

عنوان مقاله:

Hydraulic anti-lock and anti-skid braking system using fuzzy controller

محل انتشار:

دو فصلنامه تحقیقات کاربردی در مهندسی مکانیک، دوره 6، شماره 1 (سال: 1395)

تعداد صفحات اصل مقاله: 17

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خلاصه مقاله:

To maintain the stability trajectory of vehicles under critical driving conditions, anti lock-anti skid controllers, consisting of four anti-lock subcontrollers for each wheel and two anti-skid sub-controllers for left and right pair wheels have been separately designed. Wheel and body systems have been simulated with seven degrees of freedom to evaluate the proper functioning of controllers. Anti-lock controllers control brake torque through persistent monitoring of wheels velocity and acceleration and prevent them from locking up by cutting and releasing the brake fluid flow into wheel brake cylinder. On the other hand, anti-skid controllers have been designed in order to maintain the vehicle along a stable trajectory, calculated from the stable spin theory, and to monitor the vehicle's trajectory during braking. This controller maintains the vehicle along the desirable trajectory by monitoring vehicle yaw angle and comparing it with the reference yaw angle, and also by adjusting the level of brake fluid input into each wheel's caliper, and subsequently by adjusting brake torque. At the end of the current research, the use of yaw rate control input in place of yaw angle control input in anti-skid controllers has been suggested through a comparative analysis.

کلمات کلیدی:

Hydraulic braking, Intelligent braking, Fuzzy controller, Anti-Lock, Anti-Skid

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