



Vortragsankündigung

Am

Mittwoch, 01. Juli 2015
in Raum P1.302 um 17:00 Uhr

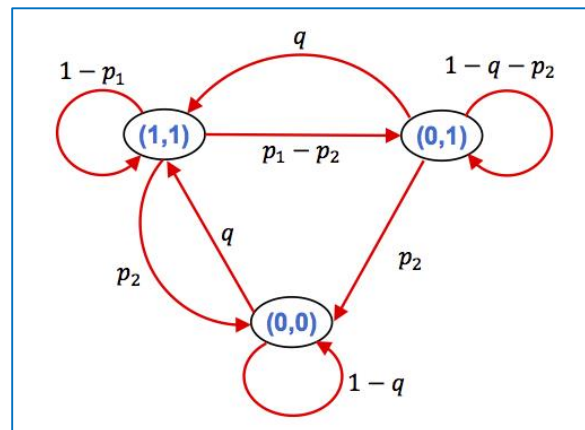
hält Herr **Dr. Junfeng Wu** von der KTH Stockholm einen Vortrag über

Stability Conditions and Phase Transition for Kalman Filtering over Markovian Channels

Abstract:

This talk concerns the stability of Kalman filtering over Gilbert-Elliott channels where the random packet drop follows a time-homogeneous two-state Markov chain whose state transition is determined by a pair of failure and recovery rates.

First, we establish a relaxed condition guaranteeing peak-covariance stability described by an inequality in terms of the spectral radius of the system matrix and transition probabilities of the Markov chain. We show that this condition can be rewritten as a linear matrix inequality feasibility problem. Next, we prove that the peak-covariance stability implies mean-square stability, if the system matrix has no defective eigenvalues on the unit circle. This implication holds for any random packet drop process, and is thus not restricted to Gilbert-Elliott channels. We show that there exists a critical curve in the failure-recovery rate plane, below which the Kalman filter is mean-square stable and above is unstable for some initial values. Finally, a lower bound for this critical failure rate is obtained making use of the relationship we establish between the two stability criteria, based on an approximate relaxation of the system matrix.



Bio:

Junfeng Wu received the B.Eng. degree from the Department of Automatic Control, Zhejiang University, Hangzhou, China, in 2009 and the Ph.D. degree in Electrical and Computer Engineering from the Hong Kong University of Science and Technology, in 2013. From September to December 2013, he was a research associate in Department of Electronic and Computer Engineering, the Hong Kong University of Science and Technology. He is currently a post-doctoral researcher at ACCESS (Autonomic Complex Communication networks, Signals and Systems) Linnaeus Center, School of Electrical Engineering, KTH Royal Institute of Technology, Sweden. His research interests include networked control systems, state estimation, and wireless sensor networks, multi-agent systems.