D-FA03 Aerospace Technologies-GPS

09:00 – 11:00 **Chair : Jee Gyu-In (Konkuk Univ.)**
Room : 4129 **Co-Chair : Park Chan Gook (Kwangwoon Univ.)**

09:00 – 09:20 **D-FA03-1**

Analysis of success rate of GPS carrier phase ambiguity resolution in Korea peninsula

Son Ji soo and Jee Gyu-In
(Konkuk Univ.)

GPS Receiver gives pseudorange Doppler and integrated carrier phase for measurements to compute navigation information. Thought the integrated carrier phase can be transfer to the equal domain as pseudorange by multiplying the wave length of the received signal, in order to get position information from the carrier phase measurements the integer ambiguity should be resolved. And differencing technique is generally used to eliminate the common error terms of the integrated carrier phase measurements between robber and server. In short baseline double-differencing operation has effect on elimination the common biases for both stations and thus ambiguity resolution are to be reliable. But the baseline increases, the integer ambiguity resolution is hardly, due to the correlated common error is increase...

09:20 – 09:40 **D-FA03-2**

GPS to monitor and track vehicle position in steel works

Park Chel No and Jee Gyu-In
(Konkuk Univ.)

In steel works, Locomotives and torpedo ladle cars are used to convey the smelted iron that comes out Blast Furnace to the steel-making mill. Above conveying vehicles are operated in all steel works area. And to trace their positions, after partitioned their areas, Automatic Vehicle Identification(RF-ID method) is installed on the railroad and identifies vehicle numbers. But AVI facilities have many problem that means that are too expensive, cost too much maintenance fee and inefficient management. This paper is to revamp those inefficient operations and state the status of operations of train positioning system, get to know what the problem is. And also when we use GPS to monitor and trace the vehicle position...

09:40 – 10:00 **D-FA03-3**

Study and Implementation on Compensation of Step Jump Errors and Integrated Filter in the INS/GPS System

Hong WoonSeon, Choi SangWook and Park HeungWon(ADD),
Kim ChenJung(KARI)

The pure navigation system using Inertial Navigation Unit(INU) which has very accurate short term stabilites but not long term gives rise to position errors propotional to time. On the contrary, Global Positioning System(GPS) which is bounded its errors to some fixed ranges shows higher accuracy in the long term, and lower accuracy in the short term than that of INS. Recently the integration of these two systems is one of the main topic in the field of navigation system. In this thesis, the implementation of kalman filter on the real time navigation computer and step jump error compensation method is suggested.

10:00 – 10:20 **D-FA03-4**

Implementation of network-assisted Software GPS Receiver based on PC for Snapshot Navigation Solution

Kim Whi, Hong JinSeok, Kim SangHyun, Jee Gyu-In (Konkuk Univ.) and Park ChanGook (Kwangwoon Univ.)

Recently, variety services are more and more developed due to supply of PDA, cellular phone, and etc. Also, a services based on location information are very helpful in traffic, shopping, and emergency. Thus the user position is positively necessary for these services. One of the latest applications in GPS is the E911 call service for wireless phones. In this case, current GPS Navigation accuracy meets the FCC requirements but the hardware size and power consumption of GPS is issued for implementation. And, some case of applications need to snapshot location solution with fast TTFF(Time-To-Fist-Fix) than continuous location solution. The software GPS receiver could be the solution...

10:20 – 10:40 **D-FA03-5**

Development of WNS/GPS System Using Tightly Coupled Method

Cho Seong Yun, Park Chan Gook(Kwangwoon University),
Jee Gyu In and Lee Young Jea(Konkuk University)

In this paper, the model for personal navigation system using low-cost inertial sensors and error compensation method with GPS are proposed. Simulation is accomplished for the performance test. WNS(Walking Navigation System) is a kind of personal navigation using the number of a walk, stride and azimuth. Because the accuracy of these variables determines the navigational performance, computational methods have been investigated. The step is detected using the motion pattern by walking motion, stride is determined by neural network and azimuth is calculated with gyro's output. The neural network filters off unnecessary motions. However, error compensation method is needed, because the error of navigation information increases with time...

10:40 – 11:00 **D-FA03-6**

Development of low power GPS receiver

Kim Il Kyu, Lee Jae Ho, Seo Hung Serk, Park Chan Sik and Lee Sang Jeong
(Chungnam National University)

According to expansion of wireless communication system and mobile device, interest has been growing in personal navigation system integrated with wireless system. In portable consumer electronics, such as cellular phones, GPS and PDA, one of major design factors is the power consumption. Solutions of reducing the power dissipation are low voltage, low system clock power management and so on. This paper develops a GPS receiver based on the advanced power management algorithm that achieves very low average power consumption. Both RF and DSP chips are powered down and reactivated only when the position fixing is required. In order to run, the developed includes the RTC calibration function and the fast reacquisition function using XMC (eXtended Multiple Correlator)...