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## IFAC Fellows 2020-2023 Announced!

The IFAC Council voted on the 25 new IFAC Fellows for the 2020-2023 triennium. They were recommended by the Fellow Selection Committee. The newly elected Fellows will be honored within the course of the IFAC World Congress in Yokohama, Japan in July 2023.

The Fellow Selection Committee (FSC) for the period 2020 - 2023 consists of: Christos G. Cassandras (Chair), Panos Antsaklis, Maria Domenica Di Benedetto, Roger Goodall, Shinji Hara, Marios M. Polycarpou, Jeff S. Shamma, Claire Tomlin, Ji-Feng Zhang.

The Fellow Search Committee consists of: Anders Rantzer (Chair), Françoise Lamnabhi-Lagarigue, Naomi Leonard, Li Qiu, Mathukumalli Vidyasagar. The role of this committee was to help finding suitable candidates to nominate as Fellows, in addition to direct nominations.

### The IFAC 2020-2023 Fellows are:

Stephen P. Boyd  
Giovanni Cherubini  
Jorge Cortes  
Raffaello D'Andrea  
Bart De Moor  
Bart De Schutter  
Dimitilia Del Vecchio  
Antonella Ferrara  
Minyue Fu  
Qing-Long Han  
Maurice Heemels  
Marija Ilic  
Alf J. Isaksson  
Ilya V. Kolmanovskiy  
P.R. Kumar  
Kirsten A. Morris  
Richard M. Murray  
Kumpati S. Narendra  
Asu Ozdaglar  
Fernando Paganini  
Ioannis Paschalidis  
Malcolm C. Smith  
Allen Tannenbaum  
Nina F. Thornhill  
Maria Elena Valcher

Further information is available at:  
[www.ifac-control.org/awards/ifac-fellows](http://www.ifac-control.org/awards/ifac-fellows)

## IFAC World Congress 2023: Call for Papers

Dear Colleagues,

On behalf of the organizing and program committees, we are pleased to invite you to submit papers and proposals to the IFAC World Congress 2023, to be held in Yokohama, Japan, July 9-14, 2023.

The IFAC World Congress is the largest event in the field of control science and technology, held every three years since 1960. It offers the most up-to-date and complete view of control techniques, with the widest coverage of application fields, and is attended by a worldwide audience of scientists and engineers from academia and industry.

Contributors are invited to prepare and submit high-quality original papers within the broad spectrum spanned by the IFAC technical areas. We accept three paper categories (Regular papers, Survey papers, and Discussion papers), several submission categories, pre-congress Workshops and Tutorials, and so on.

For more details about submission, please visit the congress website [www.ifac2023.org](http://www.ifac2023.org) and the submission guideline pages therein.

### Key Dates:

Sep. 15, 2022: Open Invited Track proposals  
Oct. 15, 2022: Invited Session proposals  
Oct. 31, 2022: Regular / Invited papers submission  
Nov. 30, 2022: Tutorial / Workshop proposals  
Discussion papers (Invited Sessions/ Open Invited Tracks)  
Feb. 1, 2023: Discussion papers (Regular)  
Feb. 21, 2023: Notification of acceptance  
Mar. 31, 2023: Final paper submission

IFAC copyright conditions:  
[www.ifac-control.org/publications/copyright-conditions](http://www.ifac-control.org/publications/copyright-conditions)

The submission site is already open at [www.ifac.papercept.net](http://www.ifac.papercept.net).

We look forward to receiving your contributions and meeting you in Yokohama next summer.



Best regards,

Masato ISHIKAWA and Noriaki ANDO  
IFAC WC 2023 Publicity Co-chairs

# No.4

August 2022

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### 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>

## Keys for Success of Academic-Practice Collaborations

In 2020 the IFAC Industry Committee established a task force to identify what leads to success, or not, with practice/academic collaboration related to control and automation.

The members of the task force were:

- David A. Anisi, Associate Professor, NMB/UiA, Norway
- Philippe Goupil, Aircraft Control System Expert, Airbus, France
- Chris Manzie, Professor, The University of Melbourne, Australia
- R. Russell Rhinehart, Professor Emeritus, Oklahoma State University, USA
- Bran Selic, President and Founder, Malina Software Corp., Canada
- Atanas Serbezov, Professor, Rose-Hulman Institute of Technology, USA
- Jaroslav Sobota, Control System Engineer, Centrum LTD, Czech Republic

The task force conducted a survey asking for experiences with various types of practice/academic collaborations: consortia, research centers, degree programs, joint statements or publications, research funding, coop or practice school programs, patent or new product development, corporate universities, standards, etc. The survey was widely distributed—to IFAC Industry and Education Committees members, ISA members, the CONTROL Global magazine readers, and through LinkedIn and contacts of the task force members. There were 240 survey hits, of which 125 were useful. There were also a few additional responses sent directly to taskforce members.

### Demographic attributes from the data analysis:

- About 50% identifying their country were from the US and Europe, equally split.
- In all, 24 countries and 6 world regions were named.
- Of those identifying experience: 31% academe only, 20% practice only, and 26% both.
- Over 11 academic disciplines, and 13 application domains were represented.

### Major points from the survey analysis:

- Survey responses were universally consistent.
- There are five separate entities involved in practice/academic collaborations: the practitioner, the faculty member, the students, as well as the practice and academic organizations.
- Each participating entity has its own version of the benefit they seek and the cost to participate.
- Immersed in their own culture, often academe and the practice do not understand the other's situation, ways, and needs.
- Success requires each entity to understand the others' views of cost and benefit.
- Success requires each entity to find a way to shape the process and outcomes to sat-

isfy their values, while making it satisfy the other entity.

- Success requires each entity to respect and integrate the others' knowledge, understanding, and experience.
- It is of utmost importance to identify a leader (project manager or director), who understands both sides and is able to persuade each side to rise above its self-centered traditions in the interest of a common benefit.

### The top 10 keys for success:

- Address a joint problem and share a vision.
- Define success and deliverables.
- Define objectives, goals, schedule, and milestones.
- Gain support of leadership.
- Secure adequate funding and staffing.
- Define responsibilities.
- Appoint a project manager / program director.
- Build realistic expectations.
- Stay engaged and connected.
- Develop mutual trust, respect, and personal relationships.

While adhering to the set of best practices identified by the task force will not automatically guarantee a success, it will help participants avoid common mistakes and will increase the likelihood of favorable outcomes.

Authors: R. Russell Rhinehart, [rrr@okstate.edu](mailto:rrr@okstate.edu) and Atanas Serbezov, [serbezov@rose-hulman.edu](mailto:serbezov@rose-hulman.edu)

### About the IFAC Industry Committee:

Starting from the 2017 World Congress in Toulouse (France), IFAC has established an Industry Committee (IndCom), reporting to the IFAC Council. The goals of the committee are to:

- Strengthen the engagement of industry and industry representatives in IFAC activities
- Enhance the value of IFAC to industry
- Help control research realize its full potential for industry impact
- Help research and education in academia be better informed by industry perspectives

The committee currently numbers about 100 members, more than half of whom are affiliated with industry (most of the rest have had substantial industry experience over their careers).

The Industry Committee welcomes additional members with significant industry experience. If you are interested please contact the IndCom chair, Tariq Samad at [samad@umn.edu](mailto:samad@umn.edu) or the chair of the IndCom Communications subcommittee Kevin Brooks at [Kevin.Brooks@apc-smart.com](mailto:Kevin.Brooks@apc-smart.com).

## From the IFAC President

Dear IFAC Friends and Colleagues,

My 2022-2023 triennium as IFAC president is frustrating because of the COVID-19 related restrictions. Fortunately, the impact on IFAC activities is gradually decreasing. The, mostly in-person, Council- and Related Meetings 2022 held in London, UK at Imperial College in July 2022 have proved we may be optimistic for the future. My gratitude goes to Alessandro Astolfi, Thomas Parisini, and all of the ECC 2022 organizers, volunteers, etc. for the kind hospitality as well as to all IFAC Executive Officers for the fruitful discussions.

The meetings provided clear evidence that IFAC is in good shape. The finances remain solid allowing the planning of new projects. IFAC journals are in continuous progression and safely managed thanks to long term planning of their Editorial staff. The Technical and Conference activities have suffered from the lack of in-presence gatherings, yet, not only they resume gradually to normal, but they start implementing new features imagined before the pandemic such as hybrid format to be more inclusive and sustainable, and the IFAC Conference App thanks to which conference organizers save on book of abstracts and preprints production. The Activity fund operates successfully for two years already with a total of 19 funded initiatives. Among new projects and services to the community are: the IFAC financial insurance package; a portal for interacting among affiliates; a portal for management of Conference applications; centralized IFAC website hosting for Conferences; actions in favor of Diversity and Inclusion. These and other projects will be detailed in due time.

But in this August 2022 issue of the Newsletter, it is my pleasure to announce a new service to National Member Organizations (NMOs): the "IFAC<sup>x</sup> brand" label for domestic events. Many NMOs organize or sponsor domestic conferences, summer schools, webinar series etc. These are well suited for the local IFAC people, held in the local language, consistent with national academic rules etc. and IFAC is confident in the quality of these events as guaranteed by the NMO supervision. In order to provide more visibility to these events, and to promote IFAC locally, the Council has approved a dedicated "IFAC<sup>x</sup> in your country/region" label. In the same manner as TED<sup>x</sup> is the local version of TED, IFAC<sup>x</sup> shall brand the excellent initiatives by NMOs. The procedure for obtaining this branding shall be very light and NMOs will be informed about it in mid-September.

Meanwhile, let me recall the next opportunity for the bigger IFAC community to gather at the 22nd IFAC World Congress (9-14 July 2023) which is planned to be held mostly in-person. It is my fervent wish to see even more of you next year!

Best regards, Hajime Asama,  
IFAC President 2020-2023

## IFAC Council- & Related Meetings 2022 10-13 July 2023 London, UK

As decided at Council, based on pre-Covid19 pandemic recommendations from sustainability taskforce, the annual IFAC Council- and Related Meetings were organized in a hybrid format. This year the meetings were with most participants being together in-person in London, UK and others joining in via Zoom. Of course, and unfortunately, most online participants were not physically present because of travel restrictions consequent to the pandemic. The in-person component of the meetings took place at London's Imperial College, in conjunction with the European Control Conference 2022.

In addition to the IFAC Council there were meetings for the boards (Conference, Technical and Publications), Awards, IFAC Foundation, Diversity & Inclusion Committee, Industry Committee, PUMB, as well as others.

IFAC Council met on Wednesday, 13 July beginning at 8am with a long agenda of important items to discuss and decide. Reports and informational materials are provided to Council members in advance of the meeting on the IFAC cloud, and the agenda is posted and provided to them as well as to the National Member Organizations (NMOs) well in advance of the meetings, as stipulated in the IFAC Constitution. Voting was done in-person with proxies given by on-line Council members to those attending in-person.

Two of the items were the bids for IFAC President 2026-2029 and the location of the IFAC 2029 World Congress. In the past there was one decision for both, but in IFAC's structural changes it was decided to separate the two decisions in order to pick the best President and the best Congress location, which might or might not be from two separate countries.

In 2021, Council selected three NMOs to present a more extensive Congress bid in 2022. These bids were shortly presented in open Council and followed by a questions-and-answers sequence. The decision was then made in closed Council, and Council members from countries bidding to host the congress were not allowed to participate in the deliberations and voting. The result was announced. The Council then gathered in closed format with only members from NMOs that had no presidential candidate. Four candidates presented their visions separately for IFAC in the triennium 2026-2029 and their presentation was followed by extensive questioning from Council members. The closed Council deliberated and voted.

The outcomes of these deliberations are as follows. **The IFAC President for 2026-2029 is Maria Prandini from Italy (she will be the first female IFAC president), and the IFAC 2029 World Congress will be held in Amsterdam, the Netherlands.** The Council insisted when announcing the results that all bids and can-

didates were outstanding. IFAC is grateful to each of the three NMOs who bid to host IFAC 2029, as well as to all four presidential candidates for their time, effort, and interest they all devoted to the bidding process and for their interest in leading IFAC.

### About the IFAC President Elect 2026-2029

Maria Prandini was born in Brescia, Italy, in 1969. She received the Laurea degree (cum laude) in Electrical Engineering from the Politecnico di Milano in 1994, and the Ph.D. degree in Information Technology from the University of Brescia in 1998. In 2002, she became an assistant professor at Politecnico di Milano, where she is currently full professor and chair of the Automation and Control Engineering Program. In 2017, she was awarded an August-Wilhelm Scheer Visiting Professorship and Honorary fellowship of the TUM Institute for Advanced Studies. Since January 2022, she is a Visiting Professor in Engineering at Oxford University for a 3-year period. She also held visiting positions at University of California at Berkeley (1998-2000 and 2005), Delft University of Technology (1998), Cambridge University (2000), and Swiss Federal Institute of Technology Zurich (2006).



IFAC President-Elect 2026-2029  
Maria Prandini (IT)

She has been active in IFAC, the IEEE Control Systems Society (CSS), and the Association for Computing Machinery (ACM). She was appointed as a member of the IFAC Policy Committee for the triennium 2017-2020, IEEE CSS Vice-President for Conference Activities in 2016 and 2017, elected member of the IEEE CSS Board of Governors for the term 2015-2017, and member of the ACM SIGBED Board of Directors in 2019-21. She is currently IFAC Vice-President (Conferences) for the triennium 2020-2023.

M. Prandini is associate editor for *IEEE Transactions on Control of Network Systems* and *Automatica*. Previously, she was editor for the *IEEE CSS Electronic Publications* and associated editor for *IEEE Transactions on Automatic Control*, *IEEE Transactions on Control Systems Technology*, and *Nonlinear Analysis: Hybrid Systems*.

She is co-general chair of the IEEE Conference on Decision and Control (CDC) 2024 and, previously, of the Mediterranean Conference on Control and Automation 2022. She was program chair of the IEEE CDC 2021 and co-chair of the ACM International Conference on Hybrid Systems: Computation and Control 2018.

M. Prandini's research interests include data-based methods for system analysis and design, stochastic and hybrid systems, distributed optimization. Her research studies are motivated by applications to the transportation and energy domains.

In 2018, she received the IEEE CSS Distinguished Member Award for contributions to stochastic, hybrid, and distributed control systems and outstanding service to the Control Systems Society related to electronic publications and conference activities. In 2020, she was elevated to IEEE Fellow for contributions to stochastic, hybrid and distributed control systems theory.

(Bio and photo provided by: Maria Prandini, IT)

### About IFAC 2029: Amsterdam, NL

**It is our great pleasure to announce that the 24th IFAC World Congress will be held in the beautiful and exciting town of Amsterdam, the Netherlands, in July 2029!**

The selection of Amsterdam is the result of a bidding process and a secret vote in the Council Meeting in London on July 13, where the decision was made public. It is the first time in the history of IFAC that the World Congress will be organized in the Netherlands, being one of the founding member countries of IFAC.



The Dutch systems and control community is thrilled about organizing IFAC's flagship event. The theme of the Congress will be **"A sustainable IFAC World Congress in a data-rich interconnected world"**.

The IFAC 2029 organizing team includes Manuel Mazo, Ming Cao, Jacqueliën Scherpen, Maurice Heemels, Antonella Ferrara and many others.



The Dutch team presenting the IFAC 2029 bid; first row, from left to right: Maurice Heemels, Jacqueliën Scherpen, Manuel Mazo and Paul Van den Hof.

(IFAC World Congress 2029 in Amsterdam information, photo, and graphic provided by: Paul Van den Hof, NL)

In addition to listening to the reports from officers, task forces and committees the Council voted on many important changes and issues within IFAC.

Out of the Membership Committee (Frank Allgöwer, chair) it was decided that IFAC will have a policy to not necessarily encourage new National Member Organizations but to allow for Associated Member Organizations (AMOs). The vision of IFAC remains to be a worldwide federation gathering automatic control associations from all countries. The new AMO category may allow IFAC to be more inclusive for example with respect to financially disadvantaged countries and those interested in a close partnership without the full rights and obligations of being an NMO.

IFAC will also grant use of its name and special branding to NMOs for a limited number of approved domestic conferences. Called IFACx, this new branding will come along with a dedicated logo, with communication in the IFAC media, and with a light approval procedure. It gets out the IFAC name and brings IFAC recognition to these local events, which do not have to be in English. In return, it increases IFAC's presence and help it to being better known by all colleagues worldwide.

After the Council a dinner/social event was held at the Royal Thames Yacht Club in London. This was a chance for many IFAC officials and volunteers who participate in IFAC's work and activities over the triennium to gather with friends old and new, some for the first time since pre-pandemic times. IFAC thanks the ECC'22 and the UK NMO for the invitation to this event. These few events for IFAC officials are appreciated since all IFAC officials are volunteers who work all year long for IFAC and travel to the IFAC meetings on their own time and having to cover their own costs. In addition, the evening was a nice way to wind down the day after a meeting lasting nearly 10 hours with a fully jam-packed agenda!

Special thanks go to Alessandro Astolfi and Thomas Parisini and their colleagues at Imperial College and the ECC 2022 organization who helped make it possible for at least part of the global IFAC family to be together in person after a pandemic-related gap of several years (the last in-person annual meetings were the ones held in Vienna, AT in September 2019).

The next Council- and Related Meetings are currently planned to take place within the framework of the 2023 IFAC World Congress in July 2023 in Yokohama, Japan. The Call for Papers is included on page 2 of this Newsletter. Over the course of the next months, Newsletter readers will have the opportunity to read about the plans for IFAC 2023 as they develop and evolve.

**Some lessons from this first hybrid IFAC Council- and Related Meetings in Covid-19 times:**

- IFAC, like every organization, is learning how to proceed with its regular activities,

conferences, and meetings in hybrid format. The format deserves to be continued in an effort to contribute to sustainability and allow people to participate who otherwise not be able to for various reasons. Yet, there are improvements to be done and learning to be made about the technology, set-up, and what works and doesn't.

- Despite people's efforts some of the IFAC meeting participants did become ill with Covid soon after the annual meetings. More efforts should be made in the future. Organizers of IFAC conferences taking place at this time are asked to keep Covid precautions in mind (such as participants having easy access to hand sanitizers, masks, etc.). IFAC will keep the Covid situation in mind while planning for 2023 and beyond.

IFAC is grateful to and appreciative of everyone who took part in the 2022 meetings, both in-person and online!

IFAC Council report written by the IFAC Newsletter Team (Elske Haberl & Dimitri Peaucelle)



**IFAC Executive Officers 2020-2023 after their post-Council meeting on 14 July 2022 at Imperial College, London, UK.**

Due to the pandemic situation the London-based meetings were the first occasion in this triennium that the IFAC Executive Officers could gather in one place in-person.

Left to right: Carlos Eduardo Pereira (Vice-President, Technical Board-BR), Dong-il "Dan" Cho (IFAC President-Elect-KR), Dimitri Peaucelle (Vice-President, Operations & IFAC Secretary-FR), Sarah Spurgeon (Vice-President, Publications-UK), Hajime Asama (IFAC President-JP), Maria Prandini (Vice-President, Conferences-IT), John Lygeros (Vice-President, Finances-CH)

### IFAC is on social media!

#### Twitter:

[www.twitter.com/IFAC\\_Control](https://www.twitter.com/IFAC_Control)

#### LinkedIn:

[www.linkedin.com/groups/13400016/](https://www.linkedin.com/groups/13400016/)

#### YouTube

[www.youtube.com/channel/UCLcWoqbVNx-o9rVSS9NKQDeA](https://www.youtube.com/channel/UCLcWoqbVNx-o9rVSS9NKQDeA)

## 13<sup>th</sup> IFAC Symposium on Dynamics & Control of Process Systems, including Biosystems (DYCOPS 2022) 14-17 June 2022 Busan, KR

The 13<sup>th</sup> IFAC Symposium on Dynamics and Control of Process Systems, including Biosystems was held in Busan, South Korea from 14-17 June 2022 in the Westin Josun Busan, located on the Haeundae Beach of Busan, one of the South Korea's most celebrated attractions. 198 submissions were received, three of which were plenaries, and 165 high-quality papers were presented, divided into 3 plenary papers, 8 keynotes papers, 120 oral presentations and 34 posters. All the accepted papers will be published in IFAC-PapersOnLine. We had a total of 287 participants: 179 in-person (regular 108 / students 71) and 108 (regular 59 / students 49) online participants. More information can be found on the website [www.dycops2022.org](http://www.dycops2022.org).

DYCOPS 2022 is a triennial symposium sponsored by the IFAC Technical Committee on Chemical Process Control (6.1), and co-sponsored by the IFAC Technical Committee on Biosystems and Bioprocesses (8.4). The IFAC Symposium on Dynamics and Control of Process Systems (DYCOPS) has a long history initiated in 1986 in Bournemouth (UK). The IFAC Symposium on Computer Applications in Biotechnology (CAB) originated from a series of events that started about 40 years ago in Dijon, France. The merging of the two events into one symposium was implemented in DYCOPS 2016 in Trondheim, Norway, which has been maintained since then. DYCOPS was held in South Korea for the second time in 21 years, after being held in Jeju Island in 2001.

DYCOPS 2022 aimed to provide a forum for professionals, theorists, researchers, engineers and students involved in the broad field of process control engineering to integrate and exchange their knowledge, experience, results, and ideas in diverse areas of dynamics and control of process systems, and to explore the latest theoretical developments as well as control applications in various industries. The symposium also encouraged the participation of young researchers, which had the opportunity to present their works for the scientific community.

To promote the participation of students and young authors, the IFAC Foundation in its framework "Young Author Support" offered support to two young authors from developing countries. The Young Author Award of DYCOPS 2022 was given to Ibrahim Yousef for the paper titled "Visual Analytics: A New Paradigm for Process Monitoring"

Amid the COVID-19 pandemic, it was difficult to determine how to organize this conference as there was much uncertainty concerning the pandemic situation. In the end, it was decided

to operate in a hybrid form by reflecting the opinions of those who wished to participate DYCOPS 2022. This challenging task was made easier for the IPC and NOC chairs by the strong support of the sponsors: we had 6 gold sponsors (4 Korean companies: GS Caltex, LG Chem, Hyundai Oilbank, Hyundai Motor Company, 1 Korean research center: Engineering Development Research Center, 1 foreign global company: Aramco), 4 silver sponsors (SK gas, CJ Cheiljedang, Hanwha Total Energies, and Busan Tourism Organization), and 1 bronze sponsor (LG Energy Solution). In addition, Seoul National University, the Korean Institute of Chemical Engineers, the Institute of Control, Robotics, and Systems, and KAIST assisted us greatly with the financial and administrative aspects of organizing the symposium.



DYCOPS 2022 participants at the symposium banquet

Participants from 29 countries attended the Symposium, being 39 from Americas, 81 from Europe/Middle East/Africa, and 167 from Asia-Pacific. Overall, the symposium was a great success, with a large number of attendees in the majority of sessions, and all of the in-person and online papers were presented without any technical difficulties. By providing lunches and coffee breaks for all participants, we encouraged active discussion between them outside of the sessions as well. It was remarkable that 12 percent of the attendees/34 industrial practitioners, attended the symposium.

The three plenary lectures were: *“Batch Process Automation Methodology Development – a Thermoplastic Injection Molding Example”*, by Furong Gao from the Hong Kong University of Science and Technology (Hong Kong SAR, China); *“Heterogeneous Cell Population Models Uncover ‘Rules of Life’, Inform Experimental Design, and Enable Control of Cell Population Dynamics”*, by Neda Bagheri from University of Washington (USA); and *“Feedback Control for Optimal Process Operation Revisited: Models, Data, and Robustness”*, by Sebastian Engell from TU Dortmund (Germany). Profs. Gao and Engell delivered their plenary speeches in-person, and Prof. Bagheri did so online.

Four workshops were organized in the first day (June 14) with the following subjects: *“Machine Learning for Predictive Control and Real-Time Optimization”*, *“The Next Epoch of Model Predictive Control: Exploiting Machine Learning Methods for Approximation and Design”*, *“InfiniteOpt.jl: A Julia Package for Infinite-Dimensional Optimization”*, and *“Lithium-Ion Batter-*

*ies: Challenges and Opportunities”*, with 51 participants.

Regarding the social aspects of the conference, the venue was chosen to provide a pleasant atmosphere for the attendees and their families. The hotel offered 5-star accommodations located on the white sand beach of Haeundae, and all the session rooms had a stunning view of the Haeundae beach, allowing attendees to relax and enjoy themselves while sitting in the session rooms.

On the evening of the workshop day (June 14), we hosted a reception with food and drinks for the attendees. The banquet was held on June 16 in the evening. The dinner began with an opening address by NOC Chair Jay H. Lee. IFAC President-Elect Dan Cho, TC 6.1 Chair Rolf Findeisen, and former Asian Control Association President Keumshik Hong delivered congratulatory remarks.

We also held a ceremony to honor the IFAC Young Author Award recipient and Plenary Speakers by presenting them with certificate and plaques of appreciation, respectively. The final performance was a fusion of Korean traditional music by the group Young *“Poongryu”*, whose name means *“love and appreciation of the arts”* in Korean.

Submitted by Jong Min Lee, Seoul National University

## 13<sup>th</sup> Asian Control Conference (ASCC 2022) 4-7 May 2022 Jeju Island, KR

The 13<sup>th</sup> Asian Control Conference (ASCC 2022) was held at Booyoung Jeju Hotel in Jeju Island, Korea, from 4-7 May 2022. Due to the effect of Covid-19, the conference was held in a hybrid (online and in-person) style. You can find more information at [www.asc2022.org/](http://www.asc2022.org/).

Past ASCCs include Tokyo (1994, the 1st), Seoul (1997), Shanghai (2000), Singapore (2002), Melbourne (2004), Bali (2006), Hong Kong (2009), Kaohsiung (2011), Istanbul (2013), Kota Kinabalu (2015), Gold Coast (2017), and Kitakyushu (2019).

ASCC 2022 was organized by the Asian Control Association (ACA) and jointly hosted with Pusan National University, Seoul National University, and Chonnam National University. It was technically co-sponsored by ICROS, IEEE, IFAC, SICE, CAA-TCCT, and CACS. The Korean Federation of Science & Technology Societies, the 9th International Electric Vehicle Expo, and nine other agencies/companies financially supported the conference. ASCC 2022 contributed to the progress of control science and technology in Asia-Oceania and the world.

ASCC 2022 received 633 submissions (453 foreign and 180 domestic/Korea). These 633 papers were peer-reviewed: 326 papers were

accepted for presentation and IEEE-Explore indexing (51.5%) and 256 papers were accepted for presentation only (40%), of which 415 papers were in oral presentation and 167 in poster presentation (China 242, Korea 171, Japan 70, India 14, Taiwan 12, etc.). Oral presentations were allocated into 79 sessions (six no-shows reported), and poster papers were presented in nine interactive sessions. The number of registrants was 710 from 30 countries (Korea 319, China 210, Japan 91, Taiwan 11, India 10, etc.). Among them, 33 were from Europe, USA, and Africa. As a hybrid conference, 283 were in-person attendees, and 427 were online attendees.



Landscape of Jeju Island, ASCC location

The six plenary speeches were: *“Robot Technology for Disaster Response”* by Prof. Hajime Asama (Department of Precision Engineering, The University of Tokyo, Japan), *“Observability, Identifiability and Excitation: Questions of Data Quality not Quantity”*, by Prof. Robert Bitmead (Dept. of Mechanical and Aerospace Engineering, University of California at San Diego, USA), *“Some Basic Problems in Systems and Control”*, by Prof. Lei Guo (Academy of Mathematics and Systems Science, Chinese Academy of Science, *“Time-Synchronized Control”*, by Prof. Shuzhi Sam Ge (Dept. of Electrical and Computer Engineering, The National Univ. of Singapore), *“Reinforcement Learning for Control and Beyond”*, by Prof. Jay H. Lee (Department of Chemical & Biomolecular Engineering, KAIST, Korea), and *“Automatic Control Research and Education for 2030 and Beyond—What I learned from Mcity”*, by Prof. Huei Peng (Department of Mechanical Engineering, University of Michigan, USA).

We provided three tutorials to the registrants for free: The first-day two tutorials were *“Security of cyber-physical systems from a control theoretical perspective”* by Prof. Yilin Mo and *“Homomorphic encryption and its application to feedback control”* by Prof. Kiminao Kogiso, Prof. Kaoru Teranishi, and Prof. Junsoo Kim. Thursday tutorial was *“Model predictive control: fundamentals and frontiers”* by Prof. Alberto Bemporad. The Friday tutorial was *“Mathematical and practical foundations of backpropagation”* by Prof. Ernest Ryu.

Two workshops were held on the last day (7 May) with the following subjects: *“Control of soft wearable robots”* by Prof. Kyu-Jin Cho and Prof. Sang-Yoep Lee, and *“Guidance and control of a space launch vehicle: an Overview”* by Prof. Jaemyung Ahn.

The ACA awards ceremony was held during the Banquet of ASCC 2022: ACA Wook Hyun Kwon Education Award 2019 was delivered to Prof. Hidenori Kimura, and that of 2022 was awarded to Prof. Xiren Cao (Shanghai Jiaotong Univ., China) and Prof. Yugeng Xi (Shanghai Jiaotong

Univ., China), respectively. ACA Temasek Young Educator Award to Prof. Kyongchul Kong (KALST, Korea) and Prof. Dongyu Li (Beihang Univ., China). ACA Contribution Award was presented to Prof. Ljubo Vlacic (Griffith Univ., Australia) and Prof. PooGyeon Park (POSTECH, Korea). Prof. Fumitoshi Matsuno (Kyoto University, Japan) announced the recipients of the ASCC 2022 awards using the Zoom link from Japan. Shimemura Young Author Prize went to Cheng Chen and co-authors (Southeast Univ., China), and the Best Paper Award was committed to Dalin Yang and co-authors.

Finally, Prof. Wei Wang, General Chair of the 14<sup>th</sup> ASCC (2024), extended a warm invitation to attend the next conference, which is scheduled to be held from 4- 7 May 2024, in Dalian, China.

Submitted by: Keum-Shik Hong (KR), ASCC NOC Chair

### 11<sup>th</sup> IFAC Symposium on Control of Power & Energy Systems (CPES 2022) 21-23 June 2022 Online

The 11<sup>th</sup> IFAC Symposium on Control of Power and Energy Systems (CPES 2022) was sponsored by the IFAC TC 6.3 on Power and Energy Systems and IFAC Secretariat with the operational help of the School of Electrical and Computer Engineering, Academy of Technical and Art Applied Studies, Belgrade, Serbia, and co-organized by IFAC Technical Committees (TCs) 1.2, TC 1.5, TC 5.4, TC 6.4, TC 7.4, TC 9.1, and 9.3.



CPES traditionally addresses all aspects of modeling, operation, and control of power plants and power systems, including dynamic interactions between power plants and power systems, constraint and security control aspects, tools and methods for control system design, test and documentation, real-time simulation and dispatching. 96 papers from 21 countries were arranged in three tracks addressing (i) cyber-physical nature of power and energy systems (PES), (ii) advances in optimization and control of PES, (iii) progress in technologies of energy generation, storage, and distribution.

This virtual event was organized using Conference Compass conference management system to give the conference participants better engagement and networking opportunities.

Plenary talks on topical aspects of future energy systems were given by Tomoya Imazu from Tokyo Electric Power Company (Japan), Christian Breyer from Lappeenranta-Lahti University

of Technology (Finland), Marija Ilic from Carnegie Mellon University (USA), Peter Fogh Odgaard from Goldwind Energy (Denmark), and Eduard Muljadi from Auburn University (USA). All plenaries are available online at the conference web site [www.cpes2022.com](http://www.cpes2022.com).

During the closing ceremony IPC Chair Yrjö Majanne (FI) noted that despite awful worldwide problems resulting in a one-year delay and deep reformatting, finally the 11<sup>th</sup> IFAC CPES Symposium was a success.

IFAC Vice-President and Secretary Dimitri Peaucelle (FR) underlined importance of international scientific exchanges for the progress of the theory of automatic control and its applications.

Submitted by: Yrjö Majanne (FI), CPES 2022 IPC Chair

### 14<sup>th</sup> IFAC Workshop on Adaptive and Learning Control Systems (ALCOS 2022) 29 June-1 July 2022 Casablanca, Morocco

The 14<sup>th</sup> IFAC Workshop on Adaptive and Learning Control Systems (ALCOS 2022) was held at the University Hassan II of Casablanca (UH2C), Casablanca, Morocco, from 29 June – 1 July 2022. Nearly 140 participants from over 20 countries attended the meetings, either in-person or remotely, and enjoyed the technical program as well as the social events including daily lunches, the gala dinner offered by the President of Casablanca Region Council in a historical building (Pasha Court), and guided tour to the Habous popular place and Hassan II Mosque.

The ALCOS Workshops series constitute a long-standing activity of IFAC. ALCOS 2022 is the 14th edition in a series originated in San Francisco (1983) and continued in Lund (1986), Glasgow (1989), Grenoble (1992), Budapest (1995), Glasgow (1998), Cernobbio-Come (2001), Katayama (2004), Saint-Petersburg (2007), Antalya (2010), Caen (2013), Eindhoven (2016), Winchester (2019). Thus, 2022 ALCOS edition was ALCOS's first time in Africa.

ALCOS 2022 was organized by two school of engineers ENSEM-Casablanca and ENSET-Mohammedia, both are components of the UH2C. It was co-organized by two French organizations, the University of Caen Normandie and the SAGIP (the French IFAC NMO). It was technically sponsored by the International Federation of Automatic Control (IFAC), especially via its Technical Committee 1.2 'Adaptive and Learning Systems' for which ALCOS is the flagship event. It also had the technical sponsorship of the IEEE Control Systems Society and the French GDR MACS.

ALCOS 2022 has been focused on the study of estimation and control issues for dynamical systems under conditions of uncertainty and lack of information. Then, adaptation, learning and extremum seeking techniques turn out to be natural tools to cope with these issues which are generally the consequence of real-time changes in the dynamical behaviour of signals and systems.

Out of 156 papers that were submitted to ALCOS 2022, the IPC has selected 131 papers for inclusion in the final program. For nearly 95% of papers, the selection was based on at least two independent evaluations per paper. The final program comprised three plenary sessions, 11 invited sessions and 14 regular sessions. The relatively large number of presentations has led the organizers to design a program with 4 parallel tracks which provided ample opportunity for anyone attending the workshops to satisfy their own personal interests.

The three plenary lectures were presented by distinguished professors and constituted highlight moments of the meeting. The first lecture, entitled '*Lessons from Adaptive Control: Towards Real-Time Machine Learning*', was presented by Professor Anuradha Annaswamy (Active-adaptive Control Laboratory, Department of Mechanical Engineering, Massachusetts Institute of Technology, USA). The lecturer outlined the similarities and connections between adaptive control design and learning control design and described how the understanding of the connections is essential for the development of new methods, tools, and algorithms.

The second plenary, entitled '*Prescribed-Time Extremum Seeking*', was delivered by Professor Miroslav Krstic (Department of Mechanical and Aerospace Engineering, University of California San Diego, CA, USA). The lecturer presented recent results that extend prescribed-time stabilization to prescribed-time extremum seeking, with applications to mobile robots in GPS-denied environments and real-time optimization under large delays on the input and in the presence of PDE (partial differential equation) dynamics. The designs are model-free and achieve convergence/optimality in a user-prescribed interval of time, independent of initial condition.

The third plenary lecture, entitled '*Safe Learning in Control*' was given by Professor Claire Tomlin (Department of Electrical Engineering and Computer Sciences, University of California-Berkeley, USA). After presenting a controller synthesis technique based on the computation of reachable sets, using optimal control and game theory, Claire Tomlin outlined methods for combining reachability with learning-based methods, to enable performance improvement while maintaining safety, and to move towards safe robot control with learned models of the dynamics and the environment.

## Calendar of IFAC Conferences

Title	2022	Place	Further Information
9 <sup>th</sup> IFAC Symposium on Mechatronic Systems MECHATRONICS 2022	September 6 – 9	Los Angeles, CA USA	<a href="https://ifacms-movic2022.seas.ucla.edu/home/">https://ifacms-movic2022.seas.ucla.edu/home/</a>
4 <sup>th</sup> IFAC Workshop on Control of Systems Governed by Partial Differential Equations CPDE 2022	September 7 – 9	Kiel Germany	<a href="https://cpde2022.org/noc@cpde2022.org">https://cpde2022.org/noc@cpde2022.org</a>
16 <sup>th</sup> IFAC Workshop on Discrete Event Systems WODES 2022	September 7 – 9	Prague Czech Republic	<a href="https://wodes2022.math.cas.cz/">https://wodes2022.math.cas.cz/</a>
15 <sup>th</sup> IFAC Symposium on Analysis Design and Evaluation of Human Machine Systems HMS 2022	September 12 – 16	San Jose, CA USA	<a href="https://www.ifac-hms2022.org/ifac.hms.2022@gmail.com">https://www.ifac-hms2022.org/ifac.hms.2022@gmail.com</a>
25 <sup>th</sup> International Symposium on Mathematical Theory of Networks and Systems (in cooperation with IFAC)	September 12 – 16	Bayreuth Germany	<a href="https://www.mtns2022.uni-bayreuth.de/mtns2022@uni-bayreuth.de">https://www.mtns2022.uni-bayreuth.de/mtns2022@uni-bayreuth.de</a>
7 <sup>th</sup> IFAC Conference on Sensing, Control and Automation Technologies for Agriculture AGRICONTROL 2022	September 14 – 16	Munich Germany	<a href="https://www.events.tum.de/frontend/index.php?folder_id=1147ertug.olcay@tum.de">https://www.events.tum.de/frontend/index.php?folder_id=1147ertug.olcay@tum.de</a>
14 <sup>th</sup> IFAC Conference on Control Applications in Marine Systems, Robotics, and Vehicles CAMS 2022	September 14 – 16	Kgs. Lyngby Denmark	<a href="https://www.ifac-cams2022.dk/">https://www.ifac-cams2022.dk/</a>
2 <sup>nd</sup> IFAC Workshop on Control Methods for Water Resource Systems CMWRS 2022	September 22 – 23	Milan Italy	<a href="https://cmwrs2022.deib.polimi.it/cmwrs2022@polimi.it">https://cmwrs2022.deib.polimi.it/cmwrs2022@polimi.it</a>
8 <sup>th</sup> IFAC Symposium on System Structure and Control (held jointly) SSSC 2022	September 27 – 30	Montreal Canada	<a href="https://sssc2022.encs.concordia.ca/">https://sssc2022.encs.concordia.ca/</a>
17 <sup>th</sup> IFAC Workshop on Time Delay Systems (held jointly) TDS 2022	September 27 – 30	Montreal Canada	<a href="https://sssc2022.encs.concordia.ca/">https://sssc2022.encs.concordia.ca/</a>
5 <sup>th</sup> IFAC Workshop on Linear Parameter Varying Systems (held jointly) LPVS 2022	September 27 – 30	Montreal Canada	<a href="https://sssc2022.encs.concordia.ca/">https://sssc2022.encs.concordia.ca/</a>
2 <sup>nd</sup> AACC Conference on Modeling, Estimation and Control Conference MECC 2022	October 1 – 5	Jersey City, NJ USA	<a href="https://mecc2022.a2c2.org/">https://mecc2022.a2c2.org/</a>
13 <sup>th</sup> IFAC Symposium on Robot Control SYROCO 2022	October 17 – 20	Matsumoto Japan	<a href="https://syroco2021.com/">https://syroco2021.com/</a>
16 <sup>th</sup> International Workshop on Enterprise Integration, Interoperability and Networking EI2N 2022	October 25	Valletta Malta	<a href="https://in4pl.scitevents.org/EI2N.aspxin4pl.secretariat@insticc.org">https://in4pl.scitevents.org/EI2N.aspxin4pl.secretariat@insticc.org</a>
21 <sup>st</sup> IFAC Conference on Technology, Culture and International Stability TECIS 2022	October 26 – 28	Prishtina Republic of Kosovo	<a href="http://tecis2022.ubt-uni.net/tecis2022@ubt-uni.net">http://tecis2022.ubt-uni.net/tecis2022@ubt-uni.net</a>
16 <sup>th</sup> European Workshop on European Advanced Control and Diagnosis ACD 2022	November 16 – 18	Nancy France	<a href="https://acd2022.cran.univ-lorraine.fr/acd2022-contact@univ-lorraine.fr">https://acd2022.cran.univ-lorraine.fr/acd2022-contact@univ-lorraine.fr</a>
22 <sup>nd</sup> IFAC Symposium on Automatic Control in Aerospace ACA 2022	November 21 – 25	Mumbai India	<a href="https://aca2022.com/contact.aca2022@aero.iitb.ac.in">https://aca2022.com/contact.aca2022@aero.iitb.ac.in</a>
1 <sup>st</sup> IFAC Workshop on Control of Complex Systems COSY 2022	November 24 – 25	Bologna Italy	<a href="https://eventi.unibo.it/cosy2022cosy2022@unibo.it">https://eventi.unibo.it/cosy2022cosy2022@unibo.it</a>

# Calendar of IFAC Conferences

Title	2022	Place	Further Information
NCACI, IFAC et al. Conference on Australian and New Zealand Control Conference ANZCC 2022	November 24 – 25	Gold Coast Australia	<a href="https://anzcc.org.au/ANZCC2022">https://anzcc.org.au/ANZCC2022</a>
4 <sup>th</sup> IFAC Workshop on Cyber-Physical and Human Systems CPHS 2022	December 1 – 2	Houston, TX USA	<a href="https://www.cphs2022.org/">https://www.cphs2022.org/</a>
Title	2023	Place	Further Information
12 <sup>th</sup> IFAC Symposium on Nonlinear Control Systems NOLCOS 2022	January 4 – 6	Canberra Australia	<a href="https://nolcos2022.com/contact@nolcos2022.com">https://nolcos2022.com/contact@nolcos2022.com</a>
Conference on American Control Conference (in cooperation with IFAC) ACC 2023	May/June 31 – 02	San Diego, CA USA	<a href="https://acc2023.a2c2.org/">https://acc2023.a2c2.org/</a>
22 <sup>nd</sup> IFAC World Congress 2023	July 09 – 14	Yokohama Japan	<a href="https://www.ifac2023.org/">https://www.ifac2023.org/</a>

Although ALCOS 2022 corresponded to an average-sized meeting, the organization required the dedicated efforts of many people, almost as many as for a larger conference. Furthermore, the uncertainties related to the CoViD-19 pandemic, as well as the constraints generated by the Ukraine war, have brought the organizers to opt for a hybrid format, allowing the participation of the greatest number of contributors. Despite the hybrid mode, a very positive atmosphere was created, thanks to the professional virtual conference platform making all attendees, being in-person or in remote, feel all in presence at the same place.



We would like to take this opportunity to thank all individuals and institutions who help in various manners to make ALCOS' first time in Africa a reality. Special thanks go to the IFAC TC1.2 Chair Tiago Roux Oliveira for providing information and support, to Rachid Lajouad for editing the final program and the proceedings, and to Khalid El Majdoub for realizing and maintaining the event website. Thanks to the IPC members, to the Associate Editors, and to all reviewers for their important work during the evaluation process. Many thanks go to the plenary speakers: their outstanding lectures were highlight moments of the meeting. Our thanks also go to all authors, session

organizers and chairs for contributing to the meeting success. We are grateful to the administrative and technical staff of the UH2C and to all volunteers who made this meeting a memorable event for all participants. Special thanks go to the NOC members for considerable effort they deployed before and during the event.

Submitted by Fouad Giri (FR, NOC Chair) and Anuradha Annaswamy (US, IPC Chair)

## 1<sup>st</sup> IFAC Workshop on Aerospace Control Education (WACE 2021) 9-10 September 2021 Online

The 1<sup>st</sup> IFAC Workshop on Aerospace Control Education (WACE) was held online based in Milan, Italy, from 9-10 September 2021. The main sponsoring IFAC TC of this workshop was TC 7.3 (Aerospace), while the co-sponsors were TC 9.4 (Control Education) and the Associazione Italiana di Aeronautica e Astronautica (AIDAA).

Due to the online nature of the workshop the planned social aspects could not take place. The workshop, the first one on this topic organised under the auspices of IFAC, developed around the methods, tools, and experience in the education on control engineering of aerospace engineering students.

Sixteen papers were presented in four technical sessions: one session on "Teaching models and practice", one session on "Tools for aerospace

control education" and two sessions on experimental and project activities "Experimental and project activities 1" and "Experimental and project activities 2". Given the innovative nature of the workshop as well as the necessity to implement it on online format, time slots for demonstrations of hardware and software tools were allocated in the technical program and were used by some of the authors to further illustrate their results and remote discussion among the participants.

Submitted by: Marco Lovera (IT), WACE 2021 NOC Chair

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