

Wavelet network: online sequential extreme learning machine for nonlinear dynamic systems identification

ABSTRACT

A single hidden layer feedforward neural network (SLFN) with online sequential extreme learning machine (OSELM) algorithm has been introduced and applied in many regression problems successfully. However, using SLFN with OSELM as black-box for nonlinear system identification may lead to building models for the identified plant with inconsistency responses from control perspective. The reason can refer to the random initialization procedure of the SLFN hidden node parameters with OSELM algorithm. In this paper, a single hidden layer feedforward wavelet network (WN) is introduced with OSELM for nonlinear system identification aimed at getting better generalization performances by reducing the effect of a random initialization procedure.

Keyword: Wavelet network; Online sequential extreme learning machine; Nonlinear dynamic systems