The design and experiments of hardware-in the-loop simulation platform for passenger cars with eletronic stabiliyy progr

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ABSTRACT

This thesis is to develop a vehicle dynamic control system ESP (Eletronic Stability Program) for passenger car using the brake system in order to stability of vehicle. In this study, we use build vehicle model and road model in CARSIM_RT, then use MATLAB/simulink to build ESP controller in order to control yaw rate and beta angle for vehicle. By using the genetic algorithm (GA), we can find the optimal membership functions of the fuzzy controller. In this study, we carry out hardware-in-the-loop (HIL) experiments. At first, we measure the environment data by CARSIM_RT, and then send them to the ESP Controller to generate the braking control signals. The braking control signals are later sent to the real brake system via the CAN BUS. After controlling the real brake system, the brake pressure response is measured and sent to CARSIM RT.

Keywords : brake controller , ESP, HIL.

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