

# TA05

## Robot Application I

09:00-11:00

Room : 1st Floor-Strauss

Chair1 : YoungKwun Lee ( SAMSUNG ELECTRONICS, Korea )

Chair2 :

09:00 – 09:20

TA05-1

### Artificial Muscle Actuator for Robotic Applications

Hyoukryeol Choi, Kwangmok Jung, Sungmoo Ryew, Hunmo Kim, Jaewook Jeon, Jaedo Nam(Sungkyunkwan Univ., KOREA)

- Actuator based on dielectric elastomer
- Antagonistic configuration
- Musclelike characteristics
- Quasi-static and dynamic analysis
- Compliance control
- Robotic actuators

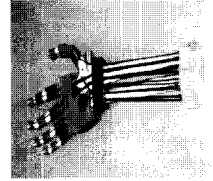
09:20 – 09:40

TA05-2

### A Skeletal Framework Artificial Hand Actuated by Micro Pneumatic Artificial Muscles

YoungKwun LEE, YeonTaek OH, HakKyung SUNG(Samsung Electronics Co. Ltd., KOREA)

- Developing a skeletal framework artificial hand similar to real human hand.
- Developing a micro artificial muscle actuated by pneumatic power.
- Building a micro pneumatic system including micro actuators and its control devices.
- Building a soft driving system for service robots.
- Designing and Fabricating a multi-channel micro pneumatic valve using MEMS technology.



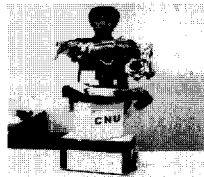
09:40 – 10:00

TA05-3

### Implementation of Human Motion Following Robot through Wireless Communication Interface

seul jung, Poongwoo jeon(Chungnam Nat'l Univ., KOREA)

- Motion capture system
- Exoskeleton mechanism
- Kinematics analysis
- Man-machine interface
- Wireless communication
- Control algorithm



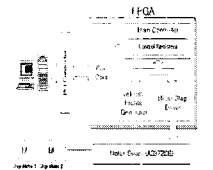
10:00 – 10:20

TA05-4

### Development of a FPGA-based One-chip Position Controller with PCI Interface

Sang Gyu Han, Jae Wook Jeon(Sungkyunkwan Univ., KOREA)

- A FPGA-based One-chip position controller with the PCI interface was developed.
- The peripherals of the existent controller can be implemented in one FPGA device.
- For this purpose, the high capacity FPGA device was used.
- PCI controller was merged into the position controller by using the PCI controller of core form.
- The developed position controller used only one FPGA device to achieve the required function.
- By doing this, the overall system can be simplified.
- The noise and power dissipation problems can be minimized and it has the advantage in the price.



10:20 – 10:40

TA05-5

### Development of Localization System for Mobile Robot Using Radio Frequency and Ultrasound

Young-gie Kim, Jin-oh Kim(Kwangwoon Univ., KOREA), Munsang Kim, Jong-suk Choi(KAIST, KOREA)

- Introduction
- Localization technique
- Experiments and evolutions
- Conclusions

10:40 – 11:00

TA05-6

### Impact Analysis for Kicking Motion of a Humanoid Robot

jae yeon choi, Seong Hoon Kim, Byung Rok So, Byung-Ju Yi(Hanyang Univ., KOREA), Wheekuk Kim(Korea Univ., KOREA)

- Human motion consists of continual impact with environment
- External impulse model of kicking motion
- Models of aerodynamic forces
- Analysis of external impulse according to posture
- Simulation of a soccer ball trajectory

