

Re: Find a period in multiple delayed time series

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- *From:* "Rusty" <rusty@xxxxxxxxxxxxxxxx>
 - *Date:* Tue, 21 Jun 2005 08:30:40 +0100
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<Martin.Camitz@xxxxxxxx> wrote in message
news:1119257325.305081.169480@xx

> Hi!

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> I'm a beginner to time series analysis and I was wondering what
> techniques there are for analysing multiple time-series with the same
> period. In particular, if the time span of the data is shorter than the
> expected period, is there a way to retrieve the period if you have
> several time series and there is a delay (unknown or known) between
> them?

The most standardized technique is linear prediction. The series will all satisfy the same linear equation $x(k+2) = a.x(k+1) + b.x(k) + \text{error}(k+2)$. So finding the period reduces to finding best values for fixed coefficients a and b . This might involve some initial principle component analysis to get rid of any white noise.

Search on the web for Pisarenko, Prony, Burg algorithms or in IEEE Transaction on Signal Processing over that last three decades. This will reveal many hundreds if not thousands of theoretical and mathematical papers, perhaps rather fewer practical ones.

rusty

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• *References:*

- ◆ *Find a period in multiple delayed time series*

◇ *From:* Martin . Camitz

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Re: Find a period in multiple delayed time series

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