

Introducing the 2017-2020 IFAC Major Award Winners

In this issue Newsletter readers have the opportunity to learn more about each of the 2017-2020 IFAC Major Award Winners.

Industrial Achievement Award Francis J. Doyle III

Francis J. Doyle III “Frank” Doyle (US) is the John A. Paulson Dean of the Paulson School of Engineering and Applied Sciences at Harvard University, where he also is the John A. & Elizabeth S. Armstrong Professor. Prior to that he was the Mellichamp Professor at UC Santa Barbara, where he was the Chair of the Department of Chemical Engineering, the Director of the UCSB/MIT/Caltech Institute for Collaborative Biotechnologies, and the Associate Dean for Research in the College of Engineering.



He received a B.S.E. degree from Princeton, C.P.G.S. from Cambridge, and Ph.D. from Caltech, all in Chemical Engineering. He has also held faculty appointments at Purdue University and the University of Delaware, and held visiting positions at DuPont, Weyerhaeuser, and Stuttgart University.

F. Doyle has been recognized as a Fellow of multiple professional organizations including: IEEE, IFAC, AIMBE, AIChE and the AAAS. He was the President for the IEEE Control Systems Society in 2015 and was the Vice President and Chair of the Technical Board for the International Federation of Automatic Control from 2014 to 2017. In 2005, he was awarded the Computing in Chemical Engineering Award from the AIChE for his innovative work in systems biology, and in 2015 received the Control Engineering Practice Award from the American Automatic Control Council for his development of the artificial pancreas. I

In 2016, he was inducted as a Fellow into the National Academy of Medicine for his work on

biomedical control. That same work earned him induction to the National Academy of Inventors in 2020.

F. Doyle’s research interests are in systems biology, network science, modeling and analysis of circadian rhythms, and drug delivery for diabetes. He would like to dedicate this Industrial Achievement Award to his long term collaborators on the AP project: Dr. Eyal Dassau (Harvard), and Dr. Howard Zisser, MD (Verily).

High Impact Paper Award Wilson J. Rugh

Wilson J. Rugh (US) received the B.S. degree in electrical engineering from Penn State University, University Park, PA (US) in 1965, and the M.S. and Ph.D. degrees in electrical engineering from Northwestern University, Evanston, IL (US) in 1967 and 1969, respectively. From 1969 to 2007 he served on the faculty of Johns Hopkins University (US), and currently is the Edward J. Schaefer Professor Emeritus in the Department of Electrical and Computer Engineering. He is the author of numerous research articles and three books - most recently “*Linear System Theory*,” 2nd ed, Prentice Hall, 1996. He has received multiple teaching awards at Johns Hopkins, and, in 2001, the NEEDS Premier Award for Excellence in Engineering Courseware for the development of Web-based, interactive demonstrations of concepts in signals, systems, and control.



W.J. Rugh has served as an associate editor of the journals *IEEE Transactions on Automatic Control*, *Mathematics of Control, Signals, and Systems*, and *Systems & Control Letters*. He is a Fellow of the IEEE and a Distinguished Member and Past-President of the IEEE Control Systems Society.

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The latest information and updates concerning the 2020 IFAC World Congress (which will be held virtually!) can always be found on the IFAC World Congress website at:

<https://www.ifac2020.org/>

More information about the upcoming virtual IFAC World Congress, which will take place in July 2020, will be featured in the next issue of this Newsletter.

In addition IFAC has partnered with IEEE CSS to create a resource for members of the control community to work and collaborate on Coronavirus/Covid-19 issues. To quote IFAC President Frank Allgöwer “The envisioned idea of such an interactive website is to provide a hub for information exchange, to share ideas and to find potential collaboration partners.” Check out the resources available at:

<https://covid.ifac-control.org>

High Impact Paper Award Jeff S. Shamma

Jeff S. Shamma (SA) is a Professor of Electrical Engineering at the King Abdullah University of Science and Technology (KAUST), where he is also the Director of the Center of Excellence for NEOM Research at KAUST and principal investigator of the Robotics, Intelligent Systems & Control laboratory (RISC). Prior to joining KAUST, he was the Julian T. Hightower Chair in Systems & Control in the School of Electrical and Computer Engineering at Georgia Tech (US).



J. Shamma received a Ph.D. in systems science and engineering from MIT (US) in 1988. He is the recipient of an NSF Young Investigator Award, the American Automatic Control Council Donald P. Eckman Award, and the Mohammed Dahleh Distinguished Lecture Award, and he is a Fellow of the Institute of Electrical and Electronics Engineers (IEEE) and of the International Federation of Automatic Control (IFAC), and a past Distinguished Lecturer of the IEEE Control Systems Society. Shamma is currently serving as the Editor-in-Chief for the *IEEE Transactions on Control of Network Systems* and as an associate editor of the *IEEE Transactions on Robotics*.

Giorgio Quazza Medal W. Murray Wonham

W. Murray Wonham (CA) received the BEng degree in Engineering Physics from McGill University in 1956, and the PhD in Control Engineering from the University of Cambridge (UK) in 1961.

From 1961 to 1969 he was associated with several US research groups in control, including the Research Institute of Advanced Studies (RIAS), Brown University's Department of Applied Mathematics, and NASA's Electronics Research Center. Since 1970 he has been a faculty member in Systems Control, with the Department of Electrical and Computer Engineering of the University of Toronto (CA).

W.M. Wonham's research interests have included stochastic control and filtering, geometric multivariable control, and discrete-event systems. He is the author of "*Linear Multivariable*

Control: A Geometric Approach" (Springer-Verlag: 3rd edn 1985), co-author (with C. Ma) of "Nonblocking Supervisory Control of State Tree Structures" (Springer-Verlag: 2005), co-author (with K. Cai) of "Supervisor Localization: A Top-Down Approach to Distributed Control of Discrete-Event Systems" (Springer-Verlag: 2015), and co-author (with K. Cai) of "Supervisory Control of Discrete-Event Systems" (Springer: 2019). He has published over 130 research articles in refereed journals and supervised over 80 MASc and PhD candidates.



In addition to being the winner of IFAC's Giorgio Quazza Medal W.M. Wonham's affiliations and awards include the following:

- Fellow of the Royal Society of Canada (RSC)
- Life Fellow of the Institute of Electrical and Electronics Engineers (IEEE)
- Foreign Member of the (US) National Academy of Engineering (NAE)
- Honorary Professor, Beijing University of Aeronautics and Astronautics (BUAA)
- University Professor Emeritus, University of Toronto
- Advisory Editor, Discrete Event Dynamic Systems
- IEEE Control Systems Science and Engineering Field Award
- Brouwer Medallist, Netherlands Mathematical Society

Nathaniel B. Nichols Medal Masayoshi Tomizuka

Masayoshi Tomizuka (US) holds the Cheryl and John Neerhout, Jr. Distinguished Professorship in Engineering at the University of California-Berkeley (US). He obtained his PhD degree at Massachusetts Institute of Technology (MIT, US) and joined the faculty of the Department of Mechanical Engineering at UC Berkeley in 1974.



M. Tomizuka has worked on optimal and adaptive control, digital control, signal processing and nonlinear control and their applications to mechatronic systems such as robots, vehicles, hard disk drives and precision motion systems. He has published more than 800 papers in ar-

From the IFAC President

Dear Friends and Colleagues,

First of all, I hope with all my heart that this message reaches you, including your family and friends, in good health. With great sadness, however, we have to acknowledge that many people from our systems and control community and their families and friends are already seriously affected by the spread of the SARS-CoV-2 virus and the associated disease COVID-19, up to the worst happening. We can already see the immeasurable extent of this crisis, the worst disaster in decades of worldwide impact that mankind has seen. In these tremendously difficult times, the IFAC team and I wholeheartedly wish all the best for you and your loved ones. Our thoughts are with you all.

In these difficult times, we all, including, of course IFAC, should think creatively how to support the society, the systems and control community, and our direct environment. Maybe you have heard about the IFAC 'Corona Control Community Project (C3P) Website': An initiative with the aim to support and encourage systems and control research activities around COVID-19. The envisioned idea of such an interactive website is to provide a hub for information exchange, to share ideas and to find potential collaboration partners. We initiated this idea as we were impressed by the valuable contributions to fight the pandemic crisis by our community even in these difficult times. More than 100 colleagues from all over the world reacted to our Call for Volunteers and a small group around Francesco Rossi, Stefan Palis and Murat Korkmaz have been setting up this website which can be reached under <https://covid.ifac-control.org>. Our sister organization within IEEE, the Control Systems Society, asked to join the efforts and the whole initiative is now an IFAC-CCS project. Please visit the C3P website, submit your Covid-19/Sars-CoV-2 related work there, announce initiatives and see what others are doing!

However, we are sure that there are many more initiatives and possibilities through which IFAC can support the community and individuals amidst this crisis. If there is anything that you believe that IFAC or I can do to support the community, please let me know!

Many of you and especially the authors of the more than 4300 contributions to the World Congress are probably on tenterhooks about where, when and, above all, how the World Congress takes place. In the past few days it has been decided: The 2020 IFAC World Congress will go fully virtual! And this is not only a drawback: The congress organizers are offering many new and exciting formats that make it worthwhile to attend, and a tremendous amount of CO2 will be saved. Plus, participation in the congress is really cost efficient: Next to not having to bear travel-related expenses, the registration fee is less than 50% of the originally announced fee. Considering all of these factors we hope that even more people will participate in this event. And our promise still stands: This World Congress will be a one of a kind experience!

Let me end this column by once more wishing you all good health for you, your families and friends. And while the world will probably never be the same as before this pandemic, let us try to actively shape this change not by merely reacting to the current challenges but by envisioning a better and more sustainable future.

With the very best wishes from my home office in Stuttgart,

Frank Allgöwer

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Acknowledgement to IFAC would be appreciated.

chival journals and refereed conference proceedings. To date, he has supervised 130 PhD students to completion. Many of his students teach at national and international academic institutions and others work as leaders in various industries.

M. Tomizuka served as Vice Chair of Mechanical Engineering at UC Berkeley from December 1989 to December 1991 and from July 1995 to December 1996. Since 2011, he has served as Associate Dean of the College of Engineering at UC Berkeley.

He was Senior Technical Editor of the *ASME Journal of Dynamic Systems, Measurement and Control* (1988-1983), Associate Editor of *IFAC Journal Automatica* (1993-1999) and Editor-in-Chief of *IEEE/ASME Transactions on Mechatronics* (1997-1999). He served as General Chair of 1995 ACC and President of AACC (1998-1999). He has held various leadership positions in ASME, AACC and IFAC. In IFAC M. Tomizuka chaired the IFAC Awards Committee (2005-2008) and the IFAC Publications Committee (2008-2011). He served as Chair of IFAC Technical Committee on Mechatronic Systems (2005-2011) and Member of the Technical Board of IFAC (2014-2017).

In recognition of his research contributions and leadership M. Tomizuka has received numerous awards, including the Charles Russ Richard Memorial Award of ASME (1997), the Rufus Oldenburger Medal of ASME (2002), the John R. Raggazzini Award of AACC (2006), the Outstanding Service Award of IFAC (2017) and the Richard E. Bellman Control Heritage Award of AACC (2018). He is a Life Fellow of ASME and IEEE and a Fellow of IFAC.

Manfred Thoma Medal Florian Dörfler

Florian Dörfler (CH) is an Associate Professor at the Automatic Control Laboratory at ETH Zürich (CH). He received his Ph.D. degree in Mechanical Engineering from the University of California- Santa Barbara (US) in 2013, and a Diplom degree in Engineering Cybernetics from the University of Stuttgart (DE) in 2008.



From 2013 to 2014 F. Dörfler was an Assistant Professor at the University of California- Los Angeles (US). His primary research interests are centered around control, optimization, and system theory with applications in network systems such as electric power grids, robotic coordination, and social networks.

18th IFAC Symposium on Control, Optimization and Automation in Mining, Mineral and Metal Processing (MMM 2019) 28-30 August 2019 Stellenbosch, ZA

The 18th IFAC Symposium on Control, Optimization and Automation in Mining, Mineral and Metal Processing (MMM 2019) took place from 28-30 August 2019 in Stellenbosch, South Africa. Stellenbosch is a university town in South Africa's Western Cape Province. It is nestled between vineyards and secluded by magnificent mountain ranges. The town's oak-shaded trees, lined with cafes, boutiques and art galleries are bordered by two world heritage nature reserves. Stellenbosch is situated just 30 minutes from Cape Town International Airport. The event venue was STIAS (The Stellenbosch Institute for Advanced Study) which is situated on the historic Mostertsdrift Farm in the heart of Stellenbosch. South Africa is rich in minerals and thus presents an obvious location for a conference on MMM control. South African Council for Automation and Control (SACAC), the local NMO for IFAC, was very proud to be the host.

Papers were invited in the fields of Underground Mining, Surface Operations, Mineral Processing and Beneficiation, Casting, Hot/Cold Rolling, forming, forging, heat treatment, annealing, metal recycling processes and waste treatment. Technologies discussed included Process Modelling, Machine Learning and Computer Vision Systems, Fault Detection, Control Algorithms, the Industrial Internet of Things, Industry 4.0, Big Data and Analytics. The symposium attracted 77 delegates from 24 countries, in addition to the 43 papers presented during eleven sessions, with two regular sessions running in parallel.

Five excellent plenaries were presented by world-renowned experts:

- Dr. Osvaldo Bascur of OsiSoft (US) spoke on "Process Analytics: Transforming Mineral Process Plant Data Into Actionable Insight."
- Prof. Jan Cilliers of Imperial College (UK) spoke on "Flotation Optimisation Using Peak Air Recovery: Past, Present and Future."
- Dr. Kathryn Hadler of Imperial College (UK) presented on "Flotation Flowsheet Design and Optimisation."
- Prof. Chris Aldrich of Curtin University (AU) presented on "Recent Advances in Multivariate Image Analysis in the Mineral Processing Industries."
- Prof. Andreas Kugi of TU Wien (AT) presented "Advanced Process Control in the Steel Industry."

There was a special session on "Women in Mining" during the program. This session was addressed by Lidia Auret, Merinda Westcott, Dineo Masokoane, Margreth Tadie, Megan Becker and Karin Wolff. This mix of academics and industry stalwarts provided insight into the challenges and opportunities for women in our field.

The organisers were very pleased to present two IFAC Foundation Young Author Support awards to two South African students, Michael Maritz of the University of Pretoria and Mohlalakoma Thercia Ngwako of the University of the Witwatersrand



IFAC Foundation Young Author Support Awards were given to two South African students, Michael Maritz of the University of Pretoria and Mohlalakoma Thercia Ngwako of the University of the Witwatersrand

At the closing ceremony the seven authors nominated for the Young Author Paper prize were presented with certificates. They were: Michael Maritz, Edgar M. Pérez-G, Ulrich Knechtelsdorfer, Shereen Abouelazayem, Mohlalakoma Thercia Ngwako, Alex Thivierge and Alexander Zeiler. The winner of the award was Alex Thivierge for his paper "Modeling the Product Net Value of a Grinding-Flotation Circuit" (co-authored by Jocelyn Bouchard, Andre Desbiens and Edgar-M. Pérez-G).

A novel feature of the symposium was the use of an event app. The app replaced the profusion of paper handouts, flash disks and bags that are traditionally handed out at such events. Instead an easy-to-use device that could be used on a mobile provided all of the needed information.

At the TC 6.2 meeting held during the symposium a proposal was discussed to hold the MMM 2021 workshop in Nancy, FR. The decision was made to recommend this proposal.

Submitted by Kevin Brooks, BluESP/Wits University (ZA), Lidia Auret, StoneThree/Stellenbosch University (ZA), NOC co-chairs

Check out IFAC's YouTube channel for new and historical IFAC video materials!
<https://www.ifac-control.org/>

To register as an IFAC affiliate or to update your information please use the IFAC affiliate registration form.
<https://www.ifac-control.org/about/ifac-affiliate-registration>

5th IFAC Conference on Foundations of Systems Biology (FOSBE 2019) 15-18 October 2019 Valencia, ES

The 8th Conference on Foundations of Systems Biology in Engineering brought together life scientists and engineers in València, Spain from 15-18 October 2019. The International Federation of Automatic Control (IFAC) and the CACHE Corporation jointly organize FOSBE on a rotating basis. Conferences and symposia such as FOSBE offer the opportunity to present ideas, methods and results, and to discuss experiences or problems with experts from various areas of specialization.

Computational and engineering methods are at the core of systems biology, synthetic biology, and systems medicine. The integration of quantitative data from a variety of sources, together with model inference and analysis technique, as well as control theory, have proven valuable to decipher biological systems ranging from intracellular mechanisms to human disease. FOSBE aims to stimulate discussion and foster collaboration among scientists, from method to theory-oriented engineers to experimental and theoretical biologists, interested or working on systems and control theory applied to life sciences, with special emphasis on systems and synthetic biology.

FOSBE 2019's varied scientific program accommodated contributions from various domains of application and methodologies spanning from design and modelling to feedback control, grouped in eight areas: Modelling of Complex Biological Systems; Computational Methods for Large-Scale Dynamic Modelling in Systems Medicine; Network Inference and Modelling; Dynamics and Control of Biological Systems; Computational Design of Biomolecular Circuits; Design and Control of Synthetic Biological Systems and Circuits; Bioreactor Modelling, Supervision and Control; and Control and Optimisation of Microalgae. The program included plenary and invited keynote presentations, contributed and invited technical sessions, two pre-conference workshops, and a social program that allowed to enjoy the cultural and natural sites of the city of València and its famous gastronomy. The technical sessions were held in the singular building of the Polytechnic City of Innovation (CPI), located at the campus of the Universitat Politècnica de València (UPV). The CPI is the Science Park of the UPV, housing a large part of its research activity, with a total of over 140,000 m² of scientific infrastructure.

The event brought together more than 115 participants from 23 countries. In order to encourage participation of researchers from the life sciences, both full papers and extended abstracts were accepted. Based on a strict reviewing process, the International Program Committee selected 48 contributions for oral presentation and 18 for poster presentation.

The program was scheduled so that each presentation was allocated 24 minutes, thus giving enough time for in-depth presentation and discussion. Participation of students was encouraged. Thus, over forty participants registered as students and special awards were given to young authors presenting both in oral and poster sessions. Rachel LeCovert from Cornell University (US) received the award for the best young author paper presentation for the work *"Kinetic Modeling of Coagulation and Fibrinolysis"* and Christian Euler from the University of Toronto (CA) was awarded for his poster presentation of the work *"Evaluating the Performance of a Post-Translational Dynamic Metabolic Control System"*.



Mustafa Khammash (CH)
presenting the first plenary talk
at FOSBE 2019

The program consisted of six regular sessions and four invited sessions, two poster sessions, two plenary and four invited keynote talks, two of which were from industry. Each day started and finished with a plenary talk or a keynote given by six outstanding invited speakers:

Prof. Mustafa Khammash, Dept. of Biosystems Science & Engineering, ETH Zurich (CH). *"A single biomolecular controller topology achieves Robust Perfect Adaptation for arbitrary intracellular networks with noisy dynamics."*

Prof. Ines Thiele, School of Medicine, National University of Ireland, Galway (IE). *"Computational modeling of whole-body metabolism permits novel insight into host-microbiome co-metabolism."*

- Dr. Neda Bagheri, Department of Biology and Chemical Engineering, University of Washington (US). *"Modelling for systems medicine."*
- Dr. Stephan Schaller, Founder and CEO, esqLABS GmbH. *"Never lost in translation: How systems pharmacology can bridge from early research to proof-of-concept in Humans."*
- Prof. Alexander Hoffmann, Institute for Quantitative and Computational Biosciences, University of California- Los Angeles (US). *"Understanding Biological Function In the Context of Biological Heterogeneity."*
- Dr. Daniel Georgiev, Founder and CEO, XENO Cell Innovations. *"Small Multicellular Cohorts Are Engineered To Function As a Distributed Detector of Rare Multivariate Events."*

The program was complemented by two interesting pre-conference workshops on standardization for synthetic biology and analysis and redesign of metabolic networks that took place from 15:00- 18:30 pm on Tuesday, October 15. Over 24 participants attended the workshops.

The social program consisted of an opening reception on Tuesday evening and a conference banquet on Thursday evening. This one was preceded by a boat tour on Lake Albufera, one of the natural treasures of València. The event participants were able to enjoy nature and the sunset from the boat and were pleasantly surprised by the arrival at the restaurant's pier.

As organizers we want to express our sincere thanks to all who helped to make FOSBE 2019 a great success, with successful interactions and showing a wide range of engineering principles and methods applied to systems and synthetic biology. The event would have not been possible without tremendous contributions of the National Organization Committee and International Program Committee members, the support and help of all volunteer students and assistants, the IPC area chairs who organized the paper reviews and all 100 reviewers who assisted them with over 150 reviews. The NOC was led by Prof. Jesús Picó, who was supported by the co-chairs and the local organisers, with special mention to Drs. A. Vignoni, J.L. Navarro, Y. Boada and E. Picó-Marco. Specific thanks also go to the IPC led by Prof. Steffen Waldherr and co-chaired by Dr. Julio R. Banga, as well as the area chairs: Dr. Rudiyanto Gunawan, Prof. Juergen Hahn, Prof. Jan Hasenauer and Dr. Diego A. Oyarzún. We would also like to acknowledge the support from the event sponsors.

Submitted by: Steffen Waldherr (IPC Chair, BE) and Jesús Picó (NOC Chair, ES)

16th IFAC Conference on Programmable Devices and Embedded Systems (PDES 2019)

29-31 October 2019
High Tatras, SK

The 16th IFAC Conference on Programmable Devices and Embedded Systems (PDES 2019), was organized as an international forum aiming to present the latest research results and experiences in the area of the design and application of programmable devices and systems. It has enabled the possibility to discuss the status and future trends of this particular branch of applied electronics in control and information technology.

The most recent event was carried out as a continuation of previous PDES conferences. Based on the experience of their organizers and participants, the structure of the conference program copied in its basic features the well-established schemes from previous years. It was jointly organized by the Slovak Society for Cybernetics and Informatics (the Slovak IFAC National Member Organization), Slovak University of Technology in Bratislava (SK),

and the Slovak e-academy, n.o., sponsored by the IFAC Technical Committee 3.1 (Computers for Control), and co-sponsored by TC 4.2 (Mechatronics) and TC 9.4 (Control Education). The International Program Committee was chaired by Alberto Leva (IT) and co-chaired by Zdenek Slanina (CZ) and Mikulas Huba (SK). It included 67 members from 19 countries. Most represented within the IPC was Slovakia with 24 active members, the Czech Republic with ten, Poland with eight, and Portugal and Italy with three members each. In response to the call for papers 129 papers were received, which were put through a rigorous review process by the IPC. 92 of 93 accepted papers were presented at the conference. The participants represented nine countries from two continents.

The conference program focused on a broad range of techniques, approaches and problems relevant for the latest research in the area of the design and application of programmable devices and systems and discussed the status and future trends of this particular branch of applied electronics in control and information technology. It included plenary lectures, technical sessions, poster and interactive sessions and software presentations. Academic researchers and lecturers in control, R&D specialists in instrumentation, control and industrial automation, and practicing control engineers from a variety of industrial sectors found it especially rewarding.



Participants gathering together
at PDES 2019

The first plenary lecture tackled *“Embedded Systems for Advanced Feedback Control in Traffic Management”* and was presented by Jack Haddad (Technion - Israel Institute of Technology, IL). An application to traffic control (platooning) has appeared also in the plenary lecture *“Variable Structure Systems - From Basics to Advanced Topics Including Applications”* by M. Horn and M. Reichhartinger, Institute of Automation and Control, Graz University of Technology (AT). An overview of the newest trends was presented in the lecture *“Recent Advances in Explicit Model Predictive Control on Embedded Hardware”* given by M. Kvasnica, Institute of Information Engineering, Automation, and Mathematics, Faculty of Chemical and Food Technology, Slovak University of Technology in Bratislava (SK). Research carried out in eastern Slovakia was introduced in the plenary lecture *“Enhanced Approaches to Automated Monitoring Environmental Quality in Non-Isolated Thermodynamic System”* offered

by O. Kainz (co-authored by F. Jakab), University Science Park TECHNICOM, Technical University of Kosice (SK).

Selected by the conference jury (A. Cardoso, A. Leva, T. Restivo and K. Zakova), two prizes were awarded. The Young Author Award went to the paper *“Modeling of the Air-Cooled PEM Fuel Cell”*, (presented by K. Ondrejicka and co-authored by V. Ferencey and M. Stromko), and a Honorable Mention prize to the paper *“Battery Management System Hardware Design For a Student Electric Racing Car”* (presented by M. Bata and co-authored by D. Mikle).

The Organizing Committee representatives decided to hold the forthcoming edition of PDES in May 2021 in Sarajevo, Bosnia-Herzegovina. It is a great pleasure for us to express gratitude and appreciation to IFAC, especially to the sponsoring and co-sponsoring Technical Committees and to the IFAC Secretariat for their support and assistance during the preparation of the event. Our thanks also go to all members of the International Program Committee (IPC) and the numerous anonymous reviewers, as well as to colleagues from the National Organizing Committee (NOC) for the job well-done.

Special thanks are due to all paper authors and plenary speakers for coming to the High Tatras to contribute to this event. Their experience, expertise and readiness to share knowledge and ideas have considerably contributed to its success and to further development of this control area.

Submitted by Mikulas Huba, STU Bratislava (SK)

3rd IFAC Workshop on Linear Parameter Varying Systems (LPVS 2019) 4-6 November 2019 Eindhoven, NL

The 3rd LPVS Workshop was held from 4-6 November 2019 at the Eindhoven University of Technology in The Netherlands. This international workshop series, which is supported by IFAC and organised by the IFAC Technical Committee 2.2 (Linear Control Systems), has the objective to contribute to future research and development on modelling, analysis, observation and control of Linear Parameter-Varying (LPV) systems and their industrial applications.

The LPV framework was born from the intention of applying the powerful results of linear control theory to nonlinear and time-varying systems. Through the evolution of early gain scheduling methods to today’s powerful approaches based on embedding of nonlinear/time-varying behaviors into solution sets of LPV representations, the principles of the framework shifted towards providing modelling and control of such systems via proxy models that are linear and allow the use of well under-

stood performance shaping, stability and identification methods for controlling and estimation of nonlinear-time varying systems via convex tools. Due to the many successful applications and empirically verified benefits of this paradigm, LPV systems and control had been an active topic of research in the control systems community. Motivated by this fact, the 1st IFAC LPVS conference was organised in Grenoble, France (2015). The 2nd edition of the workshop was organised jointly with the 9th IFAC Symposium on Robust Control Design (ROCOND’18) in Brazil (2018). At both occasions, the community showed high interest regarding a scientific meeting on the LPV framework with many exciting presentations on novel results and inspiring plenary talks.

The 3rd edition of the workshop was a successful continuation of the event series. After the review process, 32 papers were accepted for LPVS 2019. With 55 international attendees from around the globe and from various scientific and engineering fields, LPVS’19 brought together researchers interested in the field of linear parameter-varying systems and their applications in engineering problems, as well as experts interested in discussing new trends and ideas and successfully fostered interaction among relevant fields of interest.

The technical program of this three-day workshop was rich with five plenary lectures and with one invited session and five regular technical sessions where the papers were presented. The plenaries were inspiring and insightful covering all important aspects of the LPV framework: Carsten W. Scherer (University of Stuttgart, DE) gave a tutorial presentation on the theoretical pillars of LPV control; Samir Bennani (European Space Agency, NL) talked about how robust and LPV control impacted the exploration of space; Herbert Werner’s (Hamburg University of Technology, DE) talk focused on bringing state-of-the-art LPV concepts of model predictive control to applications showing remarkable results; John Lataire (Vrije Universiteit Brussel, BE) gave an unforgettable presentation on frequency domain interpretation and identification of time-varying systems, while Alfred C. Schouten (Delft University of Technology, NL) showed how data-driven LPV methods revolutionised modelling of human motion with its impact on robotic applications. The slides are available at <https://lpvs2019.tue.nl/plenary-speakers/>.

The technical papers were presented in thematically organised sessions: 1 invited session on Emerging Approaches for Nonlinear Parameter Varying Systems, 3 sessions on methodological aspects (LPV System Identification, LPV Control, Adaptive and Predictive Control), and two sessions on application-oriented aspects (Automotive Systems, Aerospace and Mechatronic Systems). The single-track nature of the workshop allowed focused discussions of technical topics and emerging ideas, which, together with the relaxed and friendly atmosphere, created a joyful experience for the attendees.

Next to the exciting discussions on current and future developments, the workshop was

also the proper occasion to remember a prominent member of the LPV community, Andrew (Andy) Packard, who passed away on 30 September 2019. During the plenary talks Carsten W. Scherer and Samir Bennani highlighted how Andy's foundational results contributed to the development of the robust and the linear parameter-varying control frameworks.



LPVS 2019 organizers: Left to right M. Schoukens (NOC), V. Laurain (IPC Vice-Chair), G. Mercère (Editor), Roland Tóth (General Chair), M. Gilson (IPC Chair), T. Oomen (NOC)

Due to the many high impact talks and papers presented at the conference, including by junior researchers, it was a difficult task for the selection committee (P. Lopez Dos Santos, M. Petreczky, and C.W. Scherer) to select the winner of the IFAC Young Author Award for LPVS 2019. Finally, H.M. Calderón (Hamburg University of Technology, DE) received the award for his paper and excellent presentation on “*qLPV Predictive Control – A Benchmark Study on State Space vs Input-Output Approach.*”

The National Organizing Committee proposed an outstanding social program with an event almost every evening. The welcome reception took place on Sunday in the cozy lounge of the main conference hotel. The banquet dinner was held on Tuesday evening at the DAF Museum, where the attendees could enjoy not only the Dutch cuisine, but also the inventiveness that has been the hallmark of Dutch DAF vehicles from 1928 through the present day. To close LPVS 2019, a farewell reception was given at the local restaurant *De Zwarte Doos*.

We would like to thank the authors for presenting their most recent work at LPVS 2019 and each of the high-profile invited speakers for their inspiring plenary talks. Special thanks go to all of the supporters and sponsors, to the members of the organising committee for all the hard work required for the organisation and the logistics. Finally, our biggest thanks go to the members of the International Program Committee and the reviewers, whose roles were fundamental in ensuring the high quality of the accepted contributions, as well as to the attendees at IFAC LPVS 2019 who made it a memorable event.

Submitted by Roland Tóth (General Chair, LPVS 2019, Eindhoven University of Technology, NL)

IFAC Spring Officers' Meetings Adapting to the Coronavirus Pandemic

The IFAC spring officers' meeting had been scheduled to take place in Austria from 1-3 April 2020. This annual in-person meeting has been an IFAC tradition ever since the early days of the IFAC Secretariat being located in Austria (the IFAC Secretariat was originally based in Germany, then Finland, and moved to its current home in Laxenburg, Austria (just south of Vienna) at the invitation of the Austrian government in the late 1970s) and the 1978-1981 IFAC presidency of Yoshikazu Sawaragi (JP).

This annual meeting has always been a time for the officers to gather together and discuss matters of importance to IFAC and the control community in-person, as well as strengthen and renew the times with Austria, the host country of the permanent IFAC Secretariat. IFAC receives an association support subsidy from the Austrian government, which is noted in the imprint of each issue of this Newsletter. The officers' meeting began during times when international communications were slow and expensive compared to what is available today, but the tradition continues as often it is more effective to conduct IFAC business as a group together in one place and on one time zone. In addition it has been a tradition that in the year of the World Congress and change in triennium that the incoming officers are invited to participate in the meetings and discussions.

Due to the Coronavirus/Covid-19 situation it was not possible for the officers to travel to Austria and gather together for an in-person/face-to-face meeting. Additionally the annual technical lecture, which has always been a yearly opportunity for the Austrian community to benefit from the knowledge of world-renowned control experts, and President's Dinner, which has always been a chance for the IFAC officers to gather with the Austrian community as well as representatives of Austrian organizations and government ministries, had to be cancelled as well. It is hoped that the pandemic situation rapidly improves and that these these activities can be held in their traditional form in 2021.

Instead the officers' meetings are being held as a series of web-based/online meetings. The first was held on Friday, 2 April 2020, and the second was held on Tuesday, 21 April 2020, with the plan that there will be further meetings in the coming weeks and months. Topics on the agenda for these meetings include: Executive and Technical Board reports, Election Committee matters for the upcoming 2020-2023 IFAC triennium, the IFAC officer structure, issues concerning IFAC events, World Congress Berlin information, the IFAC General Assembly, IFAC Covid-19-related activities, and an IFAC event app.

The IFAC Story E-book (updated version) is available!
ISBN 978-3-902823-73-1

<https://www.ifac-control.org/about/the-ifac-story>

Readers of this Newsletter are kindly requested to keep their contact details updated with the IFAC Secretariat. Please send an email to secretariat@ifac-control.org with your updated details or use the affiliate registration form:

<https://www.ifac-control.org/about/ifac-affiliate-registration>

IFAC is on social media!
Direct links to IFAC's presence on Facebook, LinkedIn, and Twitter can be found on the IFAC website.

In addition check out the IFAC Blog at
<http://blog.ifac-control.org/>

The IFAC Journals

Automatica
<http://www.journals.elsevier.com/automatica>

Control Engineering Practice
<http://www.journals.elsevier.com/control-engineering-practice>

Engineering Applications of Artificial Intelligence
<http://www.journals.elsevier.com/engineering-applications-of-artificial-intelligence>

Journal of Process Control
<http://www.journals.elsevier.com/journal-of-process-control>

Annual Reviews in Control
<http://www.journals.elsevier.com/annual-reviews-in-control>

Journal on Mechatronics
<http://www.journals.elsevier.com/mechatronics>

Nonlinear Analysis: Hybrid Systems
<http://www.journals.elsevier.com/nonlinear-analysis-hybrid-systems>

IFAC Journal of Systems & Control
<http://www.journals.elsevier.com/ifac-journal-of-systems-and-control>

IFAC-PapersOnLine

<http://www.journals.elsevier.com/ifac-papersonline>

Calendar of IFAC Events

Title	2020	Place	Further Information
Conference on European Control Conference (in cooperation with IFAC) ECC 2020	May 12 – 15	Saint Petersburg Russia	http://ecc20.eu/ info@ecc20.eu
15 th IFAC Workshop on Discrete Event Systems WODES 2020	TBD	Rio de Janeiro Brazil	https://wodes2020.eventos.ufrj.br/ e-mail: not yet available
KIEE, ACA, IFAC et al. International Conference on Electric-Vehicle, Smart-Grid and Information Technology ICESI 2020	June 17 – 19	Jeju Island Republic of Korea	http://icesi2020.org/ yilee@seoultech.ac.kr
14 th International Conference on Automatic Control and Soft Computing CONTROLO 2020	July 01 – 03	Bragança, Portugal	https://controlo2020.ipb.pt/ controlo2020@ipb.pt
Conference on American Control Conference (in cooperation with IFAC) ACC 2020	July 01 – 03	Denver, CO USA	http://acc2020.a2c2.org/ e-mail: not yet available
21 st IFAC World Congress WC 2020	July 12 – 17	Berlin Germany	http://www.ifac2020.org/ info@ifac2020.org
24 th International Symposium on Mathematical Theory of Networks and Systems (in cooperation with IFAC) MTNS 2020	August 24 – 28	Cambridge United Kingdom	https://mtns2020.eng.cam.ac.uk/ erd30@eng.cam.ac.uk
22 nd European Conference on Power Electronics and Applications EPE'20 ECCE Europe	September 07 – 11	Lyon France	https://epe-ecce-conferences.com/epe2020/ epe2020@supergrid-institute.com
4 th IFAC Workshop on Advanced Maintenance Engineering, Services and Technologies AMEST 2020	September 10 – 11	Cambridge United Kingdom	https://www.amest2020.eng.cam.ac.uk/ ifm-events@eng.cam.ac.uk
12 th INSTICC, IFAC et al. Internat. Joint Conference on Computational Intelligence IJCCI 2020	November 02 – 04	Budapest Hungary	http://www.ijcci.org/ ijcci.secretariat@insticc.org
ANZCC, IFAC, et al. Conference on Australian and New Zealand Control Conference (in cooperation with IFAC) ANZCC 2020	November 26 – 27	Gold Coast Australia	https://anzcc.org.au/ANZCC2020/ l.vlacic@griffith.edu.au
3 rd IFAC Workshop on Cyber-Physical and Human Systems CPHS 2020	December 03 – 05	Shanghai China	http://www.cphs2020.org/ e-mail: not yet available
Title	2021	Place	Further Information
Vienna International Conference on Mathematical Modelling MATHMOD 2021	February 17 – 19	Vienna Austria	http://not yet available e-mail: not yet available
ACA, ICROS, SICE, IFAC et al. Conference on Asian Control Conference (in cooperation with IFAC) ASCC 2021	May 05 – 08	Jeju Island Republic of Korea	http://ascc2021.org/ e-mail: not yet available
17 th IFAC Conference on Programmable Devices and Embedded Systems PDES 2021	May 18 – 20	Sarajevo Bosnia and Herzegovina	Sarajevo Bosnia and Herzegovina
Conference on American Control Conference (in cooperation with IFAC) ACC 2021	May 26 – 28	New Orleans, LA USA	http://not yet available e-mail: not yet available
17 th IFAC Symposium on Information Control Problems in Manufacturing INCOM 2021	June 07 – 09	Budapest Hungary	http://not yet available e-mail: not yet available

Calendar of IFAC Events

11 th IFAC Symposium on Fault Detection, Supervision and Safety for Technical Processes SAFEPROCESS 2021	June 08 – 11	Pafos Cyprus	http://not yet available e-mail: not yet available
11 th IFAC Symposium on Control of Power and Energy Systems CPES 2021	June 22 – 24	Moscow Russian Federation	http://not yet available e-mail: not yet available
16 th IFAC Symposium on Control in Transportation Systems CTS 2021	June 08 – 10	Lille France	http://not yet available e-mail: not yet available
11 th IFAC Symposium on Advanced Control of Chemical Processes ADCHEM 2021	June 13 – 16	Venice Italy	https://www.adchem2021.org/ noc@adchem2021.org
Conference on European Control Conference (in cooperation with IFAC) ECC 2021	June/July 29 – 02	Rotterdam Netherlands	https://ecc21.euca-ecc.org/ e-mail: not yet available
7 th IFAC Conference on Analysis and Design of Hybrid Systems ADHS 2021	July 07 – 09	Brussels Belgium	http://not yet available e-mail: not yet available
7 th IFAC Conference on Nonlinear Model Predictive Control NMPC 2021	July 11 – 14	Bratislava Slovakia	http://not yet available e-mail: not yet available
19 th IFAC Symposium on System Identification SYSID 2021	July 14 – 16	Padova Italy	http://not yet available e-mail: not yet available
6 th IFAC Conference on Engine and Powertrain Control, Simulation and Modeling E-COSM 2021	August 23 – 25	Tokyo Japan	http://not yet available e-mail: not yet available
3 rd IFAC Conference on Modelling, Identification and Control of Nonlinear Systems MICNON 2021	August 25 – 27	Tokyo Japan	http://not yet available e-mail: not yet available
13 th IFAC Symposium on Robot Control SYROCO 2021	August/Sept. 30 – 02	Matsumoto Japan	http://not yet available e-mail: not yet available
6 th IFAC Workshop on Mining, Mineral and Metal Processing MMM 2021	September 01 – 03	Nancy France	http://not yet available e-mail: not yet available
20 th IFAC Conference on Technology, Culture and International Stability TECIS 2021	September 14 – 17	Moscow Russian Federation	http://not yet available e-mail: not yet available
11 th IFAC Symposium on Biological and Medical Systems BMS 2021	September 19 – 22	Ghent Belgium	https://bms2021.ugent.be/ bms2021@ugent.be
10 th IFAC Symposium on Robust Control Design ROCOND 2021	September 21 – 24	Kyoto Japan	http://rocond21.ee.t.kyoto-u.ac.jp/index.html e-mail: not yet available

The IFAC Calendar of Events is constantly updated as additional technical events (Workshops, Symposia, and Conferences) are approved. The online complete version of the IFAC Calendar of Events is available at:

<https://www.ifac-control.org/events/>


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