

PID CONTROL STRATEGY IN NETWORKED CONTROL SYSTEM

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ABSTRACT

The networked control systems (NCS) and sensor networks, where the process, actuator and the controller are separated by a network, are discussed in this paper and new problems in control are pointed out. To overcome new controller tuning techniques are needed. In this paper Discrete-time PID controller tuning for varying time-delay systems, including NCS are discussed. Optimal PID tuning results are presented for a general process model in different cases of constant, state- and time-dependent or random delays. The results are displayed as functions of process time constant and controller sampling time. PID controller design methods such as internal model control and gain scheduling are discussed in this thesis and also we develop and compare the data fusion methods in NCS.

KEYWORDS: Networked Control Systems, Discrete-Time PID Controller, Tuning, Varying Time-Delay