D-TP02

Robot Systems 2

13:00-15:00   **Chair : Oh Sang Rok (KIST)**
Room : 4128   **Co-Chair : Kim Whee-Kuk (Korea Univ.)**

13:00 – 13:20   D-TP02-1

Simulation of Detecting the Distributed Denial of Service by Multi-Agent

Seo Hee Suk and Lee Young Won
(Sungkyunkwan Univ.)

The attackers on Internet-connected systems we are seeing today are more serious and more technically complex than those in the past. Computer security incidents are different from many other types of crimes because detection is unusually difficult. So, network security managers need a IDS and Firewall. IDS (Intrusion Detection System) monitors system activities to identify unauthorized use, misuse or abuse of computer and network system. It accomplishes these by collecting information from a variety of systems and network resources and then analyzing the information for symptoms of security problems. A Firewall is a way to restrict access between the Internet and internal network. Usually, the input...

13:20 – 13:40   D-TP02-2

Evolvable Cooperation Strategy for the Interactive Robot Soccer with Genetic Programming

Kim Hyoung-Rock, Hwang Jung-Hoon and Kwon Dong-Soo
(KAIST)

This paper presents an evolvable cooperation strategy based on a genetic programming for the interactive robot soccer game. The interactive robot soccer game has been developed to allow a person to join in the game dynamically and to reinforce entertainment characteristics. In this game, a cooperation strategy between humans and autonomous robots is very important in order to make the game more enjoyable. First of all, necessary action sets for the cooperation strategy and its strategy structure are presented. In the first stage, a blocking action that an autonomous robot cut off an enemy robot from disturbing the way of the human controlled robot has been considered. The success probability of the blocking action has been obtained in...

13:40 – 14:00   D-TP02-3

Mobility analysis of Planar Mobile Robots and The Rough-Terrain Mobile Robot via The Screw

Kim Whee-Kuk, Yi Byung-Ju and Lee Seung-Eun
(Korea Univ.)

In this paper, the method of analyzing mobility of the mechanisms is suggested. The method based on the joint screws provides accurate values of mobility of the mechanisms even with the lack of geometric generality. To show its validity, the method is applied to finding mobilities of planar mobile robots and a rough-terrain mobile robot, Mars Rover. To do so, simplified joint model for each of four different typical wheels of the mobile robots are described including friction velocities, firstly. Then, mobility analyses of planar mobile robots and the Mars Rover mobile robot for navigation on the rocky road on Mars are performed. It is confirmed that the obtained results in this study coincide with the previous ones which...

14:00 – 14:20   D-TP02-4

Wireless Interface of Motion between Human and Robot

Jung Seul, Jeon Poongwoo, Cho Hyun Taek, Jang Pyungsoo, Cho Kiho, Kim Jeonggu, Song Duckhee and Choi Youngkwon
(Chungnam National Univ.)

In this paper, wireless interface of the motion between human and robot is implemented. T he idea is that if a human who is equiped with device including accelerometer and rate gyro sensor move his/ her arm, then the robot follows human motion. T he robot is designed as wheeled type mobile robot with two link arms. T he robot ' s basic movements such as forward, backward, left, right movement can be controlled from foot sensor which human st eps on. Arm movements can be controlled by arm motion of human motion. In order to detect human motion, sensor data analysis from gyro and accelerometer has to be done. Data from sensor s are tr ansferr ed through wireless communication to activate the robot.

14:20 – 14:40   D-TP02-5

Multi-robot control using Petri-net

Park Se-Woong and Kuc Tae-Yong
(Sungkyunkwan Univ.)

Multi-agent robot system is the system which executes by cooperating with each robots and controlling several robots. Capability and function of each robot must be considered for cooperation behaviar. Furthermore, it is necessary to analyze the given environment and to replace complex task with some simple tasks. Analysis of the given environment and role assignment for the given tasks are composed of discret event. In this paper,the hierarchical controller for multi-agent robot system using the petri-net state diagram is proposed. The proposed modeling method is implemented for soccer robot system. The effectiveness of proposed modeling method is shown through experiment.

14:40 – 15:00   D-TP02-6

A Mobile Robot Navigation Method using Virtual Obstacle in indoor environment

Joe Woong Ryul, Park Jung-Min, Park Gui-Tae, Oh Sang-Rok and You Bum-Jae
(KIST)

A virtual obstacle method for escaping local minima encountered by sonar-based mobile robot navigation used in real-time obstacle avoidance is presented. The new algorithm judges the mobile robot falls into local minima and helps the mobile robot escape from it, which regards a concave obstacle as convex or flat one, virtual obstacle method. In the algorithm, it starts to make virtual-obstacle when the mobile robot meets a certain condition, then the robot moves back slowly taking inside area of local minima as obtacle gradually. The new algorithm is simulated. The experimental results are presented to demonstrate the usefulness of the method.