

TIME DELAY SYSTEMS

Webinar

TDS

2021

Delay-Adaptive Linear Control



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June 11, 2021, Friday @ 4:00 pm (CET)

7:00 am (PDT), 10:00 am (EDT), 10:00 pm (CST)

Event will take place via Zoom

ABSTRACT: Compensating long input delays by predictor feedback laws is challenging. Even more challenging is ensuring robustness to delay mismatch. In fact, Datko's results imply that feedback laws for hyperbolic PDEs can tolerate no delay mismatch. It is for this reason important not to count on having a delay estimate that is close to the unknown delay but to instead try to learn the delay value in real time, i.e., to employ "delay-adaptive" control. I will review adaptive control designs for linear systems which, apart from unknown delays (discrete and distributed), also have unknown plant parameter and unmeasured states. This work was initiated in 2008 with Delphine Bresch-Pietri (Ecole des Mines, Paris) and brought to maturity in collaboration since 2014 with Yang Zhu (Zhejiang University). This talk, titled the same as a new monograph with Yang Zhu, will review the most basic results from that book.

BIO: Miroslav Krstic studies input delay compensation, control of PDE systems including flows, adaptive and nonlinear control, extremum seeking, and stochastic control. He has co-authored 16 books, including "Delay-Adaptive Linear Control" (Princeton, 2020), and about 400 journal papers. Since 2012 he has divided his time between his research and serving as Senior Associate Vice Chancellor for Research at UC San Diego. Krstic is a recipient of the Bellman Award, SIAM Reid Prize, ASME Oldenburger Medal, and a dozen other awards. He is a foreign member of the Serbian Academy of Sciences and Arts and Fellow of IEEE, IFAC, ASME, SIAM, AAAS, IET (UK), and AIAA-AF. He is the EiC of Systems & Control Letters. In Automatica, he oversees the editorial areas of adaptive systems and distributed parameter systems.



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