D-TP01 Internet-Based Control

13:00-15:00 **Chair : Choi Jae-Weon (Pusan National Univ.)**
Room : 4127 **Co-Chair : Jee Gyu-In (Konkuk Univ.)**

13:00 – 13:20 **D-TP01-1**

Congestion Control in ATM Networks Using Mixed-LQR

Song Hae Seok, Seo Young Bong and Choi Jae Weon
(Pusan National Univ.)

The objectives of congestion control in ATM (Asynchronous Transfer Mode) networks are maximum utilization of network resources, acceptable level of low cell loss and fairness among all VCs (Virtual Connections). In this paper, we present a congestion control algorithm which is based on state space model. The proposed controller uses optimal control algorithms (LQR, Mixed-LQR), where control parameters can be designed to ensure the stability of the control loop in a control theoretic sense, over the propagation delay. We show how the control mechanism can be used to design a controller to support ABR service based on feedback of explicit rates. Simulation results are presented to substantiate our claim.

13:20 – 13:40 **D-TP01-2**

Token with Timer Algorithm for Guaranteeing Periodic Communication Services in Timed Token Protocol Networks

Choo Young-Yeol and Cheeha Kim
(POSCO)

Timed token protocols inadequately provide periodic communication service, although this is crucial for hard real time systems. We propose an approach to guaranteeing periodic communication service on a timed token protocol network. In this approach, we allocate bandwidth to each node so that the summation of bandwidth allocations is Target Token Rotation Time (TTRT). If a node cannot consume the allocated time, the residual time can be used by other nodes for non-periodic service using a timer which contains the unused time value and is appended to the token. This approach can always guarantee transmission of real-time messages before their deadlines when the network utilization is less than 50%.

13:40 – 14:00 **D-TP01-3**

The Design of Remote Decentralization Embedded System supporting the Internet and CAN

Hyunsuk Lee, Jaenam Lim, Jaepyung Ko, Jinwoo Park and Jangmyung Lee (Pusan National Univ.)

This paper introduces a system which offers the possibility to access remote CAN devices over the Internet as if they were local. The system consists of a local computer and the DSP server. The DSP is connected to a CAN bus with a DC motor and to a Internet simultaneously. The DSP board consists of a LAN controller and a CAN controller. It can convert to a protocol between CAN and Internet. The DSP board is not based on a personal computer. This board is profited a small and light system.

14:00 – 14:20 **D-TP01-4**

Development of Monitoring System for Polishing Robot Based on Web

Hong Chang-Woo, Go Seok Jo and Lee Min Cheol
(Pusan National Univ.)

Polishing a die that has free-form surfaces is a time-consuming and tedious job, and requires a considerable amount of high-precision skill. Some workers tend to gradually avoid the polishing work because of the poor working conditions caused by dust and noise. In the our previous study, an automatic polishing system was developed to reduce the polishing time and cope with the shortage of skilled workers. And, to operate the polishing robot system from remote sites, communication network was constructed and monitoring programs (a server program and a client program)) were developed. However, to monitor polishing process in remote sites, users have to install monitoring programs in a client PC. Thus, user can only operate the polishibg system...

14:20 – 14:40 **D-TP01-5**

A Design of Web based GEM Using Single Object Access Protocol

Kang W.Joon and Park H. Seong
(Kangwon National Univ.)

This paper presents an enhanced web-based distributed system with Single Access Object Protocol(SOAP), which uses HTTP as a communication protocol and XML as a data presentation. The suggested system is applied into a Generic Equipment Model (GEM) for exchanging specified messages(SECS-II), which are encoded into XML presentation, between Equipment and Host via the web server. In this paper, the designed system architecture and its soap components are presented.

14:40 – 14:50 **D-TP01-6**

Implementation of a Time Triggered Communication Protocol

Kim Jaewoo, Kim Keewoong, Kim Taeyol, Lim Hongjoon, Ryu Syehyung and Lee Suk (Pusan National University)

Jitter occurring during data communication creates difficulties in integrating a system. Such problems arise from using an event triggered communication protocol such as CAN(Controller Area Network) because it cannot be determined when a specific message will be transmitted. In order to avoid this problem, several time triggered communication protocols have been developed or are under development. Those protocols include TTP(TTTech) and TTCAN(BOSCH). But a time triggered communication protocol needs more hardware than an event triggered protocol and has more complicated software algorithm because data and time information goes through the existing data line...