

Testing independence for multivariate time series by the auto-distance correlation matrix

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We introduce the notions of multivariate auto-distance covariance and correlation functions for time series analysis. These concepts have been recently discussed in the context of both independent and dependent data but we extend them in a different direction by putting forward their matrix version. Their matrix version allows us to identify possible interrelationships among the components of a multivariate time series. Interpretation and consistent estimators of these new concepts are discussed. Additionally, we develop a test for testing the i.i.d. hypothesis for multivariate time series data. The resulting test statistic performs better than the standard multivariate Ljung-Box test statistic. All the above methodology is included in the R package dCovTS which is briefly introduced in this talk.

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