Oversampling of matrix-valued autoregressive model

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In modern time series analysis, more complex and higher-dimensional data sets are often considered. To manage the task of processing multivariate time series, the matrix-valued autoregressive model was introduced in [1]. In some cases, higher-frequency time series data is needed, so oversampling methods are used. In [2], oversampling method based on the spectral density function (Fourier transform) was discussed.

This poster presents an oversampling method based on the matrix-valued autoregressive (AR) model. It was done by estimating the spectral density of the time series, calculating the autoregressive function, and generating a sample of matrix-valued AR time series using the Yule-Walker equations.

References

[1] Chen, Rong, Han Xiao, and Dan Yang, *Autoregressive models for matrix-valued time series*, Journal of Econometrics, 222.1: 539–560 (2021)

[2] Pollock, D. S. G., *The Discrete–Continuous Correspondence for Frequency-Limited Arma Models and the Hazards of Oversampling.* (2011)

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