

Local Asymptotic Stability for Nonlinear State Feedback Delay Systems.

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Abstract: This paper considers the problem of output control of nonlinear delay systems by means of state delayed feedback. In previous papers, through the use of a suitable formalism, standard output control problems, such as output regulation, trajectory tracking, disturbance decoupling and model matching, have been solved for a class of nonlinear delay systems. However, in general an output control scheme does not guarantee internal stability of the system. Some results on this issue are presented in this paper. It is proved that if the system owns a certain Lipschitz property in a suitable neighborhood of the origin, and the initial state is inside such neighborhood, then when the output is driven to zero by means of a static state feedback the system state asymptotically goes to zero. Theoretical results are supported by computer simulations performed on a nonlinear delay systems that is unstable in open loop.

Keywords:

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