

Developments in sliding mode control

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Abstract

Sliding mode control (SMC) is a technique which uses discontinuous control linked with a sliding hypersurface in the state space. The state moves to the sliding surface and thereafter is constrained to remain on the surface. The main features of SMC are its robustness towards uncertain disturbances and parameters. In recent years SMC research has dramatically expanded and covers topics such as control, observers, controller-observers, singular optimal control, frequency shaping and backstepping in a wide variety of contexts, for linear and nonlinear systems. In this presentation a general description of SMC and some of its research areas will be discussed, as well as a new method called higher-order sliding, which yields more accurate sliding as well as simplification in backstepping, for instance.