

ON THE ESTIMATION OF THE AUTOCORRELATION FUNCTION

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Abstract

The autocorrelation function has a very important role in several application areas involving stochastic processes. In fact, it assumes the theoretical base for Spectral analysis, ARMA (and generalizations) modeling, detection, etc. However and as it is well known, the results obtained with the more current estimates of the autocorrelation function (biased or not) are frequently bad, even when we have access to a large number of points. On the other hand, in some applications, we need to perform fast correlations. The usual estimators do not allow a fast computation, even with the FFT. These facts motivated the search for alternative ways of computing the autocorrelation function. 9 estimators will be presented and a comparison in face to the exact theoretical autocorrelation is done. As we will see, the best is the AR modified Burg estimate.

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