STABILITY OF A TRAJECTORY-BASED CONTROL LAW FOR AN UNKNOWN NONLINEAR NON-MINIMUM PHASE SYSTEM

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ABSTRACT

We investigate the stability of an unknown nonlinear discrete-time non-minimum phase system under a trajectory-based control law. The system can be regarded as a first-order approximation to a continuous-time system. Hence, one of the parameters in the discrete-time system equation can be regarded as the “sampling interval”. We show that, subject to certain conditions, as long as the sampling interval is neither too short nor too long, the closed-loop system is stable in a certain sense.

KeyWords: Nonlinear non-minimum phase, trajectory-based control, sampling period, discrete-time system.