Design stable robust intelligent nonlinear controller for 6- DOF serial links robot manipulator

Abstract

In this research parallel Proportional-Derivative (PD) fuzzy logic theory plus Integral part (I) is used to compensate the system dynamic uncertainty controller according to highly nonlinear control theory sliding mode controller. Sliding mode controller (SMC) is an important considerable robust nonlinear controller. In presence of uncertainties, this controller is used to control of highly nonlinear systems especially for multi degrees of freedom (DOF) serial links robot manipulator. In opposition, sliding mode controller is an effective controller but chattering phenomenon and nonlinear equivalent dynamic formulation in uncertain dynamic parameters are two significant drawbacks. To reduce these challenges, new stable intelligent controller is introduce.

Keyword: Fuzzy logic methodology; Sliding mode controller; Serial links robot manipulator; Robust nonlinear theory; Chattering phenomenon