

# FM02

## Poster Session

13:30-15:30

Chair1 : Tae-Jung Lho ( Tongmyoung Univ., Korea)

Room : Base 2nd Floor-Zillertal

Chair2 :

FM02-31

### Precise contact force control of a flip chip mounting head system

Jaehong Shim(Korea Polytechnic Univ., KOREA), Youngim Cho(Pyungtaek Univ., KOREA), Yeontaek Oh(Samsung Electronics Co. Ltd, KOREA)

This paper presents a macro/micro flip chip mounting head system for precise force control. In the proposed macro/micro system, the macro actuator is conventional dc servo motor with a ball screw mechanism and the micro actuator is a voice coil motor(VCM) that consists of four NdFeB magnets and a winded moving coil. For force control, a sensitive strain-gauge force sensor is mounted in the micro actuator. Through harmonic motion between macro and micro actuator, we would like to get precise contact force control when small sized flip chip is mounted on flexible substrate in high speed. In order to show the effectiveness of the proposed macro/micro flip chip mounting head system, we com...

FM02-32

### A HILS system and its application on collision detection of an industrial robots

Ji-Heuk Song, Sang-Hun Lee, Jong-Sung Hur(Hyundai Heavy Industries Co. Ltd, KOREA)

- Development of a HILS System as a High-Speed Prototyper
- Introduction of Major Components
- Design Procedure of Control Algorithm Using the HILS System
- A Design Example: Collision Detection



FM02-33

### Fast Color Classifier Using Neural Networks in RGB and YUV Color-Space

Seonghoon Lee, Minjung Lee, Youngkiu Choi(Pusan Nat'l Univ., KOREA)

1. Introduction
2. Vision system
3. Effect of brightness variations
4. Color classifier using multi-layer neural network
5. Experimental result of color classifier
6. Applications for robot soccer system
7. Conclusion

FM02-34

### A Virtual Machine for a Modularized Personal Robot Controller

Kwang Woong Yang, Hongseok Kim(KITECH, KOREA), Jaehyun Park(Inha Univ., KOREA)

- modularized personal robot controller
- module interface
- The structure of the virtual machine
- RPL (Robot Programming Language)
- compiler
- Port Configuration
- API

FM02-35

### Visual Servoing Control of a Docking System for an Autonomous Underwater Vehicle (AUV)

Pan-Mook Lee, Bong-Hwan Jeon, Chong-Moo Lee(KRISO-KORDI, KOREA), Young-Hwa Hong, Jun-Ho Oh(KAIST, KOREA)

Autonomous underwater vehicles (AUVs) are unmanned underwater vessels to investigate sea environments, oceanography and deep-sea resources autonomously. Docking systems are required to increase the capability of the AUVs to recharge the batteries and to transmit data in real time in underwater. This paper presents a visual servo control system for an AUV to dock into an underwater station with a camera. To make the visual servo control system, this paper derives an optical flow model of a camera mounted on an AUV, where a CCD camera is installed at the nose center of the AUV to monitor the docking condition. This paper combines the optical flow equation of the camera with the AUV's equation o...

FM02-36

### Fuzzy system construction based on Genetic Algorithms and fuzzy clustering

Keun-Chang Kwak, Seoung-Suk Kim, Jeong-Woong Ryu, Myung-Geun Chun(Chungbuk Nat'l Univ., KOREA)

In this paper, the scheme of fuzzy system construction using GA(genetic algorithm) and FCM(Fuzzy c-means) clustering algorithm is proposed for TSK(Takagi-Sugeno-Kang) type fuzzy system. In the structure identification, input data is transformed by PCA(Principal Component Analysis) to reduce the correlation among input data components. And then, the number of fuzzy rule is obtained by a given performance criterion. In the parameter identification, the premise parameters are optimally searched by GA. On the other hand, the consequent parameters are estimated by RLSE(Recursive Least Square Estimate) to reduce the search space. From this, one can systematically obtain optimal parameter and the v...