Guest Editorial
Special Section on Robotic and Sensors Environments

THE IEEE International Symposium on Robotic and Sensors Environments (ROSE) was established in 2003 under the umbrella of the IEEE Instrumentation and Measurement Society. Its primary focus is on sensing systems and technologies for robotics and industrial automation, as well as their impact on autonomous robotics and intelligent system development and applications.

The year 2019 marked the 13th edition of this conference, which took place on June 17 and 18 in Ottawa, ON, Canada. Articles were carefully peer-reviewed by a highly selective diversified committee of experts in all areas of robotic and sensor technologies. The technical program was divided into eight high-quality technical sessions of oral presentations articulating dominant areas of interest, extending from fundamental control theory to a variety of practical applications, and up to the social impacts of robots and intelligent systems. Over two days, participants from 15 countries presented their research, exchanged technical insights with their peers, and networked and explored new research directions as well as future research collaborations with other researchers around the world.

Authors of ROSE 2019 were invited to submit technically extended versions of their proceedings articles to a Special Issue of the IEEE TRANSACTIONS ON INSTRUMENTATION AND MEASUREMENT (TIM). Eight articles were received. After a thorough and rigorous review process, two articles were finally accepted to appear in the Special Issue. The articles present the most recent advances in artificial intelligence and their applications in the fields of instrumentation and measurement. The first manuscript proposes an incremental online identification algorithm to develop a set of evolving fuzzy models to characterize the nonlinear human finger dynamics for the myoelectric-based control of a prosthetic hand. Real data were used to validate the best evolving fuzzy model that characterizes each of the five fingers of a human hand. The second article devises an innovative model-free data-driven control strategy for the real-time control of a flexible-wing aircraft. The controller is based on a novel online value iteration algorithm supplemented with an actor-critic feedback structure. The algorithm is validated experimentally with a real mockup. The article is also supported by three video clips demonstrating the performance of the proposed controller in different scenarios.

Finally, we would like to acknowledge and emphasize the great efforts of the Technical Program Committee that eventually led to such a high-quality program. We would like to extend our gratitude to our sponsors and technical sponsors for their support and generosity. We are immensely grateful to the volunteers whose tireless efforts have made the conference possible. We would also like to thank the authors whose remarkable research contributed to the success of the conference.

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Dr. Gueaieb is also an Associate Editor of the *Journal of Dynamic Systems, Measurement, and Control* (ASME) and the *International Journal of Robotics and Automation*. He has served as an Associate Editor, a Guest Editor, and a Program (Co-)Chair for several international journals and conferences, such as the IEEE TRANSACTIONS ON INSTRUMENTATION AND MEASUREMENT, the IEEE/ASME TRANSACTIONS ON MECHATRONICS, and the IEEE Conference on Decision and Control.

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