Identification of Nonlinear Systems Structured by Hammerstein-Wiener Model

Authors : A. Brouri, F. Giri, A. Mkhida, A. Elkarkri, M. L. Chhibat

Abstract : Standard Hammerstein-Wiener models consist of a linear subsystem sandwiched by two memoryless nonlinearities. Presently, the linear subsystem is allowed to be parametric or not, continuous- or discrete-time. The input and output nonlinearities are polynomial and may be noninvertible. A two-stage identification method is developed such the parameters of all nonlinear elements are estimated first using the Kozen-Landau polynomial decomposition algorithm. The obtained estimates are then based upon in the identification of the linear subsystem, making use of suitable pre-ad post-compensators.