Subject: Re: a_correlate is wrong...
Posted by B}rd Krane on Thu, 11 Dec 1997 08:00:00 GMT
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William Connolley wrote:
>
> The a_correlate function seems to be wrong to me. Whats wrong is that
> at every lag, the correlation is divided by the total number of elements
> in the series, not by the number-in-series minus the lag. If you take
> a perfectly correlated series, this make the correlations at higher lags
> get artificially smaller.

This is not necessarily wrong, it just gives you a biased estimator
instead of an unbiased estimator. The autocovariance (correlation) is
defined as the ensemble average of two elements separated by k elements

R[k] = < x[i+k] x[i] >

With a finite record length the average for the maximum lag contains
only one entry and is highly unreliable. Thus it is sometimes given
a smaller weight, i.e. divide by N instead of 1.
This is a sloppy explanation, but it should give you the necessary
starting points for further reading, e.g.
Modern Spectral Estimation
Steven M. Kay
ISBN 0-13-598582-x

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