Subject: Re: curve fitting: works badly?
Posted by agraps on Wed, 08 Mar 1995 20:44:15 GMT
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vek@spacsun.rice.edu (Vincent E. Kargatis) writes:

> This is great (really). But has anyone done a (linear) curvefit that
> includes both X and Y errors? A much harder problem, but much more
> realistic (c'mon, the Real World's *fun*)! NUMERICAL RECIPES has one for
> linear fitting (ch. 15.3), but not for non-linear (no surprise, since it's
> probably nigh impossible). I don't suppose anyone has translated the NR
> routine into IDL?

I think the IDL Goddard Astronomy Library has IDL code to do linear curvefit with x and y errors. See the IDL FAQ for how to get to the library. I don't have the library information handy (but Bill Thompson might :)).

> Also, why does CURVEFIT want weights instead of errors? W = 1/(sig_y)^2.
> Whose datasets give them weights? Mine all give me errors! :-)

Mine too!

Seriously, my understanding of why weights instead of errors is because:

1) Bevington did it that way.
2) It has a precise mathematical definition that can be implemented easily in least-squares algorithms.
2) There are several different kinds of errors (i.e. instrumental, statistical, etc. See Bevington for a good discussion of error analysis).

Speaking of errors, if you have criteria for checking whether a fit is good, looking at the sigma of the output fit parameters is sometimes not enough because the parameters are correlated to each other. That's why I added a covariance output matrix to my version of CURVEFIT that quantitatively describes the correlated variances between the fit parameters. See my previous post on the Marquardt-Levenberg thread here on how to do this.

Amara

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"Awaken the mind without fixing it anywhere." --Kungo Kyo
