Subject: CURVFIT with XY error
Posted by amin farhang on Sun, 27 Apr 2014 21:31:55 GMT
View Forum Message <> Reply to Message

Hi,

Is there any replacing routine for CURVFIT which was able to do a non-linear least squares fit to a user-supplied function by considering both X and Y error?

data sample:

X = [0.8, 2.2, 3.3, 4.8, 5.8]
Y = [2.02, 2.78, 3.58, 5.05, 6.35]
Xerr = 0.03*X
Yerr = 0.05*Y

Best regards,

Subject: Re: CURVFIT with XY error
Posted by Craig Markwardt on Wed, 30 Apr 2014 04:01:28 GMT
View Forum Message <> Reply to Message

On Sunday, April 27, 2014 5:31:55 PM UTC-4, Amin Farhang wrote:
>
> Is there any replacing routine for CURVFIT which was able to do a non-linear least squares fit to a user-supplied function by considering both X and Y error?

Not in IDL for the general case. Numerical recipes does give an algorithm for errors in both variables if the model function is purely linear.

Craig

Subject: Re: CURVFIT with XY error
Posted by brubaker.phil on Mon, 09 Feb 2015 18:05:50 GMT
View Forum Message <> Reply to Message

On Sunday, April 27, 2014 at 2:31:55 PM UTC-7, Amin Farhang wrote:
> Is there any replacing routine for CURVFIT which was able to do a non-linear least squares fit to a user-supplied function by considering both X and Y error?
>
CurvFit supplies the fortranCalculus code it used to create CurvFit. You could modify this code how ever you need and then re-compile it using the FC-Compiler (http://fortranCalculus.info/apps/fc-compiler.html) ... it's free!

Subject: Re: CURVFIT with XY error
Posted by Craig Markwardt on Mon, 09 Feb 2015 18:10:46 GMT
View Forum Message <> Reply to Message

On Monday, February 9, 2015 at 1:05:53 PM UTC-5, brubak...@gmail.com wrote:
> On Sunday, April 27, 2014 at 2:31:55 PM UTC-7, Amin Farhang wrote:
>> Is there any replacing routine for CURVFIT which was able to do a non-linear least squares fit to a user-supplied function by considering both X and Y error?
>>
> CurvFit supplies the fortranCalculus code it used to create CurvFit. You could modify this code how ever you need and then re-compile it using the FC-Compiler (http://fortranCalculus.info/apps/fc-compiler.html) ... it's free!

I think you've got the wrong CURVFIT, fellow.

Subject: Re: CURVFIT with XY error
Posted by wlandsman on Mon, 09 Feb 2015 19:42:31 GMT
View Forum Message <> Reply to Message

You might also look at the code MPFITEXY by Michael Willliams to apply MPFIT to linear models with errors in both coordinates.

http://user.astro.columbia.edu/~williams/mpfitexy/

But again this does apply to general nonlinear models. --Wayne

On Wednesday, April 30, 2014 at 12:01:28 AM UTC-4, Craig Markwardt wrote:
> On Sunday, April 27, 2014 5:31:55 PM UTC-4, Amin Farhang wrote:
>>
>> Is there any replacing routine for CURVFIT which was able to do a non-linear least squares fit to a user-supplied function by considering both X and Y error?
>
> Not in IDL for the general case. Numerical recipes does give an algorithm for errors in both variables if the model function is purely linear.
>
> Craig

Subject: Re: CURVFIT with XY error
Posted by brubaker.phil on Tue, 10 Feb 2015 16:42:11 GMT
View Forum Message <> Reply to Message

On Monday, February 9, 2015 at 10:10:48 AM UTC-8, Craig Markwardt wrote:

> I think you've got the wrong CURVFIT, fellow.

If so, I have CurvFit name as my trademark and no one else can use it.

Phil

---

Subject: Re: CURVFIT with XY error
Posted by dg86 on Tue, 10 Feb 2015 17:16:27 GMT
View Forum Message <> Reply to Message

On Tuesday, February 10, 2015 at 11:42:14 AM UTC-5, brubak...@gmail.com wrote:
> On Monday, February 9, 2015 at 10:10:48 AM UTC-8, Craig Markwardt wrote:
>
>> I think you've got the wrong CURVFIT, fellow.
>
> If so, I have CurvFit name as my trademark and no one else can use it.
>
>
> Phil

A search of the USPTO Trademark Electronic Search System (TESS) turns up
just one trademark for CurvFit, that being for the Curvfit Razor Company.
The registration was filed in 1925, and has since expired.

Anyhow, the IDL routine is called CURVEFIT, with an E.

---

Subject: Re: CURVFIT with XY error
Posted by Russell[1] on Tue, 10 Feb 2015 18:33:15 GMT
View Forum Message <> Reply to Message

I am only aware of this working for fitting a linear function:

y= m*x + b

But for that, you can use Brandon Kelly's fitexy.pro in astrolib:

http://idlastro.gsfc.nasa.gov/contents.html

http://idlastro.gsfc.nasa.gov/ftp/pro/math/fitexy.pro

Are you sure your function is nonlinear? I mean, is there any transformation you can apply to force it to be linear?

-Russell

On Sunday, April 27, 2014 at 5:31:55 PM UTC-4, Amin Farhang wrote:
> Hi,
>
> Is there any replacing routine for CURVFIT which was able to do a non-linear least squares fit to a user-supplied function by considering both X and Y error?
>
> data sample:
>
> X = [0.8, 2.2, 3.3, 4.8, 5.8]
> Y = [2.02, 2.78, 3.58, 5.05, 6.35]
> Xerr = 0.03*X
> Yerr = 0.05*Y
>
>
> Best regards,

---

Subject: Re: CURVFIT with XY error
Posted by Craig Markwardt on Tue, 10 Feb 2015 19:11:07 GMT
View Forum Message <> Reply to Message

On Tuesday, February 10, 2015 at 1:33:18 PM UTC-5, rrya...@gmail.com wrote:
> Are you sure your function is nonlinear? I mean, is there any transformation you can apply to force it to be linear?

Things can get a little tricky when the function is non-monotonic. Linear, exponential and power law models are all monotonic, and will work fine with errors in X and Y, but you can also transform those into linear space and use MPFITEXY / FITEXY. This works because the function is single-valued whether it is expressed as y = f(x) or x = g(y).

Once your function has any bumps or wiggles, it's no longer a single-valued function in both x and y. Error bars in the x direction make it ambiguous whether a data point is attached to the left side of a wiggle, or the right side of it. This depends on how sharp the wiggles are, and how small the error bars are.

All this doesn't mean that fitting won't work, but it might mean that the fit converges to a local minimum which is not the global best fit. I.e., extra care is needed.

Craig

P.S. To Phil Brubaker, as already pointed out, the IDL subroutine is called CURVEFIT, and it has existed within IDL since 1982. Good luck with your trademark action.

---

Subject: Re: CURVFIT with XY error
Posted by brubaker.phil on Fri, 13 Feb 2015 19:30:28 GMT

On Tuesday, February 10, 2015 at 11:11:08 AM UTC-8, Craig Markwardt wrote:
> P.S. To Phil Brubaker, as already pointed out, the IDL subroutine is called CURVEFIT, and it has existed within IDL since 1982. Good luck with your trademark action.

My CurvFit (TM) has been in use since the early 1990s. It handles non-linear curves if that is of interest to you; http://fortranCalculus.info/apps/curvfit.html

Phil