2172-2177.	
Chen, Yilong	University of California, San Diego
de Oliveira, Mauricio	University of California, San Diego

17:15-17:30	TuB04.5
Distributed Spatially Invariant Systems: An Input-Output Approach, pp. 2178-2183.	
Djouadi, Seddik, M.	University of Tennessee
Morovati, Samaneh	University of Tennessee, Knoxville

TuB05	Coordinated Universal Time (UTC)
Neural Networks (Regular Session)	
Chair: Sojoudi, Somayeh	UC Berkeley
Co-Chair: Shoukry, Yasser	University of California, Irvine

16:15-16:30	TuB05.1
Second-Order Sensitivity Methods for Robustly Training Recurrent Neural Network Models, pp. 2184-2189.	
Johnston, Liam	University of Wisconsin, Madison

Patel, Vivak	University of Wisconsin, Madison

16:30-16:45 TuB05.2

Tightened Convex Relaxations for Neural Network Robustness Certification, pp. 2190-2197.

Anderson, Brendon G.	University of California, Berkeley
Ma, Ziye	University of California, Berkeley
Li, Jingqi	University of California, Berkeley
Sojoudi, Somayeh	UC Berkeley

16:45-17:00 TuB05.3

Two-Level Lattice Neural Network Architectures for Control of Nonlinear Systems, pp. 2198-2203.

Ferlez, James	University of California, Irvine
Sun, Xiaowu	University of California, Irvine
Shoukry, Yasser	University of California, Irvine

17:00-17:15 TuB05.4

Multilayer Neural Network-Based Optimal Adaptive Tracking Control of Partially Uncertain Nonlinear Discrete-Time Systems, pp. 2204-2209.

Moghadam, Rohollah	Arkansas Tech University
Natarajan, Pappa	MIT Campus, Anna University
Jagannathan, Sarangapani	Missouri Univ of Science & Tech

17:15-17:30 TuB05.5

Feedback Control of Dynamic Artificial Neural Networks Using Linear Matrix Inequalities, pp. 2210-2215.

Nikolakopoulou, Anastasia	Massachusetts Institute of Technology
Hong, Moo Sun	Massachusetts Institute of Technology
Braatz, Richard D.	Massachusetts Institute of Technology

TuB06 Coordinated Universal Time (UTC)

Randomized Algorithms (Regular Session)

Chair: Dabbene, Fabrizio	CNR-IEIIT
Co-Chair: Margellos, Kostas	University of Oxford

16:15-16:30 TuB06.1

Stochastic Approximation for CVaR-Based Variational Inequalities, pp. 2216-2221.

Verbree, Jasper	University of Groningen
Cherukuri, Ashish	University of Groningen

16:30-16:45 TuB06.2

Scenario-Based Set Invariance Verification for Black-Box Nonlinear Systems, pp. 2222-2227.

Wang, Zheming	Université Catholique De Louvain
Jungers, Raphaël M.	University of Louvain

16:45-17:00 TuB06.3

Tight Generalization Guarantees for the Sampling and Discarding Approach to Scenario Optimization, pp. 2228-2233.

Romao, Licio	University of Oxford
Margellos, Kostas	University of Oxford
Papachristodoulou, Antonis	University of Oxford

17:00-17:15 TuB06.4

Identification of Supporting Hyperplanes in Scenario Optimisation Problems with Random Linear Constraints, pp. 2234-2239.

Mahmood, Hamza	National University of Sciences and Technology, Islamabad, Pakis
Nasir, Hasan	National University of Sciences and Technology
Ali, Usman	Georgia Institute of Technology

17:15-17:30 TuB06.5

Probabilistic Discrete Time Robust H2 Controller Design, pp. 2240-2245.

Chamanbaz, Mohammadreza	Singapore University of Technology and Design
Sznaier, Mario	Northeastern University
Lagoa, Constantino M.	Pennsylvania State Univ
Dabbene, Fabrizio	CNR-IEIIT

TuB07 Coordinated Universal Time (UTC)

Identification for Control (Regular Session)

Chair: Smith, Roy S.	ETH Zurich
Co-Chair: Berberich, Julian	University of Stuttgart

16:15-16:30 TuB07.1

MIMO System Identification by Randomized Active-Set Methods, pp. 2246-2251.

Miller, Jared	Northeastern University
Singh, Rajiv	The MathWorks
Sznaier, Mario	Northeastern University

16:30-16:45 TuB07.2

Non-Iterative Control-Oriented Regularization for Linear System Identification, pp. 2252-2257.

Chiuso, Alessandro	Univ. Di Padova
Formentin, Simone	Politecnico Di Milano
Zanini, Francesco	Università Di Padova

16:45-17:00 TuB07.3

Control of Unknown Nonlinear Systems with Linear Time-Varying MPC, pp. 2258-2263.

Papadimitriou, Dimitris	UC Berkeley
Rosolia, Ugo	Caltech
Borrelli, Francesco	Unversity of California at Berkeley

17:00-17:15 TuB07.4

A Multiobjective LQR Synthesis Approach to Dual Control for Uncertain Plants, pp. 2264-2269.

Iannelli, Andrea	ETH Zurich
Smith, Roy S.	ETH Zurich

17:15-17:30 TuB07.5

Robust Dual Control Based on Gain Scheduling, pp. 2270-2277.

Venkatasubramanian, Janani	University of Stuttgart
Koehler, Johannes	University of Stuttgart
Berberich, Julian	University of Stuttgart
Allgöwer, Frank	University of Stuttgart

TuB08 Coordinated Universal Time (UTC)

Game Equilibrium Seeking (Invited Session)

Chair: Grammatico, Sergio	Delft Univ. of Tech
Co-Chair: Hu, Guoqiang	Nanyang Technological University, Singapore
Organizer: Grammatico, Sergio	Delft Univ. of Tech
Organizer: Pavel, Lacra	University of Toronto
Organizer: Hong, Yiguang	Chinese Academy of Sciences

16:15-16:30 TuB08.1

Reinforcement Learning in Non-Stationary Discrete-Time Linear-Quadratic Mean-Field Games (I), pp. 2278-2284.

Zaman, Muhammad Aneeq uz	UIUC
Zhang, Kaiqing	University of Illinois at Urbana-Champaign (UIUC)
Miehling, Erik	University of Illinois at Urbana-Champaign
Basar, Tamer	Univ of Illinois, Urbana-Champaign

16:30-16:45 TuB08.2

Distributed Computation of Nash Equilibria for Monotone Aggregative Games Via Iterative Regularization (I), pp. 2285-2290.

Lei, Jinlong	Tongji University
Shanbhag, Uday V.	Pennsylvania State University
Chen, Jie	Beijing Institute of Technology

16:45-17:00 TuB08.3

A Gradient-Free Distributed Nash Equilibrium Seeking Method with Uncoordinated Step-Sizes (I), pp. 2291-2296.

Pang, Yipeng	Nanyang Technological University
Hu, Guoqiang	Nanyang Technological University, Singapore

17:00-17:15 TuB08.4

On the Exact Convergence to Nash Equilibrium in Monotone Regimes under Partial-Information (I), pp. 2297-2302.

Gadjov, Dian	University of Toronto
Pavel, Lacra	University of Toronto

17:15-17:30 TuB08.5

A Fully-Distributed Proximal-Point Algorithm for Nash Equilibrium Seeking with Linear Convergence Rate (I), pp. 2303-2308.

Bianchi, Mattia	Delft University of Technology
Belgioioso, Giuseppe	Swiss Federal Institute of Technology (ETH) Zürich
Grammatico, Sergio	Delft Univ. of Tech

TuB09 Coordinated Universal Time (UTC)

Recent Advances in Distributed Optimization Algorithms (Invited Session)

Chair: Pu, Shi	The Chinese University of Hong Kong, Shenzhen
Co-Chair: Xu, Jinming	Zhejiang University
Organizer: Pu, Shi	The Chinese University of Hong Kong, Shenzhen
Organizer: Xu, Jinming	Zhejiang University
Organizer: Wai, Hoi-To	The Chinese University of Hong Kong

16:15-16:30 TuB09.1

A Unified Algorithmic Framework for Distributed Composite Optimization (I), pp. 2309-2316.

Xu, Jinming	Zhejiang University
Tian, Ye	PURDUE UNIVERSITY
Sun, Ying	Purdue University
Scutari, Gesualdo	Purdue University

16:30-16:45 TuB09.2

A Newton Tracking Algorithm with Exact Linear Convergence Rate for Decentralized Consensus Optimization (I), pp. 2317-2322.

Zhang, Jiaojiao	The Chinese University of Hong Kong
Ling, Qing	Sun Yat-Sen University
So, Anthony Man-Cho	The Chinese University of Hong Kong

16:45-17:00 TuB09.3

S-ADDOPT: Decentralized Stochastic First-Order Optimization Over Directed Graphs, pp. 2323-2328.

Qureshi, Muhammad I.	Tufts University
Xin, Ran	Carnegie Mellon University
Kar, Soummya	Carnegie Mellon University
Khan, Usman A.	Tufts University

17:00-17:15 TuB09.4

Achieving Globally Superlinear Convergence for Distributed Optimization with Adaptive Newton Method (I), pp. 2329-2334.

Zhang, Jiaqi	Tsinghua University
You, Keyou	Tsinghua University
Basar, Tamer	Univ of Illinois, Urbana-Champaign

17:15-17:30 TuB09.5

A Robust Gradient Tracking Method for Distributed Optimization Over Directed Networks (I), pp. 2335-2341.

Pu, Shi	The Chinese University of Hong Kong, Shenzhen

TuB10 Coordinated Universal Time (UTC)

Optimal Control III (Regular Session)

Chair: Azhmyakov, Vadim	Universidad EAFIT
Co-Chair: Imsland, Lars	Norwegian University of Science and Technology

16:15-16:30 TuB10.1

Real Time Optimization of Systems with Fast and Slow Dynamics Using a Lookahead Strategy, pp. 2342-2349.

Andersen, Joakim Rostrup	Norwegian University of Science and Technology
Silva, Thiago Lima	Norwegian University of Science and Technology
Imsland, Lars	Norwegian University of Science and Technology
Pavlov, Alexey	Norwegian University of Science and Technology

16:30-16:45 TuB10.2

The Turnpike Property in the Maximum Hands-Off Control, pp. 2350-2355.

Sakamoto, Noboru	Nanzan University
Nagahara, Masaaki	The University of Kitakyushu

16:45-17:00 TuB10.3

Nested Sparse Successive Galerkin Approximation for Nonlinear Optimal Control Problems, pp. 2356-2361.

Wang, Zhong	Northwestern Polytechnical University
Li, Yan	Northwestern Polytechnical University

17:00-17:15 TuB10.4

A Consistent Numerical Approach to a Class of Optimal Control Processes Governed by Volterra Integro-Differential Equations, pp. 2362-2367.

Azhmyakov, Vadim	Universidad EAFIT
Verriest, Erik I.	Georgia Inst. of Tech
Londoño López, Camilo	EAFIT
Juarez, Raymundo	Universidad Autónoma De

Coahuila

17:15-17:30 TuB10.5

Optimal Control Separating Two Microalgae Species Competing in a Chemostat, pp. 2368-2373.

Djema, Walid	INRIA Saclay-Ile-De-France
Bernard, Olivier	Inria
Bayen, Térence	Université De Montpellier

TuB11 Coordinated Universal Time (UTC)

Recent Advances in Networked Systems (Invited Session)

Chair: Sun, Jian	Beijing Institute of Technology
Co-Chair: Shi, Dawei	Beijing Institute of Technology
Organizer: Sun, Jian	Beijing Institute of Technology
Organizer: Shi, Dawei	Beijing Institute of Technology

16:15-16:30 TuB11.1

Distributed Output Feedback Consensus Control of Multiple Lur'e Systems Based on Event-Triggered Mechanism (I), pp. 2374-2379.

Sun, Jianjun	Beijing Institute of Technology
Liu, Haikuo	Beijing Institute of Technology
Du, Changkun	Beijing Institute of Technology
Liu, Xiangdong	Beijing Institute of Technology
Chen, Zhen	Beijing Institute of Technology
Lu, Pingli	Beijing Institute of Technology, China

16:30-16:45 TuB11.2

Vibration Control Based on Reinforcement Learning for a Flexible Building-Like Structure System with Active Mass Damper against Disturbance Effects (I), pp. 2380-2385.

Gao, Hejia	University of Science and Technology Beijing
He, Wei	University of Science and Technology Beijing
Zhang, Youmin	Concordia University
Sun, Changyin	Southeast University

16:45-17:00 TuB11.3

Distributed Spatial Filtering Over Networked Systems, pp. 2386-2391.

Izumi, Shinsaku	Okayama Prefectural University
Katayama, Ryosuke	Okayama Prefectural University
Xin, Xin	Okayama Prefectural University
Yamasaki, Taiga	Okayama Prefectural University

17:00-17:15 TuB11.4

Event-Triggered Adaptive Horizon Model Predictive Control for Perturbed Nonlinear Systems (I), pp. 2392-2397.

Li, Pengfei	University of Science and Technology of China
Wang, Tao	University of Science and Technology of China
Kang, Yu	University of Science and Technology of China
Zhao, Yun-Bo	Zhejiang University of Technology

17:15-17:30 TuB11.5

Dynamic Output Feedback Control of a Sampled-Data System under Stochastic Sampling (I), pp. 2398-2403.

Sun, Haoyuan	Beijing University of Technology
Han, Honggui	Beijing University of Technology
Sun, Jian	Beijing Institute of Technology
Chen, Jie	Beijing Institute of Technology

TuB12 Coordinated Universal Time (UTC)

Sensor Networks (Regular Session)

Chair: Liu, Qingchen	Technology University of Munich
Co-Chair: Martinez, Sonia	University of California at San Diego

16:15-16:30 TuB12.1

Marginal Density Averaging for Distributed Node Localization from Local Edge Measurements, pp. 2404-2410.

Paritosh, Parth	UC San Diego
Atanasov, Nikolay	University of California, San Diego
Martinez, Sonia	University of California at San Diego

16:30-16:45 TuB12.2

Kullback-Leibler Average of Von Mises Distributions in Multi-Agent Systems, pp. 2411-2417.

Fan, Cody	UCLA
Chang, Tsang-Kai	University of California, Los Angeles
Mehta, Ankur	University of California Los Angeles

16:45-17:00 TuB12.3

Distributed Kalman Filter for 3-D Moving Object Tracking Over Sensor Networks, pp. 2418-2423.

Zhu, Pengxiang	University of California, Riverside
Ren, Wei	University of California, Riverside

17:00-17:15 TuB12.4

Advanced SPSA-Based Algorithm for Multi-Target Tracking in Distributed Sensor Networks, pp. 2424-2429.

Sergeenko, Anna	St. Petersburg State University
Granichin, Oleg	Saint Petersburg State University
Proskurnikov, Anton V.	Politecnico Di Torino

17:15-17:30 TuB12.5

A Distributed Localization Algorithm for Wireless Sensor Networks Subject to DoS Attacks, pp. 2430-2435.

Shi, Lei	University of Electronic Science and Technology
Liu, Qingchen	Technical University of Munich
Shao, Jinliang	University of Electronic Science and Technology of China, Chengd
Cheng, Yuhua	University of Electronic Science and Technology of China

TuB13 Coordinated Universal Time (UTC)

Learning-Based Control I (Invited Session)

Chair: Muller, Matthias A.	Leibniz University Hannover
Co-Chair: Schoellig, Angela P	University of Toronto
Organizer: Muller, Matthias A.	Leibniz University Hannover
Organizer: Schoellig, Angela P	University of Toronto
Organizer: Trimpe, Sebastian	RWTH Aachen University
Organizer: Zeilinger, Melanie N.	ETH Zurich

16:15-16:30 TuB13.1

Learning Control for Polynomial Systems Using Sum of Squares (I), pp. 2436-2441.

Guo, Meichen	University of Groningen
De Persis, Claudio	University of Groningen

Tesi, Pietro	University of Florence

16:30-16:45 TuB13.2

Exploiting Differential Flatness for Robust Learning-Based Tracking Control Using Gaussian Processes, pp. 2442-2447.

Greeff, Melissa	University of Toronto
Schoellig, Angela P	University of Toronto

16:45-17:00 TuB13.3

Safe Learning-Based Model Predictive Control under State and Input-Dependent Uncertainty Using Scenario Trees (I), pp. 2448-2454.

Bonzanini, Angelo Domenico	UC Berkeley
Paulson, Joel	The Ohio State University
Mesbah, Ali	University of California, Berkeley

17:00-17:15 TuB13.4

Constrained Optimal Tracking Control of Unknown Systems: A Multi-Step Linear Programming Approach (I), pp. 2455-2462.

Tanzanakis, Alexandros	ETH Zurich
Lygeros, John	ETH Zurich

17:15-17:30 TuB13.5

Scenario Optimization with Relaxation: A New Tool for Design and Application to Machine Learning Problems (I), pp. 2463-2468.

Campi, M. C.	Universita' Di Brescia
Garatti, Simone	Politecnico Di Milano

TuB14 Coordinated Universal Time (UTC)

Linear Delay Systems (Regular Session)

Chair: Lechappe, Vincent	INSA Lyon
Co-Chair: Espitia, Nicolas	CRIStAL, CNRS

16:15-16:30 TuB14.1

An O(T^2) Discrete-Time Adaptive Regulator for Uncertain MIMO Systems with Bounded Input Delays, pp. 2469-2476.

Abidi, Khalid	Newcastle University
Soo, Hang Jian	None

16:30-16:45 TuB14.2

Prescribed-Time Predictor Control of LTI Systems with Input Delay (I), pp. 2477-2482.

Espitia, Nicolas	CRIStAL, CNRS
Perruquetti, Wilfrid	Ecole Centrale De Lille

16:45-17:00 TuB14.3

Predictor-Based Control of LTI Remote Systems with Estimated Time-Varying Delays, pp. 2483-2488.

Deng, Yang	LS2N-CNRS-UMR 6004-ECN
Lechappe, Vincent	INSA Lyon
Moulay, Emmanuel	Université De Poitiers
Plestan, Franck	Ecole Centrale De Nantes-LS2N

17:00-17:15 TuB14.4

An Improved Lyapunov Stability Test for Linear Time-Delay Systems, pp. 2489-2494.

Egorov, Alexey	SPbSU

17:15-17:30 TuB14.5

A Robust Internal Model Based Fractional Order Controller for Fractional Order Plus Time Delay Processes, pp. 2495-2500.

Arya, Pushkar Prakash	Indian Institute of Technology Roorkee
Chakrabarty, Sohom	Indian Institute of Technology Roorkee

TuB15

Predictive Control for Linear Systems II (Regular Session)

Chair: Gulan, Martin	Faculty of Mechanical Engineering, Slovak University of Technology
Co-Chair: Sonawane, D. N.	College of Engineering, Pune

16:15-16:30 TuB15.1

Convex Lifting Based Inverse Parametric Optimization for Implicit Model Predictive Control: A Case Study, pp. 2501-2508.

Gulan, Martin	Faculty of Mechanical Engineering, Slovak University of Technolo
Nguyen, Ngoc Anh	CentraleSupelec-CNRS-UPS, Universite Paris Saclay
Takács, Gergely	Slovak University of Technology in Bratislava, Faculty of Mechan

16:30-16:45 TuB15.2

A Framework for Embedded Model Predictive Control Using Posits, pp. 2509-2514.

Jugade, Chaitanya	College of Engineering Pune (COEP)
Ingole, Deepak	KU Leuven
Sonawane, D. N.	College of Engineering, Pune
Kvasnica, Michal	Slovak University of Technology in Bratislava
Gustafson, John	National University of Singapore

16:45-17:00 TuB15.3

Fast Risk-Sensitive Model Predictive Control for Systems with Time-Series Forecasting Uncertainties, pp. 2515-2520.

Hyeon, Eunjeong	University of Michigan
Kim, Youngki	University of Michigan - Dearborn
Stefanopoulou, Anna G.	University of Michigan

17:00-17:15 TuB15.4

Error Bounds for Reduced Order Model Predictive Control, pp. 2521-2528.

Lorenzetti, Joseph	Stanford University
Pavone, Marco	Stanford University

17:15-17:30 TuB15.5

Robust Output Feedback MPC: An Interval-Observer Approach, pp. 2529-2534.

dos Reis de Souza, Alex	Inria Lille Nord Europe
Efimov, Denis	Inria
Raïssi, Tarek	Conservatoire National Des Arts Et Métiers
Ping, Xubin	Xidian University

TuB16 Coordinated Universal Time (UTC)

LMI-Based Lyapunov Methods (Regular Session)

Chair: Ferrante, Francesco	GIPSA-lab/CNRS and Université Grenoble Alpes
Co-Chair: Bianchini, Gianni	Università Di Siena

16:15-16:30 TuB16.1

Sampling Quotient-Ring Sum-Of-Squares Programs for Scalable Verification of Nonlinear Systems, pp. 2535-2542.

Shen, Shen	MIT
Tedrake, Russ	MIT

16:30-16:45	TuB16.2
On Quantization in Discrete-Time Control Systems: StabilityAnalysis of Ternary Controllers, pp. 2543-2548.	
Valmorbida, Giorgio	L2S, CentraleSupelec
Ferrante, Francesco	GIPSA-lab/CNRS and Université Grenoble Alpes

16:45-17:00	TuB16.3
Linear Fractional Representations and L2-Stability Analysis of Continuous Piecewise Affine Systems, pp. 2549-2554.	
Bianchini, Gianni	Università Di Siena
Paoletti, Simone	Universita' Di Siena
Vicino, Antonio	Univ. Di Siena

17:00-17:15	TuB16.4
Piecewise Semi-Euclidean Control Invariant Sets, pp. 2555-2560.	
Legat, Benoît	UCLouvain
Rakovic, Sasa V.	Beijing Institute of Technology
Jungers, Raphaël M.	University of Louvain

17:15-17:30	TuB16.5
An LMI-Based Iterative Algorithm for State and Output Feedback Stabilization of Discrete-Time Lur'e Systems, pp. 2561-2566.	
Bertolin, Ariádne de Lourdes Justi	University of Campinas
Peres, Pedro L. D.	University of Campinas
Oliveira, Ricardo C. L. F.	University of Campinas - UNICAMP
Valmorbida, Giorgio	L2S, CentraleSupelec

TuB17	Coordinated Universal Time (UTC)
Pricing and Portfolio (Regular Session)	
Chair: Li, Sen	The Hong Kong University of Science and Technology
Co-Chair: Monshizadeh, Nima	University of Groningen

16:15-16:30	TuB17.1
Scheduling of Flexible Non-Preemptive Loads, pp. 2567-2572.	
Dahlin, Nathan	University of Southern California
Jain, Rahul	University of Southern California

16:30-16:45	TuB17.2
Joint Pricing and Rebalancing of Autonomous Mobility-On-Demand Systems, pp. 2573-2578.	
Wollenstein-Betech, Salomon	Boston University
Paschalidis, Ioannis Ch.	Boston University
Cassandras, Christos G.	Boston University

16:45-17:00	TuB17.3
Nudging the Aggregative Behavior of Noncooperative Agents, pp. 2579-2584.	
Shakarami, Mehran	University of Groningen
Cherukuri, Ashish	University of Groningen
Monshizadeh, Nima	University of Groningen

17:00-17:15	TuB17.4
Off-Street Parking for TNC Vehicles to Reduce Cruising Traffic, pp. 2585-2590.	
Li, Sen	The Hong Kong University of Science and Technology
Qin, Junjie	UC Berkeley
Yang, Hai	The Hong Kong University of Science and Technology
Poolla, Kameshwar	Univ. of California at Berkeley
Varaiya, Pravin	Univ. of California at Berkeley

17:15-17:30	TuB17.5
Necessary and Sufficient Conditions for Frequency-Based Kelly Optimal Portfolio, pp. 2591-2596.	
Hsieh, Chung-Han	University of Wisconsin-Madison

WeA01 Coordinated Universal Time (UTC)

Direct Transcription for Dynamic Optimization: A Tutorial and Case Study on Dual-Patient Ventilation During the COVID-19 Pandemic (Tutorial Session)

Chair: Kerrigan, Eric C.	Imperial College London
Co-Chair: Solis-Lemus, Jose A.	School of Biomedical Engineering and Imaging Sciences, King's College London
Organizer: Kerrigan, Eric C.	Imperial College London

13:00-13:15 WeA01.1

Direct Transcription for Dynamic Optimization: A Tutorial with a Case Study on Dual-Patient Ventilation During the COVID-19 Pandemic (I), pp. 2597-2614.

Kerrigan, Eric C.	Imperial College London
Nie, Yuanbo	Imperial College London
Faqir, Omar James	Imperial College London
Kennedy, Caroline H.	Evelina Children's Hospital, Guy's and St Thomas' NHS Foundation
Niederer, Steven A.	School of Biomedical Engineering and Imaging Sciences, King's Co
Solis-Lemus, Jose A.	School of Biomedical Engineering and Imaging Sciences, King's Co
Vincent, Peter	Imperial College London
Williams, Steven E.	School of Biomedical Engineering and Imaging Sciences, King's Co

13:15-13:40 WeA01.2

*Dual-Patient Ventilation (I)**.

Solis-Lemus, Jose A.	School of Biomedical Engineering and Imaging Sciences, King's Co
Kennedy, Caroline H.	Evelina Children's Hospital, Guy's and St Thomas' NHS Foundation
Niederer, Steven A.	School of Biomedical Engineering and Imaging Sciences, King's Co
Vincent, Peter	Imperial College London
Williams, Steven E.	School of Biomedical Engineering and Imaging Sciences, King's Co

13:40-14:20 WeA01.3

*Direct Transcription of Dynamic Optimization Problems (I)**.

Nie, Yuanbo	Imperial College London

14:20-14:45 WeA01.4

*Numerical Methods for Structured Optimization Problems (I)**.

Faqir, Omar James	Imperial College London

14:45-15:00 WeA01.5

*The Past, Present and Future of Dynamic Optimization (I)**.

Kerrigan, Eric C.	Imperial College London

WeA02 Coordinated Universal Time (UTC)

Resource Allocation (Regular Session)

Chair: Kofman, Daniel	Telecom Paris
Co-Chair: Eisen, Mark	Intel Corporation

13:00-13:15 WeA02.1

Learning Constrained Resource Allocation Policies in Wireless Control Systems, pp. 2615-2621.

Lima, Vinicius	University of Pennsylvania
Eisen, Mark	Intel Corporation
Ribeiro, Alejandro	University of Pennsylvania

13:15-13:30 WeA02.2

Distributed Time-Varying Resource Allocation Optimization Based on Finite-Time Consensus Approach, pp. 2622-2627.

Wang, Bo	Beijing Institute of Technology
Fei, Qing	Beijjing Institute of Technology
Wu, Qinghe	Beijing Inst. of Tech

13:30-13:45 WeA02.3

Toward Distributed Optimization for Critical Service Restoration with Distributed Energy Resources, pp. 2628-2633.

Liang, Junkai	North Carolina State University
Tang, Wenyuan	North Carolina State University
Lu, Xiaonan	Temple University

13:45-14:00 WeA02.4

Efficient Distributed Solutions for Sharing Energy Resources at the Local Level: A Cooperative Game Approach, pp. 2634-2641.

Kiedanski, Diego	Telecom ParisTech
Busic, Ana	Inria
Kofman, Daniel	Telecom Paris
Orda, Ariel	Technion

14:00-14:15 WeA02.5

Social Resource Allocation in a Mobility System with Connected and Automated Vehicles: A Mechanism Design Problem, pp. 2642-2647.

Chremos, Ioannis Vasileios	University of Delaware
Malikopoulos, Andreas A.	University of Delaware

14:15-14:30 WeA02.6

On the Stability and Fairness of Submodular Allocations, pp. 2648-2653.

Kyriakis, Panagiotis	University of Southern California
Pequito, Sergio	Rensselaer Polytechnic Institute
Bogdan, Paul	University of Southern California

14:30-14:45 WeA02.7

A Cross-Layer Optimal Co-Design of Control and Networking in Time-Sensitive Cyber-Physical Systems, pp. 2654-2659.

Mamduhi, Mohammadhossein	Kth - Tum
Maity, Dipankar	Georgia Institute of Technology
Baras, John S.	University of Maryland
Johansson, Karl H.	Royal Institute of Technology

14:45-15:00 WeA02.8

Particle Based Optimization for Predictive Energy Efficient Data Center Management, pp. 2660-2665.

Carnerero, A. Daniel	University of Seville
Ramirez, Daniel R.	Univ. of Sevilla
Limon, Daniel	Universidad De Sevilla
Alamo, Teodoro	Universidad De Sevilla

WeA03 Coordinated Universal Time (UTC)

Fault Detection and Handling (Regular Session)

Chair: Niemann, Henrik	Technical Univ. of Denmark
Co-Chair: Silvestre, Carlos	University of Macau

13:00-13:15 WeA03.1

Fault Detection and Isolation for Linear Structured Systems, pp. 2666-2671.

Jia, Jiajia	University of Groningen
Trentelman, Harry L.	Univ. of Groningen
Camlibel, M. Kanat	University of Groningen

13:15-13:30	WeA03.2
Fault Isolation in MIMO Systems Based on Active Decoupling, pp. 2672-2677.	
Niemann, Henrik	Technical Univ. of Denmark
Stoustrup, Jakob	Aalborg University
Poulsen, Niels Kjølstad	Tech. Univ. of Denmark

13:30-13:45	WeA03.3
A Novel Online Active Fault Diagnosis Method Based on Invariant Sets, pp. 2678-2683.	
Yang, Songlin	Graduate School at Shenzhen, Tsinghua University
Xu, Feng	Tsinghua University
Wang, Xueqian	Tsinghua University
Liang, Bin	Tsinghua University

13:45-14:00	WeA03.4
Detection and Isolation of Actuator Faults and Collisions for a Flexible Robot Arm, pp. 2684-2689.	
Gaz, Claudio Roberto	Sapienza - Università Di Roma
Cristofaro, Andrea	Sapienza University of Rome
De Luca, Alessandro	Sapienza Università Di Roma

14:00-14:15	WeA03.5
Structural Methods for Distributed Fault Diagnosis of Large-Scale Systems, pp. 2690-2695.	
Jung, Daniel	Linkoping University

14:15-14:30	WeA03.6
Fault-Tolerant Tracking Control for Heterogeneous Multi-Agent Systems, pp. 2696-2701.	
Pham, Van Thiem	University of Reims Champagne-Ardenne
Nguyen, Thi Thanh Quynh	CReSTIC, University of Reims Champange Ardene
Messai, Nadhir	Université De Reims Champagne-Ardenne
Manamanni, Noureddine	University of Reims

14:30-14:45	WeA03.7
A General Discrete-Time Method to Achieve Resilience in Consensus Algorithms, pp. 2702-2707.	
Ramos, Guilherme	Department of Electrical and Computer Engineering, Faculty of En
Silvestre, Daniel	University of Macau
Silvestre, Carlos	University of Macau

14:45-15:00	WeA03.8
Model Reference Sliding Mode Fault Tolerant Control of a BWB Aircraft, pp. 2708-2713.	
Vile, Liam	University of Exeter
Alwi, Halim	University of Exeter
Edwards, Christopher	University of Exeter

WeA04	Coordinated Universal Time (UTC)
Uncertain Systems (Regular Session)	
Chair: Weyer, Erik	Univ. of Melbourne
Co-Chair: Putot, Sylvie	CNRS & Ecole Polytechnique

13:00-13:15	WeA04.1
An MCMC Method for Uncertainty Set Generation Via Operator-Theoretic Metrics, pp. 2714-2719.	
Srinivasan, Anand	Massachusetts Institute of Technology
Takeishi, Naoya	RIKEN

13:15-13:30	WeA04.2
Robust Under-Approximations and Application to Reachability of Non-Linear Control Systems with Disturbances, pp. 2720-2725.	
Goubault, Eric	CEA France
Putot, Sylvie	CNRS & Ecole Polytechnique

13:30-13:45	WeA04.3
A Quadratic Program Based Control Synthesis under Spatiotemporal Constraints and Non-Vanishing Disturbances, pp. 2726-2731.	
Black, Mitchell	University of Michigan
Garg, Kunal	University of Michigan-Ann Arbor
Panagou, Dimitra	University of Michigan, Ann Arbor

13:45-14:00	WeA04.4
Explorative Probabilistic Planning with Unknown Target Locations, pp. 2732-2737.	
Savvas Sadiq Ali, Farhad Nawaz	University of Illinois at Urbana-Champaign
Ornik, Melkior	University of Illinois at Urbana-Champaign

14:00-14:15	WeA04.5
A Scenario Approach for Robust Optimization Over Uncertain System Identification Models, pp. 2738-2743.	
Wang, Xiaopuwen	University of Melbourne
Weyer, Erik	Univ. of Melbourne

14:15-14:30	WeA04.6
Comparative Study of Output-Based and Error-Based ADRC Schemes in Application to Buck Converter-Fed DC Motor System, pp. 2744-2749.	
Madonski, Rafal	Jinan University
Lakomy, Krzysztof	Poznan University of Technology
Yang, Jun	Southeast University

14:30-14:45	WeA04.7
Robust Impulsive Observer--Based Stabilization for Uncertain Nonlinear Systems with Sampled--Output, pp. 2750-2755.	
Jaramillo, Oscar David	Center for Research and Advanced Studies of the National Polytec
Castillo-Toledo, Bernardino	CINVESTAV-GDL, Mexico
Di Gennaro, Stefano	University of L'Aquila

14:45-15:00	WeA04.8
Guaranteed Reachability for Systems with Unknown Dynamics, pp. 2756-2761.	
Ornik, Melkior	University of Illinois at Urbana-Champaign

WeA05	Coordinated Universal Time (UTC)
Formation Control I (Regular Session)	
Chair: Colombo, Leonardo Jesus	Universidad Autonoma De Madrid
Co-Chair: Sun, Zhiyong	Eindhoven University of Technology (TU/e)

13:00-13:15	WeA05.1
Distance-Based Formation Control with Bounded Disturbances, pp. 2762-2767.	
Vu, Dung Van	Hanoi University of Science and Technology
Trinh, Minh Hoang	Hanoi University of Science and

	Technology (HUST)
Nguyen, Phuoc	Hanoi University of Science and Technology
Ahn, Hyo-Sung	Gwangju Institute of Science and Technology (GIST)

13:15-13:30 WeA05.2

Event-Based Formation Control of Networked Multi-Agent Systems Using Complex Laplacian under Directed Topology, pp. 2768-2773.

Ranjbar, Mojtaba	Tarbiat Modares University
Beheshti, Mohammad T. H.	Univ. of Tarbiat Modares
Bolouki, Sadegh	Tarbiat Modares University

13:30-13:45 WeA05.3

A Discrete Time Model for Swarm Formation with Coordinates Coupling Matrix, pp. 2774-2779.

Fedele, Giuseppe	University of Calabria
D'Alfonso, Luigi	GIPSTECH S.r.l
Bono, Antonio	University of Calabria

13:45-14:00 WeA05.4

A Data-Driven Method Based on Quadratic Programming for Distance-Based Formation Control of Euler-Lagrange Systems, pp. 2780-2785.

Arroyo Rodriguez, Veronica	Polytechnic University of Madrid
Gamonal Fernandez, Manuela	Instituto De Ciencias Matematicas & Complutense University of Ma
Moreno, Patricio	University of Buenos Aires
Colombo, Leonardo Jesus	Universidad Autonoma De Madrid

14:00-14:15 WeA05.5

Distance-Based Formation Control Over Directed Triangulated Laman Graphs in 2-D Space, pp. 2786-2792.

Babazadeh, Reza	Concordia University
Selmic, Rastko	Concordia University

14:15-14:30 WeA05.6

Distributed Adaptive Event-Triggered Coordination with Discrete Updates of Controllers, pp. 2793-2798.

Cheng, Bin	Peking University
Li, Zhongkui	Peking University
Lv, Yuezu	Southeast University

14:30-14:45 WeA05.7

Formation Control of Multi-Agent Systems with Generalized Relative Measurements, pp. 2799-2804.

Sakurama, Kazunori	Kyoto University

14:45-15:00 WeA05.8

On Global Convergence of Area-Constrained Formations of Hierarchical Multi-Agent Systems, pp. 2805-2810.

Sugie, Toshiharu	Osaka University
Tong, Fei	Kyoto University
Anderson, Brian D.O.	Australian National University
Sun, Zhiyong	Eindhoven University of Technology (TU/e)

WeA06 Coordinated Universal Time (UTC)

Platooning and Intersections (Regular Session)

Chair: Di Benedetto, Maria Domenica	University of L'Aquila
Co-Chair: Evangelou, Simos Andreas	Imperial College

13:00-13:15 WeA06.1

On the Utilization of Macroscopic Information for String Stability of a Vehicular Platoon, pp. 2811-2816.

Mirabilio, Marco	University of L'Aquila
Iovine, Alessio	UC Berkeley
De Santis, Elena	University of L'Aquila
Di Benedetto, Maria Domenica	University of L'Aquila
Pola, Giordano	University of L'Aquila

13:15-13:30 WeA06.2

Traffic Control Via Platoons of Intelligent Vehicles for Saving Fuel Consumption in Freeway Systems, pp. 2817-2822.

Piacentini, Giulia	University of Pavia
Goatin, Paola	Inria
Ferrara, Antonella	University of Pavia

13:30-13:45 WeA06.3

Reducing Time Headway in Platoons under the MPF Topology When Using Sensors and Wireless Communications, pp. 2823-2830.

Abolfazli, Elham	Aalto University
Besselink, Bart	University of Groningen
Charalambous, Themistoklis	Aalto University

13:45-14:00 WeA06.4

Optimal Motion Control for Connected and Automated Electric Vehicles at Signal-Free Intersections, pp. 2831-2836.

Pan, Xiao	Imperial College London
Chen, Boli	University College London
Evangelou, Simos Andreas	Imperial College
Timotheou, Stelios	University of Cyprus

14:00-14:15 WeA06.5

String Stable Integral Control of Vehicle Platoons with Actuator Dynamics and Disturbances, pp. 2837-2842.

Froes Silva, Guilherme	Queensland University of Technology
Donaire, Alejandro	The University of Newcastle
McFadyen, Aaron	Queensland University of Technology
Ford, Jason John	Queensland Univeristy of Technology

14:15-14:30 WeA06.6

Coordinated Lateral and Longitudinal Vehicle-Following Control of Connected and Automated Vehicles Considering Nonlinear Dynamics, pp. 2843-2848.

Wang, Yulei	Tongji University
Bian, Ning	Dongfeng Technical Center, Dongfeng Motor Corporation
Zhang, Lin	Tongji University
Chen, Hong	Jilin University, Campus NanLing

14:30-14:45 WeA06.7

Distributed Nonlinear Model Predictive Control and Metric Learning for Heterogeneous Vehicle Platooning with Cut-in/Cut-Out Maneuvers, pp. 2849-2856.

Basiri, Mohammad Hossein	University of Waterloo
Ghojogh, Benyamin	University of Waterloo
Azad, Nasser Lashgarian	University of Waterloo
Fischmeister, Sebastian	University of Waterloo
Karray, Fakhri	University of Waterloo
Crowley, Mark	University of Waterloo

14:45-15:00 WeA06.8

Platoon Control Based on Predecessor and Delayed Leader Information Via Minimized Headway Times, pp. 2857-2862.

Koroglu, Hakan	University of Twente
Falcone, Paolo	Chalmers University of Technology

WeA07	Coordinated Universal Time (UTC)
Estimation (Regular Session)	
Chair: Ushirobira, Rosane	Inria
Co-Chair: Asiri, Sharefa	King Abdulaziz University (KAU)

13:00-13:15 WeA07.1

Selection of Modulating Functions' Design Parameters for Estimation Problems, pp. 2863-2868.

Asiri, Sharefa	King Abdulaziz University (KAU)
Liu, Da-Yan	INSA Centre Val De Loire, Campus De Bourges
Laleg-Kirati, Taous-Meriem	King Abdullah University of Science and Technology (KAUST)

13:15-13:30 WeA07.2

Iterative H∞-Norm Estimation Using Cyclic-Prefixed Signals, pp. 2869-2874.

Müller, Matias I.	KTH Royal Institute of Technology
Rojas, Cristian R.	KTH Royal Institute of Technology

13:30-13:45 WeA07.3

Estimation of Heteroscedastic Multilinear Systems, pp. 2875-2880.

Wang, Mingliang	KTH Royal Institute of Technology
Jacobsen, Elling	Royal Inst of Tech - KTH
Chotteau, Veronique	KTH Royal Institute of Technology
Hjalmarsson, Håkan	KTH Royal Inst. of Tech

13:45-14:00 WeA07.4

Towards State Estimation of Persidskii Systems, pp. 2881-2886.

Mei, Wenjie	Inria
Efimov, Denis	Inria
Ushirobira, Rosane	Inria

14:00-14:15 WeA07.5

Differentially Private Parameter Estimation: Optimal Noise Insertion and Data Owner Selection, pp. 2887-2893.

Cao, Xuanyu	University of Illinois at Urbana-Champaign
Basar, Tamer	Univ of Illinois, Urbana-Champaign

14:15-14:30 WeA07.6

Near-Optimal MAP Estimation for Markov Jump Linear Systems Using Relaxed Dynamic Programming, pp. 2894-2899.

Andrien, Alex Rudolf Petrus	Eindhoven University of Technology
Antunes, Duarte	Eindhoven University of Technology, the Netherlands

14:30-14:45 WeA07.7

Robust Moving Horizon State Estimation for Uncertain Linear Systems Using Linear Matrix Inequalities, pp. 2900-2905.

Georgiou, Anastasis	Imperial College London
Tahir, Furqan	Perceptive Engineering Limited
Evangelou, Simos Andreas	Imperial College
Jaimoukha, Imad M.	Imperial College London

14:45-15:00 WeA07.8

A Compact CRB for the Single Source Conditional Signal Model with Application to Delay-Doppler-Phase Estimation of Band-Limited Signals, pp. 2906-2911.

Ortega, Lorenzo	Telecommunications for Space and Aeronautics Lab (TéSA)
Medina, Daniel	German Aerospace Center (DLR)
Vilà-Valls, Jordi	University of Toulouse-ISAE
Vincent, Francois	University of Toulouse-ISAE
Chaumette, Eric	University of Toulouse-ISAE

WeA08	Coordinated Universal Time (UTC)
Kalman Filtering (Regular Session)	
Chair: Zorzi, Mattia	University of Padova
Co-Chair: Murata, Masaya	Japan Aerospace Exploration Agency

13:00-13:15 WeA08.1

An Extended Kalman Filter for Data-Enabled Predictive Control, pp. 2912-2917.

Alpago, Daniele	University of Padova
Dörfler, Florian	Swiss Federal Institute of Technology (ETH) Zurich
Lygeros, John	ETH Zurich

13:15-13:30 WeA08.2

Extended, Unscented Kalman, and Sigma Point Multiple Distribution Estimation Filters for Nonlinear Discrete State-Space Models, pp. 2918-2923.

Murata, Masaya	Japan Aerospace Exploration Agency
Kawano, Isao	Japan Aerospace Exploration Agency
Inoue, Koichi	Japan Aerospace Exploration Agency

13:30-13:45 WeA08.3

Robust Tracking under Measurement Model Mismatch Via Linearly Constrained Extended Kalman Filtering, pp. 2924-2929.

Ortega, Lorenzo	Telecommunications for Space and Aeronautics Lab (TéSA)
Vilà-Valls, Jordi	University of Toulouse-ISAE
Chaumette, Eric	University of Toulouse-ISAE
Pages, Gael	University of Toulouse-ISAE
Vincent, Francois	University of Toulouse-ISAE

13:45-14:00 WeA08.4

Low-Rank Kalman Filtering under Model Uncertainty, pp. 2930-2935.

Yi, Shenglun	Beijing Institute of Technology
Zorzi, Mattia	University of Padova

14:00-14:15 WeA08.5

Robust Kalman Filtering with Probabilistic Uncertainty in System Parameters, pp. 2936-2941.

Kim, Sunsoo	Texas A&M University
Deshpande, Vedang M.	Texas A&M University
Bhattacharya, Raktim	Texas A&M

14:15-14:30 WeA08.6

Exploiting Linear Substructure in Linear Regression Kalman Filters, pp. 2942-2948.

Greiff, Marcus Carl	Lund University
Robertsson, Anders	LTH, Lund University
Berntorp, Karl	Mitsubishi Electric Research Labs

14:30-14:45 WeA08.7

A Hybrid, Coupled Approach to the Continuous-Discrete Kalman Filter, pp. 2949-2954.

Patel, Zubeida	University of Cape Town
Boje, Edward	University of Cape Town

14:45-15:00 WeA08.8

Sequential Coordinates Conversion and Decoupled Linear Tracking for Airborne AESA Radars, pp. 2955-2960.

Jung, Bo-Young	Handong Global University
Ham, Dahye	Handong Global University
Ra, Won-Sang	Handong Global University

WeA09 Coordinated Universal Time (UTC)

Optimization Algorithms I (Regular Session)

Chair: Prandini, Maria	Politecnico Di Milano
Co-Chair: Tsumura, Koji	The University of Tokyo

13:00-13:15 WeA09.1

Accelerated Multi-Agent Optimization Method Over Stochastic Networks, pp. 2961-2966.

Ananduta, Wicak	TU Delft
Ocampo-Martinez, Carlos	Universitat Politècnica De Catalunya (UPC)
Nedich, Angelia	Arizona State University

13:15-13:30 WeA09.2

A Decentralized Algorithm for Large Scale Min-Max Problems, pp. 2967-2972.

Mukherjee, Soham	Indian Institute of Technology Kharagpur
Chakraborty, Mrityunjoy	IIT Kharagpur

13:30-13:45 WeA09.3

Private and Hot-Pluggable Distributed Averaging, pp. 2973-2978.

Donato Ridgley, Israel	Northwestern University
Freeman, Randy	Northwestern Univ
Lynch, Kevin M.	Northwestern University

13:45-14:00 WeA09.4

Distributed Maximization of Submodular and Approximately Submodular Functions, pp. 2979-2984.

Ye, Lintao	Purdue University
Sundaram, Shreyas	Purdue University

14:00-14:15 WeA09.5

Preconditioned Distributed Trajectory Optimization Algorithm Using Differential Dynamic Programming, pp. 2985-2991.

Wang, Yunzhuo	The University of Tokyo
Tsumura, Koji	The University of Tokyo

14:15-14:30 WeA09.6

D-DistADMM: A $O(1/k)$ Distributed ADMM for Distributed Optimization in Directed Graph Topologies, pp. 2992-2997.

Khatana, Vivek	University of Minnesota, Twin-Cities
Salapaka, Murti V.	University of Minnesota, Minneapolis

14:30-14:45 WeA09.7

A Distributed Dual Proximal Minimization Algorithm for Constraint-Coupled Optimization Problems, pp. 2998-3003.

Falsone, Alessandro	Politecnico Di Milano
Prandini, Maria	Politecnico Di Milano

14:45-15:00 WeA09.8

Overlapping Schwarz Decomposition for Constrained Quadratic Programs, pp. 3004-3009.

Shin, Sungho	University of Wisconsin-Madison
Anitescu, Mihai	Argonne National Laboratory
Zavala, Victor M.	University of Wisconsin-Madison

WeA10 Coordinated Universal Time (UTC)

Stochastic Optimal Control II (Regular Session)

Chair: Moon, Jun	Hanyang University
Co-Chair: Karlsson, Johan	KTH Royal Institute of Technology

13:00-13:15 WeA10.1

A General Framework for Bounding Approximate Dynamic Programming Schemes, pp. 3010-3015.

Liu, Yajing	National Renewable Energy Laboratory
Chong, Edwin K. P.	Colorado State University
Pezeshki, Ali	Colorado State University
Zhang, Zhenliang	Intel Corp

13:15-13:30 WeA10.2

Robust Dual Control of Batch Processes with Parametric Uncertainty Using Proximal Policy Optimization, pp. 3016-3021.

Byun, Ha-Eun	Korea Advanced Institute of Science and Technology (KAIST)
Kim, Boeun	University of Wisconsin-Madison
Lee, Jay H.	Korea Advanced Institute of Science and Technology

13:30-13:45 WeA10.3

Optimal Steering of Ensembles with Origin-Destination Constraints, pp. 3022-3027.

Haasler, Isabel	KTH Royal Institute of Technology
Chen, Yongxin	Georgia Institute of Technology
Karlsson, Johan	KTH Royal Institute of Technology

13:45-14:00 WeA10.4

A Feedback Nash Equilibrium for Linear-Quadratic Zero-Sum Stochastic Differential Games with Random Coefficients, pp. 3028-3033.

Moon, Jun	Hanyang University

14:00-14:15 WeA10.5

Harvesting Energy from a Periodic Heat Bath, pp. 3034-3039.

Fu, Rui	University of California, Irvine
Movilla Miangolarra, Olga	UC Irvine
Taghvaei, Amirhossein	University of California Irvine
Chen, Yongxin	Georgia Institute of Technology
Georgiou, Tryphon T.	University of California, Irvine

14:15-14:30 WeA10.6

Risk-Constrained Linear Quadratic Regulators, pp. 3040-3047.

Tsiamis, Anastasios	University of Pennsylvania
Kalogerias, Dionysios	University of Pennsylvania
Chamon, Luiz F. O.	University of Pennsylvania
Ribeiro, Alejandro	University of Pennsylvania
Pappas, George J.	University of Pennsylvania

14:30-14:45 WeA10.7

Stochastic Control with Random Coefficients under Recursive-Type Objective Functionals, pp. 3048-3053.

Moon, Jun	Hanyang University
Kim, Yoonsoo	Gyeongsang National University

14:45-15:00 WeA10.8

Stabilizing Optimal Density Control of Nonlinear Agents with

Multiplicative Noise, pp. 3054-3059.

Bakshi, Kaivalya	Southwest Research Institute
Theodorou, Evangelos A.	Georgia Institute of Technology
Grover, Piyush	University of Nebraska-Lincoln

WeA11	Coordinated Universal Time (UTC)
Analysis and Control of Large-Scale Autonomous Networks III (Invited Session)	
Chair: Zamani, Majid	University of Colorado Boulder
Co-Chair: Scherpen, Jacquelien M.A.	University of Groningen
Organizer: Noroozi, Navid	Ludwig-Maximilians-Universität München
Organizer: Lazar, Mircea	Eindhoven University of Technology
Organizer: Zamani, Majid	University of Colorado Boulder

13:00-13:15 WeA11.1

A Passivity-Inspired Design of Power-Voltage Droop Controllers for DC Microgrids with Electrical Network Dynamics (I), pp. 3060-3065.

Machado Martínez, Juan Eduardo	University of Groningen
Schiffer, Johannes	Brandenburg University of Technology

13:15-13:30 WeA11.2

Rumor-Robust Decentralized Gaussian Process Learning, Fusion, and Planning for Modeling Multiple Moving Targets (I), pp. 3066-3071.

Liu, Chang	Cornell University
Liao, Zhihao	Cornell University
Ferrari, Silvia	Cornell University

13:30-13:45 WeA11.3

Compositional Construction of Control Barrier Certificates for Large-Scale Stochastic Switched Systems, pp. 3072-3077.

Nejati, Ameneh	Technical University of Munich (TUM)
Soudjani, Sadegh	Newcastle University
Zamani, Majid	University of Colorado Boulder

13:45-14:00 WeA11.4

A Distributed Algorithm for Sequential Decision Making in Multi-Armed Bandit with Homogeneous Rewards (I), pp. 3078-3083.

Zhu, Jingxuan	Stony Brook University
Sandhu, Romeil	Stony Brook University
Liu, Ji	Stony Brook University

14:00-14:15 WeA11.5

Aspects of Fairness in Robust, Distributed Control of Interconnected Systems, pp. 3084-3089.

Axelson-Fisk, Magnus	Uppsala University
Knorn, Steffi	Otto-Von-Guericke University Magdeburg

14:15-14:30 WeA11.6

Exponential Stability and Local ISS for DC Networks, pp. 3090-3095.

Ferguson, Joel	University of Newcastle
Cucuzzella, Michele	University of Groningen
Scherpen, Jacquelien M.A.	University of Groningen

14:30-14:45 WeA11.7

Systematic Analysis of Distributed Optimization Algorithms Over Jointly-Connected Networks, pp. 3096-3101.

Van Scoy, Bryan	Miami University
Lessard, Laurent	Northeastern University

14:45-15:00 WeA11.8

A Relaxed Small-Gain Theorem for Discrete-Time Infinite Networks (I), pp. 3102-3107.

Noroozi, Navid	Ludwig-Maximilians-Universität München
Mironchenko, Andrii	University of Passau
Wirth, Fabian	University of Passau

WeA12	Coordinated Universal Time (UTC)
Networked Control Systems II (Regular Session)	
Chair: Zanon, Mario	IMT Institute for Advanced Studies Lucca
Co-Chair: Skarin, Per	Lund University and Ericsson Research

13:00-13:15 WeA12.1

Initial-Value Privacy of Linear Dynamical Systems, pp. 3108-3113.

Wang, Lei	The University of Sydney
Manchester, Ian R.	University of Sydney
Trumpf, Jochen	Australian National University
Shi, Guodong	The University of Sydney

13:15-13:30 WeA12.2

Interesting Phenomena in the Synchronisation of Disturbed Systems, pp. 3114-3120.

Wissing, Marc	Ruhr-Universität Bochum, IAV GmbH
Oehlschlaegel, Thimo	IAV GmbH
Lunze, Jan	Ruhr-Universität Bochum

13:30-13:45 WeA12.3

Optimal Control Design for Perturbed Constrained Networked Control Systems, pp. 3121-3126.

Bahraini, Masoud	Chalmers University of Technology
Zanon, Mario	IMT Institute for Advanced Studies Lucca
Colombo, Alessandro	Politecnico Di Milano
Falcone, Paolo	Chalmers University of Technology

13:45-14:00 WeA12.4

Interplay between Resilience and Accuracy in Resilient Vector Consensus in Multi-Agent Networks, pp. 3127-3132.

Abbas, Waseem	Vanderbilt University
Shabbir, Mudassir	Information Technology University
Li, Jiani	Vanderbilt University
Koutsoukos, Xenofon	Vanderbilt University

14:00-14:15 WeA12.5

Sparse Linear Injection Attack on Multi-Agent Consensus Control Systems, pp. 3133-3138.

Tsang, Kam Fai Elvis	Hong Kong University of Science and Technology
Huang, Mengyu	The Hong Kong University of Science and Technology
Johansson, Karl H.	Royal Institute of Technology
Shi, Ling	Hong Kong University of Science and Technology

14:15-14:30 WeA12.6

Distributed Computation of Graph Matching in Multi-Agent Networks, pp. 3139-3144.

Tran, Quoc Van	GIST
Sun, Zhiyong	Eindhoven University of Technology (TU/e)
Anderson, Brian D.O.	Australian National University
Ahn, Hyo-Sung	Gwangju Institute of Science and Technology (GIST)

14:30-14:45 WeA12.7

Rollout Scheduling and Control for Disturbed Systems Via Tube MPC, pp. 3145-3150.

Wildhagen, Stefan	University of Stuttgart
Allgöwer, Frank	University of Stuttgart

14:45-15:00 WeA12.8

A Cloud-Enabled Rate-Switching MPC Architecture, pp. 3151-3158.

Skarin, Per	Lund University and Ericsson Research
Eker, Johan	Lund University
Arzen, Karl-Erik	Lund Inst. of Technology

WeA13 Coordinated Universal Time (UTC)

Inference and Prediction Using Machine Learning (Regular Session)

Chair: Nguyen, Duc Thien	IBM
Co-Chair: Olfat, Mahbod	UC Berkeley

13:00-13:15 WeA13.1

Bayesian Safe Learning and Control with Sum-Of-Squares Analysis and Polynomial Kernels, pp. 3159-3165.

Devonport, Alex	University of California, Berkeley
Yin, He	University of California, Berkeley
Arcak, Murat	University of California, Berkeley

13:15-13:30 WeA13.2

Variational Bayesian Inference for Crowdsourcing Predictions, pp. 3166-3172.

Cai, Desmond	IBM
Nguyen, Duc Thien	IBM
Lim, Shiau Hong	IBM Research
Wynter, Laura	IBM Watson Research Center

13:30-13:45 WeA13.3

Epistemic Uncertainty Quantification in State-Space LPV Model Identification Using Bayesian Neural Networks, pp. 3173-3178.

Bao, Yajie	The University of Georgia
Mohammadpour Velni, Javad	University of Georgia
Shahbakhti, Mahdi	University of Alberta

13:45-14:00 WeA13.4

Bayesian Perceptron: Towards Fully Bayesian Neural Networks, pp. 3179-3186.

Huber, Marco	University of Stuttgart

14:00-14:15 WeA13.5

Safety Guarantees for Iterative Predictions with Gaussian Processes, pp. 3187-3193.

Polymenakos, Kyriakos	University of Oxford
Laurenti, Luca	University of Oxford
Patane, Andrea	University of Oxford
Calliess, Jan-Peter	University of Oxford
Cardelli, Luca	University of Oxford
Kwiatkowska, Marta	University of Oxford
Abate, Alessandro	University of Oxford
Roberts, Stephen	University of Oxford

14:15-14:30 WeA13.6

Average Margin Regularization for Classifiers, pp. 3194-3199.

Olfat, Mahbod	UC Berkeley
Aswani, Anil	UC Berkeley

14:30-14:45 WeA13.7

On the Sample Complexity of Data-Driven Inference of the $mathcal{L}_2$-Gain, pp. 3200-3205.

Sharf, Miel	Israel Institute of Technology

14:45-15:00 WeA13.8

Learning Multiple Nonlinear Dynamical Systems with Side Information, pp. 3206-3211.

Takeishi, Naoya	RIKEN
Kawahara, Yoshinobu	Kyushu University / RIKEN

WeA15 Coordinated Universal Time (UTC)

Cyber-Physical System Security (Invited Session)

Chair: Griffioen, Paul	Carnegie Mellon University
Co-Chair: Mo, Yilin	Tsinghua University
Organizer: Griffioen, Paul	Carnegie Mellon University
Organizer: Sinopoli, Bruno	Washington University in St Louis
Organizer: Mo, Yilin	Tsinghua University
Organizer: Johansson, Karl H.	Royal Institute of Technology

13:00-13:15 WeA15.1

Reinforcement Learning Based Approach for Flip Attack Detection (I), pp. 3212-3217.

Liu, Hanxiao	Nanyang Technological University
Li, Yuchao	KTH Royal Institute of Technology
Mårtensson, Jonas	KTH Royal Institute of Technology
Xie, Lihua	Nanyang Tech. Univ
Johansson, Karl H.	Royal Institute of Technology

13:15-13:30 WeA15.2

Data-Driven Attack Detection for Linear Systems, pp. 3218-3223.

Krishnan, Vishaal	University of California, Riverside
Pasqualetti, Fabio	University of California, Riverside

13:30-13:45 WeA15.3

Anomaly Detection in Systems with Periodic Outputs (I), pp. 3224-3229.

Cuesta-Garcia, Jose Ricardo	CICESE Research Center
Alvarez, Joaquin	CICESE
Ruths, Justin	University of Texas at Dallas
Pena Ramirez, Jonatan	Centro De Investigación Científica Y De Educación Superior De En

13:45-14:00 WeA15.4

Secure State-Reconstruction Over Networks Subject to Attacks, pp. 3230-3235.

Mao, Yanwen	University of California, Los Angeles
Diggavi, Suhas	UCLA
Fragouli, Christina	University of California, Los Angeles
Tabuada, Paulo	University of California at Los Angeles

14:00-14:15 WeA15.5

Decentralized Event-Triggered Control in the Presence of

Adversaries (I), pp. 3236-3242.

Griffioen, Paul	Carnegie Mellon University
Romagnoli, Raffaele	Carnegie Mellon University
Krogh, Bruce H.	Carnegie Mellon Univ
Sinopoli, Bruno	Washington University in St Louis

14:15-14:30 WeA15.6

Asymptotic Security of Control Systems by Covert Reaction: Repeated Signaling Game with Undisclosed Belief (I), pp. 3243-3248.

Sasahara, Hampei	KTH Royal Institute of Technology
Saritas, Serkan	KTH Royal Institute of Technology
Sandberg, Henrik	KTH Royal Institute of Technology

14:30-14:45 WeA15.7

Authenticated Computation of Control Signal from Dynamic Controllers (I), pp. 3249-3254.

Cheon, Jung Hee	Seoul National University
Kim, Dongwoo	Seoul National University
Kim, Junsoo	Seoul National University
Lee, SeungBeom	Seoul National University
Shim, Hyungbo	Seoul National University

14:45-15:00 WeA15.8

The Effect of Behavioral Probability Weighting in a Sequential Defender-Attacker Game (I), pp. 3255-3260.

Abdallah, Mustafa	Purdue University
Cason, Timothy	Purdue University
Bagchi, Saurabh	Purdue University
Sundaram, Shreyas	Purdue University

WeA16 Coordinated Universal Time (UTC)

Switched Systems (Regular Session)

Chair: Tan, Ying	The University of Melbourne
Co-Chair: Ozay, Necmiye	Univ. of Michigan

13:00-13:15 WeA16.1

Switched Optimal Control and Dwell Time Constraints: A Preliminary Study, pp. 3261-3266.

Abudia, Moad	Oklahoma State University
Harlan, Michael	Oklahoma State University
Self, Ryan	Oklahoma State University
Kamalapurkar, Rushikesh	Oklahoma State University

13:15-13:30 WeA16.2

Ellipsoid-Based Sensor Fault Detection for Discrete-Time Switched Systems, pp. 3267-3272.

Zammali, Chaima	Conservatoire National Des Arts Et Métiers (CNAM), Cedric Lab
Van Gorp, Jeremy	CNAM
Wang, Zhenhua	Harbin Institute of Technology
Ping, Xubin	Xidian University
Raïssi, Tarek	Conservatoire National Des Arts Et Métiers

13:30-13:45 WeA16.3

Existence of Initial Condition Independent Stabilising Switching Functions, pp. 3273-3278.

Townsend, Christopher	University of Newcastle
Seron, Maria M.	The University of Newcastle

13:45-14:00 WeA16.4

Path-Complete Lyapunov Functions for Continuous-Time Switching Systems, pp. 3279-3284.

Della Rossa, Matteo	LAAS CNRS
Pasquini, Mirko	Imperial College of London
Angeli, David	Imperial College

14:00-14:15 WeA16.5

Almost Global Stability of Nonlinear Switched System with Stable and Unstable Subsystems, pp. 3285-3290.

Kivilcim, Aysegul	Aalborg University
Karabacak, Özkan	Aalborg University
Wisniewski, Rafal	Aalborg University

14:15-14:30 WeA16.6

Implicit Invariant Sets for High-Dimensional Switched Affine Systems, pp. 3291-3297.

Wintenberg, Andrew	The University of Michigan, Ann Arbor
Ozay, Necmiye	Univ. of Michigan

14:30-14:45 WeA16.7

Scheduling Networked Control Systems under Jamming Attacks, pp. 3298-3303.

Kundu, Atreyee	Indian Institute of Science, Bangalore

14:45-15:00 WeA16.8

Stability and Robustness Analysis of Switched Vibrational Control, pp. 3304-3309.

Cheng, Xiaoxiao	The University of Melbourne
Tan, Ying	The University of Melbourne
Mareels, Iven	IBM

WeA17 Coordinated Universal Time (UTC)

Constrained Control (Regular Session)

Chair: Dimarogonas, Dimos V.	KTH Royal Institute of Technology
Co-Chair: Wang, Xiaofeng	University of South Carolina

13:00-13:15 WeA17.1

Safe Tracking Control of an Uncertain Euler-Lagrange System with Full-State Constraints Using Barrier Functions, pp. 3310-3315.

Salehi, Iman	University of Connecticut
Rotithor, Ghananeel	University of Connecticut
Trombetta, Daniel	University of Connecticut
Dani, Ashwin	University of Connecticut

13:15-13:30 WeA17.2

Gaussian Control Barrier Functions: Safe Learning and Control, pp. 3316-3322.

Khan, Mouhyemen	Georgia Institute of Technology
Chatterjee, Abhijit	Georgia Tech

13:30-13:45 WeA17.3

An Explicit Reference Governor for Time-Varying Linear Constraints, pp. 3323-3328.

Hosseinzadeh, Mehdi	Washington University in St. Louis
Sinopoli, Bruno	Washington University in St Louis
Bobick, Aaron	Washington University in St. Louis

13:45-14:00 WeA17.4

Construction of Control Barrier Function and $ C^2 $ Reference Trajectory for Constrained Attitude Maneuvers, pp. 3329-3334.

Tan, Xiao	KTH Royal Institute of Technology
Dimarogonas, Dimos V.	KTH Royal Institute of Technology

14:00-14:15 WeA17.5

NAW-NET: Neural Anti-Windup Control for Saturated Nonlinear

Systems, pp. 3335-3340.

Breschi, Valentina	Politecnico Di Milano
Masti, Daniele	IMT School for Advanced Studies Lucca
Formentin, Simone	Politecnico Di Milano
Bemporad, Alberto	IMT School for Advanced Studies Lucca

14:15-14:30 WeA17.6

Constrained Control for Microgrids with Constant Power Loads, pp. 3341-3346.

Baldivieso Monasterios, Pablo Rodolfo	The University of Sheffield
Konstantopoulos, George	The University of Sheffield

14:30-14:45 WeA17.7

Action Governor for Discrete-Time Linear Systems with Non-Convex Constraints, pp. 3347-3352.

Li, Nan	University of Michigan
Han, Kyoungseok	Kyungpook National University
Girard, Anouck	University of Michigan, Ann Arbor
Tseng, Eric	Ford Motor Company
Filev, Dimitre P.	Ford Motor Company
Kolmanovsky, Ilya V.	The University of Michigan

14:45-15:00 WeA17.8

Adaptive Robust Quadratic Programs Using Control Lyapunov and Barrier Functions, pp. 3353-3358.

Zhao, Pan	University of Illinois Urbana-Champaign
Mao, Yanbing	University of Illinois Urbana-Champaign
Tao, Chuyuan	University of Illinois Urbana and Champaign
Hovakimyan, Naira	University of Illinois at Urbana-Champaign
Wang, Xiaofeng	University of South Carolina

WeSP1 Coordinated Universal Time (UTC)

Glocal (Global/Local) Control: Theoretical Challenges to Practice (Semiplenary Session)

Chair: Cho, Dong-il	Seoul National University
Co-Chair: Prieur, Christophe	CNRS

15:10-16:10 WeSP1.1

*Glocal (Global/Local) Control: Theoretical Challenges to Practice**.

Hara, Shinji	Tokyo Institute of Technology

WeSP2 Coordinated Universal Time (UTC)

Learning-Based Planning and Control: Opportunities and Challenges (Semiplenary Session)

Chair: Lee, Jay H.	Korea Advanced Institute of Science and Technology
Co-Chair: Shim, Hyungbo	Seoul National University

15:10-16:10 WeSP2.1

*Learning-Based Planning and Control: Opportunities and Challenges**.

How, Jonathan, P.	MIT

WeB01 Coordinated Universal Time (UTC)

Data & Forecasting (COVID-19 Focus Session)

Chair: Beck, Carolyn L.	Univ of Illinois, Urbana-Champaign
Co-Chair: Liu, Ji	Stony Brook University

16:15-16:35 WeB01.1

*On Choice of Model Complexity and Data Sources for Prediction of Ongoing Pandemics (I)**.

Gustafsson, Fredrik	Linkoping Univ
Jaldén, Joakim	KTH Royal Institute of Technology
Soltesz, Kristian	Lund University
Bernhardsson, Bo M.	Lund University
Heimerson, Albin	Lund University
Jidling, Carl	Uppsala University
Lundh, Torbjörn	University of Gothenburg
Schön, Thomas (Bo)	Uppsala University
Spreco, Armin	Linköping University
Bagge Carlson, Fredrik	Lund University
Jöud, Anna	Skåne University Hospital, Lund University
Philip, Gerlee	Chalmers University of Technology and University of Gothenburg
Timpka, Toomas	Linköping University

16:35-16:55 WeB01.2

*An Interpretable Mortality Prediction Model for COVID-19 Patients: A Single Center Study (long Abstract) (I)**.

Yuan, Ye	Huazhong University of Science and Technology

16:55-17:15 WeB01.3

*Intermittent yet Coordinated Regional Strategies Can Alleviate the COVID-19 Epidemic: A Network Model of the Italian Case (I)**.

Della Rossa, Fabio	Politecnico Di Milano
Salzano, Davide	University of Naples Federico II
Di Meglio, Anna	University of Naples Federico II
De Lellis, Francesco	University of Naples Federico II
Coraggio, Marco	University of Naples Federico II
Calabrese, Carmela	University of Naples Federico II
Guarino, Agostino	University of Naples Federico II
Cardona-Rivera, Ricardo	University of Naples Federico II
De Lellis, Pietro	University of Naples Federico II
Liuzza, Davide	University of Sannio
Lo Iudice, Francesco	Università Di Napoli Federico II
Russo, Giovanni	University of Salerno
di Bernardo, Mario	University of Naples Federico II

17:15-17:35 WeB01.4

*Panel Discussion: Why Was/Is It so Difficult to Forecast the Spread of COVID-19? (I)**.

Pare, Philip E.	Purdue University

WeB02 Coordinated Universal Time (UTC)

Power Systems II (Regular Session)

Chair: Jacquod, Philippe	University of Applied Sciences of Western Switzerland
Co-Chair: Duel-Hallen, Alexandra	North Carolina State University

16:15-16:30 WeB02.1

A Stackelberg Security Investment Game for Voltage Stability of Power Systems, pp. 3359-3364.

An, Lu	North Carolina State University
Chakrabortty, Aranya	North Carolina State University
Duel-Hallen, Alexandra	North Carolina State University

16:30-16:45 WeB02.2

Sparse Nonlinear Wide-Area Control of Power Systems Using Perturbed Koopman Modes, pp. 3365-3370.

Hernandez, Marcos	Autonomous University of Guadalajara
Chakrabortty, Aranya	North Carolina State University
Roman Messina, Arturo	Cinvestav

16:45-17:00 WeB02.3

Primary Control Effort under Fluctuating Power Generation in Realistic High-Voltage Power Networks, pp. 3371-3376.

Tyloo, Melvyn	HES-SO
Jacquod, Philippe	University of Applied Sciences of Western Switzerland

17:00-17:15 WeB02.4

Observer-Based Excitation Control for Transient Stabilization of the Single Machine Infinite Bus System, pp. 3377-3382.

Rojas, Michael	Universidad Nacional Autonoma De Mexico
Rueda-Escobedo, Juan G.	Brandenburg University of Technology Cottbus - Senftenberg
Espinosa-Perez, Gerardo	Universidad Nacional Autonoma De Mexico
Schiffer, Johannes	Brandenburg University of Technology

17:15-17:30 WeB02.5

A Fast Certificate for Power System Small-Signal Stability, pp. 3383-3388.

Gholami, Amin	Georgia Institute of Technology
Sun, Andy	Georgia Institute of Technology

WeB03 Coordinated Universal Time (UTC)

Healthcare and Medical Systems (Regular Session)

Chair: Di Benedetto, Maria Domenica	University of L'Aquila
Co-Chair: Di Ferdinando, Mario	University of L'Aquila

16:15-16:30 WeB03.1

Flexible Regularization Approaches for Fairness in Deep Learning, pp. 3389-3394.

Mintz, Yonatan	University of Wisconsin Madison
Olfat, Mahbod	UC Berkeley

16:30-16:45 WeB03.2

Finite-Dimensional Periodic Event-Triggered Control of Nonlinear Time-Delay Systems with an Application to the Artificial Pancreas, pp. 3395-3400.

Borri, Alessandro	CNR-IASI
Pepe, Pierdomenico	University of L' Aquila
Di Loreto, Ilaria	University of L'Aquila
Di Ferdinando, Mario	University of L'Aquila

16:45-17:00 WeB03.3

An Assume-Guarantee Approach to Sampled-Data Quantized Glucose Control, pp. 3401-3406.

Di Loreto, Ilaria	University of L'Aquila
Borri, Alessandro	CNR-IASI
Di Benedetto, Maria Domenica	University of L'Aquila

17:00-17:15 WeB03.4

Robust Power and Cadence Tracking on a Motorized FES Cycle with an Unknown Time-Varying Input Delay, pp. 3407-3412.

Allen, Brendon C.	University of Florida
Stubbs, Kimberly J.	University of Florida
Dixon, Warren E.	University of Florida

17:15-17:30 WeB03.5

A Converse Lyapunov-Krasovskii Theorem for the Global Asymptotic Local Exponential Stability of Nonlinear Time-Delay Systems, pp. 3413-3418.

Di Ferdinando, Mario	University of L'Aquila
Pepe, Pierdomenico	University of L' Aquila
Di Gennaro, Stefano	University of L'Aquila

WeB04 Coordinated Universal Time (UTC)

Model Reduction (Regular Session)

Chair: Monshizadeh, Nima	University of Groningen
Co-Chair: Lamperski, Andrew	University of Minnesota

16:15-16:30 WeB04.1

Non-Asymptotic Closed-Loop System Identification Using Autoregressive Processes and Hankel Model Reduction, pp. 3419-3424.

Lee, Bruce	University of Pennsylvania
Lamperski, Andrew	University of Minnesota

16:30-16:45 WeB04.2

Online Estimation of the Loewner Matrices, pp. 3425-3430.

Simard, Joel David	Imperial College London
Astolfi, Alessandro	Imperial College & Univ. of Rome

16:45-17:00 WeB04.3

Multi-Array Electron Beam Stabilization Using Block Circulant Transformation and Generalized Singular Value Decomposition, pp. 3431-3436.

Kempf, Idris	University of Oxford
Duncan, Stephen	University of Oxford
Goulart, Paul J.	University of Oxford
Rehm, Guenther	Diamond Light Source

17:00-17:15 WeB04.4

The Enhanced Finite State Projection Algorithm, Using Conditional Moment Closure and Time-Scale Separation, pp. 3437-3442.

Kwon, Ukjin	MIT
Naghnaeian, Mohammad	Clemson University
Del Vecchio, Domitilla	Massachusetts Institute of Technology

17:15-17:30 WeB04.5

Amidst Data-Driven Model Reduction and Control, pp. 3443-3448.

Monshizadeh, Nima	University of Groningen

WeB05 Coordinated Universal Time (UTC)

Problems in Machine Learning (Regular Session)

Chair: Vidyasagar, Mathukumalli	Indian Institute of Technology Hyderabad
Co-Chair: George, Jemin	U.S. Army Research Laboratory

16:15-16:30 WeB05.1

SPARQ-SGD: Event-Triggered and Compressed Communication in Decentralized Optimization, pp. 3449-3456.

Singh, Navjot	University of California, Los

	Angeles
Data, Deepesh	University of California, Los Angeles
George, Jemin	U.S. Army Research Laboratory
Diggavi, Suhas	UCLA

16:30-16:45 WeB05.2

Worst-Case Risk Quantification under Distributional Ambiguity Using Kernel Mean Embedding in Moment Problem, pp. 3457-3463.

Zhu, Jia-Jie	Max Planck Institute for Intelligent Systems
Jitkrittum, Wittawat	Max Planck Institute for Intelligent Systems
Diehl, Moritz	University of Freiburg
Schölkopf, Bernhard	MPI for Biological Cybernetics

16:45-17:00 WeB05.3

Optimal Sensor Selection for Binary Detection Based on Stochastic Submodular Optimization, pp. 3464-3470.

Hespanha, Joao P.	Univ. of California, Santa Barbara
Garagic, Denis	BAE Systems FAST Labs

17:00-17:15 WeB05.4

NSM Converges to a K-NN Regressor under Loose Lipschitz Estimates, pp. 3471-3476.

Maddalena, Emilio	École Polytechnique Fédérale De Lausanne
Jones, Colin N.	EPFL

17:15-17:30 WeB05.5

Deterministic Completion of Rectangular Matrices with Measurement Noise Using Unbalanced Ramanujan Bigraphs, pp. 3477-3480.

Burnwal, Shantanu Prasad	Indian Institute of Technology Hyderabad
Vidyasagar, Mathukumalli	Indian Institute of Technology Hyderabad

WeB06 Coordinated Universal Time (UTC)

Estimation, Control, and Optimization of Automotive Systems (Invited Session)

Chair: Tong, Son	Siemens Digital Industries Software
Co-Chair: Dadras, Soodeh	Utah State University
Organizer: Siegel, Jason B.	University of Michigan
Organizer: Dadras, Soodeh	Utah State University
Organizer: Dadam, Sumanth	Ford Motor Company
Organizer: Dadras, Sara	Company
Organizer: Ahmed, Qadeer	The Ohio State University
Organizer: Borhan, Hoseinali	Cummins Inc
Organizer: Amini, Mohammad Reza	University of Michigan
Organizer: Tong, Son	Siemens Digital Industries Software

16:15-16:30 WeB06.1

Cooperating Modular Goal Selection and Motion Planning for Autonomous Driving (I), pp. 3481-3486.

Ahn, Heejin	Mitsubishi Electric Research Laboratories
Berntorp, Karl	Mitsubishi Electric Research Labs
Di Cairano, Stefano	Mitsubishi Electric Research Labs

16:30-16:45 WeB06.2

Decision Making through Stochastic Maneuver Validation for Overtaking on Country Roads (I), pp. 3487-3493.

Adelberger, Daniel	Johannes Kepler University Linz
Wang, Meng	Delft University of Technology
Del Re, Luigi	Johannes Kepler University Linz

16:45-17:00 WeB06.3

Estimation of Engine Combustion Instabilities for Transient Operation, pp. 3494-3499.

Jean, Maxime	IFP Energies Nouvelles
Leroy, Thomas	IFPEN
Redaud, Jeanne	IFP Energies Nouvelles

17:00-17:15 WeB06.4

Flexible Predictive Hybrid Powertrain Management with V2X Information (I), pp. 3500-3505.

Deng, Junpeng	Johannes Kepler University Linz
Meier, Florian	Johannes Kepler University Linz
Del Re, Luigi	Johannes Kepler University Linz

17:15-17:30 WeB06.5

Optimal Control of Battery Fast Charging Based-On Pontryagin's Minimum Principle (I), pp. 3506-3513.

Park, Saehong	University of California, Berkeley
Lee, Donggun	University of California, Berkeley
Ahn, Hyoung Jun	LG Chem
Tomlin, Claire J.	UC Berkeley
Moura, Scott	University of California, Berkeley

WeB07 Coordinated Universal Time (UTC)

Advances on Finite-Time Control and Consensus (Invited Session)

Chair: Zhao, Zhi-Liang	Shaanxi Normal University
Co-Chair: Jiang, Zhong-Ping	New York University
Organizer: Zhao, Zhi-Liang	Shaanxi Normal University
Organizer: Jiang, Zhong-Ping	New York University

16:15-16:30 WeB07.1

Fixed-Time Nash Equilibrium Seeking in Non-Cooperative Games (I), pp. 3514-3519.

Poveda, Jorge I.	University of Colorado at Boulder
Krstic, Miroslav	University of California, San Diego
Basar, Tamer	Univ of Illinois, Urbana-Champaign

16:30-16:45 WeB07.2

Global Output-Feedback Finite-Time Stabilization Using a Switching Technique (I), pp. 3520-3525.

Zhao, Zhi-Liang	Shaanxi Normal University
Ma, Pengjuan	Shaanxi Normal University
Chen, Sen	Shaanxi Normal University
Jiang, Zhong-Ping	New York University

16:45-17:00 WeB07.3

Practical Prescribed Time Tracking Control with User Pre Determinable Precision for Uncertain Nonlinear Systems (I), pp. 3526-3530.

Cao, Ye	ChongQing University
Song, Yongduan	Chongqing University

17:00-17:15 WeB07.4

Model Predictive Control for Discrete-Time Linear Systems with Finite-Time Convergence (I), pp. 3531-3536.

Zhu, Bing	Beihang University

Zuo, Zongyu	Beihang University (aka Beijing University of Aeronautics and As
Ding, Zhengtao	The University of Manchester

17:15-17:30 WeB07.5

Fixed-Time Convergent Consensus Algorithm of Networked Nonholonomic Multi-Agent Systems (I), pp. 3537-3542.

Defoort, Michael	UPHF
Floquet, Thierry	CNRS
Perruquetti, Wilfrid	Ecole Centrale De Lille

WeB08 Coordinated Universal Time (UTC)

Game Theory and Learning (Regular Session)

Chair: Grammatico, Sergio	Delft Univ. of Tech
Co-Chair: Etesami, S. Rasoul	University of Illinois at Urbana-Champaign

16:15-16:30 WeB08.1

Stability of Gradient Learning Dynamics in Continuous Games: Scalar Action Spaces, pp. 3543-3548.

Chasnov, Benjamin J	University of Washington
Calderone, Dan	University of Washington
Acikmese, Behcet	University of Washington
Burden, Samuel A.	University of Washington
Ratliff, Lillian J.	University of Washington

16:30-16:45 WeB08.2

Learning Pure Nash Equilibrium in Smart Charging Games, pp. 3549-3554.

Sohet, Benoît	EDF R&D Lab' Paris-Saclay, Avignon University
Hayel, Yezekael	University of Avignon
Beaude, Olivier	EDF R&D
Jeandin, Alban	EDF R&D, MIRE Dept, EDF Lab' Paris-Saclay

16:45-17:00 WeB08.3

Nash Equilibrium Seeking under Partial-Decision Information Over Directed Communication Networks, pp. 3555-3560.

Bianchi, Mattia	Delft University of Technology
Grammatico, Sergio	Delft Univ. of Tech

17:00-17:15 WeB08.4

Multi-Agent Reinforcement Learning in Cournot Games, pp. 3561-3566.

Shi, Yuanyuan	University of Washington
Zhang, Baosen	University of Washington

17:15-17:30 WeB08.5

Dynamic Assortment with Limited Inventories and Set-Dependent Revenue Functions, pp. 3567-3572.

Etesami, S. Rasoul	University of Illinois at Urbana-Champaign

WeB09 Coordinated Universal Time (UTC)

Optimization Algorithms II (Regular Session)

Chair: Graichen, Knut	University Erlangen-Nürnberg (FAU)
Co-Chair: Fagiano, Lorenzo	Politecnico Di Milano

16:15-16:30 WeB09.1

An Optimal Multistage Stochastic Gradient Method for Minimax Problems, pp. 3573-3579.

Fallah, Alireza	MIT
Ozdaglar, Asu	MIT
Pattathil, Sarath	MIT

16:30-16:45 WeB09.2

Taming Convergence for Asynchronous Stochastic Gradient Descent with Unbounded Delay in Non-Convex Learning, pp. 3580-3585.

Zhang, Xin	Iowa State University
Liu, Jia	Iowa State University
Zhu, Zhengyuan	Iowa State University

16:45-17:00 WeB09.3

On the Use of Set Membership Theory for Global Optimization of Black-Box Functions, pp. 3586-3591.

Sabug, Lorenzo Jr.	Politecnico Di Milano
Ruiz, Fredy	Politecnico Di Milano
Fagiano, Lorenzo	Politecnico Di Milano

17:00-17:15 WeB09.4

Safe Bayesian Optimization under Unknown Constraints, pp. 3592-3597.

Bergmann, Daniel	MTU Friedrichshafen
Graichen, Knut	University Erlangen-Nürnberg (FAU)

17:15-17:30 WeB09.5

A Convergence-Preserving Data Integrity Attack on Distributed Optimization Using Local Information, pp. 3598-3603.

Ding, Tie	Shanghai Jiao Tong University
Xu, Qianwen	Nanyang Technological University
Zhu, Shanying	Shanghai Jiao Tong University
Guan, Xin-Ping	Shanghai Jiao Tong University

WeB10 Coordinated Universal Time (UTC)

Markov Processes I (Regular Session)

Chair: Zhu, Quanyan	New York University
Co-Chair: Jain, Rahul	University of Southern California

16:15-16:30 WeB10.1

Expert Selection in High-Dimensional Markov Decision Processes, pp. 3604-3610.

Rubies Royo, Vicenc	UC Berkeley
Mazumdar, Eric	UC Berkeley
Dong, Roy	University of Illinois at Urbana-Champaign
Tomlin, Claire J.	UC Berkeley
Sastry, Shankar	Univ. of California at Berkeley

16:30-16:45 WeB10.2

Triggered Measurements in Markov Processes for Entropy-Constrained State Estimation with Application to Precision Agriculture, pp. 3611-3616.

Li, Nan	University of Michigan
Li, Zhaojian	Michigan State University
Dong, Liang	Iowa State University
Girard, Anouck	University of Michigan, Ann Arbor
Kolmanovsky, Ilya V.	The University of Michigan
Lu, Renfu	U.S. Department of Agriculture

16:45-17:00 WeB10.3

Finite Time Guarantees for Continuous State MDPs with Generative Model, pp. 3617-3622.

Sharma, Hiteshi	USC

Jain, Rahul	University of Southern California

17:00-17:15 WeB10.4

Censored Markov Decision Processes: A Framework for Safe Reinforcement Learning in Collaboration with External Systems, pp. 3623-3630.

Kohjima, Masahiro	NTT Corporation
Takahashi, Masami	NTT Corporation
Toda, Hiroyuki	NTT Corporation

17:15-17:30 WeB10.5

Distributed Stabilization of Two Interdependent Markov Jump Linear Systems with Partial Information, pp. 3631-3636.

Peng, Guanze	New York University
Chen, Juntao	New York University
Zhu, Quanyan	New York University

WeB11 Coordinated Universal Time (UTC)

Distributed Optimization and Learning for Networked Systems I (Invited Session)

Chair: Yang, Tao	Northeastern University
Co-Chair: Li, Na	Harvard University
Organizer: Yang, Tao	Northeastern University
Organizer: Uribe, Cesar	Massachusetts Institute of Technology
Organizer: Lu, Jie	ShanghaiTech University
Organizer: Nedic, Angelia	Alphatech Inc

16:15-16:30 WeB11.1

GT-SAGA: A Fast Incremental Gradient Method for Decentralized Finite-Sum Minimization (I), pp. 3637-3642.

Xin, Ran	Carnegie Mellon University
Li, Boyue	Carnegie Mellon University
Kar, Soummya	Carnegie Mellon University
Khan, Usman A.	Tufts University

16:30-16:45 WeB11.2

Linear Convergence for Distributed Optimization without Strong Convexity (I), pp. 3643-3648.

Yi, Xinlei	KTH Royal Institute of Technology
Zhang, Shengjun	University of North Texas
Yang, Tao	Northeastern University
Chai, Tianyou	Northeastern University
Johansson, Karl H.	Royal Institute of Technology

16:45-17:00 WeB11.3

Zeroth-Order Feedback Optimization for Cooperative Multi-Agent Systems (I), pp. 3649-3656.

Tang, Yujie	Harvard University
Ren, Zhaolin	Harvard University
Li, Na	Harvard University

17:00-17:15 WeB11.4

A Distributed Proximal Primal-Dual Algorithm for Nonsmooth Optimization with Coupling Constraints (I), pp. 3657-3662.

Wu, Xuyang	ShanghaiTech University
Wang, He	ShanghaiTech University
Lu, Jie	ShanghaiTech University

17:15-17:30 WeB11.5

Towards Totally Asynchronous Primal-Dual Convex Optimization in Blocks (I), pp. 3663-3668.

Hendrickson, Katherine	University of Florida
Hale, Matthew	University of Florida

WeB12 Coordinated Universal Time (UTC)

Social Dynamics I (Regular Session)

Chair: Morarescu, Irinel-Constantin	CRAN, CNRS, Université De Lorraine
Co-Chair: Postoyan, Romain	CNRS, CRAN, Université De Lorraine

16:15-16:30 WeB12.1

Interplay between Homophily-Based Appraisal Dynamics and Influence-Based Opinion Dynamics: Modeling and Analysis, pp. 3669-3674.

Liu, Fangzhou	Technische Universität München
Cui, Shaoxuan	Technical University of Munich
Mei, Wenjun	ETH Zurich
Dörfler, Florian	Swiss Federal Institute of Technology (ETH) Zurich
Buss, Martin	Technische Universitaet Muenchen

16:30-16:45 WeB12.2

Consensus Problems on Clustered Networks, pp. 3675-3680.

De Pasquale, Giulia	University of Padova
Valcher, Maria Elena	Universita' Di Padova

16:45-17:00 WeB12.3

Spatial Properties of a Mixed Linear-Nonlinear Model for Opinion Formation in Networks, pp. 3681-3686.

Sarker, Subir	Washington State University
Roy, Sandip	Washington State University

17:00-17:15 WeB12.4

Expressed and Private Opinion Dynamics on Influence Networks with Asynchronous Updating, pp. 3687-3692.

Xia, Weiguo	Dalian University of Technology
Liang, Hong	Dalian University of Technology
Ye, Mengbin	Curtin University

17:15-17:30 WeB12.5

A Hybrid Model of Opinion Dynamics with Memory-Based Connectivity, pp. 3693-3698.

Mariano, Simone	Université De Lorraine
Morarescu, Irinel-Constantin	CRAN, CNRS, Université De Lorraine
Postoyan, Romain	CNRS, CRAN, Université De Lorraine
Zaccarian, Luca	LAAS-CNRS and University of Trento

WeB13 Coordinated Universal Time (UTC)

Learning-Based Control II (Invited Session)

Chair: Trimpe, Sebastian	Max Planck Institute for Intelligent Systems
Co-Chair: Pappas, George J.	University of Pennsylvania
Organizer: Muller, Matthias A.	Leibniz University Hannover
Organizer: Schoellig, Angela P	University of Toronto
Organizer: Trimpe, Sebastian	RWTH Aachen University
Organizer: Zeilinger, Melanie N.	ETH Zurich

16:15-16:30 WeB13.1

Control Barrier Functions for Unknown Nonlinear Systems Using

Gaussian Processes (I), pp. 3699-3704.

Jagtap, Pushpak	KTH Royal Institute of Technology
Pappas, George J.	University of Pennsylvania
Zamani, Majid	University of Colorado Boulder

16:30-16:45 WeB13.2

A Convex Approach to Robust LQR (I), pp. 3705-3710.

Scampicchio, Anna	University of Padova
Pillonetto, Gianluigi	University of Padova

16:45-17:00 WeB13.3

Controller Design Via Experimental Exploration with Robustness Guarantees, pp. 3711-3716.

Holicki, Tobias	University of Stuttgart
Scherer, Carsten W.	University of Stuttgart
Trimpe, Sebastian	RWTH Aachen University

17:00-17:15 WeB13.4

Learning Control Barrier Functions from Expert Demonstrations (I), pp. 3717-3724.

Robey, Alexander	University of Pennsylvania
Hu, Haimin	University of Pennsylvania
Lindemann, Lars	Royal Institute of Technology, KTH
Zhang, Hanwen	University of Pennsylvania
Dimarogonas, Dimos V.	KTH Royal Institute of Technology
Tu, Stephen	University of California, Berkeley
Matni, Nikolai	University of Pennsylvania

17:15-17:30 WeB13.5

On the Robustness of Equilibria in Generalized Aggregative Games (I), pp. 3725-3730.

Fabiani, Filippo	University of Oxford
Margellos, Kostas	University of Oxford
Goulart, Paul J.	University of Oxford

WeB14

Iterative Learning Control (Regular Session)

Chair: Chu, Bing	University of Southampton
Co-Chair: Wan, Yan	University of Texas at Arlington

16:15-16:30 WeB14.1

Safety-Critical Online Control with Adversarial Disturbances, pp. 3731-3738.

Ramasubramanian, Bhaskar	University of Washington, Seattle
Xiao, Baicen	University of Washington
Bushnell, Linda	University of Washington
Poovendran, Radha	University of Washington

16:30-16:45 WeB14.2

Iterative Learning Control for Region to Region Tracking, pp. 3739-3744.

Chu, Bing	University of Southampton
Owens, David H.	The University of Sheffield

16:45-17:00 WeB14.3

Distributed Iterative Learning Control for Constrained Consensus Tracking Problem, pp. 3745-3750.

Chen, Bin	University of Southampton
Chu, Bing	University of Southampton
Geng, Hua	Tsinghua University

17:00-17:15 WeB14.4

Zero-Order Optimization-Based Iterative Learning Control, pp. 3751-3757.

Baumgärtner, Katrin	University of Freiburg
Diehl, Moritz	University of Freiburg

17:15-17:30 WeB14.5

H$infty$ Tracking Control for Linear Discrete-Time Systems: Model-Free Q-Learning Designs, pp. 3758-3763.

Yang, Yunjie	Tsinghua University
Wan, Yan	University of Texas at Arlington
Zhu, Jihong	Tsinghua University
Lewis, Frank L.	University of Texas at Arlington

WeB15

Coordinated Universal Time (UTC)

Cyber-Physical Security (Regular Session)

Chair: Meskin, Nader	Qatar University
Co-Chair: Poovendran, Radha	University of Washington

16:15-16:30 WeB15.1

Undetectable Cyber Attacks on Communication Links in Multi-Agent Cyber-Physical Systems, pp. 3764-3771.

Taheri, Mahdi	Concordia University
Khorasani, Khashayar	Concordia University
Shames, Iman	The University of Melbourne
Meskin, Nader	Qatar University

16:30-16:45 WeB15.2

A Nash Equilibrium-Based Moving Target Defense against Stealthy Sensor Attacks, pp. 3772-3778.

Umsonst, David	KTH Royal Institute of Technology
Saritas, Serkan	KTH Royal Institute of Technology
Sandberg, Henrik	KTH Royal Institute of Technology

16:45-17:00 WeB15.3

Dynamic Resilient Network Games Considering Connectivity, pp. 3779-3784.

Nugraha, Yurid	Tokyo Institute of Technology
Cetinkaya, Ahmet	National Institute of Informatics
Hayakawa, Tomohisa	Tokyo Institute of Technology
Ishii, Hideaki	Tokyo Institute of Technology
Zhu, Quanyan	New York University

17:00-17:15 WeB15.4

Privacy-Preserving Resilience of Cyber-Physical Systems to Adversaries, pp. 3785-3792.

Ramasubramanian, Bhaskar	University of Washington, Seattle
Niu, Luyao	Worcester Polytechnic Institute
Clark, Andrew	Worcester Polytechnic Institute
Bushnell, Linda	University of Washington
Poovendran, Radha	University of Washington

17:15-17:30 WeB15.5

Covariance-Robust Dynamic Watermarking, pp. 3793-3799.

Olfat, Mahbod	UC Berkeley
Sloan, Stephen	University of California, Berkeley
Hespanhol, Pedro	UC Berkeley
Porter, Matthew	University of Michigan
Vasudevan, Ramanarayan	University of Michigan
Aswani, Anil	UC Berkeley

WeB16

Coordinated Universal Time (UTC)

Switched Linear Systems (Regular Session)

Chair: Dinh, Thach N.	CNAM Paris
Co-Chair: Sun, Zhendong	Academy of Mathematics & Systems Science, CAS

16:15-16:30 WeB16.1

Feedback Stabilization of Third-Order Switched Linear Control Systems, pp. 3800-3804.

Sun, Zhendong	Academy of Mathematics & Systems Science, CAS

16:30-16:45 WeB16.2

Interval Estimation for Discrete-Time Switched Linear Systems Based on L_{infty} Observer and Ellipsoid Analysis, pp. 3805-3810.

Dkhil, Monia	University of Gabes, National Engineering School of Gabes, Elect
Dinh, Thach N.	CNAM Paris
Wang, Zhenhua	Harbin Institute of Technology
Raïssi, Tarek	Conservatoire National Des Arts Et Métiers
Amairi, Messaoud	National Engineering School of Gabes (ENIG)

16:45-17:00 WeB16.3

Statistical Consistency of Set-Membership Estimator for Linear Systems, pp. 3811-3816.

Hespanhol, Pedro	UC Berkeley
Aswani, Anil	UC Berkeley

17:00-17:15 WeB16.4

Quantized Stabilization of Continuous-Time Switched Linear Systems, pp. 3817-3822.

Berger, Guillaume O.	UCLouvain
Jungers, Raphaël M.	University of Louvain

17:15-17:30 WeB16.5

Finite Data-Rate Feedback Stabilization of Continuous-Time Switched Linear Systems with Unknown Switching Signal, pp. 3823-3828.

Berger, Guillaume O.	UCLouvain
Jungers, Raphaël M.	University of Louvain

WeB17 Coordinated Universal Time (UTC)

Quantum Information and Control (Regular Session)

Chair: Petersen, Ian R.	Australian National University
Co-Chair: Amini, Nina H.	CNRS, L2S, CentraleSupelec

16:15-16:30 WeB17.1

Data-Driven System Identification of Linear Quantum Systems Coupled to Time-Varying Coherent Inputs, pp. 3829-3835.

Nurdin, Hendra I	UNSW Australia
Amini, Nina H.	CNRS, L2S, CentraleSupelec
Chen, Jiayin	University of New South Wales

16:30-16:45 WeB17.2

A Systems Theory Approach to the Synthesis of Minimum Noise Non-Reciprocal Phase-Insensitive Quantum Amplifiers, pp. 3836-3841.

Petersen, Ian R.	Australian National University
James, Matthew R.	Australian National University
Ugrinovskii, Valery	University of New South Wales
Yamamoto, Naoki	Keio University

16:45-17:00 WeB17.3

On the Robustness of Stabilizing Feedbacks for Quantum Spin-1/2 Systems, pp. 3842-3847.

Liang, Weichao	CY Cergy Paris Université
Amini, Nina H.	CNRS, L2S, CentraleSupelec
Mason, Paolo	CNRS, Laboratoire Des Signaux Et Systèmes, Supélec

17:00-17:15 WeB17.4

Continuous Measurement and Feedback Control for Enhancement of Quantum Synchronization, pp. 3848-3854.

Kato, Yuzuru	Tokyo Institute of Technology
Nakao, Hiroya	Tokyo Institute of Technology

17:15-17:30 WeB17.5

When Do Additional Quantum Noises Affect Controller Performance?, pp. 3855-3859.

Thien, Rebbecca Tze Yean	Australian National University
Vuglar, Shanon Leigh	Princeton University
Petersen, Ian R.	Australian National University

ThA01	Coordinated Universal Time (UTC)
Risk-Aware Control and Game Theory in Engineering (Tutorial Session)	
Chair: Bauso, Dario	University of Groningen
Co-Chair: Colaneri, Patrizio	Politecnico Di Milano

13:00-13:40 ThA01.1

Risk-Aware Control and Games in Engineering (I), pp. 3860-3870.

Barreiro-Gomez, Julian	New York University Abu Dhabi (NYUAD)
Tembine, Hamidou	NYU
Stella, Leonardo	University of Derby
Bauso, Dario	University of Groningen
Colaneri, Patrizio	Politecnico Di Milano

13:40-14:00 ThA01.2

*COVID-19 Propagation Control (I)**.

Tembine, Hamidou	NYU

14:00-14:20 ThA01.3

*Bio-Inspired Collective Decision Making (I)**.

Stella, Leonardo	University of Derby

14:20-14:40 ThA01.4

*Data-Driven Mean-Field for Electric Vehicles (I)**.

Bauso, Dario	University of Groningen

14:40-15:00 ThA01.5

*Virus Propagation in Structured Environment (I)**.

Colaneri, Patrizio	Politecnico Di Milano

ThA02	Coordinated Universal Time (UTC)
Biological Systems I (Regular Session)	
Chair: Manchester, Ian R.	University of Sydney
Co-Chair: Faragasso, Angela	The University of Tokyo

13:00-13:15 ThA02.1

On Assessing Control Actions for Epidemic Models on Temporal Networks, pp. 3871-3876.

Zino, Lorenzo	University of Groningen
Rizzo, Alessandro	Politecnico Di Torino
Porfiri, Maurizio	Polytechnic Institute of New York University

13:15-13:30 ThA02.2

Sparse Resource Allocation for Control of Spreading Processes Via Convex Optimization, pp. 3877-3882.

Somers, Vera L. J.	University of Sydney
Manchester, Ian R.	University of Sydney

13:30-13:45 ThA02.3

On Interval Prediction of COVID-19 Development in France Based on a SEIR Epidemic Model, pp. 3883-3888.

Efimov, Denis	Inria
Ushirobira, Rosane	Inria

13:45-14:00 ThA02.4

A Modified SIR Model for the COVID-19 Contagion in Italy, pp. 3889-3894.

Calafiore, Giuseppe C.	Politecnico Di Torino
Novara, Carlo	Politecnico Di Torino
Possieri, Corrado	Consiglio Nazionale Delle Ricerche

14:00-14:15 ThA02.5

Visuomotor Adaptation Is a Disturbance Rejection Problem, pp. 3895-3900.

Abdel Gawad, Ahmad	University of Toronto
Broucke, Mireille E.	Univ. of Toronto

14:15-14:30 ThA02.6

On the Extinction-Free Stabilization of Predator-Prey Dynamics, pp. 3901-3906.

Massaroli, Stefano	The Univeristy of Tokyo
Califano, Federico	University of Twente
Faragasso, Angela	The University of Tokyo
Yamashita, Atsushi	The Univeristy of Tokyo
Asama, Hajime	The University of Tokyo

14:30-14:45 ThA02.7

Variance Bounds for a Class of Biochemical Reactions with Bursts Using a Discrete Expansion, pp. 3907-3912.

Pugliese Carratelli, Giovanni	University of Cambridge
Lestas, Ioannis	University of Cambridge

14:45-15:00 ThA02.8

Energy Shaping Control of a CyberOctopus Soft Arm, pp. 3913-3920.

Chang, Heng-Sheng	University of Illinois, Urbana-Champaign
Halder, Udit	University of Illinois at Urbana Champaign
Shih, Chia-Hsien	University of Illinois, Urbana-Champaign
Tekinalp, Arman	University of Illinois at Urbana-Champaign
Parthasarathy, Tejaswin	University of Illinois, Urbana-Champaign
Gribkova, Ekaterina	University of Illinois, Urbana-Champaign
Chowdhary, Girish	University of Illinois at Urbana Champaign
Gillette, Rhanor	University of Illinois, Urbana-Champaign
Gazzola, Mattia	University of Illinois at Urbana-Champaign
Mehta, Prashant G.	Univ of Illinois, Urbana-Champaign

ThA03	Coordinated Universal Time (UTC)
LTV and LPV Systems (Regular Session)	
Chair: Ebihara, Yoshio	Kyushu University
Co-Chair: Fosson, Sophie	Politecnico Di Torino

13:00-13:15 ThA03.1

Data Calibration and Quasi-LPV Unknown Input Observer: Powered Two-Wheeled Vehicle, pp. 3921-3926.

Fouka, Majda Amina Aida	IBISC LABORATORY
Nehaoua, Lamri	Evry Univeristy
Arioui, Hichem	Evry Val d'Essonne University

13:15-13:30 ThA03.2

H-Infinity Observer Design for Singular Nonlinear Parameter-Varying System, pp. 3927-3932.

Do, Manh-Hung	CNRS GIPSA-Lab
Koenig, Damien	Grenoble-INP
Theilliol, Didier	University of Lorraine

13:30-13:45 ThA03.3

On Gain-Scheduled State-Feedback Controller Synthesis with Quadratic Stability Condition, pp. 3933-3938.

Ebihara, Yoshio	Kyushu University
Sebe, Noboru	Kyushu Inst. of Tech
Waki, Hayato	Institute of Mathematics for Industry, Kyushu University

13:45-14:00 ThA03.4

Data-Driven Control of Linear Time-Varying Systems, pp. 3939-3944.

Nortmann, Benita Alessandra Lucia	Imperial College London
Mylvaganam, Thulasi	Imperial College London

14:00-14:15 ThA03.5

Uniform Detectability of Linear Time Varying Systems with Exponential Dichotomy, pp. 3945-3950.

Tranninger, Markus	Graz University of Technology
Seeber, Richard	Graz University of Technology
Steinberger, Martin	Graz University of Technology
Horn, Martin	Graz University of Technology

14:15-14:30 ThA03.6

A Recursive Approach for Set-Membership EIV Identification of LTV Systems with Bounded Variation, pp. 3951-3956.

Cerone, Vito	Politecnico Di Torino
Fosson, Sophie	Politecnico Di Torino
Regruto, Diego	Politecnico Di Torino
Abdalla, Talal Almutaz Almansi	Politecnico Di Torino

14:30-14:45 ThA03.7

New LMI Characterizations for H Infinity Norm Guaranteed Cost Computation of Linear Systems with Polytopic Uncertainties, pp. 3957-3962.

Hu, Cheng	Imperial College London
Jaimoukha, Imad M.	Imperial College London

14:45-15:00 ThA03.8

Joint Synthesis of Robust Dynamic State Feedback and Dynamic Disturbance Feed-Forward for Uncertain Systems, pp. 3963-3968.

Koroglu, Hakan	University of Twente

ThA04 Coordinated Universal Time (UTC)

Sliding Mode Control (Regular Session)

Chair: Fekih, Afef	University of Louisiana at Lafayette
Co-Chair: Fujimoto, Kenji	Kyoto University

13:00-13:15 ThA04.1

Maximum Hands-Off Feedback Control for Finite-Time Stabilization, pp. 3969-3974.

Kumar, Yogesh	Indian Institute of Technology Bombay
Srikant, Sukumar	Indian Institute of Technology Bombay
Nagahara, Masaaki	The University of Kitakyushu
Chatterjee, Debasish	Indian Institute of Technology, Bombay
Quevedo, Daniel E.	Queensland University of Technology

13:15-13:30 ThA04.2

Robust Boundary Control of a Diffusion System: An Integral Sliding Mode Control Approach, pp. 3975-3980.

Koch, Stefan	Graz University of Technology
Seeber, Richard	Graz University of Technology
Horn, Martin	Graz University of Technology

13:30-13:45 ThA04.3

Convergence Time Bounds for a Family of Second-Order Homogeneous State-Feedback Controllers, pp. 3981-3986.

Seeber, Richard	Graz University of Technology

13:45-14:00 ThA04.4

Non-Chattering Discrete Differentiators Based on Sliding Modes, pp. 3987-3992.

Hanan, Avi	Tel-Aviv University
Jbara, Adam	Tel-Aviv University
Levant, Arie	Tel-Aviv University

14:00-14:15 ThA04.5

Backstepping-Induced Indirect Adaptive Sliding Mode Control for Second Order Systems, pp. 3993-3998.

Watermann, Lars	TU Ilmenau
Reichhartinger, Markus	Graz University of Technology
Reger, Johann	TU Ilmenau

14:15-14:30 ThA04.6

A Self Tuning Fast Terminal SMC Design for Uncertain Chaotic Systems with External Disturbances, pp. 3999-4004.

Mobayen, Saleh	University of Zanjan
Fekih, Afef	University of Louisiana at Lafayette

14:30-14:45 ThA04.7

A Passivity Based Sliding Mode Controller for Simple Port-Hamiltonian Systems, pp. 4005-4010.

Fujimoto, Kenji	Kyoto University
Sakata, Naoki	Kyoto University
Maruta, Ichiro	Kyoto University
Ferguson, Joel	University of Newcastle

ThA05 Coordinated Universal Time (UTC)

Formation Control II (Regular Session)

Chair: Lanzon, Alexander	University of Manchester
Co-Chair: Hamel, Tarek	Université De Nice Sophia Antipolis

13:00-13:15 ThA05.1

Bearing-Only Formation Control under Persistence of Excitation, pp. 4011-4016.

Tang, Zhiqi	Instituto Superior Técnico, Universidade De Lisboa; Université C
Cunha, Rita	Instituto Superior Técnico, Universidade De Lisboa
Hamel, Tarek	Université De Nice Sophia Antipolis
Silvestre, Carlos	University of Macau

13:15-13:30 ThA05.2

Distributed Formation Control of Multi-Robot Systems: A Fixed-Time Behavioral Approach, pp. 4017-4022.

Zhou, Ning	Hebei University of Science and Technology
Cheng, Xiaodong	Eindhoven University of Technology

Xia, Yuanqing	Beijing Institute of Technology
Liu, Yanjun	Jiangnan Univ

13:30-13:45 ThA05.3

Further Results on Leader-Follower Multi-Agent Formation Control with Prescribed Performance Guarantees, pp. 4023-4030.

Chen, Fei	KTH Royal Institute of Technology
Dimarogonas, Dimos V.	KTH Royal Institute of Technology

13:45-14:00 ThA05.4

Robust Formation Control of Train Platoons for Interval Maintaining, pp. 4031-4036.

Li, Chunyu	Beijing Institute of Technology
Wang, Jianan	Beijing Institute of Technology
Shan, Jiayuan	Beijing Institute of Technology
Lanzon, Alexander	University of Manchester
Petersen, Ian R.	Australian National University

14:00-14:15 ThA05.5

Model-Free Adaptive Learning Formation Control of Nonlinear Non-Affine Multi-Agent Systems, pp. 4037-4042.

Yu, Xian	Beijing Jiaotong University
Hou, Zhongsheng	Qingdao University
Polycarpou, Marios M.	University of Cyprus

14:15-14:30 ThA05.6

Angle-Constrained Formation Control for Circular Mobile Robots, pp. 4043-4048.

Chan, Nelson P.K.	University of Groningen
Jayawardhana, Bayu	University of Groningen
Garcia de Marina, Hector	Universidad Complutense De Madrid

14:30-14:45 ThA05.7

Distributed Formation Control for Multi-Vehicle Systems with Splitting and Merging Capability, pp. 4049-4054.

Novoth, Szilard	Liverpool John Moores University
Zhang, Qian	Liverpool John Moores University
Ji, Kang	Liverpool John Moores University
Yu, Dingli	Liverpool John Moores University

14:45-15:00 ThA05.8

Formation Control Using Optimal Time Multiplexing, pp. 4055-4059.

Oza, Harsh	Indian Institute of Technology, Bombay
Banavar, Ravi N.	Indian Institute of Technology
Srikant, Sukumar	Indian Institute of Technology Bombay
Morarescu, Irinel-Constantin	CRAN, CNRS, Université De Lorraine

ThA06 Coordinated Universal Time (UTC)

Path Planning (Regular Session)

Chair: Incremona, Gian Paolo	Politecnico Di Milano
Co-Chair: Consolini, Luca	University of Parma

13:00-13:15 ThA06.1

Linear Differential Games for Cooperative Behavior Planning of Autonomous Vehicles Using Mixed-Integer Programming, pp. 4060-4066.

Kessler, Tobias	Fortiss GmbH
Esterle, Klemens	Fortiss GmbH
Knoll, Alois	Technical University of Munich

13:15-13:30 ThA06.2

On Probabilistic Completeness of the Generalized Shape Expansion-Based Motion Planning Algorithm, pp. 4067-4072.

Ramkumar, Adhvaith	Indian Institute of Technology Madras, Chennai
Zinage, Vrushabh	Indian Institute of Technology Madras
Ghosh, Satadal	Indian Institute of Technology Madras

13:30-13:45 ThA06.3

A Hamilton-Jacobi Formulation for Time-Optimal Paths of Rectangular Nonholonomic Vehicles, pp. 4073-4078.

Parkinson, Christian	University of Arizona
Bertozzi, Andrea L.	University of California Los Angeles
Osher, Stanley	University of California, Los Angeles

13:45-14:00 ThA06.4

A Robust Scenario MPC Approach for Uncertain Multi-Modal Obstacles, pp. 4079-4084.

Batkovic, Ivo	Chalmers University of Technology, Zenuity AB
Rosolia, Ugo	Caltech
Zanon, Mario	IMT Institute for Advanced Studies Lucca
Falcone, Paolo	Chalmers University of Technology

14:00-14:15 ThA06.5

A Receding Horizon Multi-Objective Planner for Autonomous Surface Vehicles in Urban Waterways, pp. 4085-4092.

Shan, Tixiao	Massachusetts Institute of Technology
Wang, Wei	MIT
Englot, Brendan	Stevens Institute of Technology
Ratti, Carlo	Massachusetts Institute of Technology
Rus, Daniela	MIT

14:15-14:30 ThA06.6

Self-Configuring Robot Path Planning with Obstacle Avoidance Via Deep Reinforcement Learning, pp. 4093-4098.

Sangiovanni, Bianca	University of Pavia
Incremona, Gian Paolo	Politecnico Di Milano
Piastra, Marco	University of Pavia
Ferrara, Antonella	University of Pavia

14:30-14:45 ThA06.7

Coverage Path Planning with Proximal Policy Optimization in a Grid-Based Environment, pp. 4099-4104.

Ianenko, Aleksandr	BrainGarden LLC
Artamonov, Alexander	BrainGarden
Sarapulov, Georgii	BrainGarden, LLC
Safaraleev, Alexey	LG
Bogomolov, Sergey	LG Electronics
Noh, Dongki	KAIST(Korea Advanced Institute of Science and Technology)

14:45-15:00 ThA06.8

Fast Numerical Solution of Optimal Control Problems for Switched Systems: An Application to Path Planning, pp. 4105-4110.

Laurini, Mattia	Università Degli Studi Di Parma
Consolini, Luca	University of Parma

Locatelli, Marco — University of Parma

ThA07 — Coordinated Universal Time (UTC)

Robotics (Regular Session)

Chair: Ramos, Oscar E. — Universidad De Ingenieria Y Tecnologia - UTEC

Co-Chair: Keppler, Manuel — German Aerospace Center (DLR)

13:00-13:15 — ThA07.1

Particle Filtering on the Stiefel Manifold with Optimal Transport, pp. 4111-4116.

Wang, Zhichao — University of New South Wales

Solo, Victor — University of New South Wales

13:15-13:30 — ThA07.2

On the Cramer-Rao Bound in Riemannian Manifolds with Application to SO(3), pp. 4117-4122.

Solo, Victor — University of New South Wales

Chirikjian, Gregory — Johns Hopkins University

13:30-13:45 — ThA07.3

Multi-Robot Guided Policy Search for Learning Decentralized Swarm Control, pp. 4123-4128.

Jiang, Chao — University of Wyoming

Guo, Yi — Stevens Institute of Technology

13:45-14:00 — ThA07.4

Combining Deep Reinforcement Learning and Local Control for the Acrobot Swing-Up and Balance Task, pp. 4129-4134.

Gillen, Sean — University of California Santa Barbara

Molnar, Marco — Technische Universität Berlin

Byl, Katie — University of California at Santa Barbara

14:00-14:15 — ThA07.5

The Soft Inverted Pendulum with Affine Curvature, pp. 4135-4142.

Della Santina, Cosimo — TU Delft

14:15-14:30 — ThA07.6

Torque Control in Position-Controlled Robots Using an Inverse Dynamic Task, pp. 4143-4148.

Garcia Chavez, Gabriel Enrique — IHMC

Munoz Panduro, Emanuel Samir — University of Engineering and Technology

Ramos, Oscar E. — Universidad De Ingenieria Y Tecnologia - UTEC

14:30-14:45 — ThA07.7

On Time-Optimal Control of Elastic Joints with Bounded Input, pp. 4149-4156.

Keppler, Manuel — German Aerospace Center (DLR)

De Luca, Alessandro — Sapienza Università Di Roma

14:45-15:00 — ThA07.8

TRON: A Fast Solver for Trajectory Optimization with Non-Smooth Cost Functions, pp. 4157-4163.

Vemula, Anirudh — Carnegie Mellon University

Bagnell, J. Andrew — Aurora Innovation

ThA08 — Coordinated Universal Time (UTC)

Observers for Nonlinear Systems I (Regular Session)

Chair: Deghat, Mohammad — University of New South Wales

Co-Chair: Trumpf, Jochen — Australian National University

13:00-13:15 — ThA08.1

High-Gain Observer Design for Some Semilinear Reaction-Diffusion Systems: A Transformation-Based Approach, pp. 4164-4169.

Kitsos, Constantinos — GIPSA-Lab, Grenoble INP (Institute of Engineering, Univ. Grenobl

Besancon, Gildas — GIPSA-Lab, Grenoble INP, CNRS

Prieur, Christophe — CNRS

13:15-13:30 — ThA08.2

Adaptive Parameter Estimation-Based Observer Design for Nonlinear Systems, pp. 4170-4175.

Xing, Yashan — Universitat Politècnica De Catalunya

Na, Jing — University of Bristol

Costa-Castelló, Ramon — Universitat Politècnica De Catalunya (UPC)

Gao, Guanbin — Kunming University of Science & Technology

13:30-13:45 — ThA08.3

Relative Pose Estimation from Bearing Measurements of Three Unknown Source Points, pp. 4176-4181.

Hua, Minh-Duc — I3s Uca-Cnrs Umr7271

De Marco, Simone — I3S CNRS

Hamel, Tarek — Université De Nice Sophia Antipolis

Beard, Randal W. — Brigham Young Univ

13:45-14:00 — ThA08.4

High-Gain Nonlinear Observer Using System State Augmentation, pp. 4182-4187.

Bouhadjra, Dyhia — University of Genoa, Italy

Zemouche, Ali — CRAN UMR CNRS 7039 & Inria: EPI-DISCO

Alessandri, Angelo — University of Genoa

Bagnerini, Patrizia — University of Genoa

14:00-14:15 — ThA08.5

A Minimum Energy Filter for Localisation of an Unmanned Aerial Vehicle, pp. 4188-4193.

Henderson, Jack — Australian National University

Zamani, Mohammad — DSTG

Mahony, Robert — Australian National University,

Trumpf, Jochen — Australian National University

14:15-14:30 — ThA08.6

Equivariant Systems Theory and Observer Design for Second Order Kinematic Systems on Matrix Lie Groups, pp. 4194-4199.

Ng, Yonhon — Australian National University

van Goor, Pieter — Australian National University

Hamel, Tarek — Université De Nice Sophia Antipolis

Mahony, Robert — Australian National University,

14:30-14:45 — ThA08.7

Semi-Global Stabilization of a Single Input Single Output Nonlinear System by Linear Low-And-High Gain Output Feedback, pp. 4200-4205.

Lin, Zongli — University of Virginia

14:45-15:00 — ThA08.8

Observing the Slow States of General Singularly Perturbed Systems, pp. 4206-4211.

Deghat, Mohammad	University of New South Wales
Nesic, Dragan	University of Melbourne
Teel, Andrew R.	Univ. of California at Santa Barbara
Manzie, Chris	The University of Melbourne

ThA09 Coordinated Universal Time (UTC)

Constrained Optimization (Regular Session)

Chair: Hjalmarsson, Håkan	KTH Royal Inst. of Tech
Co-Chair: Dörfler, Florian	Swiss Federal Institute of Technology (ETH) Zurich

13:00-13:15 ThA09.1

Incremental Affine Abstraction of Nonlinear Systems, pp. 4212-4217.

Hassaan, Syed	Arizona State University
Khajenejad, Mohammad	Arizona State University
Jensen, Spencer	Arizona State University
Shen, Qiang	Shanghai Jiao Tong University
Yong, Sze Zheng	Arizona State University

13:15-13:30 ThA09.2

Smooth Dynamics for Distributed Constrained Optimization with Heterogeneous Delays, pp. 4218-4223.

Li, Mengmou	The University of Hong Kong
Yamashita, Shunya	Tokyo Institute of Technology
Hatanaka, Takeshi	Tokyo Institute of Technology
Chesi, Graziano	The University of Hong Kong

13:30-13:45 ThA09.3

On Reducing the Coherence in Sparse System Identification, pp. 4224-4230.

Parsa, Javad	KTH Royal Inst. of Tech
Hjalmarsson, Håkan	KTH Royal Inst. of Tech

13:45-14:00 ThA09.4

Nesterov Acceleration for Equality-Constrained Convex Optimization Via Continuously Differentiable Penalty Functions, pp. 4231-4236.

Srivastava, Priyank	University of California, San Diego
Cortes, Jorge	University of California, San Diego

14:00-14:15 ThA09.5

High-Resolution Modeling of the Fastest First-Order OptimizationMethod for Strongly Convex Functions, pp. 4237-4242.

Sun, Boya	University of California, Irvine
George, Jemin	U.S. Army Research Laboratory
Kia, Solmaz S.	University of California Irvine (UCI)

14:15-14:30 ThA09.6

On the Differentiability of Projected Trajectories and the Robust Convergence of Non-Convex Anti-Windup Gradient Flows, pp. 4243-4248.

Hauswirth, Adrian	Swiss Federal Institute of Technology (ETH) Zurich
Dörfler, Florian	Swiss Federal Institute of Technology (ETH) Zurich
Teel, Andrew R.	Univ. of California at Santa Barbara

14:30-14:45 ThA09.7

Non-Convex Feedback Optimization with Input and Output Constraints, pp. 4249-4254.

Häberle, Verena	ETH Zurich
Hauswirth, Adrian	ETH Zurich
Ortmann, Lukas	ETH Zürich
Bolognani, Saverio	ETH Zurich
Dörfler, Florian	Swiss Federal Institute of Technology (ETH) Zurich

14:45-15:00 ThA09.8

A Dynamical System Perspective for Escaping Sharp Local Minima in Equality Constrained Optimization Problems, pp. 4255-4261.

Feng, Han	University of California, Berkeley
Zhang, Haixiang	University of California, Berkeley
Lavaei, Javad	UC Berkeley

ThA10 Coordinated Universal Time (UTC)

Stochastic Systems (Regular Session)

Chair: Hoshino, Kenta	Kyoto University
Co-Chair: Scarciotti, Giordano	Imperial College London

13:00-13:15 ThA10.1

On Design of Stabilizing Controllers Using Compression Operators for Linear Systems with Time-Varying and Time-Invariant Stochastic Parameters, pp. 4262-4267.

Ito, Yuji	Toyota Central R&d Labs., Inc
Fujimoto, Kenji	Kyoto University

13:15-13:30 ThA10.2

Finite-Horizon Control of Nonlinear Discrete-Time Systems with Terminal Cost of Wasserstein Distance, pp. 4268-4274.

Hoshino, Kenta	Kyoto University

13:30-13:45 ThA10.3

High Confidence Sets for Trajectories of Stochastic Time-Varying Nonlinear Systems, pp. 4275-4280.

Mazumdar, Eric	UC Berkeley
Westenbroek, Tyler	University of California, Berkeley
Jordan, Michael I.	UC Berkeley
Sastry, Shankar	Univ. of California at Berkeley

13:45-14:00 ThA10.4

Analysis of the Stability of Discrete-Time Markov Jump Linear Singular Systems, pp. 4281-4286.

Mayta, Guillermo, Jorge Enrique	National University of Engineering
Moreno Capristano, Maritza Lourdes	Universidad Nacional De Ingenieria

14:00-14:15 ThA10.5

Learning-Based Distributionally Robust Model Predictive Control of Markovian Switching Systems with Guaranteed Stability and Recursive Feasibility, pp. 4287-4292.

Schuurmans, Mathijs	KU Leuven
Patrinos, Panagiotis	KU Leuven

14:15-14:30 ThA10.6

Stochastic Safety for Markov Chains, pp. 4293-4298.

Bujorianu, Luminita Manuela	University of Strathclyde
Wisniewski, Rafal	Aalborg University
Boulougouris, Evangelos	University of Strathclyde

14:30-14:45 ThA10.7

Spectral Rank, Feedback, Causality and the Indirect Method for CARMA Identification, pp. 4299-4305.

Cao, Wenqi	Shanghai Jiao Tong University
Lindquist, Anders	Shanghai Jiao Tong University
Picci, Giorgio	Univ. Di Padova

14:45-15:00 ThA10.8

A Note on the Ito and Stratonovich Stochastic Relative Degree and Normal Form, pp. 4306-4311.

Mellone, Alberto	Imperial College London
Scarciotti, Giordano	Imperial College London

ThA11	Coordinated Universal Time (UTC)
Estimation Over Networks (Regular Session)	
Chair: Hendrickx, Julien M.	UCLouvain
Co-Chair: Tan, Ying	The University of Melbourne

13:00-13:15 ThA11.1

PDE-Based Dynamic Density Estimation for Large-Scale Agent Systems, pp. 4312-4317.

Zheng, Tongjia	University of Notre Dame
Han, Qing	University of Notre Dame
Lin, Hai	University of Notre Dame

13:15-13:30 ThA11.2

Consensus+Innovations Distributed Estimation with Random Network Graphs, Observation Matrices and Noises, pp. 4318-4323.

Zhang, Xiwei	East China Normal University
Li, Tao	East China Normal University
Gu, Yu	East China Normal University

13:30-13:45 ThA11.3

Reachable Set Estimation of Switched Genetic Regulatory Networks with Mixed Delays and Bounded Disturbances, pp. 4324-4329.

Zhang, Xian	Heilongjiang University
Lina, Zhang	Heilongjiang University
Xue, Yu	Heilongjiang University
Wang, Xin	Heilongjiang University
Mouquan, Shen	Nanjing Technology University,
Zhu, Jun-Wei	Zhejiang University of Technology

13:45-14:00 ThA11.4

Finite-Horizon Anisotropic Estimator Design in Sensor Networks, pp. 4330-4335.

Kustov, Arkadiy	Institute of Control Sciences
Yurchenkov, Alexander	ICS of RAS

14:00-14:15 ThA11.5

An Improved Paradigm for Robust Optimal Filtering Over Lossy Networks, pp. 4336-4341.

Feng, Yu	Zhejiang University of Technology
Chen, Xiang	University of Windsor
Tan, Ying	The University of Melbourne

14:15-14:30 ThA11.6

Local Network Identifiability with Partial Excitation and Measurement, pp. 4342-4347.

Legat, Antoine	UCLouvain
Hendrickx, Julien M.	UCLouvain

14:30-14:45 ThA11.7

A Regularized Kernel-Based Method for Learning a Module in a Dynamic Network with Correlated Noise, pp. 4348-4353.

C. Rajagopal, Venkatakrishnan	Eindhoven University of Technology
Ramaswamy, Karthik R.	Eindhoven University of Technology
Van den Hof, Paul M.J.	Eindhoven University of Technology

14:45-15:00 ThA11.8

Path-Based Data-Informativity Conditions for Single Module Identification in Dynamic Networks, pp. 4354-4359.

Van den Hof, Paul M.J.	Eindhoven University of Technology
Ramaswamy, Karthik R.	Eindhoven University of Technology

ThA12	Coordinated Universal Time (UTC)
Distributed Control I (Regular Session)	
Chair: Su, Lanlan	University of Leicester
Co-Chair: Gasparri, Andrea	University Of

13:00-13:15 ThA12.1

Distributed Control of Mobile LTI and LPV Agents Using Induced L2 to L∞ Norms, pp. 4360-4365.

Hespe, Christian	Hamburg University of Technology
Datar, Adwait	Technical University of Hamburg Harburg
Werner, Herbert	Hamburg University of Technology

13:15-13:30 ThA12.2

Distributed Learning Model Predictive Control for Linear Systems, pp. 4366-4373.

Stürz, Yvonne R.	UC Berkeley
Zhu, Edward	University of California, Berkeley
Rosolia, Ugo	Caltech
Johansson, Karl H.	Royal Institute of Technology
Borrelli, Francesco	Unversity of California at Berkeley

13:30-13:45 ThA12.3

Distributed Consensus of Linear Multi-Agent Systems with Nonidentical Random Packet Loss, pp. 4374-4379.

Ma, Ji	Xiamen University
Yu, Xiao	Xiamen University
Lan, Weiyao	Xiamen University

13:45-14:00 ThA12.4

Distributed Finite-Time Algorithm for a Class of Quadratic Optimization Problems with Time-Varying Linear Constraints, pp. 4380-4386.

Santilli, Matteo	University of Roma Tre
Oliva, Gabriele	University Campus Bio-Medico of Rome
Gasparri, Andrea	University of "Roma Tre"

14:00-14:15 ThA12.5

Distributed Optimization with ALADIN for Non-Convex Optimal Control Problems, pp. 4387-4392.

Burk, Daniel	Friedrich-Alexander-University Erlangen-Nuremberg
Völz, Andreas	Friedrich-Alexander-University Erlangen-Nuremberg
Graichen, Knut	University Erlangen-Nürnberg (FAU)

14:15-14:30 ThA12.6

Robust Event-Triggered Distributed Average Tracking for Double-Integrator Agents without Velocity Measurements, pp. 4393-4398.

Ding, Yong	University of California, Riverside
Ren, Wei	University of California, Riverside
Zhao, Yu	Northwestern Polytechnical University

14:30-14:45 ThA12.7

Distributed Optimization with Event-Triggered Communication Via Input Feedforward Passivity, pp. 4399-4404.

Li, Mengmou	The University of Hong Kong
Su, Lanlan	University of Leicester
Liu, Tao	The University of Hong Kong

14:45-15:00 ThA12.8

A Fixed-Time Convergent Distributed Algorithm for Strongly Convex Function in a Time-Varying Network, pp. 4405-4410.

Garg, Kunal	University of Michigan-Ann Arbor
Baranwal, Mayank	University of Michigan
Panagou, Dimitra	University of Michigan, Ann Arbor

ThA14 Coordinated Universal Time (UTC)

Estimation and Control of PDE Systems I (Invited Session)

Chair: Demetriou, Michael A.	Worcester Polytechnic Institute
Co-Chair: de Andrade, Gustavo Artur	Universidade Federal De Santa Catarina
Organizer: Demetriou, Michael A.	Worcester Polytechnic Institute
Organizer: Fahroo, Fariba	AFOSR

13:00-13:15 ThA14.1

Controlling PDEs with Mobile Actuators Constrained Over Time-Varying Reachability Sets (I), pp. 4411-4416.

Demetriou, Michael A.	Worcester Polytechnic Institute

13:15-13:30 ThA14.2

A Differential-Delay Estimator for Thermoacoustic Oscillations in a Rijke Tube Using In-Domain Pressure Measurements (I), pp. 4417-4422.

Auriol, Jean	CNRS, Centrale Supelec
de Andrade, Gustavo Artur	Universidade Federal De Santa Catarina
Vazquez, Rafael	Univ. De Sevilla

13:30-13:45 ThA14.3

Finite-Dimensional Control of the Kuramoto-Sivashinsky Equation under Point Measurement and Actuation (I), pp. 4423-4428.

Katz, Rami	Tel Aviv University
Fridman, Emilia	Tel-Aviv Univ

13:45-14:00 ThA14.4

Homogeneous Observers for Projected Quadratic Partial Differential Equations (I), pp. 4429-4435.

Zhuk, Sergiy	IBM
Polyakov, Andrey	Inria Lille Nord-Europe

14:00-14:15 ThA14.5

Lateral Vibration Suppression of a Disturbed Mining Cable Elevator with Flexible Guideways (I), pp. 4436-4441.

Wang, Ji	University of California, San Diego
Tang, Shuxia	Texas Tech University
Krstic, Miroslav	University of California, San Diego

14:15-14:30 ThA14.6

Sampled-Data Based Failure Rate Identification for a Multi-State Reparable System (I), pp. 4442-4447.

Hu, Weiwei	University of Georgia
Liu, Jun	Southern Illinois University Edwardsville

14:30-14:45 ThA14.7

Improved Observer Design for Heat Equation with Constant Measurement Delay Via Legendre Polynomials (I), pp. 4448-4453.

Zhang, Jin	Tel Aviv University
Kang, Wen	University of Science and Technology Beijing
Fridman, Emilia	Tel-Aviv Univ
Seuret, Alexandre	CNRS

14:45-15:00 ThA14.8

Steady-State to Steady-State Transfer of PDEs Using Semi-Discretization and Flatness (I), pp. 4454-4459.

Chatterjee, Soham	Indian Institute of Technology Bombay
Natarajan, Vivek	Indian Institute of Technology Bombay

ThA15 Coordinated Universal Time (UTC)

Security, Safety and Resilience of Control Systems (Invited Session)

Chair: Yin, Xiang	Shanghai Jiao Tong University
Co-Chair: Su, Rong	Nanyang Technological University
Organizer: Yin, Xiang	Shanghai Jiao Tong University
Organizer: Su, Rong	Nanyang Technological University
Organizer: Cai, Kai	Osaka City University
Organizer: Tong, Yin	Southwest Jiaotong University

13:00-13:15 ThA15.1

Secure-By-Construction Optimal Path Planning for Linear Temporal Logic Tasks (I), pp. 4460-4466.

Yang, Shuo	Shanghai Jiao Tong University
Yin, Xiang	Shanghai Jiao Tong University
Li, Shaoyuan	Shanghai Jiao Tong University
Zamani, Majid	University of Colorado Boulder

13:15-13:30 ThA15.2

Analysis of Behavioural Properties of Bounded Petri Nets with a Semi-Structural Approach (I), pp. 4467-4472.

Gu, Chao	Xidian University & University of Cagliari
Li, Zhiwu	Xidian University
Giua, Alessandro	University of Cagliari

13:30-13:45 ThA15.3

Initial-State Estimation of Multi-Channel Networked Discrete Event Systems, pp. 4473-4478.

Yao, Yue	Southwest Jiaotong University
Tong, Yin	Southwest Jiaotong University
Lan, Hao	Southwest Jiaotong University

13:45-14:00 ThA15.4

Marking Diagnosis in Labeled Petri Nets Using Basis Diagnosers (I), pp. 4479-4484.

Ma, Ziyue	Xidian University
Yin, Xiang	Shanghai Jiao Tong University
Li, Zhiwu	Xidian University

14:00-14:15 ThA15.5

Determining Optimal Control Sequences for Reconfiguration in Petri Nets Using Cost Trees (I), pp. 4485-4491.

Ma, Ziyue	Xidian University
Zhang, Jiafeng	XIDIAN UNIVERSITY

14:15-14:30 ThA15.6

Optimal Stabilization Control of Connected Vehicle Systems (I), pp. 4492-4497.

Wang, Yan	Nanyang Technological University

Su, Rong	Nanyang Technological University

14:30-14:45 ThA15.7

Distributed Optimization for Linear Multi-Agent Systems Subject to DoS Attacks (I), pp. 4498-4503.

Liu, Dan	Nanyang Technological University
Su, Rong	Nanyang Technological University

14:45-15:00 ThA15.8

On Attack Mitigation in Supervisory Control Systems: A Tolerant Control Approach (I), pp. 4504-4510.

Yao, Jingshi	Shanghai Jiao Tong University
Yin, Xiang	Shanghai Jiao Tong University
Li, Shaoyuan	Shanghai Jiao Tong University

ThA16 Coordinated Universal Time (UTC)

Monotone Systems and Invariance (Regular Session)

Chair: Olaru, Sorin	CentraleSupélec
Co-Chair: Grussler, Christian	UC Berkeley

13:00-13:15 ThA16.1

Stabilization of Positive Nonlinear Systems on Time Scales, pp. 4511-4516.

Bartosiewicz, Zbigniew	Bialystok University of Technology

13:15-13:30 ThA16.2

A Necessary and Sufficient Condition for Stability of a Class of Planar Positive Nonlinear Systems, pp. 4517-4522.

Zou, Yunlei	Yangzhou University
Qian, Chunjiang	University of Texas at San Antonio

13:30-13:45 ThA16.3

Controllability Maximization of Large-Scale Systems Using Projected Gradient Method, pp. 4523-4528.

Sato, Kazuhiro	The University of Tokyo
Takeda, Akiko	The University of Tokyo

13:45-14:00 ThA16.4

Variation Diminishing Hankel Operators, pp. 4529-4534.

Grussler, Christian	UC Berkeley
Sepulchre, Rodolphe	University of Cambridge

14:00-14:15 ThA16.5

Tight Decomposition Functions for Continuous-Time Mixed-Monotone Systems with Disturbances, pp. 4535-4540.

Abate, Matthew	Georgia Institute of Technology
Coogan, Samuel	Georgia Institute of Technology
Dutreix, Maxence	Georgia Institute of Technology

14:15-14:30 ThA16.6

Oblique Projected Dynamical Systems and Incremental Stability under State Constraints, pp. 4541-4546.

Heemels, W.P.M.H.	Eindhoven University of Technology
Camlibel, M. Kanat	University of Groningen
Heertjes, Marcel	Eindhoven University of Technology

14:30-14:45 ThA16.7

Two Notions of Constraint Satisfaction and Positive Invariance for the Analysis of Discrete-Time Systems, pp. 4547-4552.

Soyer, Martin	Université Paris-Saclay, CentraleSupélec
Olaru, Sorin	CentraleSupélec
Fang, Zhou	Technical Center for Simulation Development Renault

14:45-15:00 ThA16.8

Computing Robustly Forward Invariant Sets for Mixed-Monotone Systems, pp. 4553-4559.

Abate, Matthew	Georgia Institute of Technology
Coogan, Samuel	Georgia Institute of Technology

ThA17 Coordinated Universal Time (UTC)

Output Regulation (Regular Session)

Chair: Scherpen, Jacquelien M.A.	University of Groningen
Co-Chair: Sassano, Mario	University of Rome, Tor Vergata

13:00-13:15 ThA17.1

Modal Consensus of Single Integrators with Minimal "disagreement Interaction" Via Distributed Endogenous Internal Model, pp. 4560-4565.

Monti, Andrea	University of Rome Tor Vergata
Possieri, Corrado	Consiglio Nazionale Delle Ricerche
Sassano, Mario	University of Rome, Tor Vergata

13:15-13:30 ThA17.2

LMI-Based Output Feedback Control of Singularly Perturbed Systems with Guaranteed Cost, pp. 4566-4571.

Tognetti, Eduardo Stockler	University of Brasilia
Calliero, Taís	University of Brasilia
Morarescu, Irinel-Constantin	CRAN, CNRS, Université De Lorraine
Daafouz, Jamal	Université De Lorraine, CRAN, CNRS

13:30-13:45 ThA17.3

Data-Driven Internal Model Control of Second-Order Discrete Volterra Systems, pp. 4572-4579.

Rueda-Escobedo, Juan G.	Brandenburg University of Technology Cottbus - Senftenberg
Schiffer, Johannes	Brandenburg University of Technology

13:45-14:00 ThA17.4

Sufficient Conditions for Output Reference Tracking for Nonlinear Systems: A Contractive Approach, pp. 4580-4585.

Giaccagli, Mattia	University of Lyon
Astolfi, Daniele	CNRS - Univ Lyon 1
Andrieu, Vincent	Université De Lyon
Marconi, Lorenzo	Univ. Di Bologna

14:00-14:15 ThA17.5

Output Regulation for Voltage Control in DC Networks with Time-Varying Loads, pp. 4586-4591.

Silani, Amirreza	University of Groningen
Cucuzzella, Michele	University of Groningen
Scherpen, Jacquelien M.A.	University of Groningen
Yazdanpanah, Mohammad Javad	University of Tehran

14:15-14:30 ThA17.6

Cooperative Global Robust Practical Output Regulation for Output Feedback Nonlinear Multi-Agent Systems by Distributed Event-Triggered Control, pp. 4592-4597.

Liu, Wei	The Chinese University of Hong Kong
Huang, Jie	The Chinese University of Hong

Kong

14:30-14:45 ThA17.7

On Dead-Time Compensation in Repetitive Control, pp. 4598-4603.

Mirkin, Leonid — Technion - IIT

14:45-15:00 ThA17.8

Implicit Solutions to Constrained Nonlinear Output Regulation Using MPC, pp. 4604-4609.

Koehler, Johannes — University of Stuttgart
Muller, Matthias A. — Leibniz University Hannover
Allgöwer, Frank — University of Stuttgart

ThP1 Coordinated Universal Time (UTC)

Snake Robots (Plenary Session)

Chair: Annaswamy, Anuradha M. — Massachusetts Inst. of Tech
Co-Chair: Bitmead, Robert R. — University of California San Diego

15:10-16:10 ThP1.1

*Snake Robots**.

Pettersen, Kristin Y. — Norwegian University of Science and Technology (NTNU)

ThB01 Coordinated Universal Time (UTC)

Estimation & Mitigation (COVID-19 Focus Session)

Chair: Valcher, Maria Elena — Universita' Di Padova
Co-Chair: Sandberg, Henrik — KTH Royal Institute of Technology

16:15-16:35 ThB01.1

*A Closed-Loop Framework for Inference, Prediction and Control of SIR Epidemics on Networks (I)**.

Hota, Ashish — Indian Institute of Technology (IIT), Kharagpur
Pare, Philip E. — Purdue University

16:35-16:55 ThB01.2

*Distributed Feedback Control on the SIS Network Model: Challenges and Results (I)**.

Ye, Mengbin — Curtin University
Anderson, Brian D.O. — Australian National University

16:55-17:15 ThB01.3

*Model-Driven Approaches for Easing Infectious-Disease Controls (I)**.

Roy, Sandip — Washington State University

17:15-17:35 ThB01.4

*Panel Discussion: How Do We Prepare to Mitigate the Next Wave/outbreak? (I)**.

Johansson, Karl H. — Royal Institute of Technology
Liu, Ji — Stony Brook University

ThB02 Coordinated Universal Time (UTC)

Hybrid Systems in Biology and Medicine (Invited Session)

Chair: Palumbo, Pasquale — University of Milano-Bicocca
Co-Chair: Borri, Alessandro — CNR-IASI
Organizer: Singh, Abhyudai — University of Delaware
Organizer: Borri, Alessandro — CNR-IASI
Organizer: Palumbo, Pasquale — University of Milano-Bicocca

16:15-16:30 ThB02.1

Noise Propagation in Metabolic Pathways: The Role of Growth-Mediated Feedback, pp. 4610-4615.

Borri, Alessandro — CNR-IASI
Palumbo, Pasquale — University of Milano-Bicocca
Singh, Abhyudai — University of Delaware

16:30-16:45 ThB02.2

Stochastic Filters Based on Hybrid Approximations of Multiscale Stochastic Reaction Networks (I), pp. 4616-4621.

Fang, Zhou — ETH Zurich
Gupta, Ankit — ETH Zürich
Khammash, Mustafa H. — ETH Zurich

16:45-17:00 ThB02.3

Laguerre Domain Estimation of an Input Impulse Train to a Continuous Linear Time-Invariant System (I), pp. 4622-4627.

Runvik, Håkan — Uppsala University
Medvedev, Alexander V. — Uppsala University

17:00-17:15 ThB02.4

Hybrid Systems Framework for Modeling Host-Parasitoid Population Dynamics (I), pp. 4628-4633.

Singh, Abhyudai — University of Delaware
Emerick, Brooks — Kutztown University

17:15-17:30 ThB02.5

Cellular Immunotherapy Treatment Scheduling to Address Antigen Escape (I), pp. 4634-4639.

Dullerud, Natalie — University of Southern California
Jonsson, Vanessa — City of Hope National Medical Center

ThB03 Coordinated Universal Time (UTC)

Periodic Systems (Regular Session)

Chair: Bianchini, Gianni — Università Di Siena
Co-Chair: Azuma, Shun-ichi — Nagoya University

16:15-16:30 ThB03.1

LMI-Based Stability Analysis and Controller Design for Periodic Linear Time-Varying Systems, pp. 4640-4645.

Sakai, Mitsunori — Nagoya University
Asai, Toru — Nagoya University
Ariizumi, Ryo — Nagoya University
Azuma, Shun-ichi — Nagoya University

16:30-16:45 ThB03.2

Uniform Asymptotic Stabilization of Affine Periodic Discrete-Time Systems, pp. 4646-4652.

Czornik, Adam — Silesian Technical University
Makarov, Evgenii — National Academy of Sciences of Belarus, Institute of Mathematic
Niezabitowski, Michal — Silesian University of Technology, Control and Robotics Group
Popova, Svetlana — Udmurt State University
Zaitsev, Vasilii — Udmurt State University

16:45-17:00 ThB03.3

A Continuation Method for Computation of H_inf Gains of Linear Continuous Time Periodic Systems, pp. 4653-4658.

Rousse, Paul — ONERA
Hauser, John — Univ. of Colorado at Boulder
Garoche, Pierre Loïc — Onera

17:00-17:15 ThB03.4

Subspace Identification of Linear Time-Periodic Systems with

Periodic Inputs, pp. 4659-4664.

Yin, Mingzhou	ETH Zurich
Iannelli, Andrea	ETH Zurich
Smith, Roy S.	ETH Zurich

17:15-17:30 ThB03.5

Sum-Of-Norms MPC for Linear Periodic Systems with Application to Spacecraft Rendezvous, pp. 4665-4670.

Leomanni, Mirko	Università Di Siena
Bianchini, Gianni	Università Di Siena
Garulli, Andrea	Università Di Siena
Quartullo, Renato	Universita' Di Siena

ThB04 Coordinated Universal Time (UTC)

Large-Scale Optimization for Machine Learning I (Invited Session)

Chair: Freris, Nikolaos M.	University of Science and Technology of China (USTC)
Co-Chair: Patrinos, Panagiotis	KU Leuven
Organizer: Freris, Nikolaos M.	University of Science and Technology of China (USTC)
Organizer: Nedich, Angelia	Arizona State University
Organizer: Voulgaris, Petros G.	Univ of Nevada, Reno

16:15-16:30 ThB04.1

On the Linear Convergence of Random Search for Discrete-Time LQR, pp. 4671-4676.

Mohammadi, Hesameddin	University of Southern California
Soltanolkotabi, Mahdi	USC
Jovanovic, Mihailo R.	University of Southern California

16:30-16:45 ThB04.2

Feedback-Control Based Adversarial Attacks on Recurrent Neural Networks (I), pp. 4677-4682.

Deka, Shankar	University of California, Berkeley
Stipanovic, Dusan M.	Univ of Illinois, Urbana-Champaign
Tomlin, Claire J.	UC Berkeley

16:45-17:00 ThB04.3

The Role of Regularization in Overparameterized Neural Networks (I), pp. 4683-4688.

Satpathi, Siddhartha	Univ of Illinois, Urbana-Champaign
Gupta, Harsh	University of Illinois at Urbana-Champaign
Liang, Shiyu	Univeristy of Illinois at Urbana Champaign
Srikant, R	Univ of Illinois, Urbana-Champaign

17:00-17:15 ThB04.4

Privacy-Preserving Distributed Coordination of Distributed Energy Resources (I), pp. 4689-4696.

Zholbaryssov, Madi	University of Illinois at Urbana-Champaign
Hadjicostis, Christoforos N.	University of Cyprus
Dominguez-Garcia, Alejandro D.	University of Illinois at Urbana-Champaign

17:15-17:30 ThB04.5

A New Envelope Function for Nonsmooth DC Optimization (I), pp. 4697-4702.

Themelis, Andreas	KU Leuven
Hermans, Ben	KU Leuven
Patrinos, Panagiotis	KU Leuven

ThB05 Coordinated Universal Time (UTC)

Flight Control (Regular Session)

Chair: Oza, Harshal B.	Ahmedabad University
Co-Chair: Moon, Jun	University of Seoul

16:15-16:30 ThB05.1

Attitude Control and Reachability Analysis for Unmanned Helicopters Via the Zonotopic Kalman Filtering, pp. 4703-4705.

Harno, Hendra G.	Gyeongsang National University
Moon, Jun	Hanyang University
Kim, Yoonsoo	Gyeongsang National University

16:30-16:45 ThB05.2

Observer-Based Robust H_{infty} Fault-Tolerant Flight Control: A Design Example and Performance Assessment, pp. 4706-4711.

Sato, Masayuki	Japan Aerospace Exploration Agency
Marcos, Andres	TASC

16:45-17:00 ThB05.3

Hybrid Reinforcement Learning Control for a Micro Quadrotor Flight, pp. 4712-4717.

Yoo, Jaehyun	Hankyong National University
Jang, Dohyun	Seoul National University
Kim, H. Jin	Seoul National University
Johansson, Karl H.	Royal Institute of Technology

17:00-17:15 ThB05.4

Robust Continuous Finite-Time Control of a Helicopter in Turbulence, pp. 4718-4723.

Halbe, Omkar	Technical University of Munich
Oza, Harshal B.	Pandit Deendayal Petroleum University

17:15-17:30 ThB05.5

Towards Adaptive Autopilots for Fixed-Wing Unmanned Aerial Vehicles, pp. 4724-4729.

Baldi, Simone	Southeast University
Roy, Spandan	Delft University of Technology (TU Delft)
Yang, Kang	Southeast University

ThB06 Coordinated Universal Time (UTC)

Cooperative Control of Multi-Agent Systems (Invited Session)

Chair: Hu, Guoqiang	Nanyang Technological University, Singapore
Co-Chair: Yan, Yamin	The University of Newcastle
Organizer: Yan, Yamin	The University of Newcastle
Organizer: Lin, Zongli	University of Virginia

16:15-16:30 ThB06.1

Attitude Consensus of Multiple Rigid Body Systems by Output Based Adaptive Distributed Output Observer (I), pp. 4730-4735.

Cai, He	South China University of Technology
Huang, Jie	The Chinese University of Hong Kong

16:30-16:45 ThB06.2

On the Design of a Novel Control Algorithm and Communication

Structure for Discrete-Time Multi-Agent Consensus Systems (I), pp. 4736-4741.

Stuedli, Sonja	The University of Newcastle
Yan, Yamin	The University of Newcastle
Seron, Maria M.	The University of Newcastle
Middleton, Richard	The University of Newcastle

16:45-17:00 ThB06.3

Leader-Following Almost Output Consensus for Linear Multi-Agent Systems with Disturbance-Affected Unstable Zero Dynamics (I), pp. 4742-4747.

Meng, Tingyang	University of Virginia
Lin, Zongli	University of Virginia

17:00-17:15 ThB06.4

Intrinsic Formation of Regular Polyhedra: A Differential Game Approach (I), pp. 4748-4753.

Li, Yibei	KTH-Royal Institute of Technology
Hu, Xiaoming	Royal Institute of Technology

17:15-17:30 ThB06.5

Fault-Tolerant Formation Tracking of Heterogeneous Nonlinear Multi-Agent Systems with Time-Varying Actuator Faults (I), pp. 4754-4759.

Feng, Zhi	Nanyang Technological University
Hu, Guoqiang	Nanyang Technological University, Singapore

ThB07 Coordinated Universal Time (UTC)

Data-Driven Approaches I (Regular Session)

Chair: Fagiano, Lorenzo	Politecnico Di Milano
Co-Chair: Camlibel, M. Kanat	University of Groningen

16:15-16:30 ThB07.1

Iterative Data-Driven Inference of Nonlinearity Measures Via Successive Graph Approximation, pp. 4760-4765.

Martin, Tim	University of Stuttgart
Allgöwer, Frank	University of Stuttgart

16:30-16:45 ThB07.2

Willems' Fundamental Lemma for State-Space Systems and Its Extension to Multiple Datasets, pp. 4766-4771.

van Waarde, Henk J.	University of Groningen
De Persis, Claudio	University of Groningen
Camlibel, M. Kanat	University of Groningen
Tesi, Pietro	University of Florence

16:45-17:00 ThB07.3

Data-Driven Tests for Controllability, pp. 4772-4777.

Mishra, Vikas Kumar	Vrije Universiteit Brussel
Markovsky, Ivan	Vrije Universiteit Brussel
Grossmann, Benjamin	Vrije Universiteit Brussel

17:00-17:15 ThB07.4

Data-Driven Filtering for Linear Systems Using Set Membership Multistep Predictors, pp. 4778-4783.

Lauricella, Marco	Politecnico Di Milano
Fagiano, Lorenzo	Politecnico Di Milano

17:15-17:30 ThB07.5

Online Regulation of Unstable Linear Systems from a Single Trajectory, pp. 4784-4789.

Talebi, Shahriar	University of Washington
Alemzadeh, Siavash	University of Washington
Rahimi, Niyousha	University of Washington
Mesbahi, Mehran	University of Washington

ThB08 Coordinated Universal Time (UTC)

Filtering (Regular Session)

Chair: Ohtsuka, Toshiyuki	Kyoto Univ
Co-Chair: Karlsson, Johan	KTH Royal Institute of Technology

16:15-16:30 ThB08.1

Deep FPF: Gain Function Approximation in High-Dimensions, pp. 4790-4795.

Olmez, Sukru Yagiz	University of Illinois at Urbana-Champaign
Taghvaei, Amirhossein	University of California Irvine
Mehta, Prashant G.	Univ of Illinois, Urbana-Champaign

16:30-16:45 ThB08.2

Nonlinear Matched Filters Via Chen-Fliess Series, pp. 4796-4801.

Gray, W. Steven	Old Dominion University

16:45-17:00 ThB08.3

Unscented Dual Quaternion Particle Filter for SE(3) Estimation, pp. 4802-4807.

Li, Kailai	Karlsruhe Institute of Technology (KIT)
Pfaff, Florian	Karlsruhe Institute of Technology (KIT)
Hanebeck, Uwe D.	Karlsruhe Institute of Technology (KIT)

17:00-17:15 ThB08.4

Incremental Inference of Collective Graphical Models, pp. 4808-4813.

Singh, Rahul	Georgia Institute of Technology, Atlanta, GA
Haasler, Isabel	KTH Royal Institute of Technology
Zhang, Qinsheng	Georgia Institution of Technology
Karlsson, Johan	KTH Royal Institute of Technology
Chen, Yongxin	Georgia Institute of Technology

17:15-17:30 ThB08.5

Symbolic-Numeric Computation of Posterior Mean and Variance for a Class of Discrete-Time Nonlinear Stochastic Systems, pp. 4814-4821.

Iori, Tomoyuki	Kyoto University
Ohtsuka, Toshiyuki	Kyoto Univ

ThB09 Coordinated Universal Time (UTC)

Optimization Algorithms III (Regular Session)

Chair: Kerrigan, Eric C.	Imperial College London
Co-Chair: Dai, Ran	The Ohio State University

16:15-16:30 ThB09.1

A Direct Method for Solving Integral Penalty Transcriptions of Optimal Control Problems, pp. 4822-4827.

Neuenhofen, Martin P.	Imperial College London
Kerrigan, Eric C.	Imperial College London

16:30-16:45 ThB09.2

New Proximal Newton-Type Methods for Convex Optimization, pp. 4828-4835.

Adler, Ilan	University of California, Berkeley
Hu, Zhiyue Tom	University of California, Berkeley

Lin, Tianyi	University of California, Berkeley

16:45-17:00 ThB09.3

Global Exponential Stability of Primal-Dual Gradient Flow Dynamics Based on the Proximal Augmented Lagrangian: A Lyapunov-Based Approach, pp. 4836-4841.

Ding, Dongsheng	University of Southern California
Jovanovic, Mihailo R.	University of Southern California

17:00-17:15 ThB09.4

Why Not Both? Exact Continuous and Discrete Optimization with Submodularity, pp. 4842-4847.

Bunton, Jonathan	University of California, Los Angeles
Tabuada, Paulo	University of California at Los Angeles

17:15-17:30 ThB09.5

Local Optimization of Nonconvex Mixed-Integer Quadratically Constrained Quadratic Programming Problems, pp. 4848-4853.

You, Sixiong	The Ohio State University
Dai, Ran	Purdue University

ThB10 Coordinated Universal Time (UTC)

Markov Processes II (Regular Session)

Chair: Yuksel, Serdar	Queen's University
Co-Chair: Fragoso, Marcelo	Lncc / Mct

16:15-16:30 ThB10.1

Bounded Realness for Discrete-Time Jump Descriptor Systems, pp. 4854-4858.

Park, Chaneun	Postech
Park, PooGyeon	Pohang Univ. of Sci. & Tech

16:30-16:45 ThB10.2

Optimality of Stationary and Deterministic Policies for Zero-Delay Coding of $mathbb{R}^d$-Valued Linear Markov Sources with Quadratic Cost, pp. 4859-4864.

Ghomi, Meysam	QUEEN'S UNIVERSITY
Linder, Tamas	Queen's University
Yuksel, Serdar	Queen's University

16:45-17:00 ThB10.3

Optimal Linear Mean Square Filter and an Associated Stationary Filter for Hidden Markov Chain, pp. 4865-4870.

Vila Vergés, Fortià	Laboratório Nacional De Computação Cinetífica (LNCC)
Fragoso, Marcelo	Lncc / Mct

17:00-17:15 ThB10.4

Finite-Time Asynchronous H-Infinity Nonfragile Control for Markov Jump Systems with Time-Varying Mode Detection Probabilities, pp. 4871-4876.

Li, Feng	Nanjing University of Science and Technology
Zheng, Wei Xing	Western Sydney University

17:15-17:30 ThB10.5

The Reducibility of Reachable Space for Structured Hidden Markov Models, pp. 4877-4884.

Zheng, Man	Kyoto University
Ohta, Yoshito	Kyoto University

ThB11 Coordinated Universal Time (UTC)

Distributed Optimization and Learning for Networked Systems II (Invited Session)

Chair: Lu, Jie	ShanghaiTech University
Co-Chair: Yang, Tao	Northeastern University
Organizer: Yang, Tao	Northeastern University
Organizer: Uribe, Cesar	Massachusetts Institute of Technology
Organizer: Lu, Jie	ShanghaiTech University
Organizer: Nedic, Angelia	Alphatech Inc

16:15-16:30 ThB11.1

Stability of Decentralized Gradient Descent in Open Multi-Agent Systems (I), pp. 4885-4890.

Hendrickx, Julien M.	UCLouvain
Rabbat, Michael	Facebook

16:30-16:45 ThB11.2

Robust Optimization Over Networks Via Distributed Restarting of Accelerated Dynamics, pp. 4891-4896.

Ochoa, Daniel E.	University of Colorado Boulder
Poveda, Jorge I.	University of Colorado at Boulder
Uribe, Cesar	Massachusetts Institute of Technology
Quijano, Nicanor	Universidad De Los Andes

16:45-17:00 ThB11.3

On the Convergence of Consensus Algorithms with Markovian Noise and Gradient Bias (I), pp. 4897-4902.

Wai, Hoi-To	The Chinese University of Hong Kong

17:00-17:15 ThB11.4

A Linearly Convergent Algorithm for Multi-Agent Nonexpansive Operators in Real Hilbert Spaces (I), pp. 4903-4908.

Li, Xiuxian	Nanyang Technological University
Meng, Min	Nanyang Technological University
Xie, Lihua	Nanyang Tech. Univ

17:15-17:30 ThB11.5

Fully Distributed Nash Equilibrium Seeking Over Time-Varying Communication Networks with Linear Convergence Rate, pp. 4909-4914.

Bianchi, Mattia	Delft University of Technology
Grammatico, Sergio	Delft Univ. of Tech

ThB12 Coordinated Universal Time (UTC)

Social Dynamics II (Regular Session)

Chair: Huang, Minyi	Carleton University
Co-Chair: Touri, Behrouz	University of California San Diego

16:15-16:30 ThB12.1

Community Detection for Gossip Dynamics with Stubborn Agents, pp. 4915-4920.

Xing, Yu	Academy of Mathematics and Systems Science, Chinese Academy of S
He, Xingkang	KTH Royal Institute of Technology
Fang, Haitao	Chinese Academy of Sciences
Johansson, Karl H.	Royal Institute of Technology

16:30-16:45 ThB12.2

Mean Field Social Optimization: Feedback Person-By-Person Optimality and the Master Equation, pp. 4921-4926.

Huang, Minyi	Carleton University
Sheu, Shuenn-jyi	Academia Sinica

Sun, Li-Hsien	National Central University

16:45-17:00 ThB12.3

Reinforcement Learning in Linear Quadratic Deep Structured Teams: Global Convergence of Policy Gradient Methods, pp. 4927-4932.

Fathi, Vida	Concordia University
Arabneydi, Jalal	McGill University
Aghdam, Amir G.	Concordia University

17:00-17:15 ThB12.4

Uniform Strong Connectivity Is Not Necessary for Non-Bayesian Social Learning on Time-Varying Directed Graphs, pp. 4933-4940.

Parasnis, Rohit Yashodhar	University of California San Diego
Franceschetti, Massimo	UCSD
Touri, Behrouz	University of California San Diego

17:15-17:30 ThB12.5

Learning Theory for Estimation of Animal Motion Submanifolds, pp. 4941-4946.

Powell, Nathan	Virginia Tech
Kurdila, Andrew J.	Virginia Tech

ThB13

Learning-Based Control III (Invited Session)

Chair: Hirche, Sandra	Technische Universität München
Co-Chair: Zeilinger, Melanie N.	ETH Zurich
Organizer: Muller, Matthias A.	Leibniz University Hannover
Organizer: Schoellig, Angela P	University of Toronto
Organizer: Trimpe, Sebastian	RWTH Aachen University
Organizer: Zeilinger, Melanie N.	ETH Zurich

16:15-16:30 ThB13.1

Stability and Feasibility of Neural Network-Based Controllers Via Output Range Analysis (I), pp. 4947-4954.

Karg, Benjamin	TU Berlin
Lucia, Sergio	TU Berlin

16:30-16:45 ThB13.2

Direct Data-Driven Design of Neural Reference Governors (I), pp. 4955-4960.

Masti, Daniele	IMT School for Advanced Studies Lucca
Breschi, Valentina	Politecnico Di Milano
Formentin, Simone	Politecnico Di Milano
Bemporad, Alberto	IMT School for Advanced Studies Lucca

16:45-17:00 ThB13.3

Learning Nonlinear Feedback Controllers from Data Via Optimal Policy Search and Stochastic Gradient Descent (I), pp. 4961-4966.

Ferrarotti, Laura	IMT School for Advanced Studies, Lucca
Bemporad, Alberto	IMT School for Advanced Studies Lucca

17:00-17:15 ThB13.4

How Training Data Impacts Performance in Learning-Based Control, pp. 4967-4972.

Lederer, Armin	Technical University of Munich
Capone, Alexandre	Technical University of Munich
Umlauft, Jonas	Technical University of Munich
Hirche, Sandra	Technische Universität München

17:15-17:30 ThB13.5

To Share or Not to Share? Performance Guarantees and the Asymmetric Nature of Cross-Robot Experience Transfer, pp. 4973-4978.

Sorocky, Michael Joseph	University of Toronto
Zhou, Siqi	University of Toronto
Schoellig, Angela P	University of Toronto

ThB14 Coordinated Universal Time (UTC)

Event-Triggered Control I (Invited Session)

Chair: Nowzari, Cameron	George Mason University
Co-Chair: Heemels, W.P.M.H.	Eindhoven University of Technology
Organizer: Heemels, W.P.M.H.	Eindhoven University of Technology
Organizer: Hirche, Sandra	Technische Universität München
Organizer: Johansson, Karl H.	Royal Institute of Technology
Organizer: Nowzari, Cameron	George Mason University

16:15-16:30 ThB14.1

A Unifying Event-Triggered Control Framework Based on a Hybrid Small-Gain Theorem (I), pp. 4979-4984.

Wang, Wei	The University of Melbourne
Nesic, Dragan	University of Melbourne
Postoyan, Romain	CNRS, CRAN, Université De Lorraine
Heemels, W.P.M.H.	Eindhoven University of Technology

16:30-16:45 ThB14.2

Safety-Critical Event Triggered Control Via Input-To-State Safe Barrier Functions, pp. 4985-4990.

Taylor, Andrew	California Institute of Technology
Ong, Pio	University of California, San Diego
Cortes, Jorge	University of California, San Diego
Ames, Aaron D.	California Institute of Technology

16:45-17:00 ThB14.3

Traffic Abstractions of Nonlinear Homogeneous Event-Triggered Control Systems (I), pp. 4991-4998.

Delimpaltadakis, Giannis	Delft University of Technology
Mazo Jr., Manuel	Delft University of Technology

17:00-17:15 ThB14.4

Exploiting Information for Decentralized Periodic Event-Triggered Control (I), pp. 4999-5004.

Hertneck, Michael	University of Stuttgart
Allgöwer, Frank	University of Stuttgart

17:15-17:30 ThB14.5

An Approach to Minimum Attention Control by Sparse Derivative (I), pp. 5005-5010.

Nagahara, Masaaki	The University of Kitakyushu
Nesic, Dragan	University of Melbourne

ThB15 Coordinated Universal Time (UTC)

Attack Detection (Regular Session)

Chair: Namerikawa, Toru	Keio University
Co-Chair: Lucia, Sergio	TU Berlin

16:15-16:30 ThB15.1

Self Attack Detection and State Estimation Algorithm in Distributed

Observer System under Combination Attack, pp. 5011-5016.

Sato, Shotaro	Keio University
Namerikawa, Toru	Keio University
Qu, Zhihua	Univ. of Central Florida

16:30-16:45 ThB15.2

High-Confidence Attack Detection Via Wasserstein-Metric Computations, pp. 5017-5022.

Li, Dan	University of California, San Diego
Martinez, Sonia	University of California at San Diego

16:45-17:00 ThB15.3

Measuring Target Predictability for Optimal Environment Design, pp. 5023-5028.

Ornik, Melkior	University of Illinois at Urbana-Champaign

17:00-17:15 ThB15.4

Detection of Biasing Nodes in Distributed Discrete Time Varying Filter Networks, pp. 5029-5034.

Zamani, Mohammad	DSTG
Ugrinovskii, Valery	University of New South Wales

17:15-17:30 ThB15.5

A Hierarchical Attack Identification Method for Nonlinear Systems, pp. 5035-5042.

Braun, Sarah	Siemens AG, Technische Universität Berlin
Albrecht, Sebastian	Siemens AG
Lucia, Sergio	TU Berlin

ThB16 Coordinated Universal Time (UTC)

Port-Hamiltonian Systems (Regular Session)

Chair: Normand-Cyrot, Dorothée	CNRS
Co-Chair: Le Gorrec, Yann	Ensmm, Femto-St / As2m

16:15-16:30 ThB16.1

A New Riemannian Framework for Efficient H2-Optimal Model Reduction of Port-Hamiltonian Systems, pp. 5043-5049.

Moser, Tim	Technical University of Munich
Lohmann, Boris	Technische Universität München

16:30-16:45 ThB16.2

Stabilization of Discrete Port-Hamiltonian Dynamics Via Interconnection and Damping Assignment, pp. 5050-5055.

Moreschini, Alessio	Sapienza University of Rome
Mattioni, Mattia	La Sapienza Università Di Roma
Monaco, Salvatore	Università Di Roma
Normand-Cyrot, Dorothée	CNRS

16:45-17:00 ThB16.3

Stabilisation of a Rotating Beam Clamped on a Moving Inertia with Strong Dissipation Feedback, pp. 5056-5061.

Mattioni, Andrea	Université De Franche Comté
Wu, Yongxin	FEMTO-ST/ENSMM
Le Gorrec, Yann	Ensmm, Femto-St / As2m
Zwart, Hans	University of Twente

17:00-17:15 ThB16.4

Structure-Preserving Spatial Discretization of a Two-Fluid Model, pp. 5062-5067.

Bansal, Harshit	Eindhoven University of Technology
Weiland, Siep	Eindhoven Univ. of Tech
Iapichino, Laura	Eindhoven University of Technology
Schilders, Wilhelmus	Eindhoven University of Technology
Van De Wouw, Nathan	Eindhoven University of Technology

17:15-17:30 ThB16.5

On Matched Disturbance Suppression for Port-Hamiltonian Systems, pp. 5068-5073.

Ferguson, Joel	University of Newcastle
Wu, Dongjun	Université Paris-Sud, Laboratoire Des Signaux Et Systèmes
Ortega, Romeo	LSS-SUPELEC

FrA01	Coordinated Universal Time (UTC)
Monotone Systems Theory for Reachability and Safety (Tutorial Session)	
Chair: Coogan, Samuel	Georgia Institute of Technology
Co-Chair: Arcak, Murat	University of California, Berkeley

13:00-13:40 FrA01.1

Mixed Monotonicity for Reachability and Safety in Dynamical Systems (I), pp. 5074-5085.

Coogan, Samuel — Georgia Institute of Technology

13:40-14:00 FrA01.2

*Sampled-Data Reachability Analysis Using Sensitivity and Mixed-Monotonicity (I)**.

Meyer, Pierre-Jean — University of California, Berkeley

14:00-14:20 FrA01.3

*Sparsity Aware Abstractions (I)**.

Arcak, Murat — University of California, Berkeley

14:20-14:40 FrA01.4

*Mixed Monotonicity for Abstraction-Based Verification and Synthesis of Stochastic System (I)**.

Coogan, Samuel — Georgia Institute of Technology

14:40-15:00 FrA01.5

*Efficient Synthesis for Monotone Transition Systems and Directed Safety Specifications (I)**.

Ivanova, Elena — CNRS, CentraleSupelec, Université Paris-Sud, Université Paris-Sa

Saoud, Adnane — CentraleSupélec

Girard, Antoine — CNRS

FrA02	Coordinated Universal Time (UTC)
Biological Systems II (Regular Session)	
Chair: Hori, Yutaka	Keio University
Co-Chair: Marszalek, Wieslaw	Opole University of Technology

13:00-13:15 FrA02.1

Single Cell Tracking Based on Voronoi Partition Via Stable Matching, pp. 5086-5091.

Chang, Young Hwan — Oregon Health and Science University

Linsley, Jeremy — Gladstone, UCSF

Lamstein, Josh — Gladstone Center for Systems and Therapeutics

Kalra, Jaslin — Gladstone Center for Systems and Therapeutics

Epstein, Irina — Gladstone Center for Systems and Therapeutics

Barch, Mariya — Gladstone Center for Systems and Therapeutics

Daily, Kenneth — Sage Bionetworks

Synder, Phil — Sage Bionetworks

Omberg, Larsson — Sage Bionetworks

Heiser, Laura — Oregon Health and Science University

Finkbeiner, Steve — Gladstone Center for Systems and Therapeutics

13:15-13:30 FrA02.2

DISSECT: DISentangle SharablE ConTent for Multimodal Integration and Crosswise-Mapping, pp. 5092-5097.

Schau, Geoffrey — Oregon Health & Science University

Burlingame, Erik — Oregon Health and Science University

Chang, Young Hwan — Oregon Health and Science University

13:30-13:45 FrA02.3

Control of Negative Feedback Loops in Genetic Networks, pp. 5098-5105.

Belgacem, Ismail — Ghazaouet, Tlemcen, Algeria

Gouze, Jean-Luc — INRIA

Edwards, Roderick — University of Victoria

13:45-14:00 FrA02.4

Sequestration and Delays Enable the Synthesis of a Molecular Derivative Operator, pp. 5106-5112.

Cuba Samaniego, Christian — University of California Los Angeles

Kim, Jongmin — Pohang University of Science and Technology

Franco, Elisa — University of California a Los Angeles

14:00-14:15 FrA02.5

Self-Activation Attenuates the Adverse Effects of Scarce Resources on Genetic Switches, pp. 5113-5118.

Gyorgy, Andras — New York University Abu Dhabi

14:15-14:30 FrA02.6

Finite-Time Stability Analysis for Resource Limited Chemical Reactions, pp. 5119-5124.

Matsunaga, Tomoki — Keio University

Uemura, Ryosuke — Keio University

Hori, Yutaka — Keio University

14:30-14:45 FrA02.7

Time Series Identification in the Oscillatory Calcium Models: The 0-1 Test Approach with Two Varying Parameters, pp. 5125-5132.

Marszalek, Wieslaw — Opole University of Technology

Walczak, Maciej — Politechnika Opolska

Sadecki, Jan — Opole University of Technology

14:45-15:00 FrA02.8

A Generalization of the Secant Condition for Stability of Interconnected Network of Fractional-Order Systems, pp. 5133-5138.

Siami, Milad — Northeastern University

FrA03	Coordinated Universal Time (UTC)
Linear Systems (Regular Session)	
Chair: Normand-Cyrot, Dorothée	CNRS
Co-Chair: Kochdumper, Niklas	Technische Universität München

13:00-13:15 FrA03.1

Negative Imaginary Theory for a Class of Linear Time-Varying Systems, pp. 5139-5144.

Kurawa, Suleiman — University of Manchester

Bhowmick, Parijat — University of Manchester

Lanzon, Alexander — University of Manchester

13:15-13:30 FrA03.2

Adaptive Parameter Tuning for Reachability Analysis of Linear

Systems, pp. 5145-5152.

Wetzlinger, Mark	Technische Universität München
Kochdumper, Niklas	Technische Universität München
Althoff, Matthias	Technische Universität München

13:30-13:45 FrA03.3

On Stable Right-Inversion of Non-Minimum-Phase Systems, pp. 5153-5158.

Elobaid, Mohamed	Sapienza University of Rome
Mattioni, Mattia	La Sapienza Università Di Roma
Monaco, Salvatore	Università Di Roma
Normand-Cyrot, Dorothée	CNRS

13:45-14:00 FrA03.4

Iterative Method for Online Fractional Order and Parameter Identification, pp. 5159-5166.

Stark, Oliver	Karlsruhe Institute of Technology
Karg, Philipp	Karlsruhe Institute of Technology (KIT)
Hohmann, Soeren	KIT

14:00-14:15 FrA03.5

Time-Domain Output Negative Imaginary Systems and Its Connection to Dynamic Dissipativity, pp. 5167-5172.

Bhowmick, Parijat	University of Manchester
Lanzon, Alexander	University of Manchester

14:15-14:30 FrA03.6

On the Equivalence of Model Inversion Architectures for Control Applications, pp. 5173-5179.

Kavaja, Juxhino	Università Di Parma
Piazzi, Aurelio	University of Parma

14:30-14:45 FrA03.7

Potentially Hurwitz Structures: A Characterization of Nests, pp. 5180-5187.

Cavalcanti, Joao	Massachusetts Institute of Technology

14:45-15:00 FrA03.8

What Does It Take to Control a Multi-Channel Linear System with Distributed Feedback?, pp. 5188-5193.

Liu, Fengjiao	Yale University
Morse, A. Stephen	Yale Univ

FrA04 Coordinated Universal Time (UTC)

Sampled-Data and Intermittent Control (Regular Session)

Chair: Scheeres, Daniel J.	The University of Colorado
Co-Chair: Tallapragada, Pavankumar	Indian Institute of Science

13:00-13:15 FrA04.1

On Multiconsensus of Multi-Agent Systems under Aperiodic and Asynchronous Sampling, pp. 5194-5199.

Mattioni, Mattia	La Sapienza Università Di Roma

13:15-13:30 FrA04.2

Event-Sampled Learning for Unknown Nonlinear Systems Related to Dynamic Triggering Method, pp. 5200-5205.

Wang, Ke	Tianjin University
Mu, Chaoxu	University of Rhode Island

13:30-13:45 FrA04.3

Analysis of Inter-Event Times for Planar Linear Systems under a General Class of Event Triggering Rules, pp. 5206-5211.

Rajan, Anusree	Indian Institute of Science, Bangalore
Tallapragada, Pavankumar	Indian Institute of Science

13:45-14:00 FrA04.4

Computing Safe Sets of Linear Sampled-Data Systems, pp. 5212-5217.

Gruber, Felix	Technical University of Munich
Althoff, Matthias	Technische Universität München

14:00-14:15 FrA04.5

Relay-Explorer Approach for Multi-Agent Exploration of an Unknown Environment with Intermittent Communication, pp. 5218-5223.

Sun, Runhan	University of Florida
Harris, Christian	University of Florida
Bell, Zachary I.	University of Florida
Dixon, Warren E.	University of Florida

14:15-14:30 FrA04.6

Distributed Task-Space Consensus Control of Networked Euler-Lagrange Systems under Faulty Actuator and Switching Communication Topology, pp. 5224-5229.

Ngo, Van-Tam	NCKU
Liu, Yen-Chen	National Cheng Kung University

14:30-14:45 FrA04.7

Optimal Control of Sampled Linear Systems with Control-Linear Noise, pp. 5230-5235.

Jenson, Erica L.	University of Colorado Boulder
Chen, Xudong	University of Colorado, Boulder
Scheeres, Daniel J.	The University of Colorado

14:45-15:00 FrA04.8

Adaptive Predictive Control for Pipelined Multiprocessor Image-Based Control Systems Considering Workload Variations, pp. 5236-5242.

Mohamed, Sajid	Eindhoven University of Technology
Saraf, Nilay	Enel Global Services S.p.A
Bernardini, Daniele	ODYS Srl
Goswami, Dip	Eindhoven University of Technology
Basten, Twan	Eindhoven University of Technology
Bemporad, Alberto	IMT School for Advanced Studies Lucca

FrA05 Coordinated Universal Time (UTC)

Underwater and Maritime Control (Regular Session)

Chair: Pan, Wei	Delft University of Technology
Co-Chair: Axehill, Daniel	Linköping University

13:00-13:15 FrA05.1

Cooperative Flow Field Estimation Using Multiple AUVs, pp. 5243-5248.

Shi, Linlin	Zhejiang University
Zheng, Ronghao	Zhejiang University, ZJU
Liu, Meiqin	Zhejiang University
Zhang, Senlin	Zhejiang University

13:15-13:30 FrA05.2

Safety-Guaranteed Real-Time Trajectory Planning for Underwater Vehicles in Plane-Progressive Waves, pp. 5249-5254.

Siriya, Seth	University of Melbourne
Bui, Minh	Simon Fraser University

Shriraman, Arrvindh	Simon Fraser University
Chen, Mo	Simon Fraser University
Pu, Ye	University of California, Berkeley

13:30-13:45 FrA05.3

A Distributed Connectivity Maintenance Algorithm for a Network of Unmanned Underwater Vehicles under Communication Constraints, pp. 5255-5260.

Muniraj, Devaprakash	Virginia Tech
Farhood, Mazen	Virginia Tech
Stilwell, Daniel J.	Virginia Tech

13:45-14:00 FrA05.4

Neural-Net Based Robust Adaptive Control for 3D Path Following of Torpedo-Type AUVs, pp. 5261-5266.

Li, Ji-Hong	Korea Institute of Robot and Convergence
Lee, Mun-Jik	Korea Institute of Robotics and Technology Convergence
Kang, Hyungjoo	Korea Institute of Robotics and Technology Convergence
Kim, Min-Gyu	Korea Institute of Robotics and Technology Convergence
Cho, Gun Rae	KAIST

14:00-14:15 FrA05.5

Hysteretic Control Lyapunov Functions with Application to Global Asymptotic Tracking for Underwater Vehicles, pp. 5267-5274.

Basso, Erlend Andreas	Norwegian University of Science and Technology
Schmidt-Didlaukies, Henrik M.	Norwegian University of Science and Technology
Pettersen, Kristin Y.	Norwegian University of Science and Technology (NTNU)

14:15-14:30 FrA05.6

Combining Control Barrier Functions and Behavior Trees for Multi-Agent Underwater Coverage Missions, pp. 5275-5282.

Özkahraman, Özer	KTH Royal Institute of Technology
Ogren, Petter	KTH Royal Institute of Technology

14:30-14:45 FrA05.7

An Optimization-Based Motion Planner for Autonomous Maneuvering of Marine Vessels in Complex Environments, pp. 5283-5290.

Bergman, Kristoffer	Linköping University
Ljungqvist, Oskar	Linköping University
Linder, Jonas	ABB Corporate Research
Axehill, Daniel	Linköping University

14:45-15:00 FrA05.8

Model-Reference Reinforcement Learning Control of Autonomous Surface Vehicles, pp. 5291-5296.

Zhang, Qingrui	Delft University of Technology
Pan, Wei	Delft University of Technology
Reppa, Vasso	Delft University of Technology

FrA06 Coordinated Universal Time (UTC)

Nonholonomic Systems (Regular Session)

Chair: Sarras, Ioannis	ONERA
Co-Chair: Sansonetto, Nicola	Universita` of Verona

13:00-13:15 FrA06.1

On the Trajectory Generation of the Hydro-Chaplygin Sleigh, pp. 5297-5302.

Zoppello, Marta	Politecnico Di Torino
Sansonetto, Nicola	Universita` of Verona

13:15-13:30 FrA06.2

Stabilizing Formation Systems with Nonholonomic Agents, pp. 5303-5308.

Dearing, Thomas	University of Colorado Boulder
Chen, Xudong	University of Colorado, Boulder
Nicotra, Marco M	University of Colorado Boulder

13:30-13:45 FrA06.3

Coverage Control Using Directional Nonlinear Dynamic Sensors with Non-Smooth Sensing Range, pp. 5309-5314.

Ju, Zhiyang	Beihang University
Tan, Ying	The University of Melbourne
Zhang, Hui	The Ohio State University
Chen, Xiang	University of Windsor

13:45-14:00 FrA06.4

Persistent Awareness-Based Multi-Robot Coverage Control, pp. 5315-5320.

Xu, Xiaotian	University of Maryland College Park
Rodríguez-Seda, Erick J.	United States Naval Academy
Diaz-Mercado, Yancy	University of Maryland

14:00-14:15 FrA06.5

Enforcing Nonholonomic Constraints in Aerobat, a Roosting Flapping Wing Model, pp. 5321-5327.

Sihite, Eric	Northeastern University
Ramezani, Alireza	Northeastern University

14:15-14:30 FrA06.6

Leader-Follower Consensus of Unicycles with Communication Range Constraints Via Smooth Time-Invariant Feedback, pp. 5328-5333.

Restrepo, Esteban	ONERA - the French Aerospace Lab
Loria, Antonio	CNRS
Sarras, Ioannis	ONERA
Marzat, Julien	ONERA - the French Aerospace Lab

14:30-14:45 FrA06.7

Distributed Full-Consensus Control of Nonholonomic Vehicles under Non-Differentiable Measurement Delays, pp. 5334-5339.

Maghenem, Mohamed Adlene	University of California Santa Cruz
Loria, Antonio	CNRS
Nuño, Emmanuel	University of Guadalajara
Panteley, Elena	CNRS

14:45-15:00 FrA06.8

Vehicle Safety of the Velocity Obstacle Algorithm, pp. 5340-5347.

Haraldsen, Aurora	Norwegian University of Science and Technology
Wiig, Martin	Norwegian Defence Research Establishment
Pettersen, Kristin Y.	Norwegian University of Science and Technology (NTNU)

FrA07 Coordinated Universal Time (UTC)

Cooperative Control (Regular Session)

Chair: Li, Zhongkui	Peking University
Co-Chair: Shames, Iman	The University of Melbourne

13:00-13:15 FrA07.1

Consensus in Networks of Nonlinear Integrators with Applications to Coordinated Path Following Control of Fixed-Wing UAVs, pp. 5348-5353.

Chen, Hao	National University of Defense Technology
Wang, Xiangke	National University of Defense Technology
Li, Zhongkui	Peking University
Shen, Lincheng	National University of Defense Technology

13:15-13:30 FrA07.2

Optimisation with Zeroth-Order Oracles in Formation, pp. 5354-5359.

Michael, Elad	University of Melbourne
Zelazo, Daniel	Technion - Israel Institute of Technology
Wood, Tony A.	University of Melbourne
Manzie, Chris	The University of Melbourne
Shames, Iman	The University of Melbourne

13:30-13:45 FrA07.3

Communication-Efficient Distributed Algorithms for Solving Linear Algebraic Equations Over Directed Graphs, pp. 5360-5365.

Liu, Ji	Stony Brook University
Anderson, Brian D.O.	Australian National University

13:45-14:00 FrA07.4

Distributed Force/Position Optimization Dynamics for Cooperative Unknown Payload Manipulation, pp. 5366-5373.

Miyano, Tatsuya	Toyota Motor North America, Inc
Romberg, Justin	Georgia Tech
Egerstedt, Magnus	Georgia Institute of Technology

14:00-14:15 FrA07.5

Multi-Swarm Herding: Protecting against Adversarial Swarms, pp. 5374-5379.

Chipade, Vishnu S.	University of Michigan, Ann Arbor
Panagou, Dimitra	University of Michigan, Ann Arbor

14:15-14:30 FrA07.6

Pride of Lions and Man Differential Game, pp. 5380-5385.

Garcia, Eloy	Air Force Research Laboratory
Casbeer, David W.	Air Force Research Laboratory
Pachter, Meir	AFIT/ENG
Von Moll, Alexander	Air Force Research Laboratory

14:30-14:45 FrA07.7

The N-Stage War of Attrition and Its Inverse Game towards Its Application in Human-Machine Cooperative Decision Making, pp. 5386-5393.

Rothfuß, Simon	Karlsruhe Institute of Technology (KIT)
Tanaka, Toshiaki Sebastian	Karlsruhe Institute of Technology (KIT)
Inga, Jairo	Karlsruhe Institute of Technology (KIT)
Hohmann, Soeren	KIT

FrA08 Coordinated Universal Time (UTC)

Observers for Nonlinear Systems II (Regular Session)

Chair: Bernard, Pauline	MINES ParisTech, Université PSL
Co-Chair: Muller, Matthias A.	Leibniz University Hannover

13:00-13:15 FrA08.1

Time-Discounted Incremental Input/Output-To-State Stability, pp. 5394-5400.

Knuefer, Sven	Robert Bosch GmbH
Muller, Matthias A.	Leibniz University Hannover

13:15-13:30 FrA08.2

Equivariant Filter (EqF): A General Filter Design for Systems on Homogeneous Spaces, pp. 5401-5408.

van Goor, Pieter	Australian National University
Hamel, Tarek	Université De Nice Sophia Antipolis
Mahony, Robert	Australian National University,

13:30-13:45 FrA08.3

State Observers and Unknown Input Estimators for Continuous-Time Nonlinear Systems Characterized by Incremental Multiplier Matrices, pp. 5409-5414.

Alenezi, Badriah	Purdue University
Zhang, Mukai	Purdue University
Hui, Stefen	San Diego State University
Zak, Stanislaw H.	Purdue Univ

13:45-14:00 FrA08.4

Achieving Almost Feedback-Linearization Via Low-Power Extended Observer, pp. 5415-5420.

Wu, YuanQing	Guangdong University of Technology
Isidori, Alberto	Universita Di Roma
Marconi, Lorenzo	Univ. Di Bologna

14:00-14:15 FrA08.5

Nonlinear Observer for the Turbulent Wake of a Square Cylinder, pp. 5421-5427.

Ahmed, Javeria	Laboratory PRISME, University of Orléans
Courtial, Estelle	Laboratory PRISME, University of Orleans
Passaggia, Pierre-Yves	University of Orléans
Fruchard, Matthieu	Laboratory PRISME, University of Orléans
Mazellier, Nicolas	University of Orléans

14:15-14:30 FrA08.6

Low-Power High Gain Observers for Wake Flow Rebuild, pp. 5428-5434.

Ahmed, Javeria	Laboratory PRISME, University of Orléans
Fruchard, Matthieu	Laboratory PRISME, University of Orléans
Courtial, Estelle	Polytech'Orléans, Loire Valley University
Toure, Y.	Université D'orléans IUT De Bourges

14:30-14:45 FrA08.7

Numerical Design of Luenberger Observers for Nonlinear Systems, pp. 5435-5442.

Da Costa Ramos, Louise	ANSYS France SA
Di Meglio, Florent	MINES ParisTech
Figueira Da Silva, Luis Fernando	PUC-Rio
Morgenthaler, Valéry	ANSYS France SA
Bernard, Pauline	MINES ParisTech, Université PSL

14:45-15:00 FrA08.8

Simultaneous Input and State Interval Observers for Nonlinear Systems with Full-Rank Direct Feedthrough, pp. 5443-5448.

Khajenejad, Mohammad — Arizona State University
Yong, Sze Zheng — Arizona State University

FrA09 Coordinated Universal Time (UTC)

Encrypted Control and Optimization (Invited Session)

Chair: Schulze Darup, Moritz — University of Paderborn
Co-Chair: Alexandru, Andreea B. — University of Pennsylvania
Organizer: Schulze Darup, Moritz — University of Paderborn
Organizer: Alexandru, Andreea B. — University of Pennsylvania
Organizer: Shim, Hyungbo — Seoul National University

13:00-13:15 FrA09.1

Towards Private Data-Driven Control (I), pp. 5449-5456.

Alexandru, Andreea B. — University of Pennsylvania
Tsiamis, Anastasios — University of Pennsylvania
Pappas, George J. — University of Pennsylvania

13:15-13:30 FrA09.2

Secure Fast Covariance Intersection Using Partially Homomorphic and Order Revealing Encryption Schemes, pp. 5457-5462.

Ristic, Marko — Karlsruhe Institute of Technology (KIT)
Noack, Benjamin — Karlsruhe Institute of Technology
Hanebeck, Uwe D. — Karlsruhe Institute of Technology (KIT)

13:30-13:45 FrA09.3

Design Procedure for Dynamic Controllers Based on LWE-Based Homomorphic Encryption to Operate for Infinite Time Horizon (I), pp. 5463-5468.

Kim, Junsoo — Seoul National University
Shim, Hyungbo — Seoul National University
Han, Kyoohyung — Seoul National University

13:45-14:00 FrA09.4

Encrypted Explicit MPC Based on Two-Party Computation and Convex Controller Decomposition (I), pp. 5469-5476.

Schlüter, Nils — Universität Paderborn
Schulze Darup, Moritz — University of Paderborn

14:00-14:15 FrA09.5

Dynamic Quantizer for Encrypted Observer-Based Control (I), pp. 5477-5482.

Teranishi, Kaoru — The University of Electro-Communications
Kogiso, Kiminao — The University of Electro-Communications

14:15-14:30 FrA09.6

Privacy against Adversarial Classification in Cyber-Physical Systems (I), pp. 5483-5488.

Murguia, Carlos — Eindhoven University of Technology
Tabuada, Paulo — University of California at Los Angeles

14:30-14:45 FrA09.7

Resilience of Cyber-Physical Systems to Covert Attacks by Exploiting an Improved Encryption Scheme (I), pp. 5489-5494.

Fauser, Moritz — Technische Universität Kaiserslautern
Zhang, Ping — University of Kaiserslautern

14:45-15:00 FrA09.8

Distributed Aggregation Over Homomorphically Encrypted Data under Switching Networks (I), pp. 5495-5500.

Lee, Donggil — Seoul National University
Kim, Junsoo — Seoul National University
Shim, Hyungbo — Seoul National University

FrA10 Coordinated Universal Time (UTC)

Control Applications (Regular Session)

Chair: Somarakis, Christoforos — Palo Alto Research Center
Co-Chair: Eun, Yongsoon — DGIST

13:00-13:15 FrA10.1

Data-Driven Multi-Model Control for a Waste Heat Recovery System, pp. 5501-5506.

Peralez, Johan — LAGEP
Galuppo, Francesco — Lagepp, Université Claude Bernard
Dufour, Pascal — Université De Lyon, Université Claude Bernard Lyon 1, CNRS
Wolf, Christian — INSA-Lyon, LIRIS
Nadri, Madiha — Universite Claude Bernard Lyon 1

13:15-13:30 FrA10.2

Limit Cycle Oscillation Suppression Using a Closed-Loop Nonlinear Active Flow Control Technique, pp. 5507-5512.

Kidambi, Krishna Bhavithavya — University of Maryland
MacKunis, William — Embry-Riddle Aeronautical University
Kossery Jayaprakash, Anu — Embry-Riddle Aeronautical University

13:30-13:45 FrA10.3

Input Shaping Via FIR L2 Preview Tracking, pp. 5513-5518.

Bucher, Izhak — Technion—IIT
Mirkin, Leonid — Technion - IIT
Vered, Yoav — Technion - IIT

13:45-14:00 FrA10.4

Micro-Scale 2D Chiplet Position Control: A Formal Approach to Policy Design, pp. 5519-5524.

Matei, Ion — Palo Alto Research Center
de Kleer, Johan — Palo Alto Research Center
Somarakis, Christoforos — Palo Alto Research Center
Plochowietz, Anne — Palo Alto Research Center
Baras, John S. — University of Maryland

14:00-14:15 FrA10.5

Fusing Online Gaussian Process-Based Learning and Control for Scanning Quantum Dot Microscopy, pp. 5525-5531.

Pfefferkorn, Maik — Otto-Von-Guericke-Universität Magdeburg
Maiworm, Michael — OVGU Magdeburg
Wagner, Christian — Jülich Research Center
Tautz, Stefan — Peter Gruenberg Institute (PGI-3), Juelich Research Center,
Findeisen, Rolf — OVG University Magdeburg

14:15-14:30 FrA10.6

Cable Estimation-Based Control for Wire-Borne Underactuated

Brachiating Robots: A Combined Direct-Indirect Adaptive Robust Approach, pp. 5532-5539.

Farzan, Siavash	Georgia Institute of Technology
Azimi, Vahid	Georgia Institute of Technology
Hu, Ai-Ping	Georgia Tech Research Institute
Rogers, Jonathan	Georgia Tech

14:30-14:45 FrA10.7

An Indirect Estimation of Machine Parameters for Serial Production Lines with Bernoulli Reliability Model, pp. 5540-5545.

Kim, Seunghyeon	DGIST
Won, Yuchang	DGIST
Park, Kyung-Joon	DGIST
Eun, Yongsoon	DGIST

14:45-15:00 FrA10.8

Hierarchical Routing Control in Discrete Manufacturing Plants Via Model Predictive Path Allocation and Greedy Path Following, pp. 5546-5551.

Fagiano, Lorenzo	Politecnico Di Milano
Tanaskovic, Marko	Univerzitet Singidunum
Cucas Mallitasig, Lenin Dario	Politecnico Di Milano
Cataldo, Andrea	ITIA-CNR
Scattolini, Riccardo	Politecnico Di Milano

FrA11 Coordinated Universal Time (UTC)

Network Analysis and Control (Regular Session)

Chair: Frasca, Paolo	CNRS, GIPSA-lab, Univ. Grenoble Alpes
Co-Chair: Moon, Jun	University of Seoul

13:00-13:15 FrA11.1

On the Influence of Noise in Randomized Consensus Algorithms, pp. 5552-5557.

Vizuete, Renato	CentraleSupélec
Frasca, Paolo	CNRS, GIPSA-Lab, Univ. Grenoble Alpes
Panteley, Elena	CNRS

13:15-13:30 FrA11.2

Sensitivity-Based Link Addition for Robust Dynamical Networks, pp. 5558-5560.

Hamdipoor, Vahid	Gyeongsang National University
Moon, Jun	Hanyang University
Kim, Yoonsoo	Gyeongsang National University

13:30-13:45 FrA11.3

On the Active Nodes of Network Systems, pp. 5561-5566.

Chen, Kaiwen	Imperial College London
Astolfi, Alessandro	Imperial College & Univ. of Rome

13:45-14:00 FrA11.4

Leader Group Selection for Herdability of Structurally Balanced Signed Networks, pp. 5567-5572.

Meng, Shaofeng	University of Science and Technology of China
She, Baike	University of Iowa
Gao, Hongbo	University of Science and Technology of China
Kan, Zhen	University of Science and Technology of China

14:00-14:15 FrA11.5

Approximate Projection-Based Control of Networks, pp. 5573-5579.

Li, Max	Massachusetts Institute of Technology
Gopalakrishnan, Karthik	Massachusetts Institute of Technology
Balakrishnan, Hamsa	Massachusetts Institute of Technology

14:15-14:30 FrA11.6

Controllability Over Graphs for Bilinear Systems Over Lie Groups, pp. 5580-5585.

Wang, Xing	Chinese Academy of Sciences
Li, Bo	Academy of Mathematics and Systems Science, CAS
Li, Jr-Shin	Washington University in St. Louis
Petersen, Ian R.	Australian National University
Shi, Guodong	The University of Sydney

14:30-14:45 FrA11.7

Information Disclosure and Network Formation in News Subscription Services, pp. 5586-5591.

Hsu, Chin-Chia	Massachusetts Institute of Technology
Ajorlou, Amir	Massachusetts Institute of Technology
Yildiz, Muhamet	MIT
Jadbabaie, Ali	MIT

14:45-15:00 FrA11.8

On the Size of the Giant Component in Inhomogeneous Random K-Out Graphs, pp. 5592-5597.

Sood, Mansi	Carnegie Mellon University Pittsburgh
Yagan, Osman	Carnegie Mellon University

FrA12 Coordinated Universal Time (UTC)

Distributed Control II (Regular Session)

Chair: Werner, Herbert	Hamburg University of Technology
Co-Chair: Nguyen, Hoai-Minh	Ecole Polytechnique Federale De Lausanne

13:00-13:15 FrA12.1

Distributed and Localized Closed Loop Model Predictive Control Via System Level Synthesis, pp. 5598-5605.

Amo Alonso, Carmen	California Institute of Technology
Matni, Nikolai	University of Pennsylvania

13:15-13:30 FrA12.2

Explicit Distributed and Localized Model Predictive Control Via System Level Synthesis, pp. 5606-5613.

Amo Alonso, Carmen	California Institute of Technology
Matni, Nikolai	University of Pennsylvania
Anderson, James	Columbia University

13:30-13:45 FrA12.3

Collision-Freeness and Feasibility in Non-Iterative Distributed Model Predictive Control with Prediction Mismatch, pp. 5614-5621.

Kloock, Christine	Hamburg University of Technology
Werner, Herbert	Hamburg University of Technology

13:45-14:00 FrA12.4

Distributed Continuous-Time Optimization with Time-Varying Objective Functions and Inequality Constraints, pp. 5622-5627.

Sun, Shan	University of California, Riverside
Ren, Wei	University of California, Riverside

14:00-14:15 FrA12.5

Extended Full Block S-Procedure for Distributed Control of InterconnectedSystems, pp. 5628-5633.

De Pasquale, Giulia	University of Padova
Stürz, Yvonne R.	UC Berkeley
Valcher, Maria Elena	Universita' Di Padova
Smith, Roy S.	ETH Zurich

14:15-14:30 FrA12.6

Null-Controllability, Exact Controllability, and Stabilization of Hyperbolic Systems for the Optimal Time (I), pp. 5634-5640.

Nguyen, Hoai-Minh	Ecole Polytechnique Federale De Lausanne
Coron, Jean-michel	University Pierre Et Marie Curie

14:30-14:45 FrA12.7

Optimal Distribution Control Via Liouville Approach, pp. 5641-5646.

Wang, Shuo	University of Texas at Arlington

14:45-15:00 FrA12.8

Finite-Sample Analysis of Multi-Agent Policy Evaluation with Kernelized Gradient Temporal Difference, pp. 5647-5652.

Heredia, Paulo	Purdue
Mou, Shaoshuai	Purdue University

FrA14 Coordinated Universal Time (UTC)

Estimation and Control of PDE Systems II (Invited Session)

Chair: Krener, Arthur J	Naval Postgraduate School
Co-Chair: Demetriou, Michael A.	Worcester Polytechnic Institute
Organizer: Demetriou, Michael A.	Worcester Polytechnic Institute
Organizer: Fahroo, Fariba	AFOSR

13:00-13:15 FrA14.1

Al'brekht's Method in Infinite Dimensions (I), pp. 5653-5658.

Krener, Arthur J	Naval Postgraduate School

13:15-13:30 FrA14.2

Stability Analysis of Mixed-Autonomy Traffic with CAV Platoons Using Two-Class Aw-Rascle Model (I), pp. 5659-5664.

Yu, Huan	University of California San Diego
Amin, Saurabh	Massachusetts Institute of Technology
Krstic, Miroslav	University of California, San Diego

13:30-13:45 FrA14.3

Optimal PI Controller Rejecting Disturbance for ARZ Traffic Model (I), pp. 5665-5670.

Guan, Lina	Beijing University of Technology and Univ. Grenoble Alpes
Zhang, Liguo	Beijing University of Technology
Prieur, Christophe	CNRS

13:45-14:00 FrA14.4

Adaptive Isostable Reduction of Nonlinear Time-Varying PDEs with Large Magnitude Inputs, pp. 5671-5676.

Wilson, Dan	University of Tennessee
Djouadi, Seddik, M.	University of Tennessee

14:00-14:15 FrA14.5

*Backstepping Stabilization of an Underactuated 1+2 Linear Hyperbolic System with a Proper Control (I)**.

Auriol, Jean	CNRS, Centrale Supelec
Bribiesca Argomedo, Federico	Univ Lyon, INSA Lyon, CNRS, Ampère, F-69621, Villeurbanne, Franc
Bresch-Pietri, Delphine	MINES ParisTech

14:15-14:30 FrA14.6

Leader-Follower Synchronization and ISS Analysis for a Network of Boundary-Controlled Wave PDEs, pp. 5677-5682.

Pisano, Alessandro	University of Cagliari
Aguilar, Luis T.	Instituto Politecnico Nacional
Orlov, Yury	CICESE

14:30-14:45 FrA14.7

Sub-Predictors for Network-Based Control under Uncertain Large Delays (I), pp. 5683-5688.

Zhu, Yang	Zhejiang University
Fridman, Emilia	Tel-Aviv Univ

14:45-15:00 FrA14.8

Duality and ${H}_{infty}$-Optimal Control of Coupled ODE-PDE Systems (I), pp. 5689-5696.

Shivakumar, Sachin	Arizona State University
Das, Amritam	Eindhoven University of Technology
Weiland, Siep	Eindhoven Univ. of Tech
Peet, Matthew M.	Arizona State University

FrA15 Coordinated Universal Time (UTC)

Resilient Control Systems (Regular Session)

Chair: Sandberg, Henrik	KTH Royal Institute of Technology
Co-Chair: Sagues, Carlos	Universidad De Zaragoza

13:00-13:15 FrA15.1

Attention vs. Precision: Latency Scheduling for Uncertainty Resilient Control Systems, pp. 5697-5702.

Aldana-López, Rodrigo	Universidad De Zaragoza
Aragues, Rosario	Universidad De Zaragoza
Sagues, Carlos	Universidad De Zaragoza

13:15-13:30 FrA15.2

Resilient Control: Compromising to Adapt, pp. 5703-5710.

Chamon, Luiz F. O.	University of Pennsylvania
Amice, Alexandre	University of Pennsylvania
Paternain, Santiago	University of Pennsylvania
Ribeiro, Alejandro	University of Pennsylvania

13:30-13:45 FrA15.3

Asynchronous Resilient Rendezvous of Second-Order Agents under Communication Noise, pp. 5711-5716.

Shi, Mingming	Université Catholique De Louvain

13:45-14:00 FrA15.4

A Search-Based Approach to Identifying Jamming Attacks and Defense Policies in Wireless Networked Control, pp. 5717-5724.

Cetinkaya, Ahmet	National Institute of Informatics
Arcaini, Paolo	National Institute of Informatics
Ishii, Hideaki	Tokyo Institute of Technology
Hayakawa, Tomohisa	Tokyo Institute of Technology

14:00-14:15 FrA15.5

Distributed Economic Dispatch for Cyber Attacked Smart Grid Based on Resilient Event-Triggered Consensus, pp. 5725-5730.

Yang, Feisheng	Northwestern Polytechnical University
Kang, Peipei	Northwestern Polytechnical University

Guan, Xiaohong	Xian Jiaotong University

14:15-14:30 FrA15.6

Towards Distributed Accommodation of Covert Attacks in Interconnected Systems, pp. 5731-5736.

Barboni, Angelo	Imperial College London
Parisini, Thomas	Imperial College & Univ. of Trieste

14:30-14:45 FrA15.7

Resilient Desynchronization for Decentralized Medium Access Control, pp. 5737-5742.

Silvestre, Daniel	University of Macau
Hespanha, Joao P.	Univ. of California, Santa Barbara
Silvestre, Carlos	University of Macau

14:45-15:00 FrA15.8

A Secure State Estimation Algorithm for Nonlinear Systems under Sensor Attacks, pp. 5743-5748.

Chong, Michelle S.	Eindhoven University of Technology
Sandberg, Henrik	KTH Royal Institute of Technology
Hespanha, Joao P.	Univ. of California, Santa Barbara

FrA16 Coordinated Universal Time (UTC)

Hybrid Systems (Regular Session)

Chair: Gomes, Cláudio	Aarhus University
Co-Chair: Haimovich, Hernan	CONICET and UNR

13:00-13:15 FrA16.1

Converging-Input Convergent-State and Related Properties of Time-Varying Impulsive Systems, pp. 5749-5754.

Mancilla-Aguilar, J. L.	Instituto Tecnológico De Buenos Aires
Haimovich, Hernan	CONICET and UNR

13:15-13:30 FrA16.2

Semicontinuity Properties of Solutions and Reachable Sets of Nominally Well-Posed Hybrid Dynamical Systems, pp. 5755-5760.

Altin, Berk	University of California, Santa Cruz
Sanfelice, Ricardo G.	University of California at Santa Cruz

13:30-13:45 FrA16.3

Distributed State Estimation for Stochastic Linear Hybrid Systems, pp. 5761-5766.

Du, Bin	Purdue University
Yuan, Lian	Purdue University
Sun, Dengfeng	Purdue University
Hwang, Inseok	Purdue University

13:45-14:00 FrA16.4

On Notions of Detectability and Observers for Hybrid Systems, pp. 5767-5772.

Bernard, Pauline	MINES ParisTech, Université PSL
Sanfelice, Ricardo G.	University of California at Santa Cruz

14:00-14:15 FrA16.5

Symbolic Models for a Class of Impulsive Systems, pp. 5773-5778.

Swikir, Abdalla	Technical University of Munich
Girard, Antoine	CNRS
Zamani, Majid	University of Colorado Boulder

14:15-14:30 FrA16.6

Hybrid Integrator-Gain Systems: A Remedy for Overshoot Limitations in Linear Control?, pp. 5779-5784.

van den Eijnden, Sebastiaan	Eindhoven University of Technology
Heertjes, Marcel	Eindhoven University of Technology
Heemels, W.P.M.H.	Eindhoven University of Technology
Nijmeijer, Hendrik	Eindhoven University of Technology

14:30-14:45 FrA16.7

A Frequency-Domain Stability Method for Reset Systems, pp. 5785-5791.

Ahmadi Dastjerdi, Ali	DElft University of Technology
Astolfi, Alessandro	Imperial College & Univ. of Rome
HosseinNia, S. Hassan	Technical University of Delft

14:45-15:00 FrA16.8

Stability of Planar Switched Systems under Delayed Event Detection, pp. 5792-5797.

Legat, Benoît	UCLouvain
Gomes, Cláudio	Aarhus University
Karalis, Paschalis	University of Manchester
Jungers, Raphaël M.	University of Louvain
Navarro, Eva	IMP
Vangheluwe, Hans	McGill University

FrA17 Coordinated Universal Time (UTC)

Synchronization (Regular Session)

Chair: Voortman, Quentin	Eindhoven University of Technology
Co-Chair: Panteley, Elena	CNRS

13:00-13:15 FrA17.1

Robust Synchronization of Heterogeneous Robot Swarms on the Sphere, pp. 5798-5803.

Markdahl, Johan	University of Luxembourg
Proverbio, Daniele	Université Du Luxembourg
Goncalves, Jorge	University of Luxembourg

13:15-13:30 FrA17.2

Synchronization of Perturbed Linear Systems with Data-Rate Constraints, pp. 5804-5809.

Voortman, Quentin	Eindhoven University of Technology
Efimov, Denis	Inria
Pogromsky, A. Yu.	Eindhoven University of Technology
Richard, Jean-Pierre	Ecole Centrale De Lille
Nijmeijer, Hendrik	Eindhoven University of Technology

13:30-13:45 FrA17.3

Bearing-Only Formation Tracking Control of Multi-Agent Systems with Local Reference Frames and Constant-Velocity Leaders, pp. 5810-5815.

Zhao, Jianing	Shanghai Jiao Tong University
Yu, Xiao	Xiamen University
Li, Xianwei	Shanghai Jiao Tong University
Wang, Hesheng	Shanghai Jiao Tong University

13:45-14:00 FrA17.4

Distributed Composite Adaptive Synchronization of Multiple Uncertain

Euler-Lagrange Systems Using Cooperative Initial Excitation, pp. 5816-5821.

Garg, Tushar	IIIT Delhi
Basu Roy, Sayan	Indraprastha Institute of Information Technology Delhi

14:00-14:15 FrA17.5

An Emerging Dynamics Approach for Synchronization of Linear Heterogeneous Agents Interconnected Over Switching Topologies, pp. 5822-5827.

Adhikari, Bikash	University of Lorraine
Morarescu, Irinel-Constantin	CRAN, CNRS, Université De Lorraine
Panteley, Elena	CNRS

14:15-14:30 FrA17.6

Synchronization Analysis of Networks of Linear Parabolic Partial Differential Equations, pp. 5828-5833.

Xia, Tian	University of Toronto
Scardovi, Luca	University of Toronto

14:30-14:45 FrA17.7

Synchronization Conditions for a Third-Order Kuramoto Network, pp. 5834-5839.

Wu, Liang	SCUT
Chen, Haoyong	SCUT

14:45-15:00 FrA17.8

Submodular Input Selection for Synchronization in Kuramoto Networks, pp. 5840-5847.

Sahabandu, Dinuka	University of Washington
Clark, Andrew	Worcester Polytechnic Institute
Bushnell, Linda	University of Washington
Poovendran, Radha	University of Washington

FrB01 Coordinated Universal Time (UTC)

Vaccines (COVID-19 Focus Session)

Chair: Sandberg, Henrik	KTH Royal Institute of Technology
Co-Chair: Beck, Carolyn L.	Univ of Illinois, Urbana-Champaign

16:15-16:35 FrB01.1

*The Impacts of Human Decision-Making on Vaccination against Networked SIS Epidemics (I)**.

Hota, Ashish	Indian Institute of Technology (IIT), Kharagpur
Sundaram, Shreyas	Purdue University

16:35-16:55 FrB01.2

*Network-Of-Networks in Multi-City Epidemic Models (I)**.

Chapman, Airlie	University of Melbourne
Lewien, Patrick	The University of Melbourne
Vella, Elena	University of Melbourne

16:55-17:15 FrB01.3

Advanced Control in Vaccine Manufacturing (I), pp. 5848-5848.

Schickel, Kaylee C.	Massachusetts Institute of Technology
Cummings Bende, Elizabeth M.	Massachusetts Institute of Technology
Maloney, Andrew J	MIT
Barone, Paul W.	Massachusetts Institute of Technology
Wolfrum, Jacqueline	Massachusetts Institute of Technology
Springs, Stacy C.	Massachusetts Institute of Technology
Sinskey, Anthony J.	Massachusetts Institute of Technology
Braatz, Richard D.	Massachusetts Institute of Technology

17:15-17:35 FrB01.4

*Panel Discussion: How Do We Prepare for the Future Vaccine Now? (I)**.

Dabbene, Fabrizio	CNR-IEIIT
Valcher, Maria Elena	Universita' Di Padova

FrB02 Coordinated Universal Time (UTC)

Applications of Control Theory in Systems Biology (Invited Session)

Chair: Waldherr, Steffen	KU Leuven
Co-Chair: Blanchini, Franco	Univ. Degli Studi Di Udine
Organizer: Waldherr, Steffen	KU Leuven
Organizer: Singh, Abhyudai	University of Delaware

16:15-16:30 FrB02.1

Multicellular Feedback Control of a Genetic Toggle-Switch in Microbial Consortia, pp. 5849-5854.

Fiore, Davide	University of Naples Federico II
Salzano, Davide	University of Naples Federico II
Cristòbal-Cóppulo, Enric	Universitat Politècnica De Catalunya
Olm, Josep M.	Universitat Politècnica De Catalunya
di Bernardo, Mario	University of Naples Federico II

16:30-16:45 FrB02.2

A Population-Based Approach to Study the Effects of Growth and Division Rates on the Dynamics of Cell Size Statistics, pp. 5855-5860.

Totis, Niccolò	KU Leuven
Nieto Acuna, Cesar Augusto	Universidad De Los Andes
Küper, Armin	KU Leuven
Vargas-Garcia, Cesar A.	Fundación Universitaria Konrad Lorenz
Singh, Abhyudai	University of Delaware
Waldherr, Steffen	KU Leuven

16:45-17:00 FrB02.3

Predicting Adaptation for Uncertain Systems with Robust Real Plots, pp. 5861-5866.

Blanchini, Franco	Univ. Degli Studi Di Udine
Colaneri, Patrizio	Politecnico Di Milano
Giordano, Giulia	University of Trento
Zorzan, Irene	University of Padova

17:00-17:15 FrB02.4

Controlling Event Timing Precision for Gene Expression with External Disturbances (I), pp. 5867-5872.

Ghusinga, Khem Raj	University of North Carolina at Chapel Hill
Singh, Abhyudai	University of Delaware

17:15-17:30 FrB02.5

Propagation of Stochastic Gene Expression in the Presence of Decoys (I), pp. 5873-5878.

Dey, Supravat	Department of Electrical and

	Computer Engineering, University O
Singh, Abhyudai	University of Delaware

FrB03	Coordinated Universal Time (UTC)
PID Controller Design (Invited Session)	
Chair: Han, Sangjin	Booz Allen Hamilton
Co-Chair: Williams, Hunter	United States Military Academy
Organizer: Keel, Lee	Tennessee State University
Organizer: Bhattacharyya, Shankar P.	Texas a & M Univ

16:15-16:30	FrB03.1
PID/First-Order Control Design for a Bank of F-16 Longitudinal Dynamic Systems (I), pp. 5879-5884.	
Kim, Young Chol	Chungbuk National Univ
Lee, Jong Geon	Agency for Defense Development

16:30-16:45	FrB03.2
Measurement Based Stabilizing PID Controllers for Camera Gimbals (I), pp. 5885-5890.	
Han, Sangjin	Booz Allen Hamilton
Vale, Nikolas	CCDC Army Research Laboratory
Conroy, Joseph	Army Research Laboratory

16:45-17:00	FrB03.3
Tradeoff between Delay Robustness and Tracking Performance by PID Control: Second-Order Unstable Systems, pp. 5891-5896.	
Chen, Jianqi	City University of Hong Kong
Ma, Dan	Northeastern University
Xu, Yong	Guangdong University of Technology
Chen, Jie	City University of Hong Kong

17:00-17:15	FrB03.4
Transient Response Shaping Via Pole Assignment in Specified Regions (I), pp. 5897-5904.	
Williams, Hunter	United States Military Academy
Han, Sangjin	Booz Allen Hamilton
Bhattacharyya, Shankar P.	Texas a & M Univ

17:15-17:30	FrB03.5
PD Tracking for a Class of Underactuated Robotic Systems with Kinetic Symmetry, pp. 5905-5910.	
Nadubettu Yadukumar, Shishir	Indian Institute of Science

FrB04	Coordinated Universal Time (UTC)
Large-Scale Optimization for Machine Learning II (Invited Session)	
Chair: Garcia, Alfredo	Texas A&M University
Co-Chair: Xie, Le	Texas A&M University
Organizer: Freris, Nikolaos M.	University of Science and Technology of China (USTC)
Organizer: Nedich, Angelia	Arizona State University
Organizer: Voulgaris, Petros G.	Univ of Nevada, Reno

16:15-16:30	FrB04.1
On the Transient Growth of Nesterov's Accelerated Method for Strongly Convex Optimization Problems (I), pp. 5911-5916.	
Samuelson, Samantha	University of Southern California
Mohammadi, Hesameddin	University of Southern California
Jovanovic, Mihailo R.	University of Southern California

16:30-16:45	FrB04.2
A Privacy Preserving Model-Free Optimization and Control Framework for Demand Response from Residential Thermal Loads (I), pp. 5917-5922.	
Sivaranjani, S	Texas A&M University
Kumar, P. R.	Texas A&M University
Xie, Le	Texas A&M University

16:45-17:00	FrB04.3
Distributed Networked Learning with Correlated Data (I), pp. 5923-5928.	
Hong, Lingzhou	Texas A&M
Garcia, Alfredo	Texas A&M University
Eksin, Ceyhun	Texas A&M University

17:00-17:15	FrB04.4
Reach-SDP: Reachability Analysis of Closed-Loop Systems with Neural Network Controllers Via Semidefinite Programming (I), pp. 5929-5934.	
Hu, Haimin	University of Pennsylvania
Fazlyab, Mahyar	University of Pennsylvania
Morari, Manfred	University of Pennsylvania
Pappas, George J.	University of Pennsylvania

17:15-17:30	FrB04.5
Dimensionality Reduction of Volterra Kernels by Tensor Decomposition Using Higher-Order SVD (I), pp. 5935-5941.	
Libal, Urszula	KTH Royal Institute of Technology
Baras, John S.	University of Maryland
Johansson, Karl H.	Royal Institute of Technology

FrB05	Coordinated Universal Time (UTC)
Autonomous Systems (Regular Session)	
Chair: Sentis, Luis	The University of Texas at Austin
Co-Chair: Dani, Ashwin	University of Connecticut

16:15-16:30	FrB05.1
MPC-Based Hierarchical Task Space Control of Underactuated and Constrained Robots for Execution of Multiple Tasks, pp. 5942-5949.	
Lee, Jaemin	The University of Texas at Austin
Bang, Seung Hyeon	The University of Texas at Austin
Bakolas, Efstathios	The University of Texas at Austin
Sentis, Luis	The University of Texas at Austin

16:30-16:45	FrB05.2
Directional Sampling-Based Generalized Shape Expansion for Accelerated Motion Planning in 2-D Obstacle-Cluttered Environments, pp. 5950-5955.	
Zinage, Vrushabh	Indian Institute of Technology Madras
Ghosh, Satadal	Indian Institute of Technology Madras

16:45-17:00	FrB05.3
Dual Quaternion Visual Servo Control, pp. 5956-5961.	
Saltus, Ryan	University of Connecticut
Salehi, Iman	University of Connecticut
Rotithor, Ghananeel	University of Connecticut
Dani, Ashwin	University of Connecticut

17:00-17:15	FrB05.4
Target Tracking in the Presence of Intermittent Measurements by a	

Network of Mobile Cameras, pp. 5962-5967.

Harris, Christian	University of Florida
Bell, Zachary I.	University of Florida
Sun, Runhan	University of Florida
Doucette, Emily	AFRL
Curtis, J. Willard	Air Force Research Laboratory
Dixon, Warren E.	University of Florida

17:15-17:30 FrB05.5

Dynamic Regret Bound for Moving Target Tracking Based on Online Time-Of-Arrival Measurements, pp. 5968-5973.

Pun, Yuen-Man	The Chinese University of Hong Kong
So, Anthony Man-Cho	The Chinese University of Hong Kong

FrB06 Coordinated Universal Time (UTC)

Decentralized Control (Regular Session)

Chair: Saldi, Naci	Ozyegin University
Co-Chair: Yagoubi, Mohamed	CNRS-UMR 6004-CD0962

16:15-16:30 FrB06.1

A Decentralized Policy with Logarithmic Regret for a Class of Multi-Agent Multi-Armed Bandit Problems with Option Unavailability Constraints and Stochastic Communication Protocols, pp. 5974-5979.

Pankayaraj, Pathmanathan	School of Postgraduate Studies, Sri Lanka Technological Campus
Maithripala, D. H. S.	University of Peradeniya
Berg, Jordan M.	Division of Civil, Mechanical, and Manufacturing Innovation

16:30-16:45 FrB06.2

Agent-Level Optimal LQG Control of Dynamically Decoupled Systems with Processing Delays, pp. 5980-5985.

Kashyap, Mruganka	University of Wisconsin-Madison
Lessard, Laurent	Northeastern University

16:45-17:00 FrB06.3

Independently Randomized Symmetric Policies Are Optimal for Exchangeable Stochastic Teams with Infinitely Many Decision Makers, pp. 5986-5991.

Sanjari, Seyed Sina	Queen's University
Saldi, Naci	Ozyegin University
Yuksel, Serdar	Queen's University

17:00-17:15 FrB06.4

A Nonsmooth Newton Method for the Design of State Feedback Stabilizers under Structure Constraints, pp. 5992-5997.

Yagoubi, Mohamed	CNRS-UMR 6004-CD0962
Chaibi, Redouane	USMB Fes

17:15-17:30 FrB06.5

Computation of Least-Conservative State-Constraint Sets for Decentralized MPC with Dynamic and Constraint Coupling, pp. 5998-6003.

Mulagaleti, Sampath Kumar	IMT School of Advanced Studies Lucca
Bemporad, Alberto	IMT School for Advanced Studies Lucca
Zanon, Mario	IMT Institute for Advanced Studies Lucca

FrB07 Coordinated Universal Time (UTC)

Data-Driven Approaches II (Regular Session)

Chair: Jung, Daniel	Linkoping University
Co-Chair: Abuabiah, Mohammad	An-Najah National University

16:15-16:30 FrB07.1

An Hinfinity Method to Design the Reference Model in Direct Data-Driven Control Design, pp. 6004-6009.

Cerone, Vito	Politecnico Di Torino
Abuabiah, Mohammad	An-Najah National University
Regruto, Diego	Politecnico Di Torino

16:30-16:45 FrB07.2

A Data-Driven Approach for Constrained Infinite-Horizon Linear Quadratic Regulation, pp. 6010-6015.

Pang, Bo	New York University
Jiang, Zhong-Ping	New York University

16:45-17:00 FrB07.3

A Semi-Algebraic Optimization Approach to Data-Driven Control of Continuous-Time Nonlinear Systems, pp. 6016-6021.

Dai, Tianyu	Northeastern University
Sznaier, Mario	Northeastern University

17:00-17:15 FrB07.4

A Derivative-Free Optimization Method with Application to Functions with Exploding and Vanishing Gradients, pp. 6022-6027.

Al-Abri, Said	Georgia Institute of Technology
Lin, Tony	Georgia Institute of Technology
Tao, Molei	Georgia Institute of Technology
Zhang, Fumin	Georgia Institute of Technology

17:15-17:30 FrB07.5

Distributed Feature Selection for Multi-Class Classification Using ADMM, pp. 6028-6033.

Jung, Daniel	Linkoping University

FrB08 Coordinated Universal Time (UTC)

Observers for Linear Systems (Regular Session)

Chair: Kibangou, Alain	Univ. Grenoble Alpes
Co-Chair: Seeber, Richard	Graz University of Technology

16:15-16:30 FrB08.1

Distance Measures for Strong Observability and Strong Detectability of Systems with Direct Feedthrough, pp. 6034-6039.

Falkensteiner, Roland	Graz University of Technology
Seeber, Richard	Graz University of Technology
Reichhartinger, Markus	Graz University of Technology
Horn, Martin	Graz University of Technology

16:30-16:45 FrB08.2

Fixed-Time Observer Design for LTI Systems by Time-Varying Coordinate Transformation, pp. 6040-6045.

Pin, Gilberto	University of Padua
Yang, Guitao	Imperial College London
Serrani, Andrea	The Ohio State University
Parisini, Thomas	Imperial College & Univ. of Trieste

16:45-17:00 FrB08.3

Sparse Sensing and Optimal Precision: An Integrated Framework for H2/H-Infinity Optimal Observer Design, pp. 6046-6051.

Deshpande, Vedang M.	Texas A&M University
Bhattacharya, Raktim	Texas A&M

17:00-17:15 FrB08.4

State Variance Estimation in Large-Scale Network Systems, pp. 6052-6057.

Niazi, Muhammad Umar B.	Gipsa-Lab / CNRS
Canudas de Wit, Carlos	CNRS, GIPSA-Lab
Kibangou, Alain	Univ. Grenoble Alpes

17:15-17:30 FrB08.5

Average State Estimation in Presence of Outliers, pp. 6058-6063.

Pratap, Ujjwal	GIPSA-Lab, CNRS
Canudas de Wit, Carlos	CNRS, GIPSA-Lab
Garin, Federica	Inria

FrB09 Coordinated Universal Time (UTC)

Optimization Algorithms IV (Regular Session)

Chair: Chopra, Nikhil	University of Maryland, College Park
Co-Chair: Axehill, Daniel	Linköping University

16:15-16:30 FrB09.1

Exact Complexity Certification of a Nonnegative Least-Squares Method for Quadratic Programming, pp. 6064-6069.

Arnström, Daniel	Linköping University
Bemporad, Alberto	IMT School for Advanced Studies Lucca
Axehill, Daniel	Linköping University

16:30-16:45 FrB09.2

Robust and Stochastic Optimization with a Hybrid Coherent Risk Measure with an Applications to Supervised Learning, pp. 6070-6075.

Liu, Shutian	New York University
Zhu, Quanyan	New York University

16:45-17:00 FrB09.3

Dynamic and Distributed Online Convex Optimization for Demand Response of Commercial Buildings, pp. 6076-6081.

Lesage-Landry, Antoine	University of California, Berkeley
Callaway, Duncan S.	University of California, Berkeley

17:00-17:15 FrB09.4

Preserving Statistical Privacy in Distributed Optimization, pp. 6082-6087.

Gupta, Nirupam	Georgetown University
Gade, Shripad	University of Illinois at Urbana Champaign
Chopra, Nikhil	University of Maryland, College Park
Vaidya, Nitin H.	Georgetown University

17:15-17:30 FrB09.5

An Optimal Temperature Regulation Strategy for a Multi-Unit Building, pp. 6088-6093.

Molaei, Hamed	Concordia University
Aghdam, Amir G.	Concordia University

FrB10 Coordinated Universal Time (UTC)

Fuzzy Systems (Regular Session)

Chair: Arioui, Hichem	Evry Val d'Essonne University
Co-Chair: Nguyen, Anh-Tu	Université Polytechnique Des Hauts-De-France

16:15-16:30 FrB10.1

Disturbance Rejection of Two-Dimensional Repetitive Control System Based on T-S Fuzzy Model, pp. 6094-6099.

Tian, Shengnan	China University of Geosciences
Wu, Min	China University of Geosciences
Zhang, Manli	School of Automation，China University of Geosciences
Lu, Chengda	China University of Geosciences
Chen, Luefeng	China University of Geosciences
She, Jinhua	China University of Geosciences

16:30-16:45 FrB10.2

Observer Design for a Class of Nonlinear Systems with Nonscalar-Input Nonlinear Consequents, pp. 6100-6105.

Nagy, Zoltan	Technical University of Cluj Napoca
Lendek, Zsofia	Technical University of Cluj-Napoca, VAT RO22736939
Busoniu, Lucian	Technical University of Cluj-Napoca

16:45-17:00 FrB10.3

Avoiding Unmeasured Premise Variables in Designing Unknown Input Observers for Takagi-Sugeno Fuzzy Systems, pp. 6106-6111.

Nguyen, Anh-Tu	Université Polytechnique Des Hauts-De-France
Pan, Juntao	Southeast Univ
Guerra, Thierry Marie	University of Valenciennes and Hainaut Cambresis
Wang, Zhenhua	Harbin Institute of Technology

17:00-17:15 FrB10.4

Event-Triggered Reduced-Order Filtering for Networked T-S Fuzzy Systems Via a Fuzzy Lyapunov-Krasovskii Functional Approach, pp. 6112-6117.

Li, Xiehuan	Northeastern University
Ye, Dan	Northeastern University

17:15-17:30 FrB10.5

Unknown Dynamics Decoupling to Overcome Unmeasurable Premise Variable in Takagi-Sugeno Observer Design, pp. 6118-6123.

Arioui, Hichem	Evry Val d'Essonne University
Nehaoua, Lamri	Evry Univeristy

FrB11 Coordinated Universal Time (UTC)

Distributed Optimization and Learning for Networked Systems III (Invited Session)

Chair: Shi, Guodong	The Australian National University
Co-Chair: Yang, Tao	Northeastern University
Organizer: Yang, Tao	Northeastern University
Organizer: Uribe, Cesar	Massachusetts Institute of Technology
Organizer: Lu, Jie	ShanghaiTech University
Organizer: Nedic, Angelia	Alphatech Inc

16:15-16:30 FrB11.1

Information State Embedding in Partially Observable Cooperative Multi-Agent Reinforcement Learning (I), pp. 6124-6131.

Mao, Weichao	University of Illinois Urbana-Champaign
Zhang, Kaiqing	University of Illinois at Urbana-Champaign (UIUC)
Miehling, Erik	University of Illinois at Urbana-Champaign
Basar, Tamer	Univ of Illinois,

	Urbana-Champaign

16:30-16:45	FrB11.2

Multimarginal Optimal Transport by Accelerated Alternating Minimization (I), pp. 6132-6137.

Tupitsa, Nazarii	Mipt, Iitp Ras, Hse
Dvurechensky, Pavel	Weierstrass Institute for Applied Analysis and Stochastics
Gasnikov, Alexander	Moscow Institute of Physics and Technology (State University)
Uribe, Cesar	Massachusetts Institute of Technology

16:45-17:00	FrB11.3

Data-Driven Distributed Mitigation Strategies and Analysis of Mutating Epidemic Processes (I), pp. 6138-6143.

Pare, Philip E.	Purdue University
Gracy, Sebin	KTH, Royal Institute of Technology
Sandberg, Henrik	KTH Royal Institute of Technology
Johansson, Karl H.	Royal Institute of Technology

17:00-17:15	FrB11.4

Projection Consensus for Solving Linear Equations Over Random Networks (I), pp. 6144-6149.

Yi, Peng	Tongji University
Lei, Jinlong	Tongji University
Hong, Yiguang	Chinese Academy of Sciences
Chen, Jie	Beijing Institute of Technology
Shi, Guodong	The Australian National University

17:15-17:30	FrB11.5

Distributed Event-Triggered Optimization Algorithm Design for MASs with Attacks on Communication Edges (I), pp. 6150-6155.

Wang, Dandan	Southeast University
Fang, Xiao	Southeast University
Wan, Yan	University of Texas at Arlington
Wen, Guanghui	Southeast University

FrB12	Coordinated Universal Time (UTC)
Neuronal Systems (Regular Session)	
Chair: Franci, Alessio	Universidad Nacional Autónoma De Mexico (UNAM)
Co-Chair: Sepulchre, Rodolphe	University of Cambridge

16:15-16:30	FrB12.1

Robust Instability Analysis with Application to Neuronal Dynamics, pp. 6156-6161.

Hara, Shinji	Tokyo Institute of Technology
Iwasaki, Tetsuya	UCLA
Hori, Yutaka	Keio University

16:30-16:45	FrB12.2

Mediated Remote Synchronization of Kuramoto-Sakaguchi Oscillators: The Number of Mediators Matters, pp. 6162-6167.

Qin, Yuzhen	University of California, Riverside
Cao, Ming	University of Groningen
Anderson, Brian D.O.	Australian National University
Bassett, Danielle	University of Pennsylvania
Pasqualetti, Fabio	University of California, Riverside

16:45-17:00	FrB12.3

Rapid Synchronization under Weak Synaptic Coupling, pp. 6168-6173.

Lee, Jin Gyu	University of Cambridge
Sepulchre, Rodolphe	University of Cambridge

17:00-17:15	FrB12.4

Positive Dynamical Networks in Neuronal Regulation: How Tuneable Variability Coexists with Robustness, pp. 6174-6179.

Franci, Alessio	Universidad Nacional Autónoma De Mexico (UNAM)
O'Leary, Timothy	University of Cambridge
Golowasch, Jorge	New Jersey Institute of Technology

17:15-17:30	FrB12.5

System Identification of Biophysical Neuronal Models, pp. 6180-6185.

B. Burghi, Thiago	University of Cambridge
Schoukens, Maarten	Eindhoven University of Technology
Sepulchre, Rodolphe	University of Cambridge

FrB13	
Learning-Based Control IV (Invited Session)	
Chair: Borrelli, Francesco	Unversity of California at Berkeley
Co-Chair: Muller, Matthias A.	Leibniz University Hannover
Organizer: Muller, Matthias A.	Leibniz University Hannover
Organizer: Schoellig, Angela P	University of Toronto
Organizer: Trimpe, Sebastian	RWTH Aachen University
Organizer: Zeilinger, Melanie N.	ETH Zurich

16:15-16:30	FrB13.1

Active Exploration in Adaptive Model Predictive Control (I), pp. 6186-6191.

Parsi, Anilkumar	ETH Zurich
Iannelli, Andrea	ETH Zurich
Smith, Roy S.	ETH Zurich

16:30-16:45	FrB13.2

Computing the Racing Line Using Bayesian Optimization (I), pp. 6192-6197.

Jain, Achin	University of Pennsylvania
Morari, Manfred	University of Pennsylvania

16:45-17:00	FrB13.3

Trajectory Optimization for Nonlinear Multi-Agent Systems Using Decentralized Learning Model Predictive Control (I), pp. 6198-6203.

Zhu, Edward	University of California, Berkeley
Stürz, Yvonne R.	UC Berkeley
Rosolia, Ugo	Caltech
Borrelli, Francesco	Unversity of California at Berkeley

17:00-17:15	FrB13.4

Learning to Satisfy Unknown Constraints in Iterative MPC (I), pp. 6204-6209.

Bujarbaruah, Monimoy	UC Berkeley
Vallon, Charlott	University of California, Berkeley
Borrelli, Francesco	Unversity of California at Berkeley

17:15-17:30	FrB13.5

Sample Complexity of Data-Driven Stochastic LQR with Multiplicative Uncertainty (I), pp. 6210-6215.

Coppens, Peter	KU Leuven
Patrinos, Panagiotis	KU Leuven

FrB14	Coordinated Universal Time (UTC)
Event-Triggered Control II (Invited Session)	
Chair: Postoyan, Romain	CNRS, CRAN, Université De Lorraine
Co-Chair: Hirche, Sandra	Technische Universität München
Organizer: Heemels, W.P.M.H.	Eindhoven University of Technology
Organizer: Hirche, Sandra	Technische Universität München
Organizer: Johansson, Karl H.	Royal Institute of Technology
Organizer: Nowzari, Cameron	George Mason University
16:15-16:30	FrB14.1
Optimal Recursive Backstepping for Nonlinear Systems in a Strict-Feedback Form with Continuous and Intermittent Updates (I), pp. 6216-6221.	
Yang, Yongliang	University of Macau
Modares, Hamidreza	Michigan State University
Vamvoudakis, Kyriakos G.	Georgia Inst. of Tech
Xu, Cheng-Zhong	University of Macau
16:30-16:45	FrB14.2
Distributed Optimisation with Stochastic Event-Triggered Multi-Agent Control Algorithm (I), pp. 6222-6227.	
Tsang, Kam Fai Elvis	Hong Kong University of Science and Technology
Wu, Junfeng	Zhejiang University
Shi, Ling	Hong Kong University of Science and Technology
16:45-17:00	FrB14.3
Event-Triggered Distributed Inference (I), pp. 6228-6233.	
Mitra, Aritra	Purdue University
Bagchi, Saurabh	Purdue University
Sundaram, Shreyas	Purdue University
17:00-17:15	FrB14.4
Event-Triggered Control in Presence of Measurement Noise: A Space-Regularization Approach (I), pp. 6234-6239.	
Scheres, Koen	Eindhoven University of Technology
Postoyan, Romain	CNRS, CRAN, Université De Lorraine
Heemels, W.P.M.H.	Eindhoven University of Technology
17:15-17:30	FrB14.5
Resilient Self/Event-Triggered Consensus Based on Ternary Control (I), pp. 6240-6245.	
Matsume, Hiroki	Tokyo Institute of Technology
Wang, Yuan	Tokyo Institute of Technology
Ishii, Hideaki	Tokyo Institute of Technology

FrB15	Coordinated Universal Time (UTC)
Control Systems Privacy (Regular Session)	
Chair: Manchester, Ian R.	University of Sydney
Co-Chair: Hadjicostis, Christoforos N.	University of Cyprus
16:15-16:30	FrB15.1
Privacy-Preserving Event-Triggered Quantized Average Consensus, pp. 6246-6253.	
Rikos, Apostolos I.	KTH Royal Institute of Technology
Charalambous, Themistoklis	Aalto University
Johansson, Karl H.	Royal Institute of Technology
Hadjicostis, Christoforos N.	University of Cyprus
16:30-16:45	FrB15.2
Preserving Privacy of the Influence Structure in Friedkin-Johnsen Systems, pp. 6254-6259.	
Liell-Cock, Jack	The University of Sydney
Manchester, Ian R.	University of Sydney
Shi, Guodong	The University of Sydney
16:45-17:00	FrB15.3
Differentially Private Formation Control, pp. 6260-6265.	
Hawkins, Calvin	University of Florida
Hale, Matthew	University of Florida
17:00-17:15	FrB15.4
Privacy-Preserving Policy Synthesis in Markov Decision Processes, pp. 6266-6271.	
Gohari, Parham	The University of Texas at Austin
Hale, Matthew	University of Florida
Topcu, Ufuk	The University of Texas at Austin
17:15-17:30	FrB15.5
Maximizing Privacy in MIMO Cyber-Physical Systems Using the Chapman-Robbins Bound, pp. 6272-6277.	
Alisic, Rijad	KTH Royal Institute of Technology
Molinari, Marco	Royal Institute of Technology
Pare, Philip E.	Purdue University
Sandberg, Henrik	KTH Royal Institute of Technology

FrB16	Coordinated Universal Time (UTC)
Input-To-State Stability (Regular Session)	
Chair: Satoh, Yasuyuki	Tokyo University of Science
Co-Chair: Pepe, Pierdomenico	University of L' Aquila
16:15-16:30	FrB16.1
Signed Small-Gain Criteria Amenable to Asymmetry with Respect to Equilibria in Establishing iISS of Networks, pp. 6278-6284.	
Ito, Hiroshi	Kyushu Institute of Technology
16:30-16:45	FrB16.2
On Integral Input-To-Output Stability Properties, pp. 6285-6290.	
Nawarathna, R H Harsha	Florida Atlantic University
Lin, Yuandan	Florida Atlantic Univ
Wang, Yuan	Florida Atlantic Univ
16:45-17:00	FrB16.3
Average Dwell-Time Bounds for ISS and Integral ISS of Switched Systems Using Lyapunov Functions, pp. 6291-6296.	
Liu, Shenyu	University of California, San Diego
Tanwani, Aneel	Laas -- Cnrs
Liberzon, Daniel	Univ of Illinois, Urbana-Champaign
17:00-17:15	FrB16.4
Sufficient Lyapunov Conditions for Pth Moment ISS of Discrete-Time Markovian Switching Systems, pp. 6297-6302.	
Impicciatore, Anastasia	University of L'Aquila
D'Innocenzo, Alessandro	University of L'Aquila
Pepe, Pierdomenico	University of L' Aquila
17:15-17:30	FrB16.5
Local State-Independent Input-To-Output Stability As a Tool for Robustness Analysis of Mechanical Systems, pp. 6303-6308.	

Fukui, Yoshiro Kyushu Institute of Technology
Satoh, Yasuyuki Tokyo Denki University

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