D-TP07 Aerospace Technology 2

13:00-15:00 **Chair : Song Taek Lyul (Hanyang Univ.)**
Room : 4232 **Co-Chair : Ham Woon-Chul (Chonbuk National Univ.)**

13:00 – 13:20 **D-TP07-1**

Gravity Modeling and Validation for High Accuracy Navigation Computation

Cho Yuncheol, Shin Yong Jin, Park Jeong Hwa, Kim CheonJoong and Choi Kyung Ryong
(ADD)

Errors in inertial navigation system(INS) can be divided into two major groups which are system related errors and modeling errors due to approximation and linearization. Measurement noise, calibration, and alignment errors make up the first group, whereas the uncertainties in the gravity vector fall in the second category and are important error source for high quality INS, especially during high altitude and and/or long time missions, when the gravity errors tent to build up. The quality of a medium to high accuracy INS depends on the knowledge of the local gravity field. In this paper, the feasibility of improving airborns INS by use of more accurate gravity medel is studied. To make consistent comparisons, WGS-84 parameters are used and ...

13:20 – 13:40 **D-TP07-2**

Design of a 3DOF motion capture system for HMD using micro gyroscopes

Song Jin Woo, Chung Hakyoung, Park Chan Gook, Lee Jang Gyu, Kang Taesam and Park Kyucheol
(Seoul National Univ.)

In this paper, fabricated is a motion capture and attitude detection system for Head Mounted Display (HMD) composed of three low-price and low-grade micro gyroscopes and a micro-controller. To calculate attitude of a body, modified INS algorithm is used. Because the micro gyroscope has much bias drift error, scale factor error, and run-to-run bias error, the motion of a body can not be measured exactly if the general INS algorithm and micro gyroscopes are used. To reduce the errors, three accelerometers can be used. In this case, however, the size and power consumption become too large to use in HMD system. The modified INS algorithm use the grid map and the characteristics of the human motions.

13:40 – 14:00 **D-TP07-3**

Improvement of Active Homing Performance with Radome Slope Estimation in Spatial Engagements

Shin Sang-Jin and Song Taek-Lyul
(Hanyang University)

In this paper, an estimation scheme with the IMM algorithm to estimate radome slope and target states is used to reduce the radome induced miss distance effectively in spatial active homing engagements of an anti-air missile. The filter algorithm in conjunction with proportional navigation guidance is tested by a series of simulation runs.

14:00 – 14:20 **D-TP07-4**

UTV localization from fusion of Dead-reckoning and LBL System

Jeon Sang-Woon, Jung Sul, Won Moon-Cheol and Hong Sup
(KARI)

Localization is the key role in controlling the Mobile Robot. In this papers, a development of the sensor fusion algorithm for controling UTV(Unmanned Tracked Vehicle) is presented. The multi-sensocial dead-recking subsystem is established based on the optimal filtering by first fusing heading angle reading from a magnetic compass, a rate-gyro and two encoders mouned on the robot wheels, thereby computing the deat-reckoned location. These data and the position data provoded by LBL system are fused together by means of an extended Kalman filter. This algorithm is proved by simulation studies.

14:20 – 14:40 **D-TP07-5**

A Study on the GPS Error Compensation using Estimation Point of Moving Position at a Vehicle

Song-Suck-Woo, Song Hyun-Sung, Jang Hong-Seok and Rho Do-Hwan
(Chonbuk National Univ.)

It is a very important problem that we grasp the accurate position at car navigation system. The GPS has used for knowing position because of accumulating few errors, but it have errors that are Tropospheric error, Ionospheric error and Multipath error and so on. In this paper, We estimate moving position of a vehicle by Kalman filter using initial value after deducing the line equation using initial value and target value of map data. Then, we compensate GPS errors compare estimated poing with GPS errors. The experimental results have shown that are compared position data during real travel with compensated position data which are got after applying the algorithm..