IFAC NEWSLETTER

INTERNATIONAL FEDERATION OF AUTOMATIC CONTROL

IFAC Congress Prizes

No.5

October 2023

Young Author Prize (YAP)

This prize, created in 1986, is awarded at IFAC World Congresses for the best paper of which the first and presenting author is younger than 30 years.

Winner: Daniel Arnström (SE) for "*BnB-DAQP: A Mixed-Integer QP Solver for Embedded Applications.*"

Daniel Arnström received the Ph.D. degree in automatic control from Linköping University (SE), in June 2023. As of September 2023, he is a postdoc at the Division of Systems and Control, Department of Information Technology, Uppsala University (SE).

Arnström's research interests include reliable embedded optimization and reliable real-time Model Predictive Control (MPC); for reliability, his research interests include computational, safety, and security aspects.

Applications Paper Prize (APP)

The Applications Paper Prize, created in 1986, is awarded at IFAC World Congresses for the best Applications Paper.

Winners: **N. A. Jalal, T. Abdulbaki Alshirbaji, P. D. Docherty, H. Arabian, T. Neumuth, K. Moeller (DE/NZ) for "*Surgical Tool Classification & Localisation Using Attention and Multi-Feature Fusion Deep Learning Approach*."**

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N.A. Jalal

Nour Aldeen Jalal (DE) received the B.Sc. with honors and M.Sc. with distinction degrees in Biomedical Engineering from the University of Damascus (SY) and Furtwangen University (DE) in 2012 and 2017, respectively. Between 2013 and 2015, he worked as a lecturer assistant at Damascus University. In the period from 2016 to 2017, he worked as a working student at KARL STORZ company in the research & development department. Currently, he is pursuing his Ph.D. studies at the University of Leipzig (DE) since 2019 and concurrently holds the position of research associate at the Institute of Technical Medicine (ITeM) at Furtwangen University since 2018.

Jalal's ongoing research focuses on the development of intelligent applications inside the operating room. This involves the analysis and fusion of data streams generated by medical devices during surgery using artificial intelligence. He is also interested in exploring the robustness and explainability of deep learning methodologies.

T. Abdulbaki Alshirbaji
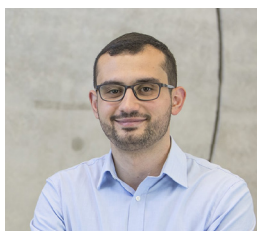
Tamer Abdulbaki Alshirbaji (DE) is a research associate at Furtwangen University (DE) and a PhD candidate at Leipzig University (DE). He received his B.S. degree in biomedical engineering from Damascus University (SY) in 2012 and his M.Sc. degree in biomedical engineering from Furtwangen University in 2017. His research focuses on surgical data analysis by developing deep neural network approaches.

The IFAC Journals

Automatica
journals.elsevier.com/automatica

Control Engineering Practice
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Engineering Applications of Artificial Intelligence
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Annual Reviews in Control
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Journal on Mechatronics
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Nonlinear Analysis: Hybrid Systems
journals.elsevier.com/nonlinear-analysis-hybrid-systems

IFAC Journal of Systems & Control
journals.elsevier.com/ifac-journal-of-systems-and-control

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P. D. Docherty

Paul Docherty received his BE(hons) mechanical in 2008, and his PhD in 2011, both from the University of Canterbury (NZ). He currently works as a professor in the Department of Mechanical Engineering at the University of Canterbury.

He works predominantly with numerical methods in bioengineering. This concentrates in the forward problem, the inverse problem, and identifiability - typically in lumped parameter systems. However, Docherty has also worked extensively in PIV analysis of biological flows, head injury mechanics and qualitative research in education. The full scope he has worked in includes agricultural design, cellular modelling, aerospace design, and medical device design.

H. Arabian

Herag Arabian (DE) received his bachelor of engineering in mechanical engineering from the Lebanese American University, Byblos (LB) in 2015. He went on to earn a master's degree in biomedical engineering in 2021 from the Furtwangen University, Schwenningen (DE), where he is currently pursuing a Ph.D. (since 2021). In the same year, he joined the Institute of Technical Medicine (ITeM) as a research assistant, where he continues to contribute to multidisciplinary projects. His research primarily focuses on modelling and predicting human emotional behaviour, with applications geared towards therapeutic treatments for individuals with Autism Spectrum Disorder. He is also keen on applying artificial intelligence to the medical domain, particularly in enhancing surgical room operations and leveraging deep learning to transform non-invasive pulmonary imaging through advances in lung EIT image reconstruction.

T. Neumuth

Thomas Neumuth is an engineer and computer scientist who is passionate about using technology to improve healthcare. He is CTO of the Innovation Center Computer Assisted Surgery (ICCAS) at the Leipzig University Medical School (DE), one of the leading German research centers developing biomedical information and communication technologies.

K. Moeller

Knut Moeller received the M.S. degree, the Ph.D. degree in computer science, and the M.D. degree in human medicine from the University of Bonn, Bonn, Germany, in 1986, 1991, and 1996, respectively.

From 1991 to 1997, he was an Assistant Professor in the Department of Computer Science, Bonn University (DE) where he was involved in the fields of machine learning, robotics, and image processing. In 1998, he became a Professor of Medical Informatics at Furtwangen University, Villingen-Schwenningen, Germany, where he currently is the Director of the Institute of Technical Medicine (ITeM). He is an associated professor at the University of Freiburg, DE and Adjunct Professor at the University of Canterbury, NZ.

Moeller's research interests include medical decision support systems, modeling, and intelligent monitoring.

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ifac-control.org/publications/cartoons

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From the IFAC President

Dear IFAC Friends and Colleagues,

It has been three months since the 2023 World Congress held in Yokohama in July. It was truly wonderful to see all our colleagues in person again.

In Yokohama, during the Incoming Council Meeting, it was decided that we would review the structure of the IFAC Technical Board (TB) and thirty-nine Technical Committees (TCs). The TB was first established in 1981, and the original nine Coordinating Committees (CCs) were formed in 1996. They underwent restructuring in 2002 to the current nine CC configuration. Apart from a limited number of changes CCs and TCs remain unchanged since 2002.

We have witnessed significant changes in the focus of control theory, technology, and their applications during the past two decades. For instance, learning and data-based control methods have gained popularity among both control theoreticians and technologists. The exponential growth in computing resources has ushered in substantial changes across various facets of control theory and practice. We have also seen remarkable advancements in autonomous driving and various robotic applications. Furthermore, the societal impact of control and the sustainability of our planet have become very important.

To address and adapt to these changes, the TB has taken on the task of evaluating all thirty-nine TCs to identify areas for improvement and to assess the need for any new TCs. This comprehensive approach aims to ensure that IFAC's technical domains align with the evolving landscape of control. Additionally, to complement this bottom-up evaluation of IFAC's technical areas, a Presidential Task Force (TF) on Future IFAC Technical Areas has been established to examine the same issue from a top-down perspective.

Carlos Eduardo Pereira, the TB Chair, volunteered nine days of his time to visit me in Korea. During this period, we analyzed extensive data related to the activities of all TCs and their events since 2014. Subsequent discussions will involve active engagement with both CCs and TCs to explore opportunities for enhancing intra-CC and inter-CC activities. Additionally, the Task Force, led by Robert Bitmead, will be providing recommendations within the next year for any additional future IFAC areas. I kindly request all IFAC NMOs and affiliates to provide any suggestions regarding IFAC's technical areas and the TB structure, with the aim of better aligning them to the changes and renewed focuses in the field of automatic control since 2002. All such requests received by the end of March 2024 will be considered.

With best regards,

Dong-Il "Dan" Cho,
IFAC President 2023- 2026

IFAC Congress Interactive Paper Prize (IPP)

This prize is awarded at IFAC World Congresses for the best interactive paper/poster. Candidates for this prize are nominated by a selection committee appointed by IFAC.

Winners: Melanie Harms, Christian Schilli and Eva Zerz (DE) for *"Invariant sets for a class of nonlinear control systems tractable by symbolic computation"*

Melanie Harms

Melanie Harms (DE) is a Ph.D. student under the supervision of Prof. Eva Zerz at RWTH Aachen University (DE), where she works as a research assistant at the Chair of Algebra and Number Theory since 2019. She also received the B.Sc. and M.Sc. degrees in mathematics from RWTH Aachen University in 2016 and 2018, respectively.

Harms' research focusses on the investigation of structural properties and invariant sets of nonlinear ODE systems from an algebraic point of view. One major aspect of her studies lies in the application of those concepts to control theory using closed loop control.

Christian Schilli

Christian Schilli (DE) studied mathematics at the RWTH Aachen University (DE), where he received his M.Sc. degree in 2012. Afterwards, he worked as a research assistant at the Chair of Algebra and Number Theory (formerly Lehrstuhl D) in Aachen.

In 2016 Schilli finalized his Ph.D. thesis and degree under the supervision of Prof. Eva Zerz at RWTH Aachen University. The work was focused on finding methods from symbolic computation (especially Groebner Bases) with which it is possible to decide whether a given algebraic variety is controlled or conditioned invariant for given polynomial or rational control systems. If this is the case, the work gives algorithmic approaches to derive state or output feedback laws, which renders the variety invariant.

Since 2017 Schilli works at the Zurich Insurance Company in Cologne, Germany as an actuary.

Eva Zerz

Eva Zerz studied Mathematics at the University of Innsbruck (AT) and received her Ph.D. degree in 1994. She then joined the Systems and Control Group at the Department of Mathematics of the University of Kaiserslautern (DE) where she completed her habilitation in 2000, with a thesis on algebraic systems theory. Subsequently, she held a lecturer position there.

In 2005, she became an associate professor of algebra at RWTH Aachen University (DE). Her fields of research are mathematical control theory and computer algebra.

She is a member of the editorial boards of *Advances in Delays and Dynamics, Mathematics of Control, Signals, and Systems,* and *Multidimensional Systems and Signal Processing*. Currently, she serves as a vice-chair of IFAC TC 2.2 for the 2023-26 triennium.

Editor's Note: Information concerning past winners of the YAP, APP, and IPP can be found at:

ifac-control.org/awards/congress-prizes

Candidates for the above-mentioned prizes are nominated by a selection committee appointed by the IFAC Council. The prizes consist of a monetary prize and a certificate.

Introducing the newest IFAC Advisors

According to Article 22 of the IFAC Constitution *"Upon retirement from his/her IFAC office or any time thereafter, any IFAC Official may be appointed by the President as an Advisor of IFAC. Such an appointment may be for life."*

IFAC Advisors may be consulted by the active Executive Officers on any matter related to the Federation or given special assignments as the President deems appropriate.

Three new IFAC Advisors were appointed by IFAC President 2020-23 Hajime Asama (JP), which were acknowledged at the IFAC World Congress 2023 in Yokohama, Japan in July 2023.

The three new IFAC Advisors are: Frank Allgöwer (DE), John Lygeros (CH), and Juan de la Puente (ES).)

A full list of the IFAC Advisors can be found in the Advisors drop-down box at:

ifac-control.org/structure/council

Frank Allgöwer

Frank Allgöwer (DE) served IFAC as president for the years 2017-2020. He is a professor in the Mechanical Engineering Department of the University of Stuttgart (DE) and director of the Institute for Systems Theory and Automatic Control (IST). He studied Engineering Cybernetics and Applied Mathematics in Stuttgart and at the University of California at Los Angeles (UCLA, US) respectively and received his Ph.D. degree from the University of Stuttgart.

Prior to his present appointment he held an assistant professorship in the electrical engineering department at ETH Zurich (CH). Visiting positions include Caltech, the NASA Ames Research Center, the DuPont Company, the University of California- Santa Barbara, the University of Newcastle (AU) and KTH Stockholm (SE). From 2012 until 2020 Frank served in addition as Vice-President of Germany's most important research funding agency, the German Research Foundation (DFG) in Bonn, Germany, and from 2018 until 2020 as Chairman of Germany's National Research Data Infrastructure Initiative (NFDI).

Frank Allgöwer's main interests in research and teaching are in the area of systems and control with emphasis on the development of new methods for the analysis and control of nonlinear systems, networks of systems, optimization based control and data based control. His application interests span a wide range from chemical engineering via mechatronic systems to systems biology. He has published over 700 scientific articles on his research and received several recognitions including many best paper awards, an IFAC Fellow, the IFAC Outstanding Service Award, the IEEE CSS Distinguished Member Award, the State Teaching Award of the German state of Baden-Württemberg, and the Leibniz Prize, which is the most prestigious award in science and engineering awarded by the Deutsche Forschungsgemeinschaft.

Before becoming its president, Frank served IFAC in many positions over the last two decades. Among others he was Editor for IFAC's flagship journal Automatica for 13 years, chairman of the IFAC Technical Committee on Nonlinear Systems, Member of IFAC's Policy Committee, Member of the IFAC Council and Chair of the Administration and Finance Committee. From 2020 till 2023 he was a member of the IFAC Executive Officers in his role as Immediate Past-President. Starting from 2023 he is the Chair of the IFAC Awards Committee and the Chair of the IFAC Foundation Board.

In addition to his activities within IFAC, Frank is also involved in other scientific and societal

organizations. He served the IEEE Control Systems Society as Vice-president for Technical Activities in 2013/14, was repeatedly a member of IEEE CSS Board of Governors, and has been the chairman of the CSS International Affairs Committee for 2007-2013. In addition he has been a member of the council of the European Union Control Association (EUCA) and a member of the Board of Governors of the VDI/VDE Society for Measurement and Automatic Control. Frank Allgöwer has been organizer or co-organizer of more than a dozen international conferences.

John Lygeros

John Lygeros completed a B.Eng. degree in electrical engineering in 1990 and an M.Sc. degree in Systems Control in 1991, both at Imperial College of Science Technology and Medicine, London (UK). In 1996 he obtained a Ph.D. degree from the Electrical Engineering and Computer Sciences Department, University of California- Berkeley (US). During the period 1996-2000 he held a series of research appointments at the National Automated Highway Systems Consortium, Berkeley, the Laboratory for Computer Science, M.I.T., and the Electrical Engineering and Computer Sciences Department at U.C.-Berkeley.

Between 2000 and 2003 Lygeros was a University Lecturer at the Department of Engineering, University of Cambridge, U.K., and a Fellow of Churchill College. Between 2003 and 2006 he was an Assistant Professor at the Department of Electrical and Computer Engineering, University of Patras (GR). In July 2006 he joined the Automatic Control Laboratory of ETH Zurich, first as an Associate Professor, and since January 2010 as a Full Professor.

Since 2009 he is serving as the Head of the Automatic Control Laboratory; between 2015 and 2018 he also served as the Head of the Department of Information Technology and Electrical Engineering of ETH Zurich. Between 2013 and 2023 he served as the Vice President for Finances and a Council member of the International Federation of Automatic Control (IFAC) as well as on the Board of the IFAC Foundation.

Lygeros' research interests include modelling, analysis, and control of hierarchical, hybrid, and stochastic systems, with applications to biochemical networks, automated highway systems, air traffic management, energy systems and industrial processes. He is the recipient of the Advanced Grant "Optimal Control at Large" of the European Research Council. He teaches classes in the area of systems and control both at the undergraduate and at the graduate level, notably the 4th semester class Signals and Systems II, which he delivers in a flipped classroom format. John Lygeros is a Fellow of the IEEE, and a member of the IET and the Technical Chamber of Greece.

Juan de la Puente

Juan de la Puente was born in Madrid (ES) in 1949. He received a degree in Electrical Engineering from the Technical University of Madrid (UPM) in 1972, and a DEA in Automatic Control from the University Paul Sabatier, Toulouse (FR) in 1973. He then pursued his doctoral studies at UPM and presented his PhD thesis on system identification in 1976. After two years as a lecturer at UPM he moved to the Technical University of Valencia (UPV), where he joined the Automatic Control department. He was appointed Associate Professor in 1981, and was promoted to Full Professor in 1984. In 1988 he moved back to the Technical University of Madrid, UPM. Since 2020 he is a Professor Emeritus at the UPM Information Processing and Telecommunications Center. He is married to Pilar Yusty, and they have three daughters and four grandchildren.

Juan's research interests are in real-time and cyber-physical systems and computer control, including design methods, software architectures, and real-time operating systems and languages. He has participated in a great variety of research projects funded by the EU, the Spanish government, the European Space Agency (ESA), and a number of Spanish and European industrial companies.

Juan de la Puente has authored or co-authored more than 150 technical papers and reports, and has edited several conference proceeding volumes, most of them in the fields of real-time control systems. He has taught courses on Automatic Control Systems, Real-Time Systems, Software Engineering, and Operating Systems, at both the undergraduate and graduate levels.

Juan joined CEA, the Spanish NMO for IFAC, in 1980, and participated in the organisation of a large number of control-related activities in Spain. In 2012 he received the national CEA Award. He collaborated with IFAC in different areas, especially in the framework of the IFAC TC on Computers for Control and its predecessors, and he was a member of IFAC Technical Board on several instances. He was Co-chair of the International Program Committee of the XV IFAC 2002 Congress in Barcelona (ES) A notable feature of this meeting was the first electronic and review system used in an IFAC conference, developed at UPM under his supervision.

Juan de la Puente was appointed Editor-in-Chief of the new *IFAC-PapersOnLine* initiative in 2008, and he served in this position until 2022. Although his main responsibility were the editorial policies and the organization of the publication of proceedings, he also supervised the technical aspects of the initial development of POL as an IFAC autonomous web site, and its transfer to the Elsevier Science Direct platform in 2015.

Juan de la Puente is an IFAC Fellow, and he received the IFAC Outstanding Service Award in 2011. He is currently an IFAC Advisor.

Introducing the IFAC Affiliates portal

This portal gives you access to IFAC services dedicated to individuals who signed up as IFAC Affiliates. The services include the possibility to share and consult information about other Affiliates. It also gives access to more advanced features such as:

-Receiving the IFAC Newsletter.
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-Participating in IFAC Technical Activities.
-Organizing IFAC Conferences.
-Participating in IFAC Journals.
-Applying to IFAC Awards.
-Applying to the IFAC Activity fund.
-And more to come in the future!

Moreover, being an IFAC Affiliate is free of charge. Any individual who is interested in Control Engineering should sign up!

The IFAC Affiliates portal can be accessed at: affiliates.ifac-control.org/

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IFAC Journal 2023 Paper Prize Awards

Automatica Paper Prize
(Created in 1979)

The prize is given for outstanding contributions to the theory and/or practice of control engineering or control science, documented in a paper published in the IFAC Journal Automatica. In each triennium, three such prizes are given, with funds provided by Elsevier, the publisher of Automatica. The prizes are presented to the authors of the three selected papers at each triennial IFAC World Congress.

On continuous-time infinite horizon optimal control -Dissipativity, stability, and transversality, Timm Faulwasser and Christopher M. Kellett. Vol. 134, No. 109907 (2021), 10.1016/j.automatica.2021.109907

Sparse system identification for stochastic systems with general observation sequences, Wenxiao Zhao, George Yin, Er-Wei Bai. Vol. 121, No. 109162 (2020), 10.1016/j.automatica.2020.109162.

Projection-Based Integrators for Improved Motion Control: Formalization, Well-posedness and Stability of Hybrid Integrator-Gain Systems, Daniel Andreas Deenen, Bardia Sharif, Sebastiaan van den Eijnden, Hendrik Nijmeijer, Maurice Heemels, Marcel Heertjes. Vol. 133, No. 109830 (2021), 10.1016/j.automatica.2021.109830

Control Engineering Practice Paper Prize
(Created in 1993)

The prize is given for outstanding papers on the practical application of control techniques and advanced control theory, documented in a paper published in the IFAC journal *Control Engineering Practice*. In each triennium, three such prizes are given, with funds provided by Elsevier, the publisher of the journal. The prizes are presented to the authors of the three selected papers at each triennial IFAC World Congress.

The three papers for the CEP award are the following:

Robust nonsingular fast terminal sliding-mode control for Sit-to-Stand task, Joel Hernández Hernández, Sergio Salazar Cruz, Ricardo López-Gutiérrez, Arturo González Mendoza, Rogelio Lozano, Vol. 101 (2020) 104496, 10.1016/j.conengprac.2020.104496

Finite-time control design for a quadrotor transporting a slung load, Zongyang Lv, Qing Zhao, Shengming Li, Yuhu Wu, Vol. 122 (2022) 105082, 10.1016/j.conengprac.2022.105082

Data-driven adaptive predictive control of hydrocracking process using a covariance matrix adaption evolution strategy, Zhongmei Li, Xinjie Wang, Wenli Du, Minglei Yang, Zhi Li, Peizhi Liao, Vol 125 (2022) 105222, 10.1016/j.conengprac.2022.105222

Journal of Process Control Paper Prize
(Created in 2002)

The prize is given for outstanding contributions to the theory and/or practice of process control engineering, documented in a paper published in the IFAC Journal of Process Control. In each triennium, three such prizes are given for papers in the following categories:

1. Survey
2. Theory/Methodology
3. Application

The prizes are presented to the authors of the three selected papers at each triennial IFAC World Congress. Funds are provided by Elsevier, the publisher of the journal.

The winners for the JPC Paper Prizes are:

Theory/Methodology: *Periodic optimal control of nonlinear constrained systems using economic model predictive control*, Johannes Kohler, Matthias A. Müller, Frank Allgöwer, JPC, Vol. 92, Aug. 2020, p. 185-201, 10.1016/j.jprocont.2020.06.004

Application: *Data-driven modeling of product crystal size distribution and optimal input design for batch cooling crystallization processes*, Jingxiang Liu, Tao Liu, Junghui Chen, Hong Yue, Fangkun Zhang, JPC, Vol. 96, December 2020, p. 1-14, 10.1016/j.jprocont.2020.10.003

Survey: *A survey and classification of incipient fault diagnosis approaches*, H. Safaeipour, M. Forouzanfar, A. Casavola Vol. 97, January 2021, p. 1-16. JPC. 10.1016/j.jprocont.2020.11.005

EAAI Paper Prize
(Created in 2002)

The prize is given for outstanding contributions to the theory and/or practice of process control engineering, documented in a paper published in the IFAC Journal Engineering Applications of Artificial Intelligence. In each triennium, two such prizes are given for papers in the following categories:

1. Theory
2. Application

The prizes are presented to the authors of the two selected papers at each triennial IFAC World Congress. Funds are provided by Elsevier, the publisher of the journal.

The EAAI Paper Prize was awarded to the following two papers:

Theory: *Quantum-based avian navigation optimizer algorithm*, Zamani H., Nadimi-Shahraki M.H., Gandomi A.H. Vol. 104, September 2021,104314, 10.1016/j.engappai.2021.104314.

Application: *Bayesian retinex underwater image enhancement*, Zhuang P., Li C., Wu J, Vol. 101, May 2021, 104171, 10.1016/j.engappai.2021.104171

Mechatronics Paper Prize

The three papers for the Mechatronics Paper Prize are the following:

An electrostatically suspended contactless platform, Michael Andonian, Robert T. M'Closkey, Mechatronics 80 (2021), 10.1016/j.mechatronics.2021.102685

Design, fabrication, modeling and control of a fabric-based spherical robotic arm, Matthias Hofer, Raffaello D'Andrea, Mechatronics 68 (2020), 10.1016/j.mechatronics.2020.102369

Control of robotic object pivoting based on tactile sensing, Marco Costanzo, Mechatronics 76 (2021), 10.1016/j.mechatronics.2021.102545

NAHS Paper Prize
(Created in 2015)

The Nonlinear Analysis: Hybrid Systems (NAHS) Paper Prize is awarded for outstanding contributions to the field of hybrid systems documented in a paper published in the IFAC Journal *Nonlinear Analysis: Hybrid Systems*. At each IFAC World Congress the prize is awarded to the authors of two selected papers published in the journal in the three years preceding the Congress. The prize funds are provided by Elsevier, the publisher of the journal.

The two papers for the *NAHS* award are the following:

Comparison of path-complete Lyapunov functions via template-dependent lifts, Virginie Debauche, Matteo Della Rossa, Raphaël M. Jungers, 46 (2022), 10.1016/j.nahs.2022.101237

Time-triggered and event-triggered control of switched affine systems via a hybrid dynamical approach, Carolina Albea, Alexandre Seuret, 41 (2021), 10.1016/j.nahs.2021.101039

ARC Paper Prize
(Created in 2019)

The prize is given for outstanding contributions to comprehensive and visionary views of the field of Systems and Control, documented in either a survey article (review papers on main methodologies or technical advances), or a vision article (cutting-edge and emerging topics with visionary perspective on the future of the field or how it will bridge multiple disciplines), or a tutorial article (fundamental guides for future studies) published in the IFAC Journal *Annual Reviews in Control*. In each triennium, one such prize is given, with funds provided by the publisher of *Annual Reviews in Control*, Elsevier

The selection committee has selected the following paper:

A historical perspective of adaptive control and learning, Anuradha M. Annaswamy, Alexander L. Fradkov, 52 (2021), P. 18-41, 10.1016/j.arcontrol.2021.10.014

American Control Conference (ACC) 2023
10-13 July 2023
San Diego, CA (US)

The 2023 American Control Conference (ACC) was held in the beautiful setting of the Hilton San Diego Bayfront (San Diego, CA, US) from 31 May- 2 June 2023. Following the footsteps of the successful 2022 ACC, which was the first in-person ACC since the start of the COVID-19 pandemic, the 2023 ACC was a completely in-person conference and it aimed to deliver an exciting, engaging and inclusive experience for everyone. It attracted over 1300 attendees from 40 countries, from all continents except Antarctica.

The ACC is organized under the auspices of the American Automatic Control Council, which is a federation of nine professional societies: the American Institute of Aeronautics and Astronautics (AIAA), American Institute of Chemical Engineers (AIChE), American Society of Civil Engineers (ASCE), American Society of Mechanical Engineers (ASME), Institute of Electrical and Electronics Engineers (IEEE), the International Society for Automation (ISA), the Society for Modeling & Simulation International (SCS), the Society for Industrial and Applied Mathematics (SIAM), and Applied Probability Society as a subdivision of the Institute for Operations Research and the Management Sciences (INFORMS APS). AACC is the US National Member Organization (NMO) of IFAC and organizing the annual ACCs is its principal technical activity.

The 2023 ACC offered a rich and high-quality technical program over the course of the conference. A total of 1110 invited and contributed papers were submitted to the conference, including 233 submissions through the IEEE Control Systems Letters (L-CSS), and 763 papers were accepted for presentation, reflecting an acceptance rate of 68.7%. In addition, 9 tutorial sessions were offered spanning a wide range of timely topics on control, learning, optimization, game theory, and their applications. These sessions were very popular and saw a large number of attendees. Furthermore, 13 pre-conference workshops were provided on 30 May, which were well attended by over 250 people. In addition, 49 posters were presented during the Late Breaking Poster Session.

The highlights of the technical program are the plenary and semi-plenary talks. Mrdjan Jankovic, a former Senior Technical Leader at Ford and a member of the US National Academy of Engineering, gave a plenary talk, *"Why would we want a multi-agent system unstable,"* on Thursday. Two semi-plenaries were delivered on Wednesday morning: Steven L. Brunton, Professor of Mechanical Engineering at University of Washington, spoke about *"Machine learning for modeling and control,"* and Fumin Zhang, Chair Professor and Director of the Cheng Kar-Shun Robotics Institute at the Hong Kong University of Science and Technology, presented on *"Autonomy for active perception by robot swarms."* Two more semi-plenaries were presented on Friday morning: Dennice F. Gayme, Associate Professor of Mechanical Engineering and the Carol Croft Linde Faculty Scholar at Johns Hopkins University, gave a talk on *"Towards flow control: from boundary layers to wind farms and back again,"*, and Yongxin Chen, the 2022 Donald P. Eckman Awardee and Assistant Professor in Aerospace Engineering at Georgia Institute of Technology, presented on *"A journey through diffusions."*

The conference also featured an evening public lecture, where the attendees had a unique opportunity to interact with Bob Behnken, Director of Technology Acceleration for Lockheed Martin Space and former NASA astronaut. Dr. Behnken, who has a Ph.D. in nonlinear control, shared his experience and insight on being part of the NASA/SpaceX team that recreated the capability to transport humans to and from low Earth orbit in 2020, as well as his perspective on a range of topics from human-technology relationship to space exploration. The video recordings of these plenary, semi-plenary, and public lectures can be accessed at the IEEE Control Systems Society's Presentation Library: ieeecss.org/presentations.

The 2023 ACC featured a number of student-focused programs, one of which was the Student Best Paper Award competition. Out of 39 nominations, five finalists were selected: Mohammad Alali from Northeastern University, Yongkai Xie from Shanghai Jiao Tong University, Eugen Ernst from Karlsruhe Institute of Technology, Mahmoud Abdelghalil from University of California, Irvine, and Bryan Lee from University of California, Los Angeles. The Student Best Paper Award went to Mahmoud Abdelghalil. Another student activity was a networking event, where students received career advices from professionals working in industry, academia and other sectors. In addition, the inaugural Quanser self-driving car student competition involved four teams from University of South Florida, Arizona State University, Northeastern University, and Purdue University, and drew the attention of many conference attendees. Finally, with the generous support from AACC, IEEE, and ASME, the 2023 ACC was able to provide complimentary conference registration for over 200 students via the student travel support program.

In addition to the main technical program, the conference included various special sessions on industry, education, emerging topics, and funding opportunities. For example, it featured two family-friendly special sessions that involved young children in engaging learning activities. In one session children got to make "toothbrush robots" from a toothbrush head, a pager motor, tape and pipe cleaners, while in the other children watched animated shorts that conveyed different aspects of engineering, followed by appropriately themed games. The 2023 ACC had a number of events focused on diversity, equity, and inclusion (DEI) and outreach, including a Women in Control luncheon (well attended by over 120 people), a panel on DEI, a special session on increasing recruitment and retention of students from underrepresented groups, and a workshop for middle and high school teachers and students.

The conference offered ample opportunities for the attendees to mingle, catch up, and relax during coffee breaks, banquet luncheon, opening and closing receptions, and other occasions. The opening reception was held at the Promenade Plaza of the hotel, by the side of the picturesque San Diego Bay. During the banquet luncheon, Martha Grover, General Chair of the 2024 ACC, invited everyone to attend the next ACC in Toronto (ON, CA). The conference was closed with a dinner cruise on the bay, where people enjoyed beautiful sunset, quality time with friends, delicious food, and an unforgettable night of great music and dancing.

ACC 2023 participants interacting with friends and colleagued old and new in person during one of the coffee breaks

The 2023 ACC had a strong lineup of sponsors and exhibitors, including both long-time ACC supporters and newcomers. The list included seven gold sponsors (Mitsubishi Electric Research Laboratory, Boeing, Mathworks, Quanser, ASML, Halliburton, Lockheed Martin) and seven silver sponsors (dSPACE, General Motors, SIAM, Springer, Collimator, JuliaHub, and Unitree Robotics). We were grateful to these sponsors for both their financial contributions and the many ways they enriched the conference experience, through application-focused special sessions, recruitment activities, and new initiatives such as the Quanser student competition.

Submitted by: Xiaobo Tan, ACC 2023 General Chair

IFAC Council- and Related Meetings 2024

IFAC Officials: Please note that the 2024 meetings will take place in conjunction with the European Control Conference (June 2024 in Stockholm, SE)!

All material proposed for publication in the IFAC Newsletter should be sent to NEWSLETTER@IFAC-CONTROL.ORG.

The latest edition of the IFAC Newsletter is available on the IFAC homepage, as well as an online archive dating back to the early 2000s.

Calendar of IFAC Conferences

Title	2023	Place	Further Information
20th International Conference on Informatics in Control, Automation and Robotics (in cooperation with IFAC) ICINCO 2023	November 13 – 15	Rome Italy	icinco.scitevents.org/ icinco.secretariat@insticc.org
17th International Workshop on Enterprise Integration, Interoperability and Networking EI2N 2022	November 15 – 16	Rome Italy	in4pl.scitevents.org/EI2N.aspx in4pl.secretariat@insticc.org

Title	2024	Place	Further Information
Conference on Australian & New Zealand Control Conference (in cooperation with IFAC) ANZCC 2024	February 01 – 02	Gold Coast Australia	anzcc.org.au/ANZCC2024/ l.vlacic@griffith.edu.au
8th ACDOS Conference on Advances in Control and Optimization of Dynamical Systems ACODS 2024	March 12 – 15	Delhi NCR India	acods-conference.org/ naveen.babu@snu.edu.in
17th IFAC Workshop on Discrete Event Systems WODES 2024	April/May 29 – 01	Rio de Janeiro Brazil	
8th IEEE/IFAC et al. International Conference on Control, Automation and Diagnosis ICCAD 2024	May 15 – 17	Paris France	iccad-conf.com/ contact@iccad-conf.com
3rd IFAC Workshop on Integrated Assessment Modeling for Environmental Systems IAMES 2024	May 29 – 31	Savona Italy	iames.unige.it/ iames2024@dibris.unige.it
22nd IFAC Conference on Technology, Culture and International Stability TECIS 2024	May 29 – 31	Waterford Ireland	conferences.ifac-control.org/tecis2024
12th IFAC Symposium on Fault Detection, Supervision and Safety for Technical Processes SAFEPROCESS 2024	June 04 – 07	Ferrara Italy	safeprocess2024.eu/ silvio.simani@unife.it
7th IFAC Conference on Analysis and Control of Nonlinear Dynamics and Chaos ACNDC 2024	June 05 – 07	London United Kingdom	acndc2024.org/
8th IFAC Workshop on Lagrangian and Hamiltonian Methods for Nonlinear Control LHMNC 2024	June 10 – 12	Besançon France	conferences.ifac-control.org/lhmnc24
4th IFAC Conference on Advances in Proportional-Integral-Derivate Control PID 2024	June 12 – 14	Almería Spain	arm.ual.es/pid2024/
6th IFAC Workshop on Advanced Maintenance Engineering, Services and Technology AMEST 2024	June 12 – 14	Cagliari Italy	sites.unica.it/amest2024/ amest2024@unica.it
18th IFAC Conference on Programmable Devices and Embedded Systems PDES 2024	June 19 – 21	Brno Czech Republic	pdes-conference.eu/ pdes@pdes-conference.eu
EUCA Conference on European Control Conference (in cooperation with IFAC) ECC 2024	June 25 – 28	Stockholm Sweden	ecc24.euca-ecc.org/ ecc24@euca-ecc.org

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Calendar of IFAC Conferences

Title	2024	Place	Further Information
Conference on American Control Conference (in cooperation with IFAC) ACC 2024	July 08 – 12	Toronto Canada	acc2024.a2c2.org/
12th IFAC Symposium on Control of Power and Energy Systems CPES 2024	July 10 – 12	Rabat Morocco	cpes2024.org/ cpes2024@unicaen.fr
12th IFAC Symposium on Advanced Control of Chemical Processes ADCHEM 2024	July 14 – 17	Toronto Canada	adchem2024.org/
20th IFAC Symposium on System Identification SYSID 2024	July 17 – 19	Boston, MA USA	conferences.ifac-control.org/sysid2024/
26th International Symposium on Mathematical Theory of Networks and Systems (in cooperation with IFAC) MTNS 2024	August 19 – 23	Cambridge United Kingdom	mtns2024.eng.cam.ac.uk/
8th IFAC Conference on Nonlinear Model Predictive Control NMPC 2024	August 21 – 24	Kyoto Japan	nmpc2024.org/ secretariat@nmpc2024.org
18th IFAC Symposium on Information Control Problems in Manufacturing INCOM 2024	August 28 – 30	Vienna Austria	incom2024.org/ incom2024@tuwien.ac.at
15th IFAC Conference on Control Applications in Marine Systems, Robotics and Vehicles CAMS 2024	September 03 – 05	Blacksburg (VA) USA	
4th IFAC Conference on Modelling, Identification and Control of Nonlinear Systems MICNON 2024	September 04 – 06	Lyon France	
7th IFAC Workshop on Mining, Mineral and Metal Processing MMM 2024	September 04 – 06	Brisbane Australia	
12th IFAC Symposium on Biological and Medical Systems BMS 2024	September 11 – 13	Villingen-Schwenningen Germany	
4th IFAC Workshop on Internet Based Control Education IBCE 2024	September 18 – 20	Ghent Belgium	
3rd SACAC Control Conference Africa (in cooperation with IFAC) CCA 2024	September 24 – 25	Balaclava Mauritius	
18th IFAC Workshop on Time Delay Systems TDS 2024	September 24 – 27	Udine Italy	tds2024.uniud.it tds2024@uniud.it
Univ. Stuttgart, IST / IFAC Symposium on Systems Theory in Data and Optimization SysDo 2024	Sept./Oct. 30 – 02	Stuttgart Germany	sysdo2024.de
5th IFAC Workshop on Cyber-Physical-Human Systems CPHS 2024	December 12 – 14	Antalya Turkey	cphs2024.org/
Title	**2026**	**Place**	**Further Information**
23rd IFAC World Congress WC 2026	**August 23 – 28**	**Busan Republic of Korea**	**ifac2026.org ifac2026@ifac2026.org**

The IFAC Calendar of Conferences is constantly updated as addditional IFAC Conferences (Workshops, Symposia, and Conferences) are approved. Please check back often for the current status.
The complete version of the IFAC Calendar of Conferences is available online at:
ifac-control.org/events/