Subject: Re: Curvefit
Posted by Lucio Chiappetti on Fri, 23 May 1997 07:00:00 GMT
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On 21 May 1997, J.M. Zanotti wrote:

> I use CURVEFIT (on PV-WAVE CL Version 6.05 (sun4 solaris sparc)) to perform
> non-linear least sqares fitting. It works rather well, but once the fit is
> performed, the vector of standard deviations for parameters (named Sigmaa)
> seems to give very large values: for a given set of data, the error on
> parameters is ten times greater with Curvefit than, for exemple, with
> Kaleidagraph.

IDL's CURVEFIT should be based on Bevington's CURFIT algorithm.
I've widely used CURFIT in my Fortran programs.

In general if I want to fit my data with a function y=f(x,a1,a2,...an)
I use a "fitting" program to get the best fit (that will be a loop
calling curfit until the chisquare converges to a stable minimum).
I trust the values of a1...an but not their errors.

To get meaningful errors, I use a "grid" program. It depends how many
"interesting" fit parameters there are. Usually I consider 1 or 2
parameters as interesting. In this case I do a grid on such parameter(s)

a loop with a1 stepped from A0 to A0+na*deltaA
a loop with a2 stepped from B0 to B0+nb*deltaB

For each grid point I use curfit to fit y=f(x,A0,B0,a3..an), i.e. the
fitted parameters are now n-2 and A0,B0 are FIXED (at different values
in each grid point).

I then report chisquare as a function of a1 (a curve) or as afunction
of a1,a2 (image) and determine the locus in which chisquare is less
than chisquaremin + deltachi, where deltachi is a value corresponding
to the confidence level you want (e.g. 2.71 for 90% confidence and one
interesting parameter).

It should not be difficult to write a wrapper like that around IDL's
curvefit.

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For more info : http://www.ifctr.mi.cnr.it/~lucio/personal.html
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