D-TE06

Information Processing Systems

15:20 – 15:40   D-TE06-1

Performance Improvement of Active Queue Management for Internet Routers

Lim Hyuk, Park Kyung-Joon, Park Eun-Chan and Choi Chong-Ho
(Seoul National University)

In this paper, we propose a control scheme for improving the performance of a conventional Proportional-Integral (PI) controller for Active Queue Management (AQM) supporting TCP flows. When the PI controller is used for AQM, the windup phenomenon of the integral action causes the performance degradation. Therefore we model AQM as a system with a saturator and apply anti-windup methods to the PI controller for AQM. We compare the performances of anti-windup algorithm with the conventional PI controler through ns simulations. The simulation results show that the PI controller with anti-windup method performs better than the conventional PI controller.

15:40 – 16:00   D-TE06-2

Implementation of Simple and Intelligent Slave ASIC for Profibus-DP

Kwon Daehyun, Bae Gyu-Sung, Lee Youngjoon, Lim Kye-Young, Moon Jeong-il and Kim Jong-Bae
(LG Industrial Systems Co.)

Profibus-DP is the performance-optimized version of Profibus, specifically dedicated to time-critical communication between automation systems and distributed peripherals. It is included into the International Fieldbus Standard IEC 61158. In this paper, The ASIC for Profibus-DP simple and intelligent slave is proposed and implemented. It can be fully compatible with Siemens LSPM2 as a pin-to-pin base and it also has a high-level function that can replace current intelligent slave boards with one chip. Also it can be used without special OS coding unlike SPC3 of Siemens.

16:00 – 16:20   D-TE06-3

Design of An Extended Robust $H\infty$ Filter

Yu Myeong-Jong, Lee Jang Gyu and Park Chan Gook
(Seoul National University)

An extended robust $H\infty$ filter is proposed for a nonlinear uncertain system. We also analyze the characteristics of the proposed filter such as an $H\infty$ performance criterion using the Lyapunov function method. The analysis results show that proposed filter has a robustness against disturbances such as process and measurement noises and against parameter uncertainties. Then the in-flight alignment for a strapdown inertial navigation system is designed using the presented filter. Simulation results show that the proposed filter effectively improve the performance.

16:20 – 16:40   D-TE06-4

Fruit Classification System with a Color Image Boundary Tracking

Choi Youn-Ho, Choi Byeong Tae, Lee Moo Young, Im Sung Woon and Kwon Woo Hyen
(Kyungpook National University)

The quality of agricultural products is classified with various factors which are measured and determined by destructive and/or nondestructive method. NIR spectrum analysis method is used to determine internal qualities such as a brix and an acidity. CCD color camera is used to measure external quality like color and a size of fruit. Today, nondestructive methods are widely researched. The quality and the garde of fruit loaded into a cup automatically and measured in real time by camera and NIR system is determined by internal and external factors. This paper proposes modified boundary tracking algorithm which detects the contour of fruit's color image and make chain code faster than conventional method ...

16:40 – 17:00   D-TE06-5

Tracking Control of a Moving Target Using a Robot Vision System

Kim Dong-Hwan and Cheon Gyung-Il
(SNUT)

A Robot vision system with a visual skill so as take information for arbitrary target or object has been applied to auto-inspection and assembling system. It catches the moving target with the manipulator by using the information from the vision system. The robot needs some information where the moving object will place after certain time. A camera is fixed on a robot manipulator, not on the fixed support outside of the robot. It secures wider working area than the fixed camera, and it dedicates to auto scanning of the object. It computes some information on the object (center, angle and speed) by vision data, and can guess grabbing spot by arriving time. When the location...

17:00 – 17:20   D-TE06-6

Control of Helicopter Training Simulator by Self Tuning Control Method

Kim Sang Bong, Ahn Hwi Ung, Lee Gun You, Park Soon Sil and Oh Sea june
(Pukyong National University)

R/C helicopter has been used to several fields of military affairs, investigation, searching and toys because it has small size, hovering and vertical take-off characteristics etc. Therefore it needs more realizable control method. The paper introduces simulation and experimental results for control of a helicopter training simulator by self tuning control method. It is assumed that the helicopter is operated at the state of hovering motion and the model is induced. The self tuning control method incorporates the concepts of the well known internal model principle and annihilator polynomial for reference input and disturbance. The controller design is separated into two cases that the plant parameters are known or not. To realize...