
Subject: Re: CURVEFIT for multiple datasets
Posted by [Spon](#) on Thu, 31 Jan 2008 14:15:40 GMT
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On Jan 31, 12:55 pm, chloesharro...@gmail.com wrote:

```
> Dear all
>
> I'm trying to fit an exponential curve to multiple data sets which
> have been overplotted on a graph. To get a feel for CURVEFIT (as I'm
> a novice at IDL and CURVEFIT), I wrote the following 2 programs (based
> on the one given in IDL help), which produce a nice exponential curve
> when there's only ONE dataset:
>
> =====
> PRO gfunct, x, t_a, f_t, PDER
>
>   t_bx = EXP(t_a[1]*x)
>   f_t = t_a[0] * (t_bx) + t_a[2]
>
> ;If the procedure is called with four parameters, calculate the
> partial derivatives
>   IF N_PARAMS() GE 4 THEN $
>       pder = [[t_bx], [t_a[0]*x*t_bx], [replicate(1.0, N_ELEMENTS(x))]]
>
> END
> =====
> and
> =====
> PRO CURVE_FITTING
> x=FLOAT(indgen(10))
> y=[12.0, 11.0, 10.2, 9.4, 8.7, 8.1, 7.5, 6.9, 6.5, 6.1]
> weights=1.0/y ;Define a vector of weights
> A=[10.0, -0.1, 2.0] ;Provide an initial guess of the function's
> parameters
>
> yfit=CURVEFIT(x,y,weights, A, FUNCTION_NAME='gfunct') ;Compute the
> parameters
> print, 'Function parameters: ', A
>
> loadcolors
> pson, filename='Curve_fitting.ps'
> plot, x, y, yrange=[5,13], ystyle=1, xrange=[0, 11], xstyle=1, psym=1,
> color=0
> oplot, x, yfit, linestyle=1, color=5
> psoff
> END
> =====
>
```

> How can I extend this for the case when I have say 2 data sets, ie:
> `x=[[indgen(10)], [indgen(10)]]`
> `y=[[12.0, 11.0, 10.2, 9.4, 8.7, 8.1, 7.5, 6.9, 6.5, 6.1], [11.5, 10.8,`
> `10.3, 9.5, 8.6, 7.8, 7.5, 6.4, 6.4, 5.9]]`
> and I want to plot an exponential curve through all of this data?
> Eventually, I would like my program to be able to plot an exponential
> curve through 2000+ data sets all of which have been plotted on the
> same graph and seem to show an exponential trend.
>
> Thanks very much
> Chloé

This doesn't really answer your question in any way, but if you're going to do a lot of curvefitting, I'd suggest having a look at Craig Markwardt's site:

<http://cow.physics.wisc.edu/~craigm/idl/idl.html>

His fitting programmes are faster and more robust than CURVEFIT in my (admittedly limited) experience, and it's certainly true that they don't crash and burn as easily as CURVEFIT does.

To try and answer your question, there's no way I can see of fitting more than one datapoint at a time using the method you describe. The brute force way involves wrapping the lot in (slow) FOR loops. The elegant and efficient way, if there is one, eludes me.

There may well be a way to use Craig's mpfit to help you here, but I don't know - perhaps someone else does?

> Eventually, I would like my program to be able to plot an exponential
> curve through 2000+ data sets all of which have been plotted on the
> same graph and seem to show an exponential trend.

It may also be worthwhile asking yourself if you really need a fitted curve to every single data set; or one curve that best fits the whole data (in which case I'd suggest looking at MOMENT or TOTAL, for example, before you do any curve fitting at all.) Maybe even something in between?

Hope this helps,
Chris
