Thursday, April 12
Scaife Hall Auditorium
Room 125 at 4:30 p.m.
Refreshments at 4:00 p.m.

John Lygeros
Professor of Computation and Control
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John Lygeros has been a Professor of Computation and Control at the Swiss Federal Institute of Technology (ETH) Zurich, Switzerland since 2006 and the Head of the Automatic Control Laboratory since 2009. He completed a B.Eng. degree in electrical engineering in 1990 and an M.Sc. degree in Systems Control in 1991, both at Imperial College of Science Technology and Medicine, London. In 1996 he obtained a Ph.D. degree from the Electrical Engineering and Computer Sciences Department, University of California, Berkeley. In July 2006 he joined the Automatic Control Laboratory at ETH Zurich, first as an Associate Professor, and since January 2010 as Full Professor. His research interests include modeling, analysis, and control of hierarchical, hybrid, and stochastic systems, with applications to biochemical networks, automated highway systems, air traffic management, power grids and camera networks. John Lygeros is a Fellow of the IEEE, and a member of the IET and the Technical Chamber of Greece.

Cyber-security of SCADA systems: A case study on Automatic Generation Control

Cyber-security issues in SCADA systems have recently concentrated considerable attention, due in part to highly publicized security threats such as the STUXNET computer worm. The research presented in this talk is motivated by security issues for SCADA systems used to monitor and control the power transmission grid. We specifically concentrate on the implications and possible countermeasures of attacks on the Automatic Generation Control (AGC) system, one of the few control loops closed over such SCADA systems without the intervention of human operators. Using tools from control theory we show how an attacker who gains access to the AGC signal of the SCADA system in one control area can robustly destabilize the transmission system. We then proceed to design countermeasures against such attacks using fault detection and isolation methods.

Joint research with G. Andersson, K. Margellos, P. Mohajerin, and M. Vrakopoulou under the VIKING project.

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