

# FP04

## Humanoid Robot

13:30-15:30

Chair1 : Volker Graefe ( Bundeswehr Univ., Germany )

Room : 1st Floor-Wilder Kaiser

Chair2 :

13:30 – 13:50

FP04-1

### Human-Friendly Interfaces of a Robot Manipulator Control System for Handicapped Person

Soo-chul Lim, Kyoobin Lee, Dong-Soo Kwon(KAIST, KOREA)

- A Human-Robot-Interface(HRI) for the disabled person is developed.
- HRI consists of the laser pointer & USB camera and pressure sensor.
- HRI makes three degree of freedom.
- Three robot position control method with the interface is presented.
- Experimental results show that user control the 6 DOF robot with the interface and control method.



13:50 – 14:10

FP04-2

### Impact Analysis in the Landing Motion of Humanoid Robot

Byung Rok So, Seong Hoon Kim, Jae Yeoni Choi, Byung-Ju Yi(Hanyang Univ., KOREA), Wheekuk Kim(Korea Univ., KOREA)

- The dynamic model of a floating human body is derived
- Introduction to impact model for human body
- Analysis of external impulse on the sole
- Analysis of internal impulse at the joints
- It is shown through simulation that the internal impulses for two different configurations

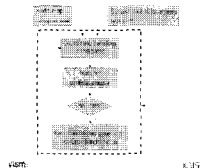
14:10 – 14:30

FP04-3

### A global localization method for mobile robot navigation using genetic algorithm

Min Young Kim, Hyung Suck Cho(KAIST, KOREA), Kyung Chul Koh(Sunmoon Univ., KOREA), Jae Hoon Kim(Samsung Heavy Industries Co. Ltd., KOREA)

- iconic localization method
- initial robot pose estimation
- genetic algorithms
- map matching



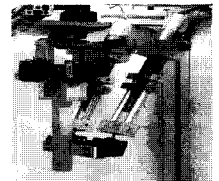
14:30 – 14:50

FP04-4

### Design of a 3-DOF Hip Module for Humanoid

Byung Rok So, Byung-Ju Yi(Hanyang Univ., KOREA), Wheekuk Kim(Korea Univ., KOREA)

- To achieve a high power-to-weight ratio, design of 3DOF hip module
- Using parallel mechanism and linear actuator consist of a ball-screw mechanism
- The kinematics analysis for the hip module
- A kinematic index to measure actuator power are introduced.
- It is demonstrated through simulation that incorporation of redundant actuator into the hip module



14:50 – 15:10

FP04-5

### Design of a biped robot using DSP and FPGA

sung-nam Oh, jae-kwan Seo, sung-ui Lee, kab-il Kim(Myongji Univ., KOREA)

Abstract: In order to be a stand-alone structure, a biped robot should be designed of the effective mechanic structure and the smaller hardware system. This paper shows the design methodology of a biped robot controller using FPGA(Field Programmable Gate Array). A hardware system consists of DSP(Digital Signal Processor) as the main CPU and FPGA as the motor controller...

15:10 – 15:30

FP04-6

### The maneuvering system of omnidirectional wheelchair by changing user's posture

Takayuki Ohnishi, Takase Kunikatsu(Univ. of Electro Communications, JAPAN)



- Introduction
- Basic experiment & Experimental result
- Design a new wheelchair
- Conclusion