

Optimal Linear Quadratic Digital Tracker for the Discrete-Time Proper System with an Unknown Disturbance

Authors : Jason Sheng-Hong Tsai, Faezeh Ebrahimzadeh, Min-Ching Chung, Shu-Mei Guo, Leang-San Shieh, Tzong-Jiy Tsai, Li Wang

Abstract : In this paper, we first construct a new state and disturbance estimator using discrete-time proportional plus integral observer to estimate the system state and the unknown external disturbance for the discrete-time system with an input-to-output direct-feedthrough term. Then, the generalized optimal linear quadratic digital tracker design is applied to construct a proportional plus integral observer-based tracker for the system with an unknown external disturbance to have a desired tracking performance. Finally, a numerical simulation is given to demonstrate the effectiveness of the new application of our proposed approach.

Keywords : non-minimum phase system, optimal linear quadratic tracker, proportional plus integral observer, state and disturbance estimator

Conference Title : ICCSCSE 2016 : International Conference on Control Systems and Computer Science Engineering

Conference Location : Berlin, Germany

Conference Dates : May 19-20, 2016