عنوان مقاله:

A New Fuzzy Sliding Mode Controller with Auto-adjustable Saturation Boundary Layers Implemented on Vehicle Suspension

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خلاصه مقاله:

This study develops a fuzzy sliding mode controller (FSMC) based on a variable boundary layer. A fuzzy inference mechanism has been used to tune the thickness of the boundary layers of the controlleronline. To lower the rate of calculation of the controller, a minimum rule base has been used. The aimof this paper is to design a controller which is able to remove the chattering and maintains the robustness of controller simultaneously. To prove the effectiveness of this method, a simulation has been done using MATLAB/SIMULINK. In this simulation, the results of 3 controllers, FSMC withauto-adjustable boundary layers, FSMC with fixed boundary layers, and FSMC with sign function are compared. The results of the simulation confirm that the performance of fuzzy sliding mode controller based on auto-adjustable boundary layer method is superior to the fixed boundary layer method

کلمات کلیدی:

Vehicle Suspension System,Sliding Mode Control,Fuzzy Sliding Mode Control,MATLAB/Simulink,Chattering Phenomenon,Nonlinear ControlVariable Boundary Layer,Auto-adjustable Boundary Layer,Saturation Function

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