

学术报告会

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Multilayer and self-organising control of complex networks

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Abstract:

In this talk I will give an overview of our recent work on control and synchronization of complex networks via self-organising and adaptive control approaches. In our work the network can self-evolve its structure in order to achieve a desired collective behaviour through adaptation of the weights on its links or by changing the very structure of its interconnections. New approaches will be presented to study convergence of the network and to develop new distributed strategies for its control. The theoretical results will be complemented by numerical examples on a set of representative applications.

Biography:

Mario di Bernardo (SMIEEE '06, FIEEE 2012) is currently Full Professor of Automatic Control at the University of Naples Federico II, Italy. He is also Professor of Nonlinear Systems and Control at the University of Bristol, U.K. He is currently Distinguished Lecturer of the IEEE Circuits and Systems Society for the term 2016-2017. On 28th February 2007 he was bestowed the title of "Cavaliere" of the Order of Merit of the Italian Republic for scientific merits from the President of Italy. In January 2012 he was elevated to the grade of Fellow of the IEEE for his contributions to the analysis, control and applications of nonlinear systems and complex networks. In 2009, He was elected President of the Italian Society for Chaos and Complexity for the term 2010-2013. He was re-elected in 2010 for the term 2014-2017. In 2006 and again in 2009 he was elected to the Board of Governors of the IEEE Circuits and Systems Society. From 2011 to 2014 he was Vice President for Financial Activities of the IEEE Circuits and Systems Society. In 2015 he served as appointed member of the Board of Governors of the IEEE Control Systems Society. His research interests include the analysis, synchronization and control of complex network systems; the analysis and control of hybrid and piecewise-smooth dynamical systems; nonlinear dynamics, nonlinear control theory and applications to engineering and synthetic biology. He authored or co-authored more than 250 international scientific publications including more than 120 papers in scientific journals, over 100 contributions to refereed conference proceedings, a unique research monograph on the dynamics and bifurcations of piecewise-smooth systems published by Springer-Verlag and two edited books. According to the international database SCOPUS (March 2016) his h-index is 36 and his publications received over 5000 citations by other authors. He serves on the Editorial Board of several international scientific journals and conferences. From 1st January 2014 till 31st December 2015 he was Deputy Editor-in-Chief of the IEEE Transactions on Circuits and Systems: Regular Papers. He is Associate Editor of the IEEE Transactions on Control of Network Systems, Nonlinear Analysis: Hybrid Systems, the Conference Editorial Board of the IEEE Control System Society and the European Control Association (EUCA). He was Associate Editor of the IEEE Transactions on Circuits and Systems I: Regular Papers from 1999 to 2002 and again from 2008 to 2010, and the IEEE Transactions on Circuits and Systems II: Brief papers from 2003 till 2008.