Subject: Re: xerr
Posted by ed.schmahl on Fri, 19 Dec 2008 05:43:59 GMT
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On Dec 18, 8:24 pm, Craig Markwardt <cbmarkwa...@gmail.com> wrote:
> On Dec 17, 5:08 pm, Paolo <pgri...@gmail.com> wrote:
>
>> This is discussed for example in
>> section 15.3 in edition 3 of the book

Orthogonal least squares, as in finding the line with minimum squared distance from a set of points (x,y), where x and y are on an equal footing, is an eigenvalue problem, and therefore not within the province of MPFIT. Just try googling "least square distance" to find oodles of info about this problem.

However, a working IDL program that finds the orthogonal solution a*x +b*y=d, where x and y are on an equal footing, may be found at http://hesperia.gsfc.nasa.gov/~schmahl/pro/lst_sq_dist_line. pro.

The least square plane a*x+b*y+c*z=d is just as readily found using a similar program: http://hesperia.gsfc.nasa.gov/~schmahl/pro/lst_sq_plane.pro

Both of these programs were converted to IDL from a Fortran program so old its origin is lost in the mists of time.

In each case (2D or 3D), the eigenvector with minimum eigenvalue found by this program is perpendicular to the line (or plane) and the eigenvalue is the sum of the squares of the distances of the points from the line.

Adding a subroutine that computes the sigmas for x and y is an exercise for the reader.

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> "numerical recipes".
>
> I've used the Numerical Recipes hack for X errors successfully before.
>
> As mentioned, orthogonal distance regression is the real way to do
> this, but unfortunately MPFIT does not support this. [It could in
> principle with a lot of work, but doesn't in practice.]
>
> Craig