

# 초청의 글

ICMIT 학술회는 한국, 중국, 일본 3국의 의공학 및 Mechatronics, 전자공학, IT 관련 연구자들이 의견을 모아 지난 15년간 격년제로 3국에서 번갈아 가며 주관하여 개최해 온 학술대회입니다. 2011년에는 8월16일부터 4일간 중국 랴오닝(遼寧)성의 성도(省都)로서 청나라 수도였던 Shenyang(선양, 瀋陽) 시(신의주/단동 북쪽 220 km)에서 열릴 예정입니다. 좋은 학술적 교류와 함께 청나라유적지와 단동, 압록강, 백두산관광도 즐기시기 바랍니다.

한양대학교 교수 김선일 (전 대한의용생체공학회 회장)

고려대학교 교수 오창현 (ICMIT 2011 공동조직위원장)

후원: 대한의용생체공학회, 대한전자공학회, 대한자기공명의학  
학회, 대한전기학회, ICROS 외

# **Call for Papers**    **ICMIT 2011**    **for KOSOMBE**

2011 International Conference on  
Mechatronics and Information Technology

**August 16-19**

**(Tuesday to Friday), 2011**

**Shenyang, China**

**[www.icmit.com](http://www.icmit.com)**



## **Important Dates**

- **Abstract Submission: March 15, 2011**
- **Notification of Acceptance: April 15, 2011**
- **Final Manuscript Submission: June 1, 2011**
- **Conference: August 16-19, 2011**

### **Organized by**

- Northeastern University, China
- Shenyang Institute of Automation, Chinese Academy of Science, China
- Chongqing University of Technology, China
- Hunan University of Science and Technology, China

### **Sponsored by**

- [The Korean Society of Medical and Biological Engineering \(KOSOMBE\), Korea](#)
- [Korean Society of Magnetic Resonance in Medicine \(KSMRM\), Korea](#)
- [Institute of Control, Robotics, and Systems \(ICROS\), Korea](#)
- [The Korean Institute of Electrical Engineers \(KIEE\), Korea](#)
- [The Institute of Electronics Engineers of Korea \(IEEK\), Korea](#)
- Natural Science Foundation of China (NSFC), China
- The Japan Society of Applied Electromagnetics and Mechanics, Japan
- GES Co., Korea
- Natural Energy Therapy Center (NET), Korea
- China-Japan-Korea Joint Advanced Mechatronics Research Association

### **General Conference Chairs**

Qingkai Han, Northeastern University, China  
Kazuhiko Takahashi, Doshisha University, Japan  
Chang-Hyun Oh, Korea University, Korea

### **Topics of Conference**

#### **• Biomedical Engineering**

- Magnetic Resonance Imaging
- Ubiquitous Application
- Sensors and Signal/Image Processing
- Human Interface
- Embedded System
- Control Theory and Application
- Actuators and Mechanism
- Smart Materials and Structure
- Welfare Engineering
- Communication and Network Systems
- Robotics
- Mechatronics and MEMS
- Information Technology
- Intelligent Control and System
- Condition Monitoring & Fault Diagnosis
- Applied Electromagnetics and Mechanics
- Power Electronics

**학술대회설명:** ICMIT 학술대회는 한국, 중국, 일본 3국의 의공학 및 IT, Mechatronics 관련 연구자들이 의견을 모아 지난 15년간 격년제로 3국에서 번갈아 가며 주관하여 개최해 온 학술대회입니다. 2011년에는 중국 랴오닝(遼寧) 성의 성도(省都)로서 청나라 수도였던 Shenyang(선양, 瀋陽) 시 (신의주/단동 북쪽 220 km) 에서 열릴 예정입니다. 좋은 학술적 교류와 함께 청나라유적지와 단동, 압록강, 백두산관광도 즐기시기 바랍니다. (문의처: 고려대학교 오창현 교수 ([ohch@korea.ac.kr](mailto:ohch@korea.ac.kr)) 또는 학술대회 홈페이지 [www.icmit.com](http://www.icmit.com))

**Abstracts:**

Abstracts (1 page, 1.5-spaced) are invited in word (.doc) or e-form (pdf) and should be sent to [icmit@icmit.com](mailto:icmit@icmit.com) (for Korea only) or [icmit2011@mail.neu.edu.cn](mailto:icmit2011@mail.neu.edu.cn) (for China, Japan and other countries) before March 15, 2011. They should contain the title of the presentation, full names and addresses of the authors, objectives of the study, employed methods, and the most significant results. Copies of all the abstracts will be available in booklet form on the first day of the conference.

*( Author form and an abstract example in the next page : Both of them have to be sent to the above email address.)*

**Full Papers:**

All the authors of accepted papers *must send full papers*. All full papers are included in Proceeding of ICMIT in CD-ROM. Selected papers are published in International Journal of AEM, or proceedings of SPIE or IEEE, (optionally and extra fee for SPIE and IEEE). Papers for Proceeding of ICMIT should be 2-6 pages; Papers for proceedings of SPIE or IEEE should be 4-6 pages, more pages need extra fee.

**Conference City:**

Shenyang, the capital of Liaoning province, is the major city in the northeast area of China, a beautiful city with large forest and many special natural sites (such as the Water Caves in Benxi) attracting many tourists all over the world. Shenyang is also a well-known traditional city with long history and various cultures, such as Imperial Palace and some Mausoleums of earlier Qing Dynasty. We welcome you to join the conference and enjoy the local flavor of Shenyang.

**Accommodation:**

**LIAONING MANSION ( 辽宁大厦 Liaoning Dasha in Chinese pronunciation )**

The cost of accommodation is RMB ¥ 300-650 or US \$50-\$100.

Address: No.105 Huanghe South Street, Huanggu District, Shenyang, Liaoning, China.

Tel.: 86-24-86081166; Fax: 86-24-869355

Website: <http://www.lnmansion.com/>

*(For the participants from Korea, a travel guide including optional guided tour will be separately posted at "<http://www.icmit.com>" as well as sent individually soon.)*

**Registration and Registration Fee:**

The deadline for a pre-registration is June 1, 2011. *A pre-registration form is in this flyer; Please return it by e-mail.*

All participants of the conference are required to register and to pay the registration fee.

Registration fee:

Regular participants: US \$350

Students: US \$200

On-site registration will be available at a \$20 surcharge.

*(Clear direction will be posted at "<http://www.icmit.com>" soon.)*

*(Author Form and Abstract Example: Please use .doc or .pdf format)*

## **Author Form**

### **Author Information:**

Name: \_\_\_\_\_

Affiliation: \_\_\_\_\_

Cellular (Mobile) Phone Number: \_\_\_\_\_

Email Address: \_\_\_\_\_

### **Presentation Method (Put a Number in the Abstract Page) :**

1. Oral only
2. Poster only
3. Prefer oral but willing to present as a poster
4. Prefer Poster but willing to present as an oral paper

### **Topics of the Study for Review (Put One or Two Numbers in the Abstract Page) :**

1. Control Theory and Application
2. Actuators and Mechanism
3. Smart Materials and Structure
4. Welfare Engineering
5. Biomedical Engineering
6. Magnetic Resonance Imaging
7. Communication and Network Systems
8. Ubiquitous Application
9. Sensors and Signal/Image Processing
10. Embedded System
11. Robotics
12. Human Interface
13. Mechatronics and MEMS
14. Information Technology
15. Intelligent Control and System
16. Condition Monitoring & Fault Diagnosis
17. Applied Electromagnetics and Mechanics
18. Power Electronics

(Abstract Example: Please use .doc or .pdf format)

**Presentation Method (Choose One) :** (Number Only)

**Topics of the Study for Review (Choose One or Two) :** (Number Only ), (Number Only)

## Constant Interaction between the Mobile and the Task Robots of a Mobile Manipulator

*Jae-Mu Yun\* and Jang-Myung Lee\*\**

*\*Dept. of Electronics Engineering, Pusan National University, Korea*

*\*\*Dept. of AAA, BBB University, Korea*

[jmlee@pusan.ac.kr](mailto:jmlee@pusan.ac.kr)

**Purpose:** This research aims at the optimal utilization of the mobile manipulator. That is, the optimal configuration of the manipulator is defined for the efficient task execution. While the mobile robot is carrying the manipulator to the desired position to execute the task, the configuration of the manipulator is adjusted to the optimal one. Through these consecutive operations, the mobile manipulator is optimally utilized for various tasks.

**Materials and Methods:** TOMM (Task Oriented Manipulability Measure) is an index to determine the desired configuration of the task manipulator for a given task. A desired ellipsoid is defined for a given task, which shows the desired configuration of the manipulator. Therefore, the actual configuration of the manipulator is controlled and changed to the desired during the carrying operation.

**Results:** **1.** Dynamics of the manipulator as well as the mobile robot are analyzed to derive the constant interaction force motion for the mobile manipulator. **2.** The mobile manipulator, PURL-II, is uniquely designed and implemented for this research. **3.** Since TOMM is well-suited for the configuration optimization, the resultant task execution performance is expected to be excellent. **4.** With the constant interaction, the mobile robot control becomes free from the motion of the manipulator.

**Conclusion:** A new algorithm for the constant interaction between the mobile and the task robots of a mobile manipulator while the two robots are moving at the same time, has been developed. The effectiveness of the algorithm is verified through the real experiments utilizing the mobile robot PURL-II.