

学术报告会

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New developments in extremum seeking control and their application

Dr. Chris Manzie

The University of Melbourne, Australia



Abstract:

Extremum seeking involves the optimisation of steady state performance in dynamic systems where full plant information is unavailable, therefore rendering classical optimal control techniques untenable. These approaches are of significant interest in a number of application areas as performance maximisation in terms of both cost and efficiency are increasingly important from both financial and environmental standpoints. In this talk I will (briefly) summarise some of our recent developments in the extremum seeking domain. I will then discuss two implementations of extremum seeking in the thermodynamic and aerodynamic domains. The first considers the online calibration of alternative fuelled engines, while the second looks at using extremum seeking techniques for the co-design of controller and geometry of aerodynamic bodies.

Biography:

Chris Manzie is an Associate Professor in the Department of Mechanical Engineering at The University of Melbourne. He leads a research group of 14 postgraduates and postdoctoral fellows working in model-based and model-free control and optimisation, with applications in a range of areas including systems related to energy and mechatronics. He has published over 120 technical papers and received recognitions including a 2011-2014 Australian Research Council Future Fellowship, a 2009 Young Tall Poppy Award for Outstanding Achievements in Science and several paper awards. He is an Assistant Dean (Research Training) and the Mechatronics Discipline coordinator in the Melbourne School of Engineering. He was a Visiting Scholar with the University of California, San Diego in 2007 and a Scientific Visitor at IFP Energies Nouvelles, Rueil Malmaison in 2012. His industry collaborations include Ford Motor Company, BAE Systems, ANCA Motion, DSTO, Toyota Motor Company and Virtual Sailing. Associate Professor Manzie is also a member of the IEEE and IFAC Technical Committees on Automotive Control.