13:00-15:00
Room : 4133

Chair : Hwang Sung-Ho (KITECH)
Co-Chair : Yu Kee-Ho (Chungbuk National Univ.)

13:00 – 13:20   **D-TP04-1**

An efficient Ambiguity searching method with constraints for attitude finding GPS receivers

Nam Sung Il, Son Seok Bo, Park Chan Sik and Lee Sang Jeong
(Chungnam Univ.)

This paper describes an efficient ambiguity searching method using additional constraints in 3-dimentional attitude finding GPS receiver design. For determining the integer ambiguity, the baseline length constraint, the angle constraint, the velocity constraint and the attitude constraint can be used for reducing the searching space. This paper describes the searching space algebraically and graphically. It is confirmed that the described restrictions are reasonable and the speed and the probability of ambiguity fixing are improved when the restricted searching spaces are applied. Moreover, it is possible to design receivers of better quality by applying the method proposed in this paper.

13:20 – 13:40   **D-TP04-2**

Development of the Real-time Initial Alignment Algorithm using the Kalman Filter

Oh Sang Heon, Hwang Dong-Hwan and Lee Sang Jeong
(Chungnam National University)

The purpose of the initial alignment of a SDINS is to get a coordinate transformation matrix from the body frame to the navigation frame. The initial alignment is one of the most important processes in the navigation system since its error has a large influence on the navigation solution. In this paper, a real-time initial alignment algorithm for the SDINS is developed using the Kalman filter. The steady state error analysis is performed for the developed Kalman filter technique and the gyrocompass loop method. The performance of the developed alignment method is compared with the gyrocompass loop method through the real-time alignment experiments.

13:40 – 14:00   **D-TP04-3**

Neural network algorithm for VOC gas recognition and concentration estimation at field screen using E-Nose System

Kim Jeong-Do, Byun Hyung-gi, Ham Yu-Kyung, Lee Jun-Sub, Shon Won-Ryul and Heo Nam-Up
(Samchok Univ.)

Field screening for pollutants has been a target of instrumental development for number of years. An electronic nose can be of substantial benefit to rapidly localize the spatial extent of a pollution or to find pollutant source. Although an electronic nose cannot separate complex composition into the whole spectrum of present volatile organic compound(VOC) in pollutants such as Gas chromatography(GC), qualitative and semi-quantitative chemical characterizations are rapidly avaiable on site at a low cost using the optium sensory system and pattern recognition algorithm based on neural network.

14:00 – 14:20   **D-TP04-4**

Distributed Flexible Tactile Sensor System Using Piezoelectric Film

Yoon Myoung Jong, Yu Kee Ho, Kwon Tae Gyu and Lee Seong-Cheol
(Chonbuk National Univ.)

This research is the development of a distributed flexible tactile sensor for service robots using PVDF (polyvinylidene fluoride) film for the detection of the contact state in real time. The tactile sensor which has 8×8 taxels is fabricated using PVDF film and flexible circuitry. The proposed fabrication method is simple and easy to make the sensor in the laboratory without using any special equipment. Experimental results on static and dynamic properties are obtained. In order to investigate the properties of the sensor, the sensor output to the arbitrary forces and frequencies are measured using the shaker with the force sensor.

14:20 – 14:40   **D-TP04-5**

Enhancement of Tracking Performance of Laser Tracking System for Measuring Position Accuracy of Robots

Hwang Sung-Ho, Choi Gyeong-Rak, Lee Ho-Gil, Shon Woong-Hee and Kim Jin-Young
(KITECH)

The laser tracking system(LTS) presents the most promising technique for dynamic position measurement of industrial robots. This system combine the advantage of high accuracy with a contactless measurement technique. It is the measurement system of position in three dimensions using distance data obtained by laser interferometer and real time angle by tracking mirror assembly. After measuring the tracking error of the beam projected on the center of retroreflector in robot end effector, this system tracks the end effector continuously by adjusting tracking mirror angle to minimize this error...

14:40 – 15:00   **D-TP04-6**

Development of the Motion Characteristics Analysis System of Robots Using Laser

Ahn Chang-Hyun, Kim Gyu-ro nd Kim Jin-oh
(Kwangwoon Univ)

In this paper, we propose a method to analyze measured data from 3D Laser tracking system and to enhance precision performance of a Cartesian robot. Position data are obtained over the stroke of a Cartesian robot with variable speeds. The measured data is need to model errors with several different sources. In general, the error is a function of part accuracy, assembly accuracy, temperature, and control etc. After the sources of errors are identified, they are used to enhance precision performance. The proposed method is more complete than others because we use very accurate 3D Laser tracking system.