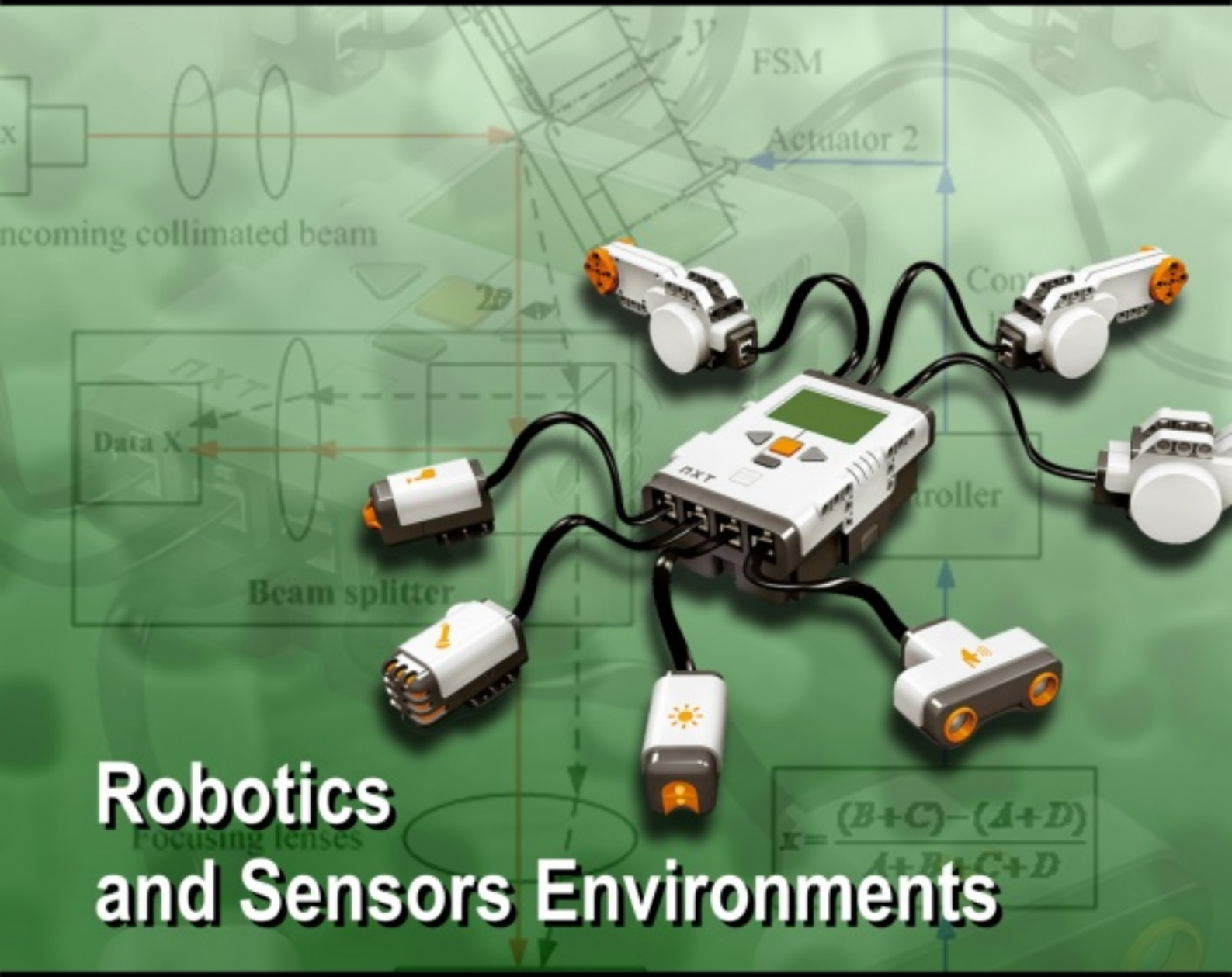
ISSN 1726-5749

SENSORS & TRANSDUCERS

vol. 5
Special
3/09



Robotics and Sensors Environments

International Frequency Sensor Association Publishing

IFSA

Sensors & Transducers

Volume 4, Special Issue
March 2009

www.sensorsportal.com

ISSN 1726-5479

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Sensors & Transducers Journal (ISSN 1726-5479) is a peer review international journal published monthly online by International Frequency Sensor Association (IFSA).
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Sensors & Transducers Journal

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Special Issue
March 2009

www.sensorsportal.com

ISSN 1726-5479

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Sensors & Transducers Journal, Vol. 5, Special Issue, March 2009, pp. 1-2

www.sensorsportal.com

Sensors & Transducers

ISSN 1726-5479
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Foreword

The 6th edition of the IEEE International Workshop on Robotic and Sensors Environments (ROSE 2008) was held at the School of Information Technology and Engineering, University of Ottawa, Ottawa, Ontario, Canada, on October 17-18, 2008. The two-day workshop brought together researchers from more than 20 different countries. The participants had the opportunity to present and discuss their latest results, as well as exchange ideas on new trends in the field of sensors and their numerous applications to intelligent robotics and control systems. Twenty-seven papers presenting contributions of high quality were included in the workshop Proceedings.

While covering the distinctive aspects of robotic platforms development, control and innovative sensing methodologies, the ROSE workshop series is especially dedicated to the amalgamation of these complementary technologies that contribute to develop intelligence in autonomous and robotic systems, as well as collaborative interaction between sensors and robots. The announced worldwide growth in robotic technology and its integration in our everyday life can only be successful by pursuing the development of innovative solutions that will evolve the design of sensor devices, the management of sensors resources, and the processing of sensor signals.

In that context, a number of authors who have published a part of their work in the Proceedings of ROSE 2008 were invited to submit a revised version of their paper in which the conceptual development, the experimentation and the validation of their initial results were extended. These papers have undergone a complete review to ensure that extensions were significant and the manuscripts remain of high quality and clarity. Authors of accepted extended papers were finally invited to refine their document according to the reviewers' comments.

We are pleased to present this special issue of the Sensors & Transducers Journal on Robotic and Sensors Environments that contains 8 publications covering several topics that are all well aligned with the scope of workshop. The extended papers included here examine various aspects of computer vision, from collaborative mobile robots to high-precision micro-manipulation, as well as for the optimization of complex processes in industrial automation. Tridimensional imaging also takes a valuable place with different, state-of-the-art, techniques being investigated to improve laser steering accuracy, modeling performance, as well as increasing the flexibility of those sensors. Finally, other papers propose innovative ways to tackle the design of distributed embedded systems and of high-accuracy inertial sensors. All papers are focused on practical applications, which is the strength of this area of development that builds on efficient combination of robotic and sensor technologies.

The guest editors want to express their sincere gratitude to the Editor-in-Chief of the Sensors & Transducers Journal, Dr. Sergey Yurish, for offering this opportunity to prepare and publish this special issue.

Guest Editors:

Dr. Pierre Payeur
University of Ottawa, Ottawa, ON, Canada

Dr. Pierre Payeur received the Ph.D. degree in Electrical Engineering from Université Laval, Quebec City, Canada, in 1999. Since 1998, he has been with the School of Information Technology and Engineering, University of Ottawa, where he is currently an Associate Professor and the director of the Sensing and Modeling for Automation and Robotic Intelligence Research Group.

Dr. Payeur's research interests include machine vision, 3D imaging, industrial automation, robot guidance, tactile sensing, dexterous manipulation, and tele-operation. Dr. Payeur has published more than 80 technical papers and supervised more 40 researchers.

He regularly serves as an organizer and technical program committee member for a large number of international conferences on instrumentation and measurement, computer vision and robotics, and as a reviewer for several Journals and Transactions in the field. He also acts as an external consultant for companies in industrial automation, sensing and robotic applications.

Dr. Emil Petriu
University of Ottawa, Ottawa, ON, Canada

Dr. Emil M. Petriu received his Dipl. Eng. and Dr. Eng. degrees from the Polytechnic Institute of Timisoara, Romania. Since 1985, he has been on the faculty at the University of Ottawa, ON, Canada, where he is now a Professor and University Research Chair in the School of Information Technology and Engineering.

Dr. Petriu's research interests include robot sensing and perception, interactive virtual environments, human-computer symbiosis, soft computing, and digital integrated circuit testing. During his career he has published more than 300 technical papers, authored two books, edited other two books, and received two patents.

He is a Fellow of IEEE, Fellow of the Canadian Academy of Engineering, and Fellow of the Engineering Institute of Canada. He is a co-recipient of the 2003 IEEE's Donald G. Fink Prize Paper Award and recipient of the 2003 IEEE Instrumentation and Measurement Society Award.

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Sensors & Transducers Journal

Guide for Contributors

Aims and Scope

Sensors & Transducers Journal (ISSN 1726-5479) provides an advanced forum for the science and technology of physical, chemical sensors and biosensors. It publishes state-of-the-art reviews, regular research and application specific papers, short notes, letters to Editor and sensors related books reviews as well as academic, practical and commercial information of interest to its readership. Because it is an open access, peer review international journal, papers rapidly published in *Sensors & Transducers Journal* will receive a very high publicity. The journal is published monthly as twelve issues per annual by International Frequency Association (IFSA). In additional, some special sponsored and conference issues published annually.

Topics Covered

Contributions are invited on all aspects of research, development and application of the science and technology of sensors, transducers and sensor instrumentations. Topics include, but are not restricted to:

- Physical, chemical and biosensors;
- Digital, frequency, period, duty-cycle, time interval, PWM, pulse number output sensors and transducers;
- Theory, principles, effects, design, standardization and modeling;
- Smart sensors and systems;
- Sensor instrumentation;
- Virtual instruments;
- Sensors interfaces, buses and networks;
- Signal processing;
- Frequency (period, duty-cycle)-to-digital converters, ADC;
- Technologies and materials;
- Nanosensors;
- Microsystems;
- Applications.

Submission of papers

Articles should be written in English. Authors are invited to submit by e-mail editor@sensorsportal.com 6-14 pages article (including abstract, illustrations (color or grayscale), photos and references) in both: MS Word (doc) and Acrobat (pdf) formats. Detailed preparation instructions, paper example and template of manuscript are available from the journal's webpage: http://www.sensorsportal.com/HTML/DIGEST/Submition.htm Authors must follow the instructions strictly when submitting their manuscripts.

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e-Impact Factor 2008:
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