INTERNATIONAL FEDERATION OF AUTOMATIC CONTROL NEWSLETTER

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IFAC Major Awards & Medals 2020-2023 Announced!

The IFAC Council voted on the 2020-2023 IFAC Major Awards and Medals at their meeting in London, UK in July 2022. Awardees will receive their awards in conjunction with the IFAC World Congress 2023 in Yokohama, JP.

Information about past winners, descriptions of each award/medal, as well as the composition of each selection committee and the Major Award Selection Committee can be found at:

https://www.ifac-control.org/awards/majorawards

The IFAC Awards Commitee Chair for 2020-2023 is Janan Zaytoon (FR).

Nichols Medal

Mrdjan Jankovic (US): For innovative fundamental contributions to the control of automotive systems.

Quazza Medal

A. Stephen Morse (US): For fundamental contributions to geometric control theory, adaptive and logic-based switching control, and distributed sensing and control.

Thoma Medal

Na (Lina) Li (US): For fundamental contributions to control of multiagent networked systems and application to biomedical and energy systems.

High Impact Paper Award

M.V. Kothare, V. Balakrishnan, M. Morari (US, US, CH): For the paper *"Robust constrained model predictive control using linear matrix inequalities"*, *Automatica*, vol 32 (10), pp. 1361-1379, Oct 1996.

Industrial Achievement Award

Reza Moheimani (US): For control developments in support of the fabrication of quantum silicon devices at the single atom scale.

IFAC Foundation Kwon Award: Call for Nominations

IFAC Foundation Kwon Award

Recognizing contributions to advances in sustainable development

The Foundation solicits nominations for papers published in IFAC journals in the broad area of sustainable development.

One of the aims of the IFAC Foundation is to promote the awareness and dissemination of the social relevance of automatic control. The IFAC Foundation recognizes at each IFAC World Congress the contributions of individuals or a group of individuals who through their work have shown how automatic control science and technology can contribute to significant advances in the broad area of "sustainable development". This includes work on the topics of renewable and clean energy, management of energy, water and resources in general, control in agriculture, pollution control, climate control or similar.

All papers published in any of the IFAC Journals during the triennium of 2020-2022 are eligible for nomination. The IFAC Foundation Kwon Award is made in honour of Professor Wook Hyun Kwon whose initial donation fostered the creation of the IFAC Foundation.

The award winner(s) will receive a certificate and cash prize of 2000 euro (total) at the time of the IFAC World Congress. A special public lecture at the IFAC 2023 World Congress is planned for the winning author(s) to present the work.The details of the public lecture will be developed together with the organizers of the World Congress.

Nominated papers should be of the highest technical quality and demonstrate evidence of significant potential future impact on one or more of the sustainable development topics outlined above. The award selection criteria include:

(i) The quality of the paper, (ii) the interest and impact of the topic on sustainability,

 $\ensuremath{\text{(iii)}}$ the relevance of the control solution to the problem, and

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The IFAC Journals

Automatica www.journals.elsevier.com/ automatica

Control Engineering Practice www.journals.elsevier.com/controlengineering-practice

Engineering Applications of Artificial Intelligence www.journals.elsevier.com/ engineering-applications-ofartificial-intelligence

Journal of Process Control www.journals.elsevier.com/journalof-process-control

Annual Reviews in Control www.journals.elsevier.com/annualreviews-in-control

> Journal on Mechatronics www.journals.elsevier.com/

mechatronics

Nonlinear Analysis: Hybrid Systems www.journals.elsevier.com/

nonlinear-analysis-hybrid-systems IFAC Journal of Systems & Control

www.journals.elsevier.com/ifacjournal-of-systems-and-control

IFAC-PapersOnLine

www.journals.elsevier.com/ifacpapersonline INTERNATIONAL FEDERATION OF AUTOMATIC CONTROL

(iv) previous results and the forecasted evolution of the proposed methodology.

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In particular, the nomination form should include a summary of how these criteria are addressed by the work described in the nominated paper.

The deadline for nominations is 1 February 2023.

Further details on preparing the nomination package can be found at the IFAC Foundation website: <u>https://foundation.ifac-control.org/projects/ifac_foundation_award</u>

The selection committee chair is Hideaki Ishii (JP), with members Denis Dochain (BE), Pramod Khargonekar (US), Andreas Kugi (AT), Iven Mareels (AU), and Sarah Spurgeon (UK).

The award selection committee will examine all qualifying nominated papers and will propose a winner and an alternate to the IFAC Foundation Board. Based on the report of the award selection committee, the IFAC Foundation Board may choose a winner or may choose not to give the award. The winner will be notified by the Chair of the IFAC Foundation Board.

Note that members of the Selection Committee, the Foundation Board or the Foundation Group of Experts cannot be nominees or nominators. The names of the IFAC Foundation Board and the Foundation Group of Experts are listed at: https://foundation.ifac-control.org/board

IFAC Journal Awards: Call for Nominations

Journals concerned:

Automatica: Three paper prizes

Control Engineering Practice: Three paper prizes

Annual Reviews in Control Paper Prize

Journal of Process Control: Three paper prizes in the following categories: 1) Survey, 2) Theory/Methodology, 3) Application

Engineering Applications of Artificial Intelligence: Two paper prizes in the following categories: 1) Theory, 2) Application

Mechatronics: Three paper prizes

Nonlinear Analysis: Hybrid Systems Paper Prize: Two paper prizes

Description and Presentation of the Award:

The prizes are given for outstanding contributions in the specific field and category of the IFAC journal concerned. The number of prizes in each triennium for each journal is indicated above. The funds are provided by the publisher of IFAC journals, Elsevier Science Ltd. For this triennium, the prizes will be presented during the Awards Ceremony at the 22nd IFAC World Congress, to be held in Yokohama, Japan, 9-14 July 2023.

Eligibility

To be considered for an IFAC Journal Paper Prize, papers must have appeared in a volume published during the calendar years 2020, 2021, or 2022. Papers authored by members of the Selection Committee and by the Editorin-Chief or the Editors of the journal are not eligible.

Nominations

For each IFAC Journal Paper Prize, a complete nomination should include:

- a) A nomination letter that contains the full title of the paper and name(s) of the author(s), as well as the issue (year, month, number) of the journal where the paper has appeared.
- b) A brief description of the contributions of the paper, and why (in the opinion of the nominator) the paper deserves the prize.

Submission

For each Journal Paper Prize, nominations should be submitted in electronic form no later than 1 March 2023 to the email address of the chair of the selection committee of the related journal paper prize. The names and email addresses of the chairs of the selection committees are as follows:

Automatica: Prof. Paul Van den Hof. Email: <u>P.M.J.vandenhof@tue.nl</u>

Control Engineering Practice: Prof. Ian K. Craig. Email: <u>ian.craig@up.ac.za</u>

Annual Reviews in Control Paper Prize: Prof. Alberto Isidori. Email: albisidori@diag.uniroma1.it

Journal of Process Control: Prof. Podromos Daoutidis. Email: <u>daout001@umn.edu</u>

Engineering Applications of Artificial Intelligence: Prof. Derong Liu. Email: <u>derongliu@</u> <u>gmail.com</u>

Mechatronics: Prof. Andreas Kugi. Email: Kugi@acin.tuwien.ac.at

Nonlinear Analysis: Hybrid Systems Paper Prize: Prof. Luca Zaccarian. Email: <u>zaccarian@</u> <u>laas.fr</u>

The IFAC Conference App is now available!

The App is paid for by IFAC and can be used free of charge by IFAC conference organizers and attendees. Many IFAC conferences are to be included soon!

How to download: App Store <u>https://apple.co/3mpaER7</u> Google Play <u>https://bit.ly/3lazFjx</u> You can also search for 'IFAC' in the Apple App Store or in the Google Play Store.

From the IFAC President

Dear IFAC Friends and Colleagues,

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Diversity is important for the adaptiveness and robustness of systems. IFAC is committed to promoting diversity and inclusion with the aim of eliminating disparities even in academic activities. IFAC should not only conduct academic research activities, but also contribute to society by solving various social issues and creating value through automatic control technology.

The Diversity & Inclusion Committee is chaired by Mary Doyle-Kent, with members Maria Prandini, Patricia Pena, and Hye-Kyung Cho. Andrew Alleyne has served as a committee member but recently stepped down due to new responsibilities. The committee has also benefitted from the expertise of its Consultants/Assistants: Bozenna Pasik-Duncan, Dawn Tilbury, and Brenda O'Neill. I am thankful to each of these individuals for helping IFAC and its activities become more diverse and inclusive.

For this triennium nearly 30% of the IFAC Fellows are female, and it is hoped that in the next triennium there can be 30% of awardees with a diversity profile (Major Awards will be a focus). Other diversity includes our boards, committees, etc. For example, this triennium has a record number of women serving on the IFAC Council, which is the body responsible for the management of the Federation.

The D&I Committee has interacted with the Database Task Force. It is hoped that information collected with the soon-to-belaunched new database will help IFAC better understand the diversity of the various IFAC affiliates (individuals), conferences, and other activities. Other steps taken include: Best practices were included in the Organisers Guide in September 2022, engagement with boards to create awareness of diversity issues and make IFAC Conferences more inclusive and ability-friendly, and progress being made in planning a 'Diversity and Inclusion' Round Table event for IFAC 2023 and details of this event will be available closer to the time.

The IFAC Foundation is also developing a Diversity and Inclusion Author's Support Program and the intention is that this will be available for the 2023 World Congress. It will be similar to their Young Author's Support Program and will support candidates to attend IFAC 2023 as a trial. Also new this triennium is the IFAC Foundation Diversity and Inclusion Award. The inaugural awardee is Bozenna Pasik-Duncan, who has been active in IFAC over many years in creating awareness of the need for more diversity and the importance of making more voices heard in our community. I would like to personally congratulate Bozenna on this award and thank her for the tremendous involvement and persuasiveness.

As IFAC's president I am proud of the strides that IFAC has made in increasing its diversity and inclusion and opening it up to control community participants who were perhaps overlooked in decades past, and look forward to even more developments!

Best regards, Hajime Asama, IFAC President



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Transition: IFAC Advisor Roger Goodall

Roger Morgan Goodall 1946 – 2022



We invite you to celebrate the life of our friend and colleague, IFAC Advisor Roger Goodall (UK), who passed away peacefully at home on 16 August. Roger was diagnosed with prostate cancer in January 2017, but as with most things he approached it with scientific interest and his characteristic positivity. He insisted that no one should treat him any differently and that there should not be any "treading-on-eggshells" around him.

Roger graduated from Peterhouse College at the University of Cambridge, UK, in 1968 and worked initially at Brush and BAE systems. In 1970 he joined British Rail's Research Division in Derby, where he spent 12 years in industrial research. He took up an academic position as a Lecturer at Loughborough University in 1982, followed by promotion to Senior Lecturer and a period as Head of Department (Electronic and Electrical Engineering) from 1990-94. Roger was awarded his Chair in Control Systems Engineering in 1994 and established a vibrant Control Systems Research group at Loughborough during the mid-2000s. He was also Director of the EPSRCs Systems Engineering Doctorate Centre at Loughborough from 2005 to 2009 with more than 45 Eng.Doc graduates. In 2013 Roger was appointed to a second Professorship in the Institute of Railway Research at the University of Huddersfield, and he was contributing to research teams at both Loughborough and Huddersfield until very recently.

Roger was a champion for the subject of Mechatronics, with a speciality related to mechatronic suspension and steering systems for railway vehicles. His research projects have been characterised by strong industrial collaboration, having worked with companies such as Alstom, BAE Systems, Bombardier Transportation and Rolls-Royce. He was a Fellow of IFAC as well as the Institution of Electrical Engineers and the Institution of Mechanical Engineers. In 2007 he was elected a Fellow of the Royal Academy of Engineering.

Roger was instrumental in many key innovations in railway engineering including the development of a suspension controller design for an experimental Maglev vehicle in 1976 which became the world's first operational Maglev system at Birmingham Airport in the UK. He led the first experimental demonstration of a full-scale active suspension for a railway vehicle in 1979 and the first demonstration of tilting railway vehicle using electro-mechanical actuators (now the standard technology for European tilting trains). In 2002 Roger led the experimental demonstration of an actively-stabilised highspeed railway bogie and more recently with colleagues at Loughborough University, the development of algorithms for low adhesion detection and the development of a novel railway track switch.

An expert in Control Systems, Roger made contributions to the design of modern flight control laws for fixed wing aircraft, active vibration control for helicopters, and applications of active modal damping. He pioneered the use of the delta operator for rapid sampling applications and his ground breaking work on bespoke digital control architectures included innovations such as single-bit-processing for control implementation.

Roger served in a variety of external scientific and technical roles including the Board of Trustees for the International Association for Vehicle System Dynamics (IAVSD), Chairman of the UK Automatic Control Council (UKACC) and Chairman of the Railway Division for the UK's Institution of Mechanical Engineers (IMechE). Roger has received many awards, including the IMechE's prestigious James Watt International Gold Medal. He was the 2nd Vice President of IAVSD from 2003 to 2005, IAVSD Treasurer from 2005 to 2011, and joint host of the 2011 IAVD Symposium in Manchester. In 2021 Roger was made an Honorary Member of IAVSD.

Roger was a key figure in the International Federation of Automatic Control (IFAC), serving the federation in many roles between 1991 and 2022. Most notably, he was the inaugural Chair of the Technical Committee on Mechatronic Systems (2000-2005). He also served as IFAC Vice-President and Chair of the Executive Board from 2008-2014. In 2016, he was part of the team that successfully hosted the 7th IFAC Symposium on Mechatronic Systems at Loughborough University. Roger's service to IFAC has continued with his appointment as IFAC Advisor (Lifetime) in 2017. In 2019 Roger received a IFAC TC Award: Mechatronics Systems Life Time Achievement Award (TC 4.2) for his pioneering research contributions in mechatronics and its application to industrial systems, particularly internationally leading research in Maglev and active control for future mechatronic railway vehicles.

Roger was a very modest man with a great sense of humour, and a wicked ability to deploy a Disney tie at the appropriate time (see photo). Alongside his many outstanding achievements and awards he was, above all, a kind and supportive colleague to all those around him. A mentor and supporter of many; he was always generous with his time and keen to support his colleagues, peers, and students. A legacy of Roger's selflessness and support for others is the current strength of railway research in a number of UK universities, which Roger was instrumental in establishing as part of an EPSRC initiative in the early 2000's. Roger will be missed by all of us. However, we can be certain that he would wish that we celebrate his life, rather than feel at all sad. To paraphrase his words, "All of this teaching, research, leadership and conference going is rather a lot of fun actually".

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Roger's funeral was held on 14 September 2022 at the village hall in Tealby, Lincolnshire, UK.

Submitted by: Roger Dixon and Simon Iwnicki (UK)

The UK Automatic Control Council will host a memorial page for Roger on the UKACC website, where those colleagues that wish to may leave a short anecdote, favourite memory, or any thoughts that you might like to share with his friends and family.

https://ukacc.sites.sheffield.ac.uk/news/obituary-professor-roger-goodall

IFAC Membership: Introducing IFAC AMOs

New IFAC membership opportunities for financially weak countries: Become an Associated Member Organization (AMO)!

Going back to the founding days, the membership structure of the International Federation of Automatic Control is such that not individuals are members, but "countries". To quote from the IFAC Constitution: "For each country, one scientific or professional engineering organization, having a strong interest in automatic control and a sound professional background, or one council formed by two or more such organizations, shall be eligible for membership of IFAC. Such organizations, after admission to IFAC, will be known as National Member Organizations (NMOs) and shall have a responsibility for furthering the aims and objectives of IFAC within their respective countries."

However, since its start IFAC never had more than 50 members, meaning that only control researchers and practitioners in less than 50 countries are represented by IFAC. This is in contrast to "the Vision for IFAC to be the worldwide federation for promoting automatic control for the benefit of humankind" "with the primary objective to serve all those concerned with the theory and application of automatic control and systems engineering irrespective of, e.g., gender, race, religion, disability, political conviction, or geographic location." (both quotes from the preamble of IFAC's constitution). https://www.ifac-control.org/structure/ IFAC%20Constitution-and-By-Laws.pdf

While some countries have no NMO within IFAC because of their small size or little industrial or research activity in the field of interest to IFAC, other countries are not represented because of financial reasons. With the introduction of the new membership category Associated Member Organization (AMO), that is available starting immediately, IFAC intends to have a means to include groups of researchers



and practitioners from financially weak countries in a way that provides dedicated and fitting benefits with little administrative burden both for IFAC and for those groups, with only few formal criteria needed to qualify for the status, and especially free of charge to the AMOs.

The benefits for AMOs are directed towards support for individual researchers from financially weak countries, but also to associate and tie the respective country and systems and control organizations in that country to IFAC and support of professional activities in these countries.

Applying for AMO membership status is very simple and no strong formal hurdles are raised: Next to the country being financially weak and the requirement that the country has no formal IFAC NMO, mainly the actions of AMO members have to be in accordance with IFAC's Code of Conduct (<u>https://www.ifac-control.</u> <u>org/about/ifac-code-of-conduct/view</u>).Other than that there is no obligation to participate in any IFAC activity. The only administrative obligation as an AMO is to write a short and informal report about three months prior to each World Congress indicating that the group represented by the AMO is interested in keeping the AMO status.

This membership category is not meant as a means to recruit new NMOs and is not meant to raise money for IFAC. On the contrary, IFAC intends to support groups concerned with automatic control in financially weak countries in suitable ways and intends to provide a framework for including and linking them to the federation with this program. It is a means to incorporate researchers in financially weak countries that do not benefit from being an NMO. The program is shaped so that researchers and practitioners in the broad field of automatic control in those countries are linked to IFAC, IFAC activities and the IFAC community and to benefit from IFAC.

IFAC decided on this new membership category for financially weak countries during its council meetings in London, UK in July 2022. The success and value of this program will be evaluated in 2029.

More details can be found on the corresponding website <u>https://www.ifac-control.org/struc-</u> <u>ture/associated-member-organizations-amos</u> or by contacting the chair of IFAC's Membership Committee Frank Allgöwer at <u>frank.all-</u> <u>gower@ifac-control.org</u>.

Submitted by: Frank Allgöwer (DE), Chair, IFAC Membership Committee

IFAC Email Aliases are available!

Sign up with the address with which you are registered with IFAC at:

https://hera.ifac-control.org/ifacmail/

If you need any assistance to complete the process please contact the IFAC Secretariat via email at <u>secretariat@ifac-control.org</u>.

Introducing the 2020-2023 IFAC Fellows

This is the first in a series in which Newsletter readers can learn more about the 25 new 2020-2023 IFAC Fellows.

Alf Isaksson



Alf Isaksson received an MSc in Computer Engineering and a PhD in Automatic Control, in 1983 and 1988 respectively, both from Linköping University, Sweden. After graduating he stayed at Linköping University until 1991 as an Assistant Professor. From 1991 to 1992 he spent one year as a Research Associate at The University of Newcastle, Australia. Returning to Sweden in 1992 Isaksson moved to the Royal Institute of Technology (KTH) in Stockholm, where eventually in 1999 he was promoted to full Professor. During this time he also spent six months in 1999 at the University of British Columbia, Vancouver, Canada as a visiting professor.

In 2001 Isaksson made the shift from academic to industrial research and joined ABB Corporate Research in Västerås, Sweden. After a specialist career culminating in an appointment to Corporate Research Fellow in 2009, from 2012 until June 2020 he held multiple positions responsible for funding and coordinating research inside ABB. Most prominently, from January 2014 until March 2019 he was Group Research Area Manager coordinating all Control research globally at ABB Corporate Research. Meanwhile Isaksson still kept a connection to the academic world as Adjunct Professor in Automatic Control at Linköping University 2006-2015. He is now once again Corporate Research Fellow for Automation and Control, and from November 2021 also back in academia as Adjunct Professor at KTH, Stockholm, Sweden.

Stephen P. Boyd



Stephen P. Boyd is the Samsung Professor of Engineering, Professor of Electrical Engineering, and a member of the Institute for Computational Mathematics and Engineering at Stanford University. His current interests include convex optimization applications in control, machine learning, signal processing, and finance.

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He received an AB degree in Mathematics, summa cum laude, from Harvard University in 1980, and a PhD in EECS from U.C. Berkeley in 1985. He holds honorary doctorates from Royal Institute of Technology (KTH) and Catholic University of Louvain (UCL).

He is the author of many papers and several books, including *Introduction to Applied Linear Algebra, Convex Optimization, Linear Matrix Inequalities in Systems and Control, and Linear Controller Design: Limits of Performance.* His group has created many open source software packages, including the widely used packages for convex optimization CVX, CVXPY, Convex. jl, and CVXR.

He is a fellow of IEEE, SIAM, INFORMS, and IFAC, a member of the US National Academy of Engineering, a foreign member of the Chinese Academy of Engineering, and a foreign member of the National Academy of Engineering of Korea.

Jorge Cortes



Jorge Cortes received the Licenciatura degree in mathematics from Universidad de Zaragoza, Zaragoza, Spain, in 1997, and the Ph.D. degree in engineering mathematics from Universidad Carlos III de Madrid, Madrid, Spain, in 2001. He held postdoctoral positions with the University of Twente, Twente, The Netherlands, and the University of Illinois at Urbana-Champaign, Urbana, IL, USA. He was an Assistant Professor with the Department of Applied Mathematics and Statistics, University of California, Santa Cruz, CA, USA, from 2004 to 2007.

Cortes is currently a Professor and Cymer Corporation Endowed Chair in High Performance Dynamic Systems Modeling and Control in the Department of Mechanical and Aerospace Engineering, University of California, San Diego, CA, USA. He is a Fellow of IEEE, SIAM and IFAC.

He is the author of *Geometric, Control and Numerical Aspects of Nonholonomic Systems* (Springer-Verlag, 2002) and co-author (together with F. Bullo and S. Martinez) of *Distributed Control of Robotic Networks* (Princeton University Press, 2009). He has co-authored papers that have won the 2008 and the 2021 IEEE Control Systems Outstanding Paper Award, the 2009 SIAM Review SIGEST selection from the SIAM Journal on Control and Optimization, the 2012 O. Hugo Schuck Best Paper Award in the Theory category, and the 2019 IEEE Transactions on Control of Network Systems



Outstanding Paper Award. He has served in numerous editorial boards, including the IEEE Transactions on Automatic Control, IEEE Control Systems magazine, Systems and Control Letters, SIAM Journal on Control and Optimization, and IEEE Transactions on Network Science and Engineering.

Cortes was an elected member of the Board of Governors of the IEEE Control Systems Society and is currently its Director of Operations. His research interests include distributed control and optimization, network science, resourceaware control, nonsmooth analysis, reasoning and decision making under uncertainty, network neuroscience, and multi-agent coordination in robotic, power, and transportation networks.

Raffaello D'Andrea



Raffaello D'Andrea is a professor at ETH Zürich and the founder/CEO of Verity, a selfflying drone systems company and provider of drone failsafe technology. He cofounded Kiva Systems, which was acquired by Amazon and rebranded as Amazon Robotics. During his time as a professor at Cornell University, he cofounded the systems engineering program and led the Cornell Robot Soccer team to four world championships. He is also a founder of RoboGlobal, an organization that introduced the world's first Robotics and AI Exchange Traded Fund.

His work as a new media artist has been exhibited at the Venice Biennale and is part of the permanent collections of the National Gallery of Canada and France's FRAC Centre. He is the co-creator of the Robotic Chair, a plain-looking wooden chair that falls apart and seems to defy the second law of thermodynamics by reassembling itself. He created the drone design and choreographies for Cirque du Soleil's Paramour on Broadway and Metallica's WorldWired tour, and was executive producer for the drone light shows in Drake's Aubrey & the Three Migos tour, Céline Dion's Courage tour, and Justin Bieber's Justice tour.

In 2020 D'Andrea was inducted into the National Inventors Hall of Fame and was elected to the U.S. National Academy of Engineering. His TED and research videos, with tens of millions of views, offer an inspiring view into the world of engineering, robotics, and computer science.

The full list of IFAC Fellows can be found at: https://www.ifac-control.org/awards/ifac-fellows

Introducing the 2020-2023 IFAC Major Award & Medal Winners

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This is the first in a series in which Newsletter readers can learn about the winners of the 2020-2023 IFAC Major Awards and Medals.

Manfred Thoma Medal: Na Li



Na Li is a Gordon McKay professor in Electrical Engineering and Applied Mathematics at Harvard University. She received her bachelor's degree in Mathematics from Zhejiang University in 2007 and Ph.D. degree in Control and Dynamical systems from California Institute of Technology in 2013. She was a postdoctoral associate at Massachusetts Institute of Technology 2013-2014. She has hold a variety of shorter term visiting appointments including the Simons Institute for the Theory of Computing, MIT, and Google Brain.

Her research lies in control, optimization, and learning of networked systems, including theory development, algorithm design, and applications to real-world cyber-physical societal system. Li has been an associate editor for IEEE Transactions on Automatic Control (2020--present), Systems & Control letters (2019--present), IEEE Control Systems Letters (2019), and served on the organizing committee for a few conferences. She received the NSF Career Award (2016), AFSOR Young Investigator Award (2017), ONR Young Investigator Award (2019), Donald P. Eckman Award (2019), Mc-Donald Mentoring Award (2020), along with other awards.

Nichols Medal: Mrdjan Jankovic



Mrdjan Jankovic received his undergraduate degree in electrical engineering from Belgrade University, Yugoslavia in 1986 and masters and doctoral degrees from Washington University, St. Louis in 1989 and 1992 respectively. He held postdoctoral positions with Washington University and UC Santa Barbara, before joining Ford in 1995. He is currently a Senior Technical Leader at Ford Research, working on development of control technologies for powertrain and driver assist applications. He has also made theoretical contributions to the areas of nonlinear control, delay systems, and control of systems with constraints. Dr. Jankovic was a plenary speaker at the 2005 SIAM Annual Meeting and 2022 Chinese Control and Decision Conference.

Dr. Jankovic coauthored one book, five book chapters, and more than 140 technical papers. He is a co-inventor of over 90 US patents, with more than 20 used in Ford products sold worldwide. He served as an associate editor for IEEE Transactions on Control Systems Technology 1997-2005, and the committee chair for IEEE TCST Best Paper Award (2005-08), IEEE Control System Technology Award (2016-17), SAE Control and Calibration (2006-08).

Dr. Jankovic's contribution has been recognized by AACC Control Engineering Practice Award (2016), IEEE Control Systems Technology Award (2010), Ford's prestigious Dr. Haren Gandhi Research and Innovation Award (2018), two Ford Research Technical Achievement Awards (2001, 2009), and best paper awards from IEEE (TCST 2002), SAE (Arch T. Colwell Award, 2008), and AVEC (2006). Dr. Jankovic is a Fellow of the IEEE and a member of the US National Academy of Engineering.

Industrial Achievement Award: Reza Moheimani



Reza Moheimani is a professor and holds the James Von Ehr Distinguished Chair in Science and Technology in the Department of Systems Engineering at the University of Texas at Dallas with appointments in Electrical and Computer Engineering and Mechanical Engineering Departments. He is the founding Director of UTD Center for Atomically Precise Fabrication of Solid-State Quantum Devices and founder and Director of Laboratory for Dynamics and Control of Nanosystems.

Moheimani is a past Editor-in-Chief of *Me-chatronics* (2016-2021), and a past associate editor of *IEEE Transactions on Control Systems Technology, IEEE Transactions on Mechatronics* and *Control Engineering Practice*. He received the Industrial achievement Award (IFAC, 2023), Nyquist Lecturer Award (ASME DSCD, 2022), Charles Stark Draper Innovative Practice Award (ASME DSCD, 2020), Nathaniel B. Nichols Medal (IFAC, 2014), IEEE Control Systems Technology Award (IEEE CSS, 2009) and IEEE Transactions on Control Systems Technology Outstanding Paper Award (IEEE CSS, 2007 and 2018). He is a Fellow of IEEE, IFAC, ASME, and Institute of Physics (UK).



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Moheimani received the Ph.D. degree in Electrical Engineering from University of New South Wales, Australia in 1996. His current research interests include applications of control and estimation in high-precision mechatronic systems, high-speed scanning probe microscopy and atomically precise manufacturing. He is leading a multidisciplinary effort to develop new tools and methods for fabrication of solidstate quantum devices with atomic precision based on ultra-high vacuum scanning tunneling microscope.

1st IFAC Conference on Networked Systems (NecSys2022) 5-7 July 2022 Zurich, CH

The 1st IFAC Conference on Networked Systems (NecSys22) took place on July 5-7 2022 at ETH Zurich in Zurich, Switzerland. The 1st NecSys conference has been preceded by a series of eight NecSys workshops starting from 2009 with the intent to bring together researchers from control, computer science, communication, game theory, social sciences, statistics, and mathematics to discuss emerging topics in networked systems. This year, for the first time, NecSys has become an IFAC conference. The main sponsoring Technical Committee was Networked Systems (TC1.5). The conference was attended by 115 participants plus an additional 30 online participants.

Florian Dörfler (ETH Zurich) served as the NOC General Chair, and Luca Schenato (University of Padova) served as IPC Chair. Melanie Zeilinger (ETH Zurich) and Roy Smith (ETH Zurich) served as NOC Vice Chairs, and Steffi Knorn (TU Berlin) served as IPC Vice Chair. Giancarlo Ferrari-Trecate (EPF Lausanne) served as Editor. Angelia Nedic (Arizona State University) chaired the IFAC Young Author Award Committee, and Saverio Bolognani (ETH Zurich) was responsible for local arrangements. The Organizing Committee and all NecSys22 participants are grateful to the members of the IPC who handled the reviews of 75 submitted manuscripts and extended abstracts. We are also deeply grateful to the National Centre of Competence in Research (NCCR) Automation, which has been supporting the NecSys22 conference both as a financial sponsor and facilitator in terms of logistics, public communication, and local organization.

NecSys22 was preceded by a two-day short course delivered by Nicola Bastianello, Ruggero Carli, and Luca Schenato (all from University of Padova, IT) from July 3-4 on the topic of "Multi-agent convex optimization over asynchronous and lossy networks". The 25 participants commented very highly on the quality of the course. The technical conference program on July 5-7 included 53 contributed papers as well as 14 extended abstracts to facilitate the rapid dissemination of recent and relevant results. Following the tradition of previous NecSys events, the technical program is structured in plenary lectures accompanied by interactive poster sessions as well as six spotlight talks presented by the IFAC Young Author Award finalists. A special thank goes to our 13 distinguished plenary speakers for sharing their research with us (in temporal order):

1. Elisa Franco (UC Los Angeles): Dynamic Control of Biomolecular Phase Separation

2. Cathy Wu (Massachusetts Institute of Technology): Cities as Robots: Scalability, Operations, and Robustness

3. Fabio Pasqualetti (UC Riverside): Analysis and Control of Functional Brain Networks

4. Daniel Molzahn (Georgia Institute of Technology): Recent Developments in Nonlinear Optimization of Electric Power Systems

5. Francesca Parise (Cornell University): Analysis, Control and Identification of Networked Multi-Agent Systems in the Large Population Regime

6. Maryam Kamgarpour (EPF Lausanne): Learning in Multi-Agent Systems

7. Hyoun Jin Kim (Seoul National University): *Planning and Coordination of Multi-Robot Systems*

8. Jakob Foerster (University of Oxford): Off-Belief Learning and Zero-Shot Coordination

9. Ali Jadbabaie (Massachusetts Institute of Technology): News Subscription, Persuasion, and Spread of Misinformation on Social Media

10. Nikolas Geroliminis (EPF Lausanne): On the (In)Efficiency of Ride-Sourcing Services Towards Urban Congestion and Multimodal Mobility

11. Gabriela Hug (ETH Zurich): *The Role of Control in Future Electric Power Systems*

12. Bruno Sinopoli (Washington University in St Louis): *Toward AI-enhanced Design of Resilient Cyber-Physical Systems*

13. Laurent Vanbever (ETH Zurich): *What I Talk About When I Talk About Network Control*

Further, the following six contributions were nominated for the IFAC Young Author Award, and the authors presented their papers in student spotlight talks during single-track conference:

1. Information Structures of the Kalman Filter for the Elastic Wave Equation: Juncal Arbelaiz, Emily Jensen, Bassam Bamieh, Anette Hosoi, Ali Jadbabaie, Laurent Lessard

2. Aggregative Feedback Optimization for Distributed Cooperative Robotics Guido Carnevale, Nicola Mimmo, Giuseppe Notarstefano

3. A Networked Competitive Multi-Virus SIR Model: Analysis and Observability: Ciyuan Zhang, Sebin Gracy, Tamer Basar, Philip Pare

4. Event-Based Control for Synchronization of Stochastic Linear Systems with Application to Distributed Estimation: Jiaqi Yan, Yilin Mo, Hideaki Ishii

5. Optimal Combined Motion and Assignments with Continuum Models: Max Emerick, Stacy Patterson, Bassam Bamieh

6. Dynamic Max-Consensus with Local Self-Tuning: Diego Deplano, Mauro Franceschelli, Alessandro Giua

The IFAC Young Author Award was awarded to Max Emerick (UC Santa Barbara).

The technical program was flanked by multiple social events. The first evening of the conference featured a Women Networking Event sponsored by the NCCR Automation inside the historic main building of ETH Zurich. The conference banquet was held on the second evening of the event at the Gasthaus Albisgütli: a historic festival location (since 1839) located on Uetliberg with a unique view of the city of Zurich, the lake and the mountains. The banquet featured alphorn music performances as well as an exquisite multi-course dinner. Finally, the last day of the conference was concluded with a farewell party on the rooftop of the historic main building of ETH Zurich with outstanding views of the city of Zurich and the nearby Swiss Alps.



NecSys22 Farewell at ETH Zurich

The Organizing Committee thanks all participants for making NecSys22 a resounding success. Additional information about the conference program and other event features can be found at https://necsys22.control.ee.ethz.ch/.

Submitted by: Florian Dörfler (CH), NecSys22 NOC Chair

IFAC Cartoon Archive is available! www.ifac-control.org/publications/cartoons



10th Vienna International Conference on Mathematical Modelling (MATHMOD) 27-29 July 2022 Vienna, AT

In the German language a proverb says "Aller guten Dinge sind drei", which translates to "All good things come in threes". This saying perfectly fits the organization of the tenth MATHMOD. MATHMOD was originally scheduled for February 2021 and had to be postponed to February 2022 and then to July 2022 due to the pandemic situation. Thus, we were very happy that, despite these adversities, MATHMOD finally took place as an in-person event at TU Wien from July 27-29, 2022. The organizers (Institute for Analysis and Scientific Computing (ASC) and the Automation and Control Institute (ACIN) of Technische Universität Wien) were pleased to welcome 199 participants from 27 different countries at this forum for professionals, researchers, and experts in the field of theoretic and applied aspects of mathematical modelling for systems of dynamic nature.

Technical Program

MATHMOD 2022 received 160 full contributions and 49 discussion contributions. The review process was organized by the 52 members of the IPC. The final program included 37 regular and minisymposium sessions with 112 full contributions and 55 discussion contributions. These papers were written by 572 authors from 44 countries.

An important part of every MATHMOD conference are minisymposia, which cover specific topics of mathematical modelling. The 8 minisymposia of MATHMOD 2022 were concerned with topics ranging from model order reduction, Port-Hamiltonian systems over bio-chemical systems, smart structures, environmental modelling and geosciences to cardiac systems and sports models. The papers of these very succesful minisymposia were presented in 16 minisymposium sessions.

Moreover, the program contained three outstanding plenary talks:

• Prof. Thomas Slawig (Kiel University) gave a brilliant virtual talk on "Mathematical Modeling in Climate Research: Characteristics and Challenges".

• Prof. Lars Eriksson (Linköping University) gave an excellent presentation on "A Mathematical Diesel Engine Model, its Evolution

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• Prof. Marina Dolfin (University of Messina) provided interesting insights into "Challenges in modelling and detecting the impact of human aptitudes and preferences in economics and finance".

Social Program

MATHMOD invited its participants to a welcome reception in a casual atmosphere on July 26, 2022. The official conference program started on July 27, 2022 with an opening ceremony. In addition to the cordial welcome notes from the NOC- and IPC-chairs and co-chairs, the ceremony was accompanied by music from a clarinet ensemble of the Johann Sebastian Bach music school in Vienna and, as a well-established highlight, Prof. Inge Troch gave an insight into many hidden but worth-visiting sights and places of Vienna.

MATHMOD always encourages to take a view over the edge of the plate. This time in the evening lecture on July 27, 2022, Prof. Michael Doneus (University of Vienna) gave a fascinating talk on techniques and methodologies of archaeological prospection. After this evening lecture, the participants were invited to enjoy ice cream, drinks and a great view over the old town of Vienna at the roof terrace of Campus Gußhaus at TU Wien. weather, delicious food and wine and inspiring technical and non-technical discussions were the ideal ingredients for a successful evening.

The conference closed with a farewell and snacks on July 29, 2022 and surprised the participants with a charming musical interlude performed by students from the Institute of Analysis and Scientific Computing.

The organizers would like to extend a big thank you to all participants for their patience waiting almost for 1 ½ years for finally coming to Vienna. Their excellent contributions were essential for the success of MATHMOD 2022. Moreover, the organizers would like to thank the members of the International Program Committee (IPC) for organizing the review process and hence ensuring the scientific quality of MATHMOD. Finally, a thank goes to all sponsors and cosponsors of the conference, in particular to IFAC and its technical committees TC 4.2 – Mechatronic Systems and TC 1.1 – Modelling, Identification and Signal Processing.

We are looking forward to welcome you again at the next MATHMOD in 2025!

Submitted by: MATHMOD Organizing Team (AT)- Andreas Kugi, Andreas Körner, Andreas Deutschmann-Olek, Felix Breitenecker, Inge Troch, Sibylle Kuster, Wolfgang Kemmetmüller



Evening lecture given by University of Vienna Prof. Michael Doneus at MATHMOD

The banquet dinner took place at a Heurigen (wine tavern) located at the foot of the Viennese vineyards on July 28, 2022. Perfect summer

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https://www.ifac-control.org/about/theifac-story

Bundesministerium Klimaschutz, Umwelt, Energie, Mobilität, Innovation und Technologie



Calendar of IFAC Conferences

Title	2022	Place	Further Information
16 th International Workshop on Enterprise Integration, Interoperability and Networking EI2N 2022	October 25	Valletta Malta	https://in4pl.scitevents.org/El2N.aspx in4pl.secretariat@insticc.org
21 st IFAC Conference on Technology, Culture and International Stability TECIS 2022	October 26 – 28	Prishtina Republic of Kosovo	http://tecis2022.ubt-uni.net/ otecis2022@ubt-uni.net
16 th European Workshop on European Advanced Control and Diagnosis ACD 2022	November 16 – 18	Nancy France	https://acd2022.cran.univ-lorraine.fr/ acd2022-contact@univ-lorraine.fr
22 nd IFAC Symposium on Automatic Control in Aerospace ACA 2022	November 21 – 25	Mumbai India	https://aca2022.com/ contact.aca2022@aero.iitb.ac.in
1 st IFAC Workshop on Control of Complex Systems COSY 2022	November 24 – 25	Bologna Italy	https://eventi.unibo.it/cosy2022 cosy2022@unibo.it
NCACI, IFAC et al. Conference on Australian and New Zealand Control Conference ANZCC 2022	November 24 – 25	Gold Coast Australia	https://anzcc.org.au/ANZCC2022
4 th IFAC Workshop on Cyber-Physical and Human Systems CPHS 2022	December 1 – 2	Houston, TX USA	https://www.cphs2022.org/
Title	2023	Place	Further Information
12 th IFAC Symposium on Nonlinear Control Systems NOLCOS 2022	January 4 – 6	Canberra Australia	https://nolcos2022.com/ contact@nolcos2022.com
Conference on American Control Conference (in cooperation with IFAC) ACC 2023	May/June 31 – 02	San Diego, CA USA	https://acc2023.a2c2.org/
22 nd IFAC World Congress 2023	July 09 – 14	Yokohama Japan	https://www.ifac2023.org/
Conference on European Control Conference (in cooperation with IFAC) ECC 2023	July) 13 – 16	Bucharest Romania	https://ecc23.euca-ecc.org/ ecc2023@euca-ecc.org
Title	2024	Place	Further Information
12 th IFAC Symposium on Advanced Control of Chemical Processes ADCHEM 2024	July 14 – 17	Toronto Canada	http://not yet available
4 th IFAC Conference on Modelling, Identification and Control of Nonlinear Systems	September 4 – 6	Lyon France	http://not yet available

The IFAC Calendar of Conferences is constantly updated as addditional IFAC Conferences (Workshops, Symposia, and Conferences) are approved. Due to the Covid-19 pandemic some conferences have had date changes, cancellations, etc. since their initial approval. Please check back often for the current status. The complete version of the IFAC Calendar of Conferences is available online at: <u>https://www.ifac-control.org/events/</u>