

عنوان مقاله:

A New Low Chattering Sliding Mode Control

محل انتشار:

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خلاصه مقاله:

In this paper, a new chattering free sliding mode control scheme with high precision in reaching to sliding surface is proposed. The proposed control algorithm is derived using the Lyapunov stability theorem. The reaching part in control input is achieved using a new sliding condition. Therefore the reaching term is consisting of a continuous function that leads to reducing chattering phenomenon. Also by using continues approximation in this algorithm, the chattering is removed completely with higher precision than conventional boundary layer SMC. In designed controller there are designing parameters for adjusting the reaching time to sliding surface. Because of using the new sliding condition, the boundary layer is adjusted only once and with varying the designing parameter this adjusting procedure for second time is not required. Several simulation results show that the proposed sliding mode controller has non-chattering phenomenon with satisfactory performance and high precision and is guarantee the finite time convergence in reaching mode.

کلمات کلیدی:

sliding mode control, chattering, finite time convergence, uncertainty

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