

# D-SMP01

## Domestic Poster Session

13:00 – 13:50

Chair : Kim Soo Hyun (KAIST)

Room : Terrace(3F)

Co-Chair : Jooyoung Park (Korea Univ.)

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13:00 – 13:50

D-SMP-13

### Lateral Control of an Autonomous Vehicle by Machine Vision systems

Ju-Yong Choi, Seong-Jae Hong, Seung Gweon Jeung,  
Man-Hyung Lee, Jong-Il Bae  
(Pusan National Univ.)

In the autonomous vehicle, the reference lane is continually detected by machine vision system. And then the vehicle is steered to follow the reference yaw rates which are generated by the deviations of lateral distance and the yaw angle between the vehicle and the reference lane. To cope with the steering delay and the side-slip of vehicle, PI controller is introduced for the yaw rate feedback. And it is tuned by the simulation that the vehicle is modeled as 2 DOF verified by the results of the actual vehicle test. The lateral control algorithm by the yaw rate feedback has good performances of lane tracking and passenger comfort.

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13:00 – 13:50

D-SMP-14

### A Study on the Roll Eccentricity Estimation by Using an ALE

Cho Kyu-Young, Kim Sang Woo, Lee Young-Kow ,  
Jo Sung Eun  
(POSTECH)

In the hot rolling process, the RF AGC (Roll Force Auto Gauge Control) is used to control the roll gap to reduce the variation of rolling force caused by the roll eccentricity and the variation of material thickness. However the effect of the roll eccentricity cannot be distinguished. To eliminate the effect of the roll eccentricity, the roll eccentricity estimation is needed to supplement some drawbacks of RF AGC. In this paper, an ALE(Adaptive Line Enhancer) that extracts the rolling force variation due to the roll eccentricity is suggested. We also provide an algorithm that enhances the convergence time of roll eccentricity estimation. The performance improvement of the suggested algorithm is shown via simulations.

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13:00 – 13:50

D-SMP-15

### Congestion Control using Smith Principle and PID Control Algorithm in High-speed ATM Network

Kim Kyungwoo, Chun Kyunghan, Jeon Haejin, Choi Bongyeol  
(Kyungpook National University)

In recent years, the remarkable development of communication network technology with the increasing demand of B-ISDN service helps the high-speed ATM network to be applied a fully integrated global network. The considerable issue of high-speed communication network is a performance of service-link and stability of network queue. In this paper, we propose a feedback control algorithm and PID control method to improve the performance of service-link and stability of network queue and confirm upgraded traffic performance of the high-speed ATM network.

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13:00 – 13:50

D-SMP-16

### Vision-based Line Tracking and steering control of AGVs

Lee Hyeon Ho, Lee Chang-Goo  
(Chonbuk Univ.)

This paper describes a vision-based line-tracking system for AGV and steering control scheme. For detect the guideline quickly and exactly, We use four line-points which complement and predict each other. This low-cost line-tracking system is efficiently using PC-based real-time vision processing. Steering control is studied through an steering controller with guide-line angle and line-point error. This method is tested via a typical AGV with a single camera in laboratory environment.

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13:00 – 13:50

D-SMP-17

### Design of PD controller for WMR using a Neural Network

Kim Kyu-Tae, Kim Sung-Hoe, Park Chong-Kug(Kyunghee Univ.),  
Bae Jun-Kyung(Chinju Industrial Univ.)

This paper presents A Design of WMR Controller that being composed of cooperative relation between PID controller and optimized neural network algorithm, it operate a variable control by velocity. Some proposed algorithm in the past just depended on PID controller for the control of position of WMR but for more efficient control we design a variable controller that operate control by PD controller using neural network if it is satisfied with any given condition. it adjust gain of PD controller for real time control using a fast feedforward algorithm which is different with Form of the standard backpropagation algorithm.

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13:00 – 13:50

D-SMP-18

### Path Optimization for Welding/ Soldering Robots Using an Improved Genetic Algorithm

Kang Sung-Gyun, Kwon Son, Choi Hyuk-Jin  
(Pusan Univ.)

Welding/ soldering automation is one of the most important manufacturing issues in order to lower the cost, increase the quality, and avoid labor problems. An off-line programming, OLP, is one of the powerful methods to solve this kind of diversity problem. Unless an OLP system is ready for the path optimization in welding/ soldering, a waste of time and cost is unavoidable due to an inefficient path in welding/ soldering processes. Therefore, this study attempts to obtain path optimization using a genetic algorithm based on artificial intelligences. The problem of the welding path optimization is defined as conventional TSP (traveling salesman problem), but still paths have to go through welding lines. An improved genetic algorithm was suggested and the problem was formulated as a TSP problem considering ...