Event-based Fault Detection Filtering for Complex Networked Jump Systems

ABSTRACT

In modern industrial processes, fault occurrence unfortunately cannot be completely avoided in practical systems. To ensure the safety and reliability of the systems subjected to potential component faults, fault detection and fault-tolerant control techniques have been intensivel studied on the complex systems. On the other hand, apart from various control problems in the industrial processes, the state estimation or filtering problem has received considerable attention for the past decades since states are not always available.

EXISTING SYSTEM

Nowadays, a variety of fault detection filtering approaches have been developed. Moreover, the problem of sensor failures is inevitable in real-world control systems due to harsh working environment, power supply instability, unavailable component aging and so on. On the other hand, it should be pointed out that unexpected abrupt variations widely happen in practical utilizations, such as networked control systems, economic systems and manufacturing systems. A great many reasons contribute to it including sudden environmental disturbance, repairs or failures of interconnected components and modifications in the operating points. In terms of this situation, Markov process or Markov chain is introduced to model practical plants by researchers, which has attracts a great deal of efforts.

DISADVANTAGES

- Fault occurrence unfortunately cannot be completely avoided.
- Various control problems in the industrial processes, the state estimation or filtering problem has received considerable attention for the past decades since states are not always available.

PROPOSED SYSTEM

In Proposed System, fault detection filtering for complex systems over communication networks subject to non homogeneous Markovian parameters. A residual signal is generated which gives a satisfactory estimation of the fault and an event-triggered scheme is proposed to determine whether the networks should be updated at the trigger instants decided by the event-threshold. Moreover, a random process is employed to model the phenomenon of malicious packet losses. Consequently, a novel method is presented to address the stochastically stability analysis and satisfies a given *H*2 performance index simultaneously. The condition of the existence of the filter design algorithm is derived by a convex optimization approach to estimate the faults and to generate a residual. Finally, the proposed fault detection filtering method is then applied to an industrial non isothermal continuous stirred tank reactor under realistic network conditions. Simulation results are given to show the effectiveness of the proposed design method and the designed filter.

ADVANTAGES

- Reduce the transmission frequency for saving the communication resources.
- Detect the possible system faults when the measurements are transmitted through a unreliable communication network which may include malicious packet losses.

SYSTEM REQUIREMENTS

H/W System Configuration:-

Processor	-	Pentium –III
RAM	-	256 MB (min)
Hard Disk	-	20 GB
Key Board	-	Standard Windows Keyboard
Mouse	-	Two or Three Button Mouse
Monitor	-	SVGA

S/W System Configuration:-

Operating System	:	Windows95/98/2000/XP
Application Server	:	Tomcat5.0/6.X
Front End	:	HTML, Jsp
Scripts	:	JavaScript.
Server side Script	:	Java Server Pages.
Database	:	MySQL 5.0
Database Connectivity	:	JDBC