

The 26th Mediterranean Conference on Control and Automation

The 26th Mediterranean Conference on Control and Automation (MED 2018) was held June 19–22, 2018, at the Kolovare Hotel in Zadar, Croatia. The conference covered a broad range of topics that were aligned with the ongoing convergence of control and systems theory with software and communication technologies. The list of topics included new developments in robotics and mechatronics, autonomous systems, unmanned systems, cyberphysical systems, and network-controlled systems. MED 2018 also tackled growing societal and economic challenges as well as possible solutions provided by control, automation, and robotics technologies. The general chairs for the conference were Stjepan Bogdan of the University of Zagreb, Croatia, and Sandra Hirche of the Technical University of Munich, Germany. The honorary chairs were Panos Antsaklis of the University of Notre Dame, Indiana, president of the Mediterranean Control Association (MCA), and Kimon P. Valavanis, an MCA vice president.

TECHNICAL PROGRAM OVERVIEW

The technical program was chaired by Nikola Mišković of the University of Zagreb, Croatia, and Roberto Galeazzi of the Technical University of Denmark, Kongens Lyngby, Denmark. A total of 160 papers were accepted for presentation (out of 215 submissions). The authors were from 40 countries, with the top three countries for accepted papers being Italy, Croatia, and Greece. The 124 members of the International Program Committee served as associate editors and reviewers. The conference drew in 153 registered participants. The technical program included 28 regular and two invited



Bart De Moor explains the basic algorithm outline.



Maryam Kamgarpour discusses learning in control design.



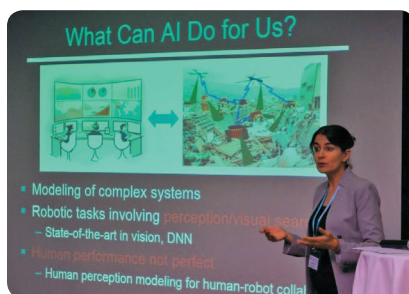
Aerial robotics control and perception challenge mockup wind farm environment.

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sessions in five parallel tracks; three plenary sessions, featuring keynote talks by leaders in the field; and two roundtable discussions, a workshop, tutorial, student competition, and social events.

KEYNOTE TALKS

Three keynote talks were presented, one on each day of the main conference. On the first day, Bart De Moor of the KU Leuven, Belgium, presented “Back to the Roots: Multivariate Polynomial Optimization by Numerical Linear Algebra.” The speaker on the second day was Yasamin Mostofi of the University of California, Santa Barbara, with “Robotics and Wireless Communications: Opportunities and Challenges.” The third day featured a talk by Maryam Kamgarpour of the Swiss Federal Institute of Technology Zurich, “Multiagent Decision-Making: Learning From Observations.”



Yasamin Mostofi at the AI roundtable discussion.

ROUNDTABLE DISCUSSIONS

After a lengthy hiatus (since MED 2007 in Athens, Greece), MED 2018 once again included roundtable events. At the first one, “Social Implications of Autonomy and Automation” (chaired and moderated by Panos Antsaklis), the panelists discussed the benefits and challenges of technological innovation in autonomy (and automation) and the future implications on society. The panelists were Airlie Chapman of

the University of Melbourne, Australia; Sandra Hirche; Kamgarpour; and Anthony Tzes of New York University–Abu Dhabi. The second roundtable (also chaired by Antsaklis) was “Control Systems and Artificial Intelligence (AI) in the Quest for Autonomy,” and it addressed the implications, evolution, and impacts of AI adoption in control systems. The panelists included Kamgarpour, Alexandre Maze of SoftBank Robotics, Mostofi, and Zoran Vukić of the University of Zagreb. Both roundtables were well attended and elicited lively discussion.

WORKSHOP, TUTORIAL, AND INDUSTRIAL CHALLENGES

The main technical program was preceded by a day dedicated to workshops, tutorials, and an Industrial Challenges student competition.

The half-day workshop, “Assistive Technologies for People With Autism Spectrum Disorder (ASD) and Other Disabilities,” was organized by Zdenko Kovačić and Maja Cepanec, both from the University of Zagreb. It brought together top experts and trainers from diverse fields, including robotics, IT, human–robot interaction, rehabilitation, and other related areas. The goals were to share knowledge and discuss the technologies that could facilitate better social inclusion



Industrial Challenges competition participants' group photo.

of people suffering from ASD as well as people with other forms of disabilities. A half-day tutorial, "Graph Theoretic Methods in Networked Dynamic Systems," was presented by Chapman and Mehran Mesbahi of the University of Washington, Seattle.

Industrial Challenges dedicated to students are one of the innovative aspects of the MED conference series. The main idea is to expose students to interesting project assignments in close relation with industry. Each challenge was based on a technical specification of the problem, set forth by the conference organizers and industrial partners supporting the challenge. The challenge had two stages: 1) preconference qualification round(s) and 2) finals at the conference.

The challenges and their respective organizers were

- » Aerial Robotics Control and Perception Challenge, organized by robotics@fer.hr (organization of robotics laboratories at the University of Zagreb Faculty of Electrical Engineering and Computing)
- » Automotive Challenge, organized by Rimac Automobili and supported by dSpace and MathWorks



Zalman Palmor (left) receives the Best Paper Award from Panos Antsaklis.

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- » Process Automation Challenge, organized by the 3Smart project and supported by Siemens and MathWorks.

SOCIAL EVENTS AND AWARDS

Social events included the gala dinner and welcome and closing receptions. The gala dinner provided the opportunity to announce the winners of the Best Paper Award and Industrial Challenges.

The Best Paper Award was given to the paper "Rational Approximation of Distributed-Delay Control Laws Via Moment-Matching," coauthored by Omer Malka and Zalman J. Palmor from Technion-Israel Institute of Technology, Haifa. The Best Paper Award was sponsored by *Actuators, Robotics*, and MDPI, Basel, Switzerland.

The winning team for the aerial robotics Industrial Challenge was Crobots, which included students Filip Zorić, Bojan Spahija, and Lovro Marković from the electrical engineering and computing faculty at the University of Zagreb. The winning team for the Automotive Challenge was YDrive, including students Miloš Stojanović and Marko Skakun, both from electrical engineering at the University of Belgrade, Serbia. The winning team for the Process Automation Challenge was SapiEngineering, which included Tamás Kardos and Zsolt Hobaj, both from the Sapientia Hungarian University of Transylvania, Romania.

Another social event was the IEEE Young Professionals Meet Up, organized by the IEEE Young Professionals affinity

group of the IEEE Croatia Section. The aim of this event was to provide an opportunity for scientists and engineers at an early stage of their careers to establish new international contacts and to explore collaboration opportunities. This networking event was open to all MED 2018 conference participants, local IEEE Members, and visitors.

ORGANIZATION AND SUPPORT

MED 2018 was organized by the MCA and the Croatian Society for Communications, Computing, Electronics, Measurement and Control. The conference was technically cosponsored by the IEEE Control Systems Society and IEEE Robotics and Automation Society. It was supported by the International Conference on Unmanned Aircraft Systems Association, Inc. and the project Advanced Methods and Technologies in Data Science and Cooperative Systems, under the auspices of the Center of Research Excellence for Data Science and Advanced Cooperative Systems of the Republic of Croatia. See the conference website at <http://www-med-control.org/med2018> for more details.

NEXT CONFERENCE

MED 2019 will take place in Akko, Israel, on July 1–4, 2019. For more information, see <https://med19.net> or <http://technion.ac.il/>.

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