

The Recurrent Imputation Method: Singular Spectrum Analysis of Time Series with Missing Values

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One of the most popular extensions of principal component analysis for time series is provided by Singular Spectrum Analysis (SSA). Typically, the basilar foundations of this technique are attributed to the pioneer work of Broomhead and King [1]. From the practical standpoint, a broad number of applications is known, ranging from meteorology and climatology to econometrics (c.f. Golyandina et al. [3]). In order to produce out-of-sample forecasts, the SSA method is often combined with the Recurrent Forecast Algorithm (RFA). In this work, we contribute by proposing an imputation method for time series with missing values, based on a combination of the SSA method and the RFA. The proposed technique relies in an weighted average of the forecasts and backcasts yield by the application of the RFA. In order to illustrate the mechanics of the introduced method we use the prominent database of Brown [2] which contains a set of monthly observations on the number of passengers flying in international airlines. This data set enable us to establish a simple comparison with the method recently introduced by Golyandina and Osipov [4].

References

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