Article Abstract

Title:	Compensation for unmatched uncertainty with adaptive RBF network
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Abstract:	Robust control for nonlinear uncertain systems has been solved for matched uncertainty but has not been completely solved yet for unmatched uncertainty. This paper developed a new method in which an adaptive radial basis function neural network is used to compensate for the effects of unmatched uncertainty in the framework of integral sliding mode control. The stability of the whole system is guaranteed by the Lyapunov method. The adaptation algorithm of the network is also derived by the Lyapunov function so that its convergence is also guaranteed. A numerical example is used to show the effectiveness of the proposed method. Improvement against existing methods is also demonstrated.
Keywords:	Integral sliding mode, neural networks, matched and unmatched uncertainty.