Optomechatronic Systems IV (RB05)

Part of SPIE's International Symposium on Photonics Technologies for Robotics, Automation, and Manufacturing
27-31 October 2003 • Rhode Island Convention Center • Providence, RI USA

Cooperating Organizations: Institute of Control, Automation and System Engineers (ICASE- Korea); Japan Optomechatronics Association (JOEM); The Optical Society of Korea; SPIE Japan Chapter; SPIE Singapore Chapter; SPIE Taiwan Chapter

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As an engineering discipline, mechatronics strives to optimally integrate mechanical, electronic, and computer technologies in order to create innovative products and processes. Optical and photonic devices are being incorporated, at an accelerated rate, into mechatronic systems because these lightwave technologies provide components for high precision, rapid data processing, flexible circuits, and circuit miniaturization. Optomechatronics focuses on the tools and technologies needed to create intelligent systems from optical/optoelectronic sensors and actuators, flexible fiber optic and lightwave communication, smart machine vision systems, reconfigurable structures, and embedded control. The philosophy of optomechatronic system design stresses technology integration for enhanced system performance. As a result of this evolution, products, processes, and systems are becoming smarter, more accurate, and more human-friendly than those of the past. These optomechatronic technologies will continue to play a leading role in the development of intelligent products and systems in the coming years.

This conference is designed to fulfill the need for closer collaboration between researchers, academics, manufacturers, and end users by bringing them together in a single forum to interact, exchange technical knowledge, and discuss their experiences. To achieve this goal the conference will focus on the design and implementation of smart optomechatronic systems. Papers on all aspects of optomechatronic systems are welcome, including, but not limited to the following:

Optomechatronic Devices and Systems
- optomechatronic technology
- sensors and actuators with optical or optoelectronic components
- optical actuators and control-by-light
- optical micro-manipulation
- micro/nano-optics
- micro-optical systems
- optical computing and information processing
- smart systems that utilize optical properties of biological transducers
- advanced optical design, fabrication, and testing.

Intelligence for an Optomechatronic System
- embedded intelligent control
- optical-based human-machine interfaces
- multisensor data fusion
- optical pattern recognition
- machine learning
- neural network and fuzzy logic systems
- evolutionary computation.

Applications using Optomechatronic Technology
- optomechatronics for photonic networks
- optical or optoelectronic precision measurement and inspection
- 3D measurement and reconstruction
- intelligent vision systems for sensing and control
- vision-based process monitoring
- information storage and display devices and systems
- robotic and automated manufacturing applications
- design of smart products and structures.

Invited Sessions: Invited sessions are aimed at providing focused discussion on new and timely research topics, innovative applications, and case studies. Each invited session will consist of four papers, which will be reviewed through the regular reviewing process. Those interested in organizing an invited session should contact the Conference Chair, Professor G.K. Knopf, The University of Western Ontario, London, Ontario, Canada, gknopf@engga.uwo.ca by March 17, 2003, and submit a proposal including a minimum of four extended abstracts, and a session title.

Abstract Due Date: 17 March 2003
Manuscript Due Date: 4 August 2003

SPIE—The International Society for Optical Engineering

Abstract Due Date: **17 March 2003** *Manuscript Due Date:* **4 August 2003**
Proceedings of this conference will be published and available at the meeting.
The abstract and manuscript due dates must be strictly observed.

Submissions imply the intent of at least one author to register, attend the symposium, and present the paper (either orally or in poster format), and submit a full-length manuscript.

Instructions for Submitting Abstracts via Web

All authors are <u>STRONGLY ENCOURAGED</u> to submit their abstracts by the due date using the "submit an abstract" link on the Web at:

www.spie.org/info/pe

Submitting directly on the web ensures that your abstract will be immediately accessible by the conference chair for review.

You will be asked to provide information about the paper that you are submitting, including all authors' contact information and a summary of the paper. You will also be asked who should be contacted about this submission. *Please note! The contact author must also submit the manuscript and all revisions.*

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SUBJECT: **Conf. Code (RB05)**

Your abstract must include all of the following:
1. SUBMIT TO: RB05, KNOPF
2. **ABSTRACT TITLE**
3. **AUTHOR LISTING** (principal author first) <u>For each author</u>: First (given) name (initials not acceptable), Last (family) name, Affiliation, Mailing address, Telephone, Fax, and Email address.
4. **PRESENTATION** Indicate your preference for "Oral Presentation" or "Poster Presentation." Final placement is subject to chairs' discretion**.**
5. **BRIEF BIOGRAPHY** (principal/presenting author) Approximately 50 words.
6. **ABSTRACT TEXT** Approximately 250 words.
7. **KEYWORDS** List a maximum of five keywords.

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- Commercial papers, descriptions of papers with no research/development content, and papers where supporting data or a technical description cannot be given for proprietary reasons will not be accepted for presentation in this symposium.
- Abstracts should contain enough detail to clearly convey the approach and the results of the research.
- Government and company clearance to present and publish should be final at the time of submittal. Authors are required to warrant to SPIE in advance of publication of the Proceedings that all necessary permissions and clearances have been obtained, and that submitting authors are authorized to transfer copyright of the paper to SPIE.
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Proceedings of SPIE

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