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Automatic
Control and
Systems
Engineering

The Department of Automatic Control & Systems Engineering
is pleased to announce the following joint seminar:

Adaptive Treatment and Robust Control

Dr C James Taylor

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Lancaster University, UK*

Monday, 20 February 2017 at 15:00

LT6, Mappin Broad Lane Block

Abstract

An adaptive treatment strategy is a set of rules for choosing effective medical treatments for individual patients. In the statistical literature, methods for optimal dynamic treatment (ODT) include Q-learning and A-learning. These are linked to machine learning and automatic control in engineering. One example is warfarin dosing strategies for long-term anticoagulation, in which the output is blood clotting speed and the control input is the dose. The research project behind this talk aims to develop new methodology for both ODT and engineering control, through the integration of techniques and approaches that have been developed in both fields, with a particular focus on the problem of robustness. This talk provides an introduction to some of these concepts and presents preliminary novel contributions based on the application of robust H-infinity methods. Case study examples from both medicine and robotics will be used.

Biography

Having joined the Department in 2000, Dr James Taylor is Deputy Head of Engineering at Lancaster University. His interdisciplinary research into modelling and control addresses diverse areas, from nuclear safety (EP/N017749/1) to chemical biology (BB/M004260/1). He is the Lancaster lead for current projects on: Adaptive Treatment and Robust Control (EPSRC: EP/M015637/1); Autonomous Mobile Robotic Systems (funded by the Nuclear Decommissioning Authority); and the Centre for Innovative Nuclear Decommissioning (funded by Sellafield Ltd, with Manchester, Liverpool and Cumbria Universities). He is a Fellow of the Institution of Engineering and Technology (IET) and vice-chair of the IET Control and Automation Network.