

Identification of Nonlinear Systems Structured by Hammerstein-Wiener Model

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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.

Keywords : nonlinear system identification, Hammerstein-Wiener systems, frequency identification, polynomial decomposition

Conference Title : ICSPSMC 2014 : International Conference on Signal Processing, Systems Modeling and Control

Conference Location : Amsterdam, Netherlands

Conference Dates : May 15-16, 2014