UNIVERSITÀ
DEGLI STUDI
FIRENZE

DINFO
DIPARTIMENTO DI
INGEGNERIA
DELL'INFORMAZIONE

AVVISO DI SEMINARIO

Stability and Performance Analysis of 2D Mixed Continuous-Discrete-Time Systems

Prof. Graziano Chesi

Department of Electrical and Electronic Engineering - University of Hong Kong

Aula Caminetto – Scuola di Ingegneria

Giovedì 17 Marzo 2016 – ore 16:30

Abstract. 2D mixed continuous-discrete-time systems allow one to study complex phenomena characterized by continuous and discrete evolutions that affect each other. This talk addresses the stability and performance analysis of 2D mixed continuous-discrete-time linear systems via the use of convex optimization in the form of linear matrix inequality (LMI) feasibility tests. Specifically, it is shown that a necessary and sufficient condition for exponential stability can be given based on the introduction of a complex Lyapunov function depending polynomially on a frequency. Moreover, it is shown that necessary and sufficient conditions for establishing upper bounds of the H-infinity and H-2 norms can be given based on the introduction of a complex Lyapunov function depending rationally on a frequency. Lastly, the numerical complexity of the proposed conditions is analyzed, and an exact reduction technique is proposed.

Bio. Graziano Chesi received the Laurea from the University of Florence in 1997 and the Ph.D. from the University of Bologna in 2001. During 2001-2006 he was with the University of Siena, and since 2006 he is with the University of Hong Kong. He served as Associate Editor for Automatica, the European Journal of Control, the IEEE Transactions on Automatic Control, the IEEE Transactions on Computational Biology and Bioinformatics, and Systems and Control Letters. He founded and served as chair for the Technical Committee on Systems with Uncertainty of the IEEE Control Systems Society. He served as chair for the Best Student Paper Award Committees of the IEEE Conference on Decision and Control and the IEEE Multi-Conference on Systems and Control. His current research interests include multi-dimensional systems, networked control systems, nonlinear systems, and uncertain systems.