University of Cyprus
School of Engineering

Department of Electrical and Computer Engineering

Department of Electrical and Computer Engineering

Title: Decentralized fault diagnosis of discrete event systems using labeled Petri nets

Associate Prof. Carla Seatzu, University of Cagliari

Wednesday 22 of October 2014, 17.00-18.00

Room A010, Main Campus - University of Cyprus

Abstract:

In this talk we focus on the problem of decentralized diagnosis of discrete event systems modelled by labeled Petri nets. The considered decentralized architecture is composed by a set of sites communicating their diagnosis information to a coordinator that is responsible of detecting the occurrence of failures in the system. Three protocols are defined, that differ for the amount of information exchanged with the coordinator.
We also address the problem of diagnosability analysis in a decentralized framework. We first prove that, as in the case of automata, diagnosability is strictly related to the presence of failure ambiguous strings. Secondly, a procedure to detect the presence of failure ambiguous strings is presented that is based on the construction of a particular Petri net called *Modified Verifier Net*.

Biography:

Carla Seatzu received the Laurea degree in electrical engineering and her Ph.D. degree in electronic engineering and computer science from the University of Cagliari, Italy, in 1996 and 2000, respectively. In 2002 she joined the Department of Electrical and Electronic Engineering of the University of Cagliari as an assistant professor of Automatic Control. Since 2011 she serves as an associate professor of Automatic Control in the same Department.

Carla Seatzu's research interests include discrete-event systems, hybrid systems, Petri nets, manufacturing systems, networked control systems, and control of mechanical systems. She has published 190+ publications, including one textbook and 50+ international journal papers.

Carla Seatzu served as General Co-Chair of the 18th IEEE Int. Conf. on Emerging Technology and Factory Automation (ETFA2013). She was Chair of the National Organizing Committee of the 2nd IFAC Conf. on the Analysis and Design of Hybrid Systems (ADHS'06) and member of the International Program Committee of over 50 international conferences. She is associate editor of *IEEE Trans. on Automatic Control*, *IEEE Trans. on Automation, Science and Engineering*, and *Nonlinear Analysis: Hybrid Systems*. She is associate editor of the Conference Editorial Board of the IEEE Control System Society and of the IEEE Robotics and Automation Society; she is chair of the IEEE IES Technical Committee on Factory Automation - Subcommittee on Industrial Automated Systems and Control.