IFAC
INTERNATIONAL FEDERATION OF AUTOMATIC CONTROL

NEWSLETTER

E-MAIL: NEWSLETTER@IFAC-CONTROL.ORG | PHONE +43 2236 71447 www.ifac-control.org

No.5
October 2021

2020-2023 IFAC Fellows and Major Awards: Calls Now Available

Calls are now published on the IFAC website and in this issue of the IFAC Newsletter for the 2020-2023 IFAC Fellows and Major Awards (Nichols, Thoma, and Quazza Medals, and the High Impact Paper and Industrial Achievment.) Please note that the IFAC Fellows and Major Awards are awarded on a triennial (NOT yearly) basis.

Call for 2020-2023 IFAC Fellow Nominations

IFAC is seeking nominations for 2020-2023 IFAC Fellows. The IFAC Fellow award provides a distinction of excellence in the Federation and is conferred on a small number of outstanding scientists or engineers by the IFAC Council, based on the proposal of the Fellow Selection Committee. With the appointment as an IFAC Fellow, IFAC honors outstanding contributions with a high impact in the fields of interest of IFAC in the role as a Scientist, Engineer, Technical Leader or Educator. These contributions may be technical publications, patents, control solutions, products, software, and leadership in research, development and education.

Any control scientist or engineer (with the exceptions listed below) can be a candidate for the title of an IFAC Fellow. Past involvement in IFAC activities, publications and events is desirable and an asset but not absolutely mandatory. For a list of IFAC Fellows elected so far, please go to the IFAC website at:
https://www.ifac-control.org/awards/ifac-fellows

Current members of the IFAC Council, Fellow Search Committee or the Fellow Selection Committee are not eligible to be considered as Fellow Candidates.
https://www.ifac-control.org/structure/council

IFAC Fellow candidates must be proposed by a separate nominator.

Nominators

Any person is eligible to serve as a nominator with the exception of members of the IFAC Council, Fellow Search Committee or Fellow Selection Committee. The nominator is responsible for the information provided about the candidate. The nominator is asked to read the Nominator Information, complete the Nomination Form according to the requirements given below, and inform the persons indicated as referees that they have been named as such.
If you plan to submit an IFAC Fellow Nomination Form, please find instructions below to assist you in this nomination process. Strict adherence to this procedure is essential; otherwise, a candidate may be placed at a serious disadvantage and possibly excluded from consideration this triennium.

Fellow Nominations should be uploaded electronically at:
https://ifac.papercept.net/conferences/scripts/submissionwizard.pl?ConfID=467 by

February 1, 2022

References

Each nomination must be supported by at least three, but no more than five references from internationally reputed experts in the field who are aware of the candidate's contributions. These referees need not be IFAC Fellows themselves. Note that the choice of referees is important for the success of the candidate's nomination. Members of the IFAC Council, Fellow Search Committee or the Fellow Selection Committee are not eligible to serve as referees. If you have been asked to act as a referee, please read the Reference Information and complete the Reference Form.

Fellow References should be uploaded electronically at
https://ifac.papercept.net/conferences/scripts/submissionwizard.pl?ConfID=467 by

March 1, 2022

The Call for Nominations, the Nominator Information, as well as the Reference Information are available at the IFAC website at
https://www.ifac-control.org/awards/fellow-nominations-2023

IN THIS ISSUE:

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

Fellow Announcement

The announcement of the newly elected Fellows will be made shortly after the completion of the vote taken by the IFAC Council in July 2022. IFAC will inform all successful candidates and their nominators of the election results by e-mail. Nominators of unsuccessful candidates will be notified by e-mail. The new elected IFAC Fellows will be honored in a ceremony at the 2023 IFAC World Congress (scheduled to take place in Yokohama, Japan from 9-14 July 2023).

Calls for 2020-2023 IFAC Major Award Nominations

Call for Nominations for the IFAC Major Awards: Giorgio Quazza Medal, Nathaniel B. Nichols Medal, Manfred Thoma Medal, Industrial Achievement Award, and High Impact Paper Award

According to the provisions as outlined for the IFAC Major Awards, the IFAC NMOs and the IFAC Technical Committee Chairs as well as other individuals are invited to nominate a candidate (candidates) for one or more of these awards. The nomination should be uploaded electronically at
https://ifac.papercept.net/conferences/scripts/submissionwizard.pl?ConfID=467
no later than

February 15, 2022

The nominations should in general contain a curriculum vitae of the candidate, a summary of his/her major contributions, a proposed citation and the names of three referees. Specific details for the awards are listed below. Nominations should be submitted as a single pdf file through PaperCept, by following the submission instructions provided at:
https://ifac.papercept.net/conferences/scripts/submissionwizard.pl?ConfID=467

It is the nominator's role to inform the people listed as referees to send in an electronic reference form with an assessment of the candidate(s). The **reference form should be uploaded to PaperCept by**

March 15, 2022

Reference forms are available at
https://www.ifac-control.org/awards/major-awards-reference-forms

For each of the Major Awards, a selection committee has been appointed. All awards will be presented by the IFAC President at the Opening Ceremony of the 2023 IFAC World Congress in July 2023 in Yokohama, Japan.

Every individual can act as nominator or referee, with the exception of members of the corresponding Major Award Selection Committee, the Major Awards Search Committee, IFAC Executive Officers and members of the IFAC Council. Self-nominations are not allowed.
It may be useful to consider the list of past winners on the IFAC Website, at
https://www.ifac-control.org/awards

Please note that it is possible to resubmit a nomination that was made in the past.

A more detailed description of the several Awards, including selection criteria, follows below:

GIORGIO QUAZZA MEDAL
(Created 1979)

This IFAC award recognizes lifetime achievements in science and engineering in any of the technical fields covered by IFAC. The contributions should be manifested in technical publications. A nominee should have served IFAC in some capacity, formally or informally. The selection criteria are:

- Quality of publications
- Impact of publications
- Engineering significance
- Service to IFAC
- International recognition

Nominations should contain a curriculum vitae of the candidate, a summary of his/her major contributions and an account of their impact, a proposed citation and the names of three referees.

NATHANIEL B. NICHOLS MEDAL
(Created 1996)

This IFAC award recognizes industrial leadership, outstanding contributions of an individual to design methods, software tools and instrumentation, or significant projects in major applications and advancement of control engineering. The award is given for contributions in any of the technical fields of IFAC. The contributions should be manifested in technical publications, patents or reports documenting completed projects or developed products. The selection criteria are:

- Quality of publications
- Impact of publications
- Innovation level of patents
- Impact of patents
- Engineering significance of products and projects
- International recognition

Nominations should contain a curriculum vitae of the candidate, a summary of his/her major contributions and an account of their impact, a proposed citation and the names of three referees.

MANFRED THOMA MEDAL
(Created 2015)

This is an IFAC award for early career achievements that recognizes outstanding contributions of a young researcher and/or engineer under the age of 40 to the field of systems and control in its widest sense. For the award to be given at the 2023 World Congress candidates

From the IFAC President

Dear IFAC Friends and Colleagues,

In the past the bids for hosting an World Congress and for IFAC President for that triennium were submitted, presented, and decided on as a single package. One of the many changes made to the IFAC structure in recent years has been the uncoupling of the IFAC presidency and World Congress location.

The decision-making procedure for the Congress location for 2029 is already underway. After receiving Expressions of INterest (EoIs) from six NMOs the IFAC Council invited three IFAC NMOs (IT, NL, and US) to prepare more extensive second-round bids to host the 2029 IFAC World Congress. The three bidding NMOs will make their final presentations at the 2022 IFAC Council meeting, which is currently planned to be held on 13 July 2022 in conjunction with the ECC in London, UK.)

At the time of this writing a letter to the NMOs was being drafted to invite them to submit EoIs for the IFAC presidency for the 2026-2029 triennium. The IFAC Executive Officers will have the opportunity to study and discuss the EoIs at their planned meeting in Austria in April 2022. Then the EoIs will be distributed to the IFAC Council for advance review, and a formal invitation will be extended to the respective NMOs to give their presentation in London. The proposed president must be part of the presentation. Unlike the decision concerning the congress location which is made in two steps the decision concerning the IFAC President is made in only one round.

Article 17 of the IFAC Constitution explains the required IFAC service that an individual must have to be considered for IFAC President. „Article 17 (a) With the exception of the Immediate Past-President, all the Executive Officers listed in Article 16(a) shall be elected by the General Assembly after nomination by the Council. Such elections will require at least half of the votes cast. (b) Only those who have been elected or appointed for at least a total of two terms in one or several of the following offices: Council member, Technical, Conference or Publications Board member, Technical Committee chair, Executive Committee member (including chairs) may be elected to the offices of President and President Elect. Normally the President Elect, after serving in this capacity for one term, will be elected to the office of President for the next term."

It is hoped that the new procedure will allow for the IFAC World Congress being a big success at a great venue and location, as well as an excellent IFAC president, and it may be that these important components of an IFAC triennium are from two separate countries. We look forward to receiving many excellent EoIs and for fruitful discussions in planning for the future!

Best regards, Hajime Asama
IFAC President 2020-2023

are eligible that were born after January 1, 1983. (Age verification, such as passport copy may be requested.)

Candidates are assessed by their scientific and technical contributions to the field of systems and control. The selection criteria are:

- Quality and impact of publications
- Engineering significance
- International recognition

Involvement in IFAC is not part of the criteria.

Nominations should contain a curriculum vitae of the candidate, a summary of the major achievements in terms of the selection criteria above, a proposed citation and the names of three referees.

INDUSTRIAL ACHIEVEMENT AWARD
(Created 2000)

The IFAC Industrial Achievement Award is given to an individual, or a team of individuals, who has made significant contributions to industrial applications of control in any of the technical fields covered by IFAC. The award can be given for a single achievement (an invention or the leadership of a major project) or a record of achievements over a period of time. There is no requirement that the nominated candidates must have been involved in IFAC. The selection criteria are:

- Inventions in the control area
- Engineering significance of products and projects
- Industrial leadership
- Promotion of control technology in industry
- Impact of patents
- International recognition

Nominations should contain a curriculum vitae of the candidate(s), a summary of the major achievements in terms of the selection criteria above, a proposed citation and the names of three referees.

HIGH IMPACT PAPER AWARD
(Created 2009)

This award is to acknowledge the impact of a paper published in any of the official IFAC journals on the broad areas of automatic control theory and applications. At most two such awards will be made in any triennium.

Eligible papers must have been published in any of the official IFAC Journals (Automatica, Control Engineering Practice, Annual Reviews in Control, Journal of Process Control, Engineering Applications of Artificial Intelligence, Mechatronics, Nonlinear Analysis: Hybrid Systems). For the award(s) to be given at the 2023 Congress, only papers published within the time period from 1 January 1993 through 31 December 2014 are eligible.

The selection criteria are:

- Evidence of high number of citations, as obtainable from either (or both) the engineering databases: Thompson ISI's Web of Science and Elsevier's SCOPUS.
- Evidence that the work under consideration has been actually used by others in their research/professional activity.
- Opinions expressed by three references from internationally reputed experts in the field who are personally aware of the contributions of the nominated paper.

Nominations should include:

- A statement specifying the number of citations, as obtainable from either (or both) the engineering databases: Thompson ISI's Web of Science and Elsevier's SCOPUS;
- Excerpts of technical papers documenting work and progress made possible due to the prior contributions of the nominated paper. Papers (co)authored by one of the authors of the nominated paper cannot be used for this purpose.
- A description (if appropriate) of industrial achievements made possible due to the prior contributions of the nominated paper.
- The names of three internationally reputed experts that can serve as referees.

IFAC Distinguished Lecturer Program: Update from the Chair

This article is an update concerning IFAC's inaugural triennium of the Distinguished Lecturer Committee, with the eight distinguished lecturers appointed for 2020-2023. The worldwide Covid-19 pandemic has affected the progress of this new activity.

The IFAC Distinguished Lecturer Program was approved by IFAC Council at its meeting during the 2020 IFAC World Congress. This program provides for the appointment of eight Pawel J Nowacki Distinguished Lecturers for each triennium. (Editor's Note: The Pawel J Nowacki name is in honor of the IFAC president from Poland who served as the federation's president from 1966-1969.)

These Distinguished Lecturers are appointed by the IFAC Council Executive on recommendation from the IFAC Distinguished Lecturer Committee. The aim of the program is for IFAC to enable researchers working in developing countries to hear lectures from the top researchers in our field. The eight Pawel J Nowacki Distinguished Lecturers for the current triennium are

- Hideaki Ishii, Tokyo Institute of Technology (JP)
- Mustafa Khammash, ETH (CH)
- Na Li, Harvard University (US)
- Kirsten Morris, University of Waterloo (CA)
- Bruno Siciliano, University of Naples Federico II (IT)
- Lucy Pao, University of Colorado (US)
- Eduardo Sontag, Northeastern University (US)
- Feiyue Wang, Chinese Academy of Sciences, Beijing (CN)

The lecturers serve a term of one triennium during which time they are expected to give at least one lecture. The lectures must be given in or for a developing country, often in conjunction with a local conference. IFAC provides a contribution towards the travel expenses for each lecture. Potential hosts of distinguished lectures in developing countries are encouraged to contact the lecturers directly about the possibility of hosting a lecture. Due to COVID-19 travel restrictions, noin-person Distinguished Lectures have yet been held for this triennium but we are hoping that all of the lecturers will be able to present at least one lecture between now and the next IFAC World Congress. Due to the current pandemic situation where international travel is limited such lectures can be held online.

Submitted by: Ian Petersen (pictured above)
Chair, IFAC Distinguished Lecturer Committee.

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 to be included soon!

How to download:
App Store http://bit.ly/2ID8v0h
Google Play http://bit.ly/2IRT8RZ
You can also search for 'IFAC' in the Apple App Store or in the Google Play Store.

Reports from IFAC Conferences (formerly known as IFAC Technical Events)

At their July 2021 meeting the IFAC Council voted to change the name of IFAC Technical Events to IFAC Conferences.

Although the overall name has changed, the various types (IFAC Workshop, IFAC Symposium, IFAC Conference, and the flagship IFAC World Congress) have not changed. The change also does not affect the names of each conference such as ADCHEM, SYSID etc.

In this and future IFAC Newsletters we will continue to bring you reports about some of IFAC's many conferences, which are bringing together the worldwide control community even in a time where much of this activity is forced to take place on a screen instead of in-person with colleagues and friends old and new.

https://www.ifac-control.org/conferences

11th IFAC Symposium on Advanced Control of Chemical Processes ADCHEM 2021

13-16 June 2021

Venice, IT

Held in virtual format, 119 presentations in the program, three plenary speakers, pre-conference workshop, Young Author Award.

The 11th IFAC Symposium on Advanced Control of Chemical Processes (ADCHEM 2021) was originally scheduled to be held in Venice. However, due to COVID-19 pandemic, it was held as a virtual conference. As one of the triennial meetings of the International Federation of Automatic Control, ADCHEM 2021 brought together 159 researchers and practitioners to discuss recent developments in the control of chemical, biochemical, and related process systems. Based on a rigorous review process, the International Program Committee (IPC) selected 119 papers for presentation. Taking advantage of inherent benefits of the virtual platform, all the sessions were oral sessions; the program consisted of 17 regular sessions, 12 keynote lectures (all selected from the contributions), three plenary sessions. In order to allow the interaction among the participants, the plenary and keynote sessions were broadcast live and their recorded videos were made available since the day of the talk. Archived pre-recorded presentations were also provided on-demand for the other technical sessions from the first day of the symposium.

Following the tradition of ADCHEM and considering different time zones of the attendees from around the world, each day began with a plenary talk around 2:00 PM (CET) followed by four keynote talks in series. Three plenary sessions were held at the symposium, presented by Thomas A. Badgwell from Collaborative Systems Integration (USA), Riccardo Scattolini from Politecnico di Milano (Italy), and Chunhui Zhao from Zhejiang University (China). On the first day, Dr. Badgwell talked about the bright future of chemical process control, where he highlighted economic model predictive control (EMPC) and deep reinforcement learning (DRL) as promising control technologies. In addition, he also discussed open process automation forum as a new opportunity for the future of industrial process control. On the second day, Prof. Scattolini talked about a set of recurrent neural networks approaches formulated with input-to-state stability for control applications. Finally, on the last day of ADCHEM 2021, Prof. Zhao talked about state-of-the-art monitoring techniques for nonstationary industrial processes.

The program was also complemented by a pre-conference workshop on *"Machine Learning and Model Predictive Control"* that was broadcast live on Sunday. The social program consisted of a welcome reception on Monday and closing ceremony on Wednesday. In the closing ceremony farewell speeches, the winner of the IFAC Young Author Award was announced among six finalists. The excellence of the program would not be possible without tremendous contributions of the NOC and IPC members, invited session organizers, area chairs who organized review of the papers, and the reviewers. We would also like to acknowledge the tremendous support from our conference sponsors. ADCHEM 2021 was sponsored by the IFAC Technical Committee on Chemical Process Control and co-sponsored by the IFAC Technical Committees on Non-linear Control Systems, Biosystems and Bioprocesses, and Fault Detection, Supervision and Safety of Technical Processes.

Submitted by Gabriele Pannocchia (NOC Chair), Fabrizio Bezzo (NOC Co-Chair), Jong Min Lee (IPC Chair), and Martha Grover (IPC Co-Chair)

9th IFAC Symposium on System Identification SYSID 2021

13-16 July 2021

Padova, IT

Held in virtual format, 144 presentations in the program, four plenary speakers, IFAC TC 1.1 Award on System Identification, Young Author Award.

The scope of the symposium covered all major aspects of system identification, machine learning for dynamical systems and control, experimental modelling, signal processing and adaptive control, ranging from theoretical, methodological and scientific developments to a large variety of application areas. The International Program Committee, which was co-chaired by Prof. Roy Smith (ETH Zurich, Switzerland) and Prof. Paul Van den Hof (Technical University of Eindhoven, The Netherlands) received 191 papers out of which 144 were selected after a thorough review process handled by the International Program Committee, representing 15 countries.

Due to COVID-19 pandemic, the conference has been organized in a fully virtual format. In order to facilitate the participation of attendees from so different time zones, the scientific program has been stretched to four days, with one plenary session followed by six parallel sessions on each day, for a total of 30 sessions (including six invited and one software invited session), 144 papers presented. 242 delegates from as many as 30 countries attended the conference.

All regular presentation have been pre-recorded, played live as scheduled in the program, followed by questions asked by attendees via a chat-based system and answered live by the presenters. Recording of the sessions have been made available to registered participants on the virtual platform for a duration of one month after the event. All the program runned smoothly with not a single no-show.

Four distinguished pleanary speakers have contributed to the success of SYSID. Thomas Schön (Uppsala University) discussed his recent work on flexible probabilistic models for system identification. Alf Isaakson (ABB Corporate Research) discussed the role of learning, physical based-modeling and their interplay from an industrial perspective. Tianshi Chen (The Chinese University of Hong Kong) shared his views and experience on incorporating prior knowledge in system identification using regularization. Mihaela van der Shaar (University of Cambridge and UCLA) gave an inspirational talk on studying knowledge, how it can be improved and better exploited using machine learning tools.

The scientific program was closed with the Award Ceremony, where both the first IFAC TC 1.1. Award on System Identification and the Young Author Award were presented.

The IFAC TC 1.1 Award on System Identification 2021 has been awarded by the selection committee chaired by Prof. Håkan Hjalmarsson to Prof. Torsten Söderström for the book ``Error-in-Variables System Identification" with the citation *"For a deep and broad analysis of EIV modeling of linear dynamic systems, treating identifiability, model selection and (parameter-) estimation procedures together with their statistical properties".*

The Young Author Award committee chair, Prof. Tomas McKelvey (University of Chalmers), announced the winner, Fabio Bonassi (Politecnico di Milano), for the paper *"Stability of Discrete-Time Feed-Forward Neural Networks in NARX Configuration"* co-authored with Marcello Farina and Riccardo Scattolini. The other finalists were Antonio Horta Ribeiro (Uppsala University) and Luca Zancato (University of Padova).

The scientific program was complemented with social gatherings which took place virtually every day after the sessions, including a welcome and closing reception. The gathering gave a good opportunity to chat and share ideas, and have been well attended by students and young researchers.

The SYSID organisers express their utmost gratitude to everyone that contributed to make SYSID 2021 a successful event: first of all Authors and Speakers for their scientific contribution, all participants for the lively discussions, the International Program Committee and the reviewers for their contribution in shaping the program, The Mathworks for its support as sponsor, the sponsoring TCs TCs 1.1., 1.2., 1.3., and 1.4., Technical co-sponsor IEEE Control Systems Society, the Department of Statistical Sciences (University of Padova) which, in

Readers of this Newsletter are kindly requested to keep their contact details updated with the IFAC Secretariat.

the orginal plans, should have hosted the physical event, the Municipality of Padova and the University of Padova for their patronage.

Last, but not least, the chair would like to express his gratitude to the program co-chairs for their dedication and intensive work in putting together the program as well as for the technical arrangements needed for the virtual platform, and to Sistema Congressi for the organizing support.

The technical program, and other info can be obtained from the conference website at: http://www.sysid2021.org

Submitted by: Alessandro Chiuso (NOC Chair)

4th IFAC Conference on Embedded Systems, Computational Intelligence and Telematics in Control CESCIT 2021

5-7 July 2021

Valenciennes, FR

Held in virtual format, 40 presentations in the program, three plenary speakers, one Open Invited Track, Young Author Award.

CESCIT is a triennial conference co-locating all events of the IFAC Coordinating Committee on Computers, Cognition and Communication in Control (CC 3) scheduled to occur in the year following the IFAC World Congress. It addresses interdisciplinary scientific aspects related to interaction between control, computers and software exploring theoretical and application driven aspects.

IFAC CESCIT 2021 was sponsored by the Technical Committees for Computers for Control (3.1), Computational Intelligence in Control (3.2) and Telematics: Control via Communication Networks (3.3). It was also co-sponsored by the TCs on Human Machine Systems (4.5), Automotive Control (7.1) and Control Education (9.4). IFAC CESCIT 2021 Technical Program consisted of three plenary lectures, seven regular sessions and one open invited track for a total of 40 papers authored by 127 authors from 18 countries. The presentations of the accepted papers were done on real time. The plenary lectures were given by Dr Laurentiu Hetel, CNRS researcher, Head of the Control and scientific Computing team, CRIStAL, Lille, France: *"Stability problems in aperiodic control"*, Pr. Mohammad Osman Tokhi, School of Engineering, London South Bank University, UK: *"Control of hybrid dynamic systems"*, and Jean-Loup Duvignacq, , Hardware In the Loop Business Developer, dSPACE, France: *"dSPACE: Key components and solutions in electromobility"*.

To stimulate the involvement of young scientists and engineers in IFAC, as well as to recognize top-level contributions of the younger generation in our field, an "IFAC Young Author Award" was organized. Three finalists were selected by the jury. An award certificate was delivered to them and the best paper award got a monetary prize. The winner is Pedro Henrique Coutinho (Federal University of Minas Gerais, BR) for the paper entitled "Local Sampled-Data Gain-Scheduling Control of quasi-LPV System". CESCIT also proposed a prize for the best presentation. The winner is Dalil Ichalal (University of Evry-Val d'Essonne, FR) for the paper entitled "State and Fault Estimation of a Class of Nonlinear Systems with Slow Internal Dynamics: Asymptotic Decoupling Approach".

The CESCIT 2021 event website can be accessed at: http://www.uphf.fr/cescit2021/

Submitted by: Jimmy Lauber (NOC Chair)

11th IFAC Symposium on Biological and Medical Systems BMS 2021

19-22 September 2021

Ghent, BE

Held in hybrid format, 97 presentations in the program, ten plenary speakers, competition with a benchmark simulator, five Open Invited Tracks, Young Author Award.

About three years ago when the decision had been made to organize the 11th IFAC Symposium on Biological and Medical Systems in Ghent, Belgium, our ambition was to make it one of the greatest events of our main sponsoring TC 8.2. It turned out the world had a different plan altogether. There is a great deal to be said and learned from the years following the official IFAC approval, yet human nature (as a biological system with perfect control) has the ability to embrace the challenging, sensational, and inspiring times that have taken over our lives and tamed our ambitions – even if only for a while.

More than ever, control, as the invisible thread of technology and its best application, has proved to be essential in service of humanity. Whether societal, economic, or simply instrumentation, control was always there. IFAC – The International Federation of Automatic Control – once again, feels like the beating heart of millions of researchers who wish to address the great challenges ahead.

Our Symposium held every three years on medical and biological systems remains at the core of the societal and economic challenges faced all over the world. Our researchers response to the pandemic has again demonstrated the essential role played by inter-disciplinarity should never be ignored or underestimated in its potential to overcome the biggest challenges. Following the previous editions in Berlin (2015) and Sao Paulo (2018), the 11th IFAC Symposium on Biological and Medical Systems stands under the sign of inter-disciplinarity.

This landmark event brought together contributions and scientific discussions from 148 academics (97 engineering and 51 medical sciences), 20 research institutions and nine medical companies across the world. More precisely, 436 authors from 32 countries, including 95 female contributors, as our TC helps lead the increasing contributions from under-represented peoples and society.

Our four-day hybrid event featured 97 oral presentations distributed over 16 sessions and provided ten plenaries. A benchmark simulator was provided for design and test of control of hemodynamic and sedation variables during general anesthesia and received significant attention from the control applications community with nine competition enrolled contributions. The winner of the competition from both technical content and presentation point of view, was Mr Michele Schiavo, doctoral student of Prof Antonio Visioli, at University of Brescia, Italy.

As expected, the core biomedical applications were in pulmonary and cardiac dynamics, glucose control, biomechanics, and COVID-19 pandemic rollout. Echoing worldwide technology trends, from our five Open Invited Tracks the track on artificial intelligence applications and solutions in medicine received the largest number of contributions. However, perhaps most importantly, and to our delight and that of our attendees, the majority of contributions feature significant and increasing amounts of experimental and clinical data, showing how our field continues to push forward.

We had six nominations for Young Author Award. The winner, Jack Abraham Wilkie, was evaluated based on paper technical content and presentation, with his work on *„Stripping Torque Model for Bone Screws"* co-authored by Paul Docgerty (University of Canterbury) and Knut Moeller (Furtwangen University).

In-person attendees of the hybrid BMS 2021

The plenary speakers and paper contributors guaranteed the high scientific quality of the conference. The members of the organizing committees, sponsors associated editors, reviewers, and session chairs voluntarily made this event possible. Although only a limited number (17%) of attendees were able to physically enjoy the cultural, art, and long-standing history of the city of Gent situated at the heart of the Flanders BioTech Valley, we hope IFAC BMS 2021 was an inspiring experience for all the participants.

Submitted by: Clara Ionescu (NOC Chair)

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

Calendar of IFAC Conferences

Title	2021	Place	Further Information
7th IFAC Workshop on Lagrangian and Hamiltonian Methods for Nonlinear Control LHMNC 2021	October 11 – 13	Berlin Germany	https://lhmnc21.org contact@lhmnc21.org
AACC Conference on Modeling, Estimation and Control MECC 2021	October 24 – 27	Austin, TX USA	https://mecc2021.a2c2.org/
15th International Workshop on Enterprise Integration, Interoperability and Networking EI2N 2021	October 25 – 27	online Portugal	http://www.in4pl.org/EI2N.aspx in4pl.secretariat@insticc.org
NCACI, IFAC et al. Conference on Australian and New Zealand Control Conference ANZCC 2021	November 25 – 26	Gold Coast Australia	https://anzcc.org.au/ANZCC2021
Conference on Control Conference Africa (in cooperation with IFAC) CCA 2021	December 07 – 08	Magalies South Africa	https://cca2021.org/

Title	2022	Place	Further Information
Vienna International Conference on Mathematical Modelling MATHMOD 2022	February 16 – 18	Vienna Austria	https://www.mathmod.at/ mathmod@acin.tuwien.ac.at
7th ACDOS/IFAC Conference on Advances in Control and Optimization of Dynamical Systems ACODS 2022	February 22 – 25	Silchar, Assam India	http://acods2022.nits.ac.in/ bkr@ee.nits.ac.in
14th IFAC Workshop on Intelligent Manufacturing Systems IMS 2022	March 28 – 30	Tel-Aviv Israel	https://ws.eventact.com/IMS2022/ yuvalc@afeka.ac.il
16th IFAC Symposium on Large Scale Complex Systems: Theory and Applications LSS 2022	April 22 – 24	Xi'an China	http://not yet available
ACA, ICROS, SICE, IFAC et al. Conference on Asian Control Conference (in cooperation with IFAC) ASCC 2022	May 04 – 07	Jeju Island Republic of Korea	http://ascc2021.org/
17th IFAC Conference on Programmable Devices and Embedded Systems PDES 2022	May 17 – 19	Sarajevo Bosnia and Herzegovina	http://pdes-conference.eu/ dejan.jokic@ibu.edu.ba
2nd IFAC Workshop on Integrated Assessment Modelling for Environmental Systems IAMES 2022	June 01 – 03	Tarbes France	https://iames2022.sciencesconf.org/ francois.peres@enit.fr
11th IFAC Symposium on Fault Detection, Supervision and Safety for Technical Processes SAFEPROCESS 2022	June 07 – 10	Pafos Cyprus	https://safeprocess2021.eu/
Conference on American Control Conference (in cooperation with IFAC) ACC 2022	June 08 – 10	Atlanta, GA USA	https://acc2022.a2c2.org/
13th IFAC Symposium on Dynamics and Control of Process Systems, including Biosystems DYCOPS 2022	June 14 – 17	Busan Republic of Korea	http://dycops2022.org/ secretariat@dycops2022.org
6th IFAC Symposium on Telematics Applications TA 2022	June 15 – 17	Nancy France	http://not yet available
11th IFAC Symposium on Control of Power and Energy Systems CPES 2022	June 21 – 23	Moscow Russian Federation	https://cpes2021.com/ cpes2021@ipu.ru
10th IFAC Conference on Manufacturing Modelling, Management and Control MIM 2022	June 22 – 24	Nantes France	http://not yet available

Calendar of IFAC Conferences

Title	2022	Place	Further Information
IFAC Workshop on Control for Smart Cities CSC 2022	June 27 – 30	Sozopol Bulgaria	https://csc2022.sai-bg.com/ csc2022bulgaria@gmail.com
14th IFAC Workshop on Adaptive and Learning Control Systems ALCOS 2022	June/July 29 – 01	Casablanca Morocco	http://www.alcos2022.org/ alcos2022@unicaen.fr
9th IFAC Conference on Networked Systems NECSYS 2022	July 05 – 07	Zürich Switzerland	https://necsys22.control.ee.ethz.ch/
11th IFAC Symposium on Intelligent Autonomous Vehicles IAV 2022	July 06 – 08	Prague Czech Republic	http://not yet available
6th IFAC Conference on Intelligent Control and Automation Sciences ICONS 2022	July 13 – 15	Cluj-Napoca Romania	https://icons2022.utcluj.ro/ icons2022@conference.utcluj.ro
Conference on European Control Conference (in cooperation with IFAC) ECC 2022	July 13 – 15	London United Kingdom	https://ecc22.euca-ecc.org/ ecc22admin@euca-ecc.org
18th IFAC Workshop on Control Applications of Optimization CAO 2022	July 18 – 22	Gif sur Yvette France	https://cao2022.sciencesconf.org/
13th IFAC Symposium on Advances in Control Education ACE 2022	July 24 – 27	Hamburg Germany	https://ace2022.org/ info@ace2022.org
5th IFAC Workshop on Advanced Maintenance Engineering, Services and Technologies AMEST 2022	July 26 – 29	Bogotá Colombia	https://amest2022.uniandes.edu.co/ amest@uniandes.edu.co
19th IFAC Symposium on Control, Optimization and Automation in Mining, Mineral and Metal Processing MMM 2022	August 15 – 18	Montreal Canada	http://ifacmmm2022.org/ ifac-mmm2022@conferium.com
9th CACHE/IFAC Conference on Foundations of Systems Biology in Engineering FOSBE 2022	August 28 – 31	Boston (MA) USA	http://not yet available
10th IFAC Symposium on Advances in Automotive Control AAC 2022	August 29 – 31	Columbus (OH) USA	http://not yet available
10th IFAC Symposium on Robust Control Design ROCOND 2022	August/Sept. 30 – 02	Kyoto Japan	http://rocond21.ee.t.kyoto-u.ac.jp/index.html rocond2021-secretariat@googlegroups.com
4th IFAC Workshop on Control of Systems Governed by Partial Differential Equations CPDE 2022	September 5 – 7	Kiel Germany	https://cpde2022.org/ noc@cpde2022.org
12th IFAC Symposium on Nonlinear Control Systems NOLCOS 2022	September 6 – 8	Canberra Australia	http://not yet available
16th IFAC Workshop on Discrete Event Systems WODES 2022	September 7 – 9	Prague Czech Republic	http://not yet available

The IFAC Calendar of Conferences is constantly updated as addditional technical events (Workshops, Symposia, and Conferences) are approved. Due to the Covid-19 pandemic some conferences have had date changes, format 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:

https://www.ifac-control.org/conferences

Calendar of IFAC Conferences

Title	2022	Place	Further Information
15th IFAC Symposium on Analysis Design and Evaluation of Human Machine Systems HMS 2022	September 12 – 16	Santa Clara County (CA) USA	http://not yet available
25th International Symposium on Mathematical Theory of Networks and Systems (in cooperation with IFAC)	September 12 – 16	Bayreuth Germany	https://www.mtns2022.uni-bayreuth.de mtns2022@uni-bayreuth.de
7th IFAC Conference on Sensing, Control and Automation Technologies for Agriculture AGRICONTROL 2022	September 14 – 16	Munich Germany	http://not yet available
2nd IFAC Workshop on Control Methods for Water Resource Systems CMWRS 2022	October 06 – 07	Como Italy	http://not yet available
13th IFAC Symposium on Robot Control SYROCO 2022	October 17 – 20	Matsumoto Japan	https://syroco2021.com/
21st IFAC Conference on Technology, Culture and International Stability TECIS 2022	October 26 – 28	Prishtina Republic of Kosovo	http://not yet available
1st IFAC Workshop on Control of Complex Systems COSY 2022	November 24 – 25	Bologna Italy	https://eventi.unibo.it/cosy2022 cosy2022@unibo.it

Invitation: IFAC Technical Lecture

30 November 2021

ONLINE

International Federation of Automatic Control (IFAC) invites you on Tuesday, 30 November 2021 at 11:00 am (CET)

to the lecture

"High-performance nonlinear control method for servo systems in automation and robotics: theory to practice"

Speaker:
Prof. Dongil "Dan" Cho, Ph.D.
IFAC President-Elect

The lecture will take place via Zoom video conference. The link will be distributed after registration.

Please RSVP to:
IFAC SECRETARIAT
https://www.ifac-control.org/survey/index.php/992246?lang=en

The registration deadline is 15 November 2021.

ABSTRACT: High-performance servo controllers are very important in modern robotics and automation systems. Most common control methods are based on the of classical control techniques, but they demand much tuning from experienced engineers. Furthermore, controllers that are specifically tuned for given tasks do not perform well under varying operating conditions. Over the years, we have developed a robust recursive discrete-time sliding mode control method integrated with a novel decoupled disturbance observer and a novel saturation compensator. It is shown that the desirable properties of invariance, finite convergence, and robustness to external disturbances and parametric uncertainties of the continuous-time sliding mode control method can be preserved in the discrete time. Our developed control method has been applied to a plethora of robotics and automation systems to provide greatly improved performance for wide ranges of varying operating conditions without the typical arduous tuning process. This talk will show the development of the control method, as well as the processes that were involved in successful industrial implementations.

PROGRAM

11:00	Introduction Dr. Dimitri Peaucelle (FR) IFAC Secretary, VP Operations
11:05	High-performance nonlinear control method for servo systems in auto mation and robotics: theory to practice Speaker: Prof. Dongil "Dan" Cho (KR), Ph.D. IFAC President-Elect Seoul National University
11:45	Discussion/Q&A Moderation Dr. Dimitri Peaucelle

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 secretariat@ifac-control.org.

Impressum:
Medieninhaber und Herausgeber:
International Federation of Automatic Control (IFAC), Zurich
Schlossplatz 12, 2361 Laxenburg, Austria

Verlagsort und Redaktion:
Dr. Dimitri Peaucelle,
Schlossplatz 12, 2361 Laxenburg
newsletter@ifac-control.org
Editor: Dimitri Peaucelle
Layout: Elske Haberl
published bimonthly

Das Sekretariat der IFAC befindet sich seit 1978 aufgrund eines Übereinkommens mit der Österreichischen Bundesregierung und mit der Österreichischen Akademie der Wissenschaften in Laxenburg und wird derzeit aus Mitteln des Bundesministeriums für Klimaschutz, Umwelt, Energie, Mobilität, Innovation und Technologie „BMK" gefördert.

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