



Control Systems Society
UK&RI Chapter

Networked Controlled Systems: Paradigms, Applications and Limitations*

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Venue: W1.30, Sir David Davies Building, Department of Electronic and Electrical Engineering, Loughborough University, Loughborough, Leicestershire

(* *this talk is also part of the EPSRC NEWACE workshop*)

Abstract

Networked Controlled Systems (NCS) are spatially distributed systems in which between the controlled plant (actuator, process, and sensor) and the controller there is a shared limited bandwidth network. The network induced delay, packet losses and reordering of packets deteriorates the system's performance. In a similar manner as the communications OSI-stack, control engineers are mostly involved with the application layer where robust controllers are designed capable of handling the aforementioned QoS-issues. In the middleware layer, appropriate routing protocols are provided while in the physical layer for Wireless NCS, the power control to ensure connectivity is of paramount importance. This talk will explore these issues through a series of examples and provide certain theoretical tools for handling these cases in mobile ad-hoc wireless NCS.

Biosketch:

Prof Anthony Tzes (IEEE-S '85, M '90, SM '03) is Professor and Head (2009-11) of the Electrical & Computer Engineering Department of the University of Patras (UPAT) in Greece. He is a graduate of UPAT (85) and has received his doctorate from the Ohio State University (90). From 1990 till 1999 he was employed as a tenured associate professor in the faculty of Polytechnic University (www.poly.edu), Brooklyn, NY, U.S.A.

His research interests include Networked Controlled Systems, MEMs, Robotics, Mechatronics, Adaptive Control, Neural Networks and Fuzzy Logic Applications for Intelligent Transportation Systems, Adaptive Fuzzy Control, Instrumentation Embedded Systems, System Identification and Signal Processing.

Prof. Tzes has been a committee member of the Advanced Traffic Management Systems of the ITS-America organization, a Guest Scientist at the Brookhaven National Laboratory (USA), and has received research funding from various organizations including NASA, and the National (U.S.) Science Foundation, the European Union (FP6), and the European Space Agency (ESA).

He is the Chairman of IEEE's Control Systems Society Greek Chapter, a member of the national (Greek) committee of the European Control Association (EUCA), member at several committees of the International Federation of Automatic Control (IFAC), and until recently the national representative to EU's FP7's thematic area "Regions of Knowledge, Research Potential and Coherent Development of Policies". He has served in various positions (Program Chairman (MIM '00), Organizing Committee Chairman (ECC'07), and as IPC-member at several international conferences.

He has over ten years of experience as the director of the Instrumentation and Control Laboratory at Polytechnic University focusing on smart sensors and self-tuning systems. Concurrently, he served as the principal investigator of the Urban Intelligent Transportation Systems Center in New York, NY. While in Greece, he is the leader and principal investigator of the "Applied Networked micro Mechatronics Systems group" which has received funding from various national (Greek) governmental agencies and ESA.

He has authored more than 50 (125) papers published in international technical journals (conferences) and has served in the editorial board of several journals (e.g. IEEE Control Systems Magazine, Circuits Systems and Computers). His current research is funded by several national (Greek) and EU-projects.