

# INTERNATIONAL JOURNAL OF INTELLIGENT MECHATRONICS AND ROBOTICS

January-March 2013, Vol. 3, No. 1

## Table of Contents

### SPECIAL SECTION FROM THE 3M-NANO CONFERENCE

- 1 Automatic Operating Process for Zebrafish Embryo Injection**  
*Wang Yiliao, Institute of Robotics and Automatic Information System, Nankai University, Nankai, Tianjin, China*  
*Sun Mingzhu, Institute of Robotics and Automatic Information System, Nankai University, Nankai, Tianjin, China*  
*Feng Xizeng, State Key Laboratory of Medicinal Chemical Biology, College of Life Science, Nankai University, Nankai, Tianjin, China*  
*Wang Ya Nan, State Key Laboratory of Medicinal Chemical Biology, College of Life Science, Nankai University, Nankai, Tianjin, China*  
*Zhao Baoquan, Department of Toxicology and Biochemistry Pharmacy, Academy of Military Medical Science, Beijing, China*  
*Zhao Xin, Institute of Robotics and Automatic Information System, Nankai University, Nankai, Tianjin, China*
- 16 Sliding Mode Control of a 2D Torsional MEMS Micromirror with Sidewall Electrodes**  
*Hui Chen, College of Automation Science and Engineering, South China University of Technology, Guangzhou, China*  
*Manu Pallapa, Systems Design Engineering, University of Waterloo, Waterloo, ON, Canada*  
*Weijie Sun, College of Automation Science and Engineering, South China University of Technology, Guangzhou, China*  
*Zhendong Sun, College of Automation Science and Engineering, South China University of Technology, Guangzhou, China*  
*John T. W. Yeow, Systems Design Engineering, University of Waterloo, Waterloo, ON, Canada*
- 27 FPGA-Based Object Detection and Motion Tracking in Micro- and Nanorobotics**  
*Claas Diederichs, Department of Computing Science, University of Oldenburg, Oldenburg, Germany*  
*Sergej Fatikow, Department of Computing Science, University of Oldenburg, Oldenburg, Germany*
- 38 Piezoresistive Ring-Shaped AFM Sensors with Pico-Newton Force Resolution**  
*Zhuang Xiong, CNRS IEMN UMR 8520, NAM6 group, University Lille 1, Villeneuve d'Ascq, Lille, France*  
*Benjamin Walter, CNRS IEMN UMR 8520, NAM6 group, University Lille 1, Villeneuve d'Ascq, Lille, France*  
*Estelle Mairiaux, CNRS IEMN UMR 8520, NAM6 group, University Lille 1, Villeneuve d'Ascq, Lille, France*  
*Marc Faucher, CNRS IEMN UMR 8520, NAM6 group, University Lille 1, Villeneuve d'Ascq, Lille, France*  
*Lionel Buchailot, CNRS IEMN UMR 8520, NAM6 group, University Lille 1, Villeneuve d'Ascq, Lille, France*  
*Bernard Legrand, CNRS IEMN UMR 8520, NAM6 group, University Lille 1, Villeneuve d'Ascq, Lille, France*

### RESEARCH ARTICLES

- 53 An Advance Q Learning (AQL) Approach for Path Planning and Obstacle Avoidance of a Mobile Robot**  
*Arpita Chakraborty, Bengal Institute of Technology, Kolkata, West Bengal, India*  
*Jyoti Sekhar Banerjee, Bengal Institute of Technology, Kolkata, West Bengal, India*

### Copyright

The *International Journal of Intelligent Mechatronics and Robotics* (ISSN 2156-1664; eISSN 2156-1656). Copyright © 2013 IGI Global. All rights, including translation into other languages reserved by the publisher. No part of this journal may be reproduced or used in any form or by any means without written permission from the publisher, except for noncommercial, educational use including classroom teaching purposes. Product or company names used in this journal are for identification purposes only. Inclusion of the names of the products or companies does not indicate a claim of ownership by IGI Global of the trademark or registered trademark. The views expressed in this journal are those of the authors but not necessarily of IGI Global.

IJIMR is currently listed or indexed in: ACM Digital Library; Bacon's Media Directory; Cabell's Directories; DBLP; Google Scholar; INSPEC; JournalTOCS; MediaFinder; ProQuest Advanced Technologies & Aerospace Journals; ProQuest Computer Science Journals; ProQuest Engineering Journals; ProQuest Illustrata: Technology; ProQuest SciTech Journals; ProQuest Technology Journals; The Standard Periodical Directory; Ulrich's Periodicals Directory