

D-TA03

Factory Automation and CIM 1

08:30-10:30

Chair : Kim Dae-Won (Myongji Univ.)

Room : 4129

Co-Chair : Kwon Soon-Jae (Pukyong National Univ.)

08:30 – 08:50

D-TA03-1

D-TA03-2

A Study on the Realization of Protocol Stack for I/O Elements Control for Multi-devices and Field Level

Kwak Chang-Yong, Kim Tae-Hwa, Kwon Soon-Jae(Pukyong National Univ.)

Son Jeong-Ki(Korea Port Training Institute)

System establishment using a network may be a decisive factor both for creating a flexible production system and increasing reliability and serve as a basis for setting up of a management system that will make the designing, maintenance, and repair easier. It is therefore imperative to develop a protocol which is simple to use for communications and connections among different devices. The objectives of this study is to establish communications protocol stack that will enable to conduct an effective monitoring of production facilities and to secure flexibility of reduction control system, and to improve the working ratio of the production facilities by centralization of communications system through effective collecting and storing of the diversified data of multi-type and multi-device production facilities.

09:10 – 09:30

D-TA03-3

A Study on Real-time Protocol over UDP

Hwang Jee Hwan, Jung Myung Soon, Kang Jung Mo and Park Hong Seong

(Kangwon National Univ.)

There are some problems to implement a real-time network system with Ethernet because the MAC(Medium Access Control) of Ethernet uses a CSMA/CD protocol, which introduces unexpected delays. In this paper, we designed a method to solve problems due to the Ethernet MAC. This method introduces a pseudo-MAC in application layer to support the real-time feature. So the presented method doesn't need any modifications of protocols such as UDP/IP/MAC. The presented pseudo-MAC is based on both a token passing protocol and a publisher-subscriber protocol. The suggested real-time protocol is implemented and tested practically in a local area network. The proposed real-time network consists of a token controller node and general nodes.

08:50 – 09:10

A Path Planning of Dispenser Machines in PCB Assembly System Using Genetic Algorithm

Woo Minjung, Lee SooGil and Park Tae Hyoung
(Chungbuk National University)

We propose a new optimization method to improve the productivity of dispenser machines in PCB assembly lines. The optimization problem for multi-nozzle dispensers is formulated as a variant TSP. A genetic algorithm is applied to the problem to get a near-optimal solution. Chromosome and some operator are newly defined to implement the genetic algorithm for multi-nozzle dispensers. Simulation results are then presented to verify the usefulness of the method.

09:30 – 09:50

D-TA03-4

The Design of Open Architected Manufacturing System based on RT CORBA

Yi Gi Woong, Kim Hong Rok, Suh Il Hong(Hanyang Univ.)
Park Myong Kwan(Dongyang Univ.)

In this paper we propose a framework of an open architected manufacturing system base on CORBA middleware. The manufacturing system consists of four configurable software modules 9mchine control module, database module, monitoring module, and operation module). Each module is distributed through the network and integrated with CORBA middleware technology. CORBA Characteristics including independence from programming languages, computing platforms and networking protocols makes us to easily develop new applications and to effectively integrate new module into existing distributed systems. The CORBA program used in this study is The ACE ORB (TAO) developed by the laboratory in Washington University. ...
