Online seminar

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On Dead-Time Compensation in Repetitive Control

Prof. Como introduces the seminar.

Abstract

Repetitive control is an elegant implementation of the internal model principle, which incorporates a model of an arbitrary periodic signal via the use of a delay element. The main difficulty in the design of controllers incorporating repetitive elements is the need to analyze the stability of an unorthodox time-delay system. Existing solutions often do that via robust control arguments, leading to conservative solutions.

In this talk I put forward an alternative approach, which reduces the stabilization problem to that for a delay-free system. The proposed architecture is, in a sense, dual to that used in various dead-time compensation schemes, like the Smith predictor. In the minimum-phase case, an implementation scheme, which is insensitive to the value of the delay in the repetitive block, is proposed.

Biography

Leonid Mirkin is a native of Frunze, Kirghiz SSR, USSR (now Bishkek, Kyrgyz Republic). He received the Electrical Engineer degree from Frunze Polytechnic Institute and the PhD (candidate of sciences) degree in automatic control from the Institute of Automation, Academy of Sciences of Kyrgyz Republic, in 1989 and 1992, respectively. He joined the Faculty of Mechanical Engineering at the Technion - Israel Institute of Technology in 1994, first as a postdoc and then as a faculty.

His research interests include systems theory, control and estimation of sampled-data systems, dead-time compensation, systems with preview, distributed control, and applications in electro-mechanical systems and process control.