Hamilton Institute

Experimental Certification of Jet Engine Controllers

Professor Robert Bitmead
Department of Mechanical Engineering, UCSD

Tuesday, October 21st, 2008

Abstract:
With the move to fully multi-input-multi-output, or MIMO, controllers for jet engines, a problem arises in deciding acceptance tests for the engine controllers based on experimental evaluation. A replacement for the traditional metrics of gain and phase margins is needed.

In this presentation, a candidate MIMO controller robustness metric will be discussed together with the associated robustness measure, which is used to infer good performance of an untested controller through its closeness to a tested one. The core MIMO issues of weighting function determination and experiment design will be broached, since they highlight the very significant difficulties in moving beyond single-loop controllers.

Bio:
Professor Robert Bitmead is known as the Cymer Corporation Professor in the Department of Mechanical Engineering at UCSD, though really he's an irreverent expatriate Australian. Despite having escaped the antipodean penal colony, he continues an active interest in and umpires (having ceased playing in 2004) the enhancement(?!) of Gaelic Football pioneered in Australia.

Professor Bitmead has made a number of seminal contributions to systems and control research including:
* some really old results like the 1988 paper by Poubelle et al on Fake Algebraic Riccati Techniques and Stability;
* in the 1990's, in collaboration with Anderson et al, the Windsurfer Approach to Adaptive Control;
and some really cool new stuff including:
* optimal control with state equality constraints.
Professor Bitmead is a fellow of lots of societies and was also a founding member of pi-pi-pi.

Venue: Seminar Room, Hamilton Institute, Rye Hall, NUI Maynooth

Time: 2.00 - 3.00pm (followed by tea/coffee)

Travel directions are available at www.hamilton.ie

IEEE CC Ireland Chapter