Subject: Re: multi-dimensional SVDFIT
Posted by R.G.S. on Tue, 03 Jul 2001 21:17:21 GMT
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Ingo Wardinski <ingo@gfz-potsdam.de> wrote in message
news:ynlelryc66q.fsf@mt35.gfz-potsdam.de...
> Hi,
> does anyone know, if it is possible to make a multi-dimensional SDVFIT
> to a certain dataset? I'm looking for a SDVFIT of y=f(x1,x2), but
> AFAIK the standard idl SDVFIT routine works only for 1-d.
> thanks in advance
> ingo
> --
> ingo wardinski ingo@gfz-potsdam.de
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>
> "Ich war ganz allein in der Maschine und habe dem Piloten gesagt..."
> (Helmut Kohl in "Am Ende des Jahrhunderts")

Hello,
the SVD solution to a least squares fit (Ax=b) to higher dimensions is
trivial.
Merely add on the other dimensions as columns of A, since there is no
difference
in principal between "x^2" and "xy", since to the SVD, the matrix A is
merely a collection
of numbers.

Cheers,
bob stockwell
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For instance, here is a smallpiece of code that will compute a fit to
f(x,y,z) = a0+a1*x+a2*y+a3*z+a4x*y+a5x*z+a6y*z+a7= x^2+a8y^2+a9z^2

(i.e. 10 parameters second order term polynomial in 3D)

; Here zon = data(x,y,z)
m = 10 ; number of terms in equation
n = n_elements(zon) ; n = number of data points

```
; create matrix colum by colum
a = dblarr(m,n)
a(0,*) = 1
a(1,*) = x
a(2,*) = y
a(3,*) = z
a(4,*) = x*y
a(5,*) = x*z
a(6,*) = y*z
a(7,*) = x^2
a(8,*) = y^2
a(9,*) = z^2



; Decompose A:
tic = systime(1)
SVDC, A, W, U, V,/double
toc = systime(1)

; Compute the solution and print the result:
result1 = SVSOL(U, W, V, zon,/double)
toc2 = systime(1)
print,result1
```