NEWSLETTER

IFAC
INTERNATIONAL FEDERATION OF AUTOMATIC CONTROL

Introducing the 2017-2020 IFAC Fellows
last in a series

No.1

February 2020

Dragan Nesic

Dragan Nesic is a Professor at the Department of Electrical and Electronic Engineering (DEEE) at The University of Melbourne, Australia. He currently serves as Associate Dean Research at the Melbourne School of Engineering. He received his Bachelors of Engineering (BE) degree in Mechanical Engineering from the University of Belgrade, Serbia (formerly Yugoslavia) in 1990, and his Ph.D. degree from Systems Engineering, RSISE, Australian National University, Canberra, Australia in 1997.

His research interests include networked control systems, reset systems, extremum seeking control, hybrid control systems, event-triggered control, security and privacy in cyber-physical systems, and so on. He is a Fellow of the Institute of Electrical and Electronic Engineers (IEEE) and a Fellow of the International Federation for Automatic Control (IFAC).

D. Nesic was awarded Doctorate Honoris Causa by the University of Lorraine (FR) in 2019. He was also awarded a Humboldt Research Fellowship (2003) by the Alexander von Humboldt Foundation, an Australian Professorial Fellowship (2004-2009) and Future Fellowship (2010-2014) by the Australian Research Council (ARC). He served as a Distinguished Lecturer of the Control Systems Society (CSS), IEEE and as a Member of the Board of Governors, CSS, IEEE.

He was a co-recipient of the George S. Axelby Outstanding Paper Award (2018) for the Best Paper in IEEE Transactions on Automatic Control. He also served as an Associate Editor for the journals *Automatica*, *IEEE Transactions on Automatic Control*, *Systems and Control Letters,* and *European Journal of Control*. He also served as a General Co-Chair of IEEE Conference on Decision and Control (CDC) 2017 in Melbourne.

Currently, he serves as an Associate Editor for the IEEE Transactions on Control of Network Systems (CONES).

Greg Stewart

Greg Stewart's interests are in developing and deploying advanced control and analytic technologies to solve industrial problems. An industrial researcher with an adjunct professor appointment, he has led all phases of the research, development and industrial deployment of technology for several areas including robust paper machine control, microalgae cultivation, large scale data centers, carbon fiber brake manufacture, semiconductor fabrication, and an intrapreneurial startup initiative for automotive powertrain control which was stood up as new business (Honeywell Automotive Software) who are providing production deployment to commercial engine makers. Recent projects include reinforcement learning for maintenance-free control of industrial chemical processes, and pragmatic techniques for high performing and robustly stable control of real-world nonlinear systems. He is currently working with a startup company developing analytics and automation for agricultural applications including crop yield optimization and the detection of pests and disease for early proactive action.

G. Stewart received a B.Sc. in Physics and a M.Sc. in Applied Mathematics from Dalhousie University (CA), and a PhD from University of British Columbia (CA) in Control Engineering. He is a Fellow of the IEEE, received the IFAC Industrial Achievement Award in 2017, has twice received the IEEE Control Systems Technology Award (2002 and 2012), as well as the IEEE Transactions on Control Systems Technology Outstanding Paper Award in 2004.

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

He holds 33 patents, has published more than 50 technical publications, and his designs reside on over 300 industrial installations. G. Stewart enjoys family, mountain biking, cooking, and is a certified judge for competitive barbecue.

Jie Chen

Jie Chen is currently a professor of control science and engineering in Tongji University (CN), and the president of the university. He is also an academician of the Chinese Academy of Engineering. He received the B.S., M.S., and Ph.D. degrees in control theory and control engineering from the Beijing Institute of Technology (CN) in 1986, 1996, and 2001 respectively. From 1989 to 1990, he was a visiting scholar in the California State University- Northridge (US). From 1996 to 1997, he was a research fellow in the school of E & E at the University of Birmingham (UK).

In addition to being an IFAC Fellow, J. Chen is an IEEE Fellow of the IEEE Systems, Man and Cybernetics Society. He is also a fellow of the Chinese Association of Automation and the Chinese Association for Artificial Intelligence. He is the head of the State Key Laboratory of Intelligent Control and Decision of Complex Systems and a leader of the Innovative Research Groups of the National Natural Science Foundation of China. He has served as the Vice President of the Chinese Association of Automation from 2013.

J. Chen is a recipient of the Science and Technology Awards of the Ho Leung Ho Lee Foundation (2018), the Chang Jiang Scholars, Ministry of Education CN (2011) and the National Science Fund for Distinguished Young Scholars (2009). He received the National Natural Science Award of China (Class II) in 2014, and the National Science and Technology Progress Award of China (Class II) twice in 2009 and 2011, respectively.

He serves as the managing editor of the *Journal of Systems Science and Complexity* since 2014, a deputy editor-in-chief of the *Book Series on Systems and Control* since 2013, and a subject editor of the Wiley journal *Advanced Control for Applications: Engineering and Industrial Systems* (since 2018). He also serves as an associate editor for many international journals such as *IEEE Transactions on Cybernetics* (since 2016) and *International Journal of Robust and Nonlinear Control* (since 2017). He was awarded the Best Associate Editor for *IEEE Transactions on Cybernetics* by the IEEE Systems, Man and Cybernetics Society in 2018.

J. Chen's main research interests include multi-objective optimization and decision in complex systems, multi-agent systems, intelligent control, nonlinear control, and optimization methods. He has co-authored four books and more than 100 research papers, and more than 50 patents.

Lorenz T. (Larry) Biegler

Lorenz T. (Larry) Biegler is the Covestro University Professor of Chemical Engineering at Carnegie Mellon University (Pittsburgh, PA, US). His research interests lie in computer aided process engineering (CAPE) and include flowsheet optimization, optimization of systems of differential and algebraic equations, reactor network synthesis, nonlinear process control and real-time optimization. Contributions in these areas include analysis and development of nonlinear programming algorithms, optimization software design and application to real-world chemical processes and energy systems.

L. Biegler is an author on over 450 archival publications and two textbooks, has edited eleven technical books and given hundreds of invited presentations at national and international conferences. His awards include the Lewis Award, Walker Award and Computers in Chemical Engineering Award, given by AIChE; the Lectureship Award, Curtis McGraw Research Award and CACHE Computing Award, given by ASEE; the INFORMS Computing Prize, and an honorary doctorate in engineering sciences from the Technical University of Berlin (DE).

In addition to being an IFAC Fellow he is a Fellow of AIChE and SIAM, and a member of the National Academy of Engineering. In 2019 L. Biegler was a recipient of the Chinese Government Friendship Award (information about this honor was published in the Dec. 2019 issue of this Newsletter).

Magnus Egerstedt

Magnus Egerstedt is a Professor and School Chair in the School of Electrical and Computer Engineering at the Georgia Institute of Technology in Atlanta, GA (US), where he also holds secondary faculty appointments in Mechanical Engineering, Aerospace Engineering, and Interactive Computing. Prior to becoming School Chair, he served as the director for Georgia Tech's Institute for Robotics and Intelligent Machines.

A native of Sweden, M. Egerstedt was born, raised, and educated in Stockholm. He received a B.A. degree in Philosophy from Stockholm University, and M.S. and Ph.D. degrees in

not the whole newsletter by introducing these outstanding researchers and their exciting and stimulating topics – but today I am obviously already overreaching the space limitation of this "column".

So whether the plenary speakers convinced you that the World Congress in Berlin is a must, or you just had this exciting idea that you want to discuss, or you're from industry waiting for the right format for exchanging ideas, or you're the strategist thinking about a journal article,… late breaking results is just the right format for you and one more reason (out of the thousand reasons which would really blow this column) to start planning your trip to Berlin now!

I hope you had a good start into the new year 2020, and I send you the very best wishes from Stuttgart

Frank Allgöwer

PS: In the next column (which will already be my second to last president's column – can you believe how time flies?), I will announce our extraordinary semi-plenary speakers!

Engineering Physics and Applied Mathematics, respectively, from the KTH Royal Institute of Technology (Stockholm, SE). He subsequently was a postdoctoral scholar at Harvard University (Cambridge, MA, US).

M. Egerstedt conducts research in the areas of control theory and robotics, with a particular focus on control and coordination of complex networks, such as multi-robot systems, mobile sensor networks, and cyber-physical systems. Part of his research mission has been to democratize access to controls and robotics resources, including the development of online courses and remotely accessible robotics hardware, such as the Robotarium, which is a remotely accessible swarm robotics lab that has been used by thousands of researchers across the globe.

M. Egerstedt currently serves as the Vice President for Member Activities in the IEEE Control Systems Society. His past roles in the CSS include Vice President for Financial Activities, and elected member of the CSS Board of Governors. In addition to being an IFAC Fellow M. Egerstedt is a Fellow of the IEEE and a foreign member of the Royal Swedish Academy of Engineering Sciences. He has received a number of teaching and research awards for his work, including the John. R. Ragazzini Award from the American Automatic Control Council (the US IFAC National Member Organization), the O. Hugo Schuck Best Paper Award from the American Control Conference, and the Alumni of the Year Award from the Royal Institute of Technology.

Bo Wahlberg

Bo Wahlberg received his M.Sc. degree in Electrical Engineering in 1983 and his Ph.D. degree in 1987 from Linköping University, Sweden, under the supervision of Lennart Ljung. He was a post-doc with Graham Goodwin at the University of Newcastle, Australia, in 1988 and a post-doc with John Moore at the Australian National University, Australia, in 1989. In December 1991, he became Professor of the Chair of Automatic Control at KTH Royal Institute of Technology, Stockholm, Sweden. B. Wahlberg was a pro-rector of KTH Royal Institute of Technology from 1999 to 2001.

He was a visiting professor and Senior Fulbright Scholar at Stanford University, USA, the academics years of 1997/1998 and 2009 /2010. Since 2007, he is a Fellow of the IEEE for his contributions to system identification using orthonormal basis functions.

B. Wahlberg is a co-founder of Centre of Autonomous Systems and the Linnaeus Center ACCESS on networked systems at KTH. He is a co-founder and a member of the program management of the ongoing Wallenberg AI, Autonomous Systems and Software Program (WASP) with a total budget of EUR 350 million. He was an associate editor of the IFAC Journal *Automatica* from 1990 -1996. He was the first chair of IFAC's Technical Committee on Modelling, Identification and Signal Processing from 1993 to 1999. He co-organized the IFAC Symposia on System Identification (SYSID) in 2003 and in 2018. Dr. Wahlberg is since 2003 the co-ordinator for the European Network on System Identification (ERNSI). He was chair of the IEEE Fellow Evaluation Committee of the Control Systems Society 2014-2015 and a member of the IEEE Fellow Committee 2016-2018. He is since 2018 the Chair of the Swedish IFAC National Member Organization.

B. Wahlberg has received several awards, including the IEEE Transactions on Automation Science and Engineering Best New Application Paper Award in 2016. He was a plenary speaker at the 35th Chinese Control Conference in 2016.

His research interests include system identification, modeling and control of industrial processes, machine learning and statistical signal processing with applications in automated transportation systems. Dr. Wahlberg is the author of over 200 publications in these fields and has been supervisor of more than 120 master's students and 20 PhD students.

Roy Smith

Roy Smith's research interests are broadly focused on the modeling, identification, and control of uncertain systems. Particular control application domains of interest include: chemical processes; flexible structure vibration; spacecraft and vehicle formations; semiconductor fabrication control; automotive engines; Mars aeromaneuvering entry design; linear accelerators; energy management in buildings; and thermoacoustic machines.

R. Smith received a Bachelor and Master of Engineering (1979 and 1980) from the University of Canterbury in his native New Zealand. Before returning to academia for a PhD he worked as a power systems engineer, embedded control designer in the automotive industry, and instrumentation and control specialist on linear accelerators.

R. Smith obtained his PhD from the California Institute of Technology (US) in 1990 and joined the Electrical and Computer Engineering faculty at the University of California at Santa Barbara (US) later that year. In 2011 he moved to the Swiss Federal Institute of Technology (ETH) in Zürich as a professor of Electrical Engineering. He has been a long-time consultant to the NASA Jet Propulsion Laboratory. In additional he has held visiting faculty positions at UC Berkeley; the Indian Institute of Science; Cambridge University, England, and the Royal Institute of Technology, Stockholm. He is also a Fellow of the IEEE, an Associate Fellow of the AIAA, and a member of SIAM, AACZ, and NZAC.

Editor's Note: This concludes the series introducing the 2017-2020 IFAC Fellows to Newsletter readers. Pins and certificates will be presented to the new Fellows in the context of IFAC 2020 in Berlin, DE. The full list of 2017-2020 IFAC Fellows with their citations, as well as the names of previous Fellows, can be found at: https://www.ifac-control.org/awards/ifac-fellows

IFAC Blog is available at:

http://blog.ifac-control.org/

Check out the latest blog posts on relevent and exciting control topics!

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

IFAC Major Awards 2017-2020

All Major Awards had multiple nominations, many thanks to the work of the Major Awards Search Committee, chaired by Anuradha Annaswamy (US). The Awards Committee is chaired by Karl Henrik Johansson (SE).

Quazza Medal Selection Committee Chair: Alberto Isidori (IT)

Nichols Medal Selection Committee Chair: Pramod Khargonekar (US)

Manfred Thoma Medal Selection Committee Chair: Lei Guo (CN)

Industrial Achievement Award Selection Committee Chair: Alf Isaksson (SE)

High Impact Paper Award Selection Committee Chair: Jim Rawlings (US)

2017-2020 IFAC Major Award Winners:
Giorgio Quazza Medal

W. Murray Wonham (CA)
"For fundamental and visionary contributions to control theory."

Nathaniel B. Nichols Medal

Masayoshi Tomizuka (US)
"For pioneering contributions to the control of mechatronic systems."

Manfred Thoma Medal

Florian Dörfler (CH)
"For contributions to the analysis of nonlinear models of power grids and network systems."

Industrial Achievement Award

Francis J. Doyle III (US)
"For leading an outstanding team effort over many years with a combination of control experts, medical researchers and industry, resulting in numerous granted patents and a large number of patients in clinical trials that has now led to the commercialization of the Artificial Pancreas for treatment of type 1 diabetes."

High Impact Paper Award

Wilson J. Rugh (US) and Jeff S. Shamma (SA)
"Research on gain scheduling", Automatica, Vol. 36, pp. 1401-1425, 2000.

The presentation of the IFAC Major Awards will take place in the framework of the Opening Ceremony at the Berlin IFAC World Congress on Sunday, 12 July 2020. Preparations are currently underway to feature the bios and photos of each of the winners in an upcoming issue of the IFAC Newsletter.

Descriptions of all of the IFAC Major Awards, as well as the names of current and past winners, can be found at:
https://www.ifac-control.org/awards/major-awards

21st IFAC World Congress Update
12-17 July 2020
Berlin, DE

Late Breaking Results Submissions: Can be submitted until **February 28**. Please see the President's Column of this IFAC Newsletter for details.

Review Process: The evaluation process of the submitted contributions for the IFAC World Congress is well under way. More than 25,000 review requests have been sent out. Currently, the last reviews are collected before the Associated Editors make their recommendations. Based on these recommendations, the IPC team will make their final evaluation and select the papers for inclusion in the final program. Needless to say that this immense amount of work would not be possible without the volunteers taking the role as editors, associated editors, and the countless reviewers.

Plenary speakers: We are proud to announce our confirmed plenary speakers:

Alin Albu-Schäffer (TU Munich, Germany)

Ben Recht (UC Berkeley, USA)

Jay H. Lee (KAIST, Republic of Korea)

Jing Sun (University of Michigan, USA)

Marc Raibert (Boston Dynamics, USA)

IFAC Foundation Support of Developing Countries Young Authors: The IFAC Foundation supports attendance of young authors from developing countries by covering the regular registration fee for one accepted paper. The call for applications was opened in November 2019 and 59 applications from 16 countries were received by the deadline of January 31, 2020. Winners will be selected after completion of the review process, considering fulfillment of the formal requirements and the rating of the submitted technical paper (only accepted ones will be considered). The winners will be informed shortly after notification of paper acceptance.

Competitions at 2020 IFAC World Congress: The 2020 IFAC World Congress will be hosting a number of exciting competitions. Whether racing an autonomous car, flying a minidrone, or detecting faults in an industrial benchmark - challenge yourself and compete against other international teams at the World Congress. The competitions pose a challenging problem, which needs to be worked on and solved as a team before the IFAC World Congress. At the congress, the actual competitions will take place, and the winners of each competition will be selected and announced. For more information please see https://www.ifac2020.org/program/competition/

Submitted by: Uwe Hanebeck (DE), IFAC 2020 Publicity Chair

13th IFAC Workshop on Intelligent Manufacturing Systems (IMS 2019)
12-14 August 2019
Oshawa, ON, CA

The 13th IFAC Workshop on Intelligent Manufacturing Systems (IMS 2019) was held in Oshawa, Ontario, CA and hosted by the University of Ontario's Institute of Technology (Ontario Tech) from 12-14 August 2019. IMS was main-sponsored by the Intelligent Manufacturing Systems Working Group of the IFAC's Technical Committee on Manufacturing Plant Control, IFAC TC 5.1. In addition, IMS 2019 was co-sponsored by additional IFAC TCs, including IFAC TC 4.2 (Mechatronics Systems), IFAC TC 4.5 (Human Machine Systems), IFAC TC 5.2 (Manufacturing Modelling for Management and Control), and IFAC TC 5.3 (Enterprise Integration and Networking). The IFAC Workshop on Intelligent Manufacturing Systems always brings together researchers and experts from academia and industry to present the state-of-the-art in intelligent manufacturing systems to provide stimulating opportunities for initiating fruitful relationships and ambitious projects.

IMS 2019 was a very successful event structured with parallel and individual scientific tracks. IMS 2019's 17 sessions included eight plenary and regular sessions and nine invited sessions, where the worldwide recognized scientists and industry professionals presented their latest research and development results.

IMS 2019 participants visiting General Motors Oshawa

IMS 2019 paid specific attention to the latest innovations, ongoing efforts and the best practices in experiencing the Industry 4.0 era, smart factory and its cyber-physical systems, intelligent inspection to monitor the manufacturing health, and on-demand and customized manufacturing with additive. Participants identified new initiatives, applications, and research advances in Intelligent Manufacturing Systems, and demonstrated the ready-to-deploy technologies. There were numerous opportunities for networking and discussing the collaborative opportunities. The first keynote speaker was presented by Professor Marco Macchi (IT) on *Industrial Asset and Maintenance Management in the Smart Factory Challenges and Opportunities Brought by Digitalization*. The second keynote speech was provided by an industrial expert from ANSYS, Mr. Mohsen Tayefeh (CA), *Imperative Foundations Toward Intelligent*

Manufacturing: Matching up the Technology with the Business Value.

An exceptional International Program Committee was formed for IMS 2019, with 36 members from 15 countries. Several IFAC International Journals were associated to the workshop supporting the publication of the best quality papers presented in the workshop. In total, the International Program Committee received over 94 submissions contributed by authors from many countries worldwide. Following a comprehensive peer review process which considered the technical merits and the strict relevance to the scope of the workshop, the International Program Committee selected only 70 articles. The topics of the contributions accepted range from case studies of particular manufacturing processes through mathematical models of intelligent manufacturing systems. Nine invited sessions were organized within IMS 2019, including:

- *Miniature Manufacturing and Intelligent Surfaces Engineering*
- *Smart Machining*
- *Additive Manufacturing for On-Demand Production and Personalized Products (I)*
- *Additive Manufacturing for On-demand Production and Personalized Products (II)*
- *Enterprise Maturity Driven Planning for Sustainable Manufacturing Systems (I)*
- *Enterprise Maturity Driven Planning for Sustainable Manufacturing Systems (II)*
- *Digital Twins for Smart Manufacturing*
- *Smart Production Control for Industry 4.0 (I)*
- *Smart Production Control for Industry 4.0 (II)*

IMS 2019 focused on industrial contributions, networking with the local industries, and industrial applications. Two industrial workshops were conducted during IMS 2019 and over 30 industry experts were invited to join the IMS 2019's participants in these workshops. In addition the workshop was followed by two sessions of networking with industry. A few local companies also had exhibitions during the coffee breaks. In order to encourage the industrial contribution as well as student and young researcher contributions to IMS 2019, three categories of awards were defined: Best Paper Award, Best Student Paper Award, and Best Industrial Paper Award. The finalists and the winner in each category were selected following a detailed scoring process conducted by the chairs and co-chairs of the sessions.

The participants of IMS 2019 described it as a focused and organized event with opportunities for listening to experts and networking. The side activities of IMS 2019 included a welcome reception at a facility along Lake Ontario, five coffee breaks with exhibitions by industry, industrial networking during events, an industrial workshop, a tour of Automotive Center of Excellence, a tour of the research labs at the Faculty of Engineering and Applied Science, an industrial tour to General Motors Oshawa, lunch buffets and a gala dinner, and the IFAC TC 5.1 meeting.

Overall, IMS 2019 was deemed as a very successful event by the participants and experts in providing a platform for discussing high level recent research and development in Intelligent Manufacturing Systems. We would like to express our gratitude to all the people who collaborated and assisted to make this event happen.

For more information about IMS 2019, please visit the event's website at www.IFACIMS2019.com

Submitted by: Ahmad Barari (CA), IMS 2019 NOC chair

5th IFAC Symposium on Telematics Application (TA 2019)
25-27 September 2019
Chengdu, CN

The 5th IFAC Symposium on Telematics Application (TA 2019) was hosted by the Institute of Systems Science and Technology at Southwest Jiaotong University (SWJTU) in Chengdu, CN from 25-27 September 2019. TA is a triannual symposium sponsored by IFAC's *Telematics: Control via Communication Networks Technical Committee* (TC 3.3). It was first held in Espoo, FI in 2004 under the auspices of the IFAC Technical Committee on Telematics: Control via Communication Networks, the predecessor to the current TC 3.3, as the IFAC Symposium on Telematics Application. Subsequent editions of the symposium were held in Timisoara, RO in 2010, Seoul, KR in 2013, and most recently in Porto Alegre, BR in 2016. The symposium in 2019 was co-sponsored by: TC 1.5 (Networked Systems), TC 3.1 (Computers for Control), TC 3.2 (Computational Intelligence in Control), TC 4.3 (Robotics), TC 4.5 (Human-Machine Systems), TC 5.1 (Manufacturing Plant Control), TC 5.3 (Enterprise Integration and Networking), TC 7.3 (Aerospace), TC 7.5 (Intelligent Autonomous Vehicles), TC 9.4 (Control Education), as well as CAA Control Theory.

Since its establishment, TA has served as a platform for scientists, researchers, and practitioners to present and discuss their latest research results and findings, to shape their future directions and development, and to exchange their knowledge and perspectives in the field of control technologies, communication technology, information processing, and digitalization. Symposium TA 2019 continued this fine tradition with an exciting and diverse set of technical sessions, covering the latest research and development results in Control of Networks, Control Through Networks, Cyber Physical Systems, Industry 4.0, Intelligent Homes and Ambient intelligence, Internet of Things, Mathematics of Networked Systems, Mobile Sensor Networks With Low Energy, Optimization, Remote Control, Remote Sensor Data Acquisition, Robotic Networks, Smart and Connected Cars, Smart Grids, Spacecraft Operations, Telematic Methods, Traffic Control Systems, and UAVs Applications.

We received 90 full paper submissions for the symposium from 211 authors and seven countries across the globe. Following a rigorous review process the International Program Committee selected 64 papers for inclusion in the technical program and proceedings of the symposium.

Interspersed with our technical sessions, we had a number of exciting plenary talks over the three days of the program. The IFAC CC 3 chair, Professor Klaus Schilling from Würzburg Center for Telematics (DE), gave the opening plenary on *'Internet of Space: Networks of Small Satellites for Global Telecommunications'*. Professor Andrew Kemp from the University of Leeds (UK) addressed the topic *'The Internet of Things Paradigm'*, while Professor Yiqing Ni from the Hong Kong Polytechnic University (Hong Kong, CN) introduced us to *'Intelligentizing Rail Transit by Sensing and Machine Learning'*. Professor Jie Chen from the City University of Hong Kong (HK, CN) presented a plenary entitled *'From Bode to Shannon: Fundamental Limitations and Limits of Feedback Revisited in an Information Age'.* Finally, Dr. Na Dong from DEC Chengdu Intelligent Technology Co., LTD (CN) addressed the topic *'Practice of DEC Intelligent Manufacturing Projects'.*
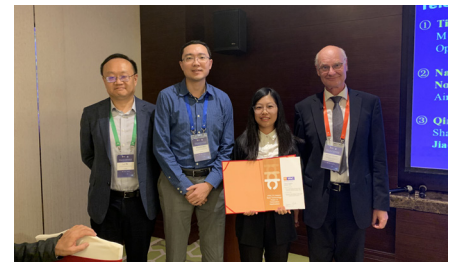
Best Technology Paper Award presentation at TA 2019. From left to right: Lei Ma (CN, NOC Chair), Zhanbo Sun (CN), Tianyu Huang (CN, and Ulrich Jumar (DE, IPC Chair)

An IFAC Young Author Award competition was held as part of the symposium, with three student papers shortlisted for consideration by an award committee. The winner of the competition was Di Cui from Northwestern Polytechnical University (CN) for her paper entitled *'Model Predictive Control of Nonholonomic Mobile Robots'*. An IFAC TC Award, a Best Technology Paper competition was held for the first time, with three technical papers shortlisted for consideration. The winners of the competition were Tianyu Huang and Zhanbo Sun from Southwest Jiaotong University (CN) for their paper entitled *'Cooperative Ramp Merging for Mixed Traffic with Connected Automated Vehicles and Human-Operated Vehicles'*.

A welcome reception was held on the first evening of the symposium in Zijin Hall, where the CC 3 Chair Klaus Schilling (DE) and general chair of the Organization Committee Professor Lei Ma gave welcome speeches, respectively. On the last day of the symposium the delegates had the opportunity to take part in a technical tour of Siemens Digital Factory Chengdu and the National Rail Transit Laboratory of SWJTU.

The symposium banquet was held in the Dorsett Chengdu Hotel. The banquet featured an address by the IFAC Young Award presentation, IFAC TC Award Best Technology Paper presentation, and delicious Sichuan food. Ulrich Jumar (DE), IPC chair of TA 2019, took the opportunity to encourage the participants to attend the IFAC 2020 World Congress, Berlin, Germany, which will take place from 12-17 July 2020.

We would like to thank the organizing committee, the plenary speakers, the international program committee and reviewers, the symposium participants, and of course, all the contributing authors who shared the results of their research during the symposium. Our sincere thanks also go to the many volunteers who assisted with the symposium's logistics. Last but not least, we would like to express our sincere gratitude to all of our sponsors, including our main sponsors, IFAC, Southwest Jiaotong University Chengdu, the Institute of Systems Science and Technology at Southwest Jiaotong University, Chinese Association of Automation, Chinese Association for Artificial Intelligence, and Sichuan Society of Automation and Instrument. Their generous support helped make TA 2019 a great success.

Further details about the symposium program and photos from the event can be found at https://ifactelematics2019.swjtu.edu.cn/index.htm.

Submitted by: Lei Ma, General Chair, Deqing Huang, Co-chair, Zhiping Huang, Vice-chair

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

1st IFAC Workshop on Control Methods for Water Resource Systems (CMWRS 2019)
19-20 September 2019

The Netherlands, a country with one third of its territory below sea level, and the town of Delft with its network of canals provided a very appropriate location for the 1st IFAC Workshop on Control Methods for Water Resource Systems (CMWRS), which was held from 19-20 September 2019 at Delft University of Technology, NL. More information can be found on the website http://www.cmwrs2019.org.

The application of control to water systems in the Netherlands in general and Delft in particular goes back at least one thousand years to the construction of the Delf canal in around 1000 CE. For centuries windmills have been used to control water levels in and around Delft. Starting at the end of the 18th century fossil fuel driven pumping stations came into use and eventually replaced the windmills. This process made

the system independent of wind power. In the 19th century new means of communication became available, such as telegraph, telephone, and radio. These would eventually make rapid communications over large distances possible. For the Dutch water systems with canals and pump stations often distributed over areas of hundreds or sometimes thousands of square kilometres of mostly farm land, this opened the door to much closer coordination of control actions. However, for truly revolutionary developments cheaper communication and remotely operated pump stations were needed. For large pump stations this last point remained a potential bottleneck until well into the 20th century. The start of the 21st century has on the one hand provided greater challenges than ever before, especially in the field of water management, which resides in a web linking it to health, well-being, prosperity, safety, food production, transport, and industrial activity. On the other hand it has seen developments in communication, computers, automation, and energy supply that, possibly for the first time, make system-wide real-time control in water management economically feasible.

CMWRS IPC Chair Andrea Castelletti (IT) announcing the location of the next CMWRS with his event umbrella

The IFAC Technical Committee on Modelling and Control of Environmental Systems (TC 8.3) was primarily responsible for organizing this workshop, which was also supported by the IFAC Technical Committees on Transportation Systems (TC 7.4) and Control for Smart Cities (TC 9.3). This workshop aimed to provide an environment where researchers on present and future methods of control for water resource systems, researchers and practitioners representing the state of the art in water resource engineering science, researchers considering the theme of water in the context of social systems, and representatives of industry could meet and exchange ideas.

After a warm welcome by Prof. D.J. Jansen on behalf of the Faculty of Civil Engineering and Geosciences of Delft University of Technology (NL) and Prof. B. De Schutter on behalf of the Dutch Institute for Systems and Control (DISC, NL), Prof. D. Koutsoyiannis of the National Technical University of Athens (GR) delivered the plenary talk on "*Stochastic Simulation of Time Irreversible Processes and Its Use In Hydrosystem Control Problems*". In this talk he described a method to generate a time series that reproduces some of the statistical properties estimated from a given series, including one that is characteristic for irreversible processes. Such time series are essential for the

testing of the complex control systems needed for water management.

With sixteen contributed full papers as well as eleven extended abstracts distributed over seven technical sessions, the workshop offered a varied program to the 39 participants who had come to Delft from fifteen different countries. About half of the presentations were by female researchers. Seven participants from industry presented interesting solutions to practical problems.

On the day preceding the workshop there was a tour of one of the laboratories of Deltares, which is an independent institute for applied research in the field of water and subsurface. During the hourlong tour the guide explained different projects and the relevance of physical modelling and the newest technologies that are used. The participants were shown several flumes and basins and an experiment in progress concerning the stability of dikes. The social program consisted of a lovely dinner in the restaurant van der Dussen, located in a picturesque 17th century building in the center of Delft.

The presentations at the workshop covered a wide range of topics: reservoir management, irrigation, desalination, water distribution, navigable waterways, groundwater systems, wastewater treatment, urban drainage, and flood defences. The speakers presented a variety of interesting ideas such as data-driven modelling of droughts, the use of continuation methods in non-linear Model Predictive Control, use of mobile robots, use of mobile sensors, and use of renewable energy for operational water management. The papers addressed important societal topics such as health (malaria prevention), water quality, drinking water supply, flood protection, and the socio-hydrological aspects of groundwater use, see https://www.sciencedirect.com/journal/ifac-papersonline/vol/52/issue/23.

At the end of the workshop Ronald van Nooyen (TC 8.3 Chair) presented the audience with the following question: What will be the main challenges for the next nine years (three IFAC triennia)? As examples of possible challenges he listed: Showing viability of the application of control in water management; Dealing with uncertainty; The risks of going digital; Finding an appropriate mix of theory and empiricism; Finding the appropriate level of modelling detail. Refreshments were served and a general discussion was started, which resulted in 25 topics for further exploration. The NOC chair then thanked the members of the IPC, the members of the NOC, and the participants. She presented the members of the NOC with a small gift and closed the workshop.

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We would like to thank the authors for submitting their work to IFAC CMWRS 2019, the reviewers for their contribution to the quality of the proceedings, Prof. J. D. Jansen for the support the workshop received from the university and his inspiring words of welcome, and Prof. D. Koutsoyiannis for his thought-provoking plenary talk. Thanks also to the members of the International Program Committee for their help with the review process and to the National Organizing Committee for the successful organization of the event. We are grateful to Deltares for their generous financial support. Finally we thank Prof. Henk Nijmeijer, Scientific Director of DISC, who acted on behalf of the National Member Organisation of IFAC in the Netherlands, for his help during the approval process.

We are extremely happy to announce that CMWRS 2022 will be organized in Italy by Prof. Andrea Castelletti of Politecnico di Milano, and we are sure that CMWRS 2019 will be the first in a row of successful future IFAC CMWRS events.

Submitted by: Alla Kolechkina (NL), NOC Chair, Bart De Schutter (NL), NOC Vice Chair, Andrea Castelletti (IT), IPC Chair

New IFAC NMO for France
Introducing SAGIP

Automatic Control has a long tradition in France. IFAC was founded in Paris in 1957, and since then 115 IFAC events have been organized in France, including the 1972 IFAC World Congress in Paris, and the 2017 IFAC World Congress in Toulouse. Many French personalities have served IFAC in various positions, including two IFAC Presidents: Victor Broïda (1969-1972) and Janan Zaytoon (2014-2017).

**Hervé Panetto (FR)
SAGIP (French NMO) Chair**

The French NMO was AFRA until 1968, and AFCET until 1998. From 1999 to 2019, the Société de l'Electricité, de l'Electronique (SEE) became the French NMO and the IFAC activi-

ties in France have been coordinated by the GdR MACS national research group/network of CNRS.

The Automatic Control and Industrial Engineering Association (SAGIP) became the French NMO as of January 2020. SAGIP http://www.sagip.org is a representative body of the French community of Automatic Control and Industrial Engineering, including more than 2000 members. The aim of SAGIP is to promote organizational activities of interest to automatic control and industrial engineering research and education.

SAGIP is structured into three chapters. The French NMO Chapter of SAGIP is chaired by Hervé Panetto (IFAC CC5 Chair) and cochaired by Thierry Marie Guerra (IFAC TC 3.2 Chair). Dimitri Peaucelle and Janan Zaytoon are appointed as SAGIP advisors. A committee involving French members who are active in IFAC and in its technical committees will be established to coordinate the IFAC activities in France.

The SAGIP research community looks forward to the continuation of our prosperous cooperation with IFAC.

Submitted by Hervé Panetto (FR), SAGIP French NMO Chapter Chair

Calendar of IFAC Events

Title	2020	Place	Further Information
KIEE, ACA, IFAC et al. International Conference on Electric-Vehicle, Smart-Grid and Information Technology ICESI 2020	April/May 29 – 01	Jeju Island Republic of Korea	http://icesi2020.org/ yilee@seoultech.ac.kr
Conference on European Control Conference (in cooperation with IFAC) ECC 2020	May 12 – 15	Saint Petersburg Russia	http://ecc20.eu/ info@ecc20.eu
15th IFAC Workshop on Discrete Event Systems WODES 2020	May 13 – 15	Rio de Janeiro Brazil	https://wodes2020.eventos.ufrj.br e-mail: not yet available
14th 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
21st IFAC World Congress WC 2020	July 12 – 17	Berlin Germany	http://www.ifac2020.org/ info@ifac2020.org
24th 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
22nd 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
4th 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

Calendar of IFAC Events

3rd IFAC Workshop on Cyber-Physical and Human Systems CPHS 2020	December 03 – 05	Shanghai China	http://not yet available 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
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
17th IFAC Symposium on Information Control Problems in Manufacturing INCOM 2021	June 07 – 09	Budapest Hungary	http://not yet available e-mail: not yet available
16th IFAC Symposium on Control in Transportation Systems CTS 2021	June 08 – 10	Lille France	http://not yet available e-mail: not yet available
11th 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
19th IFAC Symposium on System Identification SYSID 2021	July 14 – 16	Padova Italy	http://not yet available e-mail: not yet available
6th 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
3rd 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
13th IFAC Symposium on Robot Control SYROCO 2021	August/Sept. 30 – 02	Matsumoto Japan	http://not yet available e-mail: not yet available
6th IFAC Workshop on Mining, Mineral and Metal Processing MMM 2021	September 01 – 03	Nancy France	http://not yet available e-mail: not yet available
10th 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
6th IFAC Conference on Analysis and Control of Chaotic Systems CHAOS 2021	September 27 – 29	Catania Italy	http://not yet available e-mail: not yet available

The IFAC Calendar of Events is constantly updated as addditional 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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