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PROCEEDINGS

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FOREWORD

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 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 has brought together contributions and scientific discussions from 148 academics (97 engineering and 51 medical sciences), 20 research institutions and 9 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 4-day hybrid event featured 97 oral presentations distributed over 16 sessions and provided 10 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. 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 5 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.

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 BMS2021 was an inspiring experience for all the participants.

Balázs Benyó
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