Discrete Dynamics in Nature and Society

Special Issue on

Filtering and Control for Unreliable Communication 2015

CALL FOR PAPERS

In the past decades, communication networks have been extensively employed in many practical control systems, such as manufacturing plants, aircraft, and spacecraft to transmit information and control signals between the system components. When a control loop is closed via a serial communication channel, a networked control system (NCS) is formed. NCSs have become very popular for their great advantages over traditional systems (e.g., low cost, reduced weight, power requirements, etc.). Generally, it has been implicitly assumed that the communication between the system components is perfect; that is, the signals transmitted from the plant always arrive at the filter or controller without any information loss. Unfortunately, such an assumption is not always true. For example, a common feature of the NCSs is the presence of significant network-induced delays and data losses across the networks. Therefore, an emerging research topic that has recently drawn much attention is how to cope with the effect of network-induced phenomena due to the unreliability of the network communication.

With the wide application of computer science since the 1960s, the theory and practice of the discrete-time system have entered a new stage, and the progress of the study on the large-scale integrated circuit makes the discrete-time system easily realized. The discrete-time system has a lot of advantages, such as small volume, low cost, easy implementation, and better reliability. Because of the extensive use of computers and digital communication networks, the discrete-time dynamic system has been widely applied in communications, remote sensing, and so on. Therefore, in the past few years, there has been a growing research interest in the filtering and control issues for discrete-time systems with unreliable communication. Many methods for filtering and control have been proposed, and a lot of uncertain factors (e.g., random packet dropouts) have been discussed.

We invite authors to contribute with high-quality original research as well as review articles that will bring together the latest approaches to understand, filter, and control discrete-time systems under unreliable communication.

Potential topics include, but are not limited to:

- Multiobjective filtering or control
- Network-induced phenomena
- Stability analysis
- Robustness and fragility
- Applications in real-world discrete-time systems

Authors can submit their manuscripts via the Manuscript Tracking System at http://mts.hindawi.com/submit/journals/ddns/cun15/.

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Manuscript Due
Friday, 6 February 2015

First Round of Reviews
Friday, 1 May 2015

Publication Date
Friday, 26 June 2015