Abstract

In this paper, robust control design is presented for a general class of uncertain non-affine nonlinear systems. The design employs feedback linearization, coupled with two high-gain observers—the first to estimate the feedback linearization error based on the full state information; the second to estimate the unmeasured states of the system when only the system output is available for feedback. All the signals in the closed loop are guaranteed to be uniform ultimate bounded and the output of the system is proven to converge to a small neighborhood of the origin. The proposed approach not only handles the difficulty in controlling non-affine nonlinear systems, but also simplifies the stability analysis of the closed loop due to its simple control structure.

References


Index Terms

Computer Science

Networks

Keywords
Output feedback control, multi-input/multi-output (MIMO) nonlinear systems, uncertainty