Subject: Re: BUG IN C_CORRELATE
Posted by sogawa on Thu, 01 Feb 1996 08:00:00 GMT
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In article <4eo3t8$21e@post.gsfc.nasa.gov> Jack Saba <jsaba@magus.stx.com> writes:
> Subject: BUG IN C_CORRELATE
> From: Jack Saba <jsaba@magus.stx.com>
> Date: 31 Jan 1996 16:03:52 GMT

> There appears to be a bug in c_correlate. The documentation says
> the sums in the denominator go from 0 --> N-1. However, as
> implemented, they go from 0 --> N-2. The same seems to be the
> case for a_correlate.

> I'm not an expert on correlation analysis, but the definition of
> the cross-correlation in these functions strikes me as odd. The
> use of the entire vector in the denominator means that the
> cross-correlation at large lag is decreased wrt smaller lags
> because more elements of the vector are used in the denominator
> than in the numerator. Is this the normal definition, or should
> the sums in the denominator include only the elements that are
> are used in the numerator?

This is the most common way to estimate cross and autocorrelations from realization of stochastic processes. By dividing N, the estimates are not unbiased but positive-definite. The definition of correlations are expectations of x(t)y(t+lag). Without knowing the joint distributions of implied stochastic process, we have to estimate from available data.

References: Brockwell/Davis TIme Series: Theory and Methods,Springer-Verlag 1991

Box/Jenkin, Time Series Analysis, Holden-Day 1976

Shiro Ogawa
MacMillan Bloedel Ltd.