Real time dynamic simulation for four wheels vehicle

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ABSTRACT

The study is going to research the ten degrees of freedom mathematic model of vehicle dynamic. It includes three different direction of vehicle movement and three Euler angle. Furthermore, it also includes the suspention of four wheels. The formula for automobile movement is ten degrees of freedom which purpose is to investigate the longitudinal and lateral forces and the yaw rate of vehicle. In addition, the automobile ’ s stableness is also examined while a controller is assembled afterward. As stimulating, the steering wheel was quickly turning around while vehicle without controller but in low friction on the ground. This factor of low friction conducts the longitudinal and lateral forces of tyres decreasing. Therefore, it cannot maintain the steady of vehicle and make vehicle tend to be slipping. However, after assembling vehicle with controller, the situation has been controlled. The controller would control one of the front wheels in order to increase or decrease the yaw rate. Throughout the stimulation, we understand the relationship between steering wheel and yaw rate. Moreover, after examining the angular magnitude of steering wheel we also obtained the variation between them. We applied these two message and their variation, the controller of vehicle steady was been designed. Plus, the stimulation of vehicle ’ s movement as well as the result were achieved.

Keywords : Fuzzy control, dynamic, vehicle stable

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