PID Stabilization of Linear Time-Delay Systems

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Tuesday, April 28
1:00 – 2:00 p.m. Light lunch will be served
Lecture Hall 144 / 1st floor

Stability analysis and control design of time-delay systems have attracted the attention of numerous investigators over the decades. It becomes increasingly evident that delays are the main causes of instability and poor performance in dynamical systems and frequently encountered in various engineering and physical systems.

In this presentation, we provide a new delay-dependent stabilization scheme for a class of linear time-delay systems based on PID Hoo feedback. The time-delay is a differentiable time-varying function satisfying some bounding relations. An appropriate Lyapunov-Krasovski functional (LKF) is constructed and then a new parameterized characterization for PID feedback stabilization is established in terms of feasibility-testing of linear matrix inequalities (LMIs). A numerical example is provided to illustrate the theoretical developments.

MagdiSadek Mahmoud obtained Ph. D. in systems engineering from Cairo University, Egypt, 1974. He has been a professor of systems engineering since 1984. He worked at different universities worldwide including Egypt, Kuwait, UAE, UK, USA, Singapore, Saudi Arabia and Australia. He has given invited lectures in Venezuela, Germany, UK and USA. He has been actively engaged in teaching and research in the development of modern methodologies to computer control, systems engineering and information technology. He is the principal author of twenty (20) books and book-chapters and the author/co-author of more than 400 peer-reviewed papers. He is the recipient of two national, one regional and one university prizes for outstanding research in engineering. He is a fellow of the IEEE, a senior member of the IEEE, the CEI (UK), and a registered consultant engineer of information engineering and systems (Egypt).