Abstract

The periodic autoregressive model (PAR (p)) becomes a powerful tool when to need generate scenarios. The NEWAVE and GEVAZP models in PAR (p) structures use the lognormal distribution to obtain scenarios using synthetic time series. Singular Spectrum Analysis (SSA) is a powerful statistical tool. SSA can decompose a time series into three components: trend, harmonics and noise and smoothing the series, removing the noisy component. Multichannel Singular Spectrum Analysis (MSSA) is a multivariate version of SSA for more than one time series simultaneously. This paper proposes the use of the bootstrap in noisy time series detected by MSSA for the generation of scenarios in the PAR (p) model for many time series smoothed by SSA and MSSA. Scenarios are generated with the original time series as well as the smoothed time series. Affluent Natural Energy (ANE) times series are used to illustrate the propose.

Index Terms

Computer Science
Applied Sciences

Keywords

Scenarios generation, MSSA, bootstrap, PAR (p) model, time series