Subject: Re: svd experts?
Posted by Dennis Boccippio on Wed, 27 Jun 2001 06:32:31 GMT
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Not an SVD expert, but a while back I came across the following info when using SVD as an alternative to normal-equations solution of an overdetermined system:

It is wise to scale A to have equal _column lengths_, particularly if the columns of A have very different numerical magnitudes (as might be obtained if A represented an instrument response kernel for inverting observations or fitting a model). Thus, the SVD would be performed on Z, where:

Z = A S^-1

and S is a diagonal matrix consisting of the roots of the diagonal elements of A*A (A-transpose A).

I can't recall what the motivation for this was; numerical stability or some issue unique to SVD use in overdetermined systems.

I *believe* the reference for this is:

Belsley, Kuh and Welch (1980): Regression Diagnostics, Identifying Influential Data and Sources of Collinearity, John Wiley & Sons, 292 pp. (SVD played of course a big part in their treatment of inversion of ill-conditioned matrices).

If not, it may be:

Draper and Smith (1981): Applied Regression Analysis. John Wiley & Sons, 407 pp.

Sorry for the ambiguity, it's been ~6 years since I had to deal with this and can't recall the exact reference...

- Dennis Boccippio, NASA/MSFC SD-60

In article <V68_6.2448$nx3.1001188453@den-news1.rmi.net>,
"R.G.S." <rgs1967@hotmail.com> wrote:

> Hail honourable svd experts,
>
> I'm using svdc and svsol to solve a matrix equation (like so).

> SVDC, A, W, U, V,/double
> result2 = SVSOL(U, W, V, data,/double)
>
> Is it a good idea to scale my data so that the A matrix
> is between a certain range? such as (0,1).
> I actually have julian day in there, so of course it seems
> wise to subract off a 'zero day' and bring the julian day into
> a normal range, but how important is it to scale the magnitude
> of the data?
>
> I figure I'd try a quick "ask the audience" before trying to figure
> it out.
>
> Thanks!
>
> Cheers,
> bob stockwell
>
>