

TIME DELAY SYSTEMS

Webinar

TDS

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Asymptotic Stability and Gamma-Stability of Linear Time Invariant Time Delays Systems (LTI-TDS) Leveraging algebraic tools for analytical results



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

Event will take place via Zoom

ABSTRACT: In this talk, I would like to demonstrate how algebraic tools can be leveraged to study asymptotic stability and gamma-stability of LTI-TDS. In particular, the presentation entails how algebraic tools can enable analytical results in delay-independent stability tests and the derivation of explicit formulae with which rightmost pole placement becomes possible. Interestingly, all these results are founded in the existence of singularities in some functions associated with the spectrum of the LTI-TDS. This common thread is not limited to our results, and appears consistently in the results of other research groups, potentially calling for expanded research efforts in future work.

BIO: Rifat Sipahi received the BSc degree in mechanical engineering from Istanbul Technical University, Istanbul, Turkey, in 2000, and the MSc and PhD degrees in mechanical engineering from the University of Connecticut, Storrs, CT, USA, in 2003 and 2005, respectively. He was a Post-Doctoral Fellow with HeuDiaSyC (CNRS) Labs, Université de Technologie de Compiègne, Compiègne, France, from 2005 to 2006. In 2006, he joined the Department of Mechanical and Industrial Engineering, Northeastern University, Boston, MA, USA, where he is currently a professor. His research interests include stability, stabilization of dynamical systems at the interplay between multiple time delays and network graphs, human-machine systems, and human-robotic interactions. Dr. Sipahi was a recipient of Chateaubriand Post-Doctoral Scholarship Award of the French Government (2005), the 2011 DARPA Young Faculty Award, and the 2015 ASME Dynamic Systems and Control Division Outstanding Young Investigator Award. He has served at various capacities including as an associate editor in national and international conferences under the umbrella of IEEE, ASME, and IFAC. He is currently an Associate Editor of Automatica. He is a fellow of ASME and Senior Member of IEEE.



Questions? Contact: Gabor Orosz, orosz@umich.edu