Boosting Nonlinear Additive Autoregressive Time Series

25th June 2008

Abstract

Within the last years several methods for the analysis of nonlinear time series models have been proposed. As in linear autoregressive models main problems are model identification, estimation and prediction. A boosting method is proposed that performs model identification and estimation simultaneously within the framework of nonlinear autoregressive time series. The method allows to select influential terms from a large numbers of potential lags and exogenous variables. The influence of the selected terms is modelled by an expansion in basis function allowing for a flexible additive form of the predictor. The approach is very competitive in particular in high dimensional settings where alternative fitting methods fail. This is demonstrated by means of simulations and two applications to real world data.