SA01

Industrial Application II

10:10 – 10:30   SA01-1

Development of A Hybrid Type Electronic Brake System(EBS)

Chulki Lim, Kwangsuck Boo, Jeonghoon Song, Soonyoung Hong(Inje Univ., KOREA)

This study proposes a new conceptual Hybrid Electric Brake System (HEBS) which overcomes the problems of the conventional hydraulic brake system. The HEBS uses the contactless brake system when vehicle speed is high to obtain superior braking force by eddy current, which is induced in pole area by magnetic flux through a rotating conductive disk. On the contrary, when a vehicle speed is low, contact type brake system such as conventional hydraulic brake system makes higher braking force. HEBS transfers faster a braking intention of drivers and guarantees a safety of drivers because of vehicle dynamic superior controllability.
Braking torque analysis is performed based upon Lee. Barn?math...

10:30 – 10:50   SA01-2

Development of a Real-Time Vehicle Dynamic Model for a Tracked Vehicle Driving Simulator

Ji-Young Lee, Woon-Sung Lee(Kookmin Univ., KOREA), Ji-Sun Lee(InnoSimulation Inc., KOREA)

A real-time vehicle simulation system is a key element of a driving simulator because accurate prediction of vehicle motion with respect to driver input is required to generate realistic visual, motion, sound and proprioceptive cues. In order to predict vehicle motion caused by various driving actions of the driver on board the simulator, the vehicle model should consist of complete subsystems. In this paper, a tracked vehicle dynamic model with high efficiency and effectiveness is introduced that has been implemented on a training driving simulator. The multi-body vehicle model is based on recursive formulation and has been automatically generated from a symbolic computation package develop...

10:50 – 11:10   SA01-3

Preview Control of High Mobility Tracked Vehicle Suspension with multiple wheels

Yoonsun Kim, Youngjin Park(KAIST, KOREA)

To improve the performance of the tracked vehicle system, we examined the feasibility of using the preview control for the tracked vehicles suspension system. We proposed a method to apply a linear optimal preview control to the tracked vehicle system. To avoid the complexity of modeling the track subsystem and kinematical nonlinearity in the trailing arm suspension, we classified these as unknown dynamics and disturbances. We used the Time Delay Control(TDC) method to make sprung mass dynamics follow that of linear preview controlled tracked vehicle model by compensating the uncertainties and disturbances. We have verified by the computer simulation that the proposed method shows good robus...

11:10 – 11:30   SA01-4

Design of Hydraulic Control Systems for a Disc Spinning Machine

Geun-Seok Park, Jun-Young Lim, E-Sok Kang(Chungnam Nat'l Univ., KOREA), Jung-Sik Kang(KIMM, KOREA)

The disc spinning machine is a specific production machine for discs of automobile. Using this machine, we could product superior wheels in hardness and strength to the press method and the machine made process time shorten by one-pass spinning. But, the spinning machine became huge because it needed maximum pressure during the process and this can badly affect the lifetime of components. In this paper, hydraulic control system was designed to make up for defects of spinning machine and to shorten overusing power. Experimental hydraulic control system was used to simulate the wheel disc spinning process and the control performance was evaluated for the required forces and positions.

11:30 – 11:50   SA01-5

Red Light Running Enforcement System Using Real Time Individual Vehicle Tracking

Dae-Woon Lim, Joon-Suk Jun, Sung-Hoon Choi(LG Industrial Systems Co. Ltd., KOREA)

In this paper, we introduce a system that detects all kinds of violations at a street intersection such as red light running, speed violation, stop line violation and lane violation by tracking individual vehicles. Two cameras are used for detecting violations. One is an analog camera for real-time tracking and the other is a digital camera for license plate reading. This system is connected to the traffic signal system controller and monitors the red, arrow, yellow and green phases of an approach. Two loops in the road are used to detect vehicle approach and speed. The system takes pictures of all vehicles passing a second loop and tracks the vehicles until they go out a street intersection...