



## Time series forecasting using singular spectrum analysis, fuzzy systems and neural networks

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### Abstract:

Hybrid methodologies have become popular in many fields of research as they allow researchers to explore various methods, understand their strengths and weaknesses and combine them into new frameworks. Thus, the combination of different methods into a hybrid methodology allows to overcome the shortcomings of each singular method. This paper presents the methodology for two hybrid methods that can be used for time series forecasting. The first combines singular spectrum analysis with linear recurrent formula (SSA-LRF) and neural networks (NN), while the second combines the SSA-LRF and weighted fuzzy time series (WFTS). Some of the highlights of these proposed methodologies are: (i) the two hybrid methods proposed here are applicable to load data series and other time series data; (ii) the two hybrid methods handle the deterministic and the nonlinear stochastic pattern in the data; and (iii) the two hybrid methods show a significant improvement to the single methods used separately and to other hybrid methods. (joint work with W. Sulandari, Subanar and M.H. Lee)

### Keywords:

Time series forecasting; Singular spectrum analysis; Neural networks; Energy consumption

### References:

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