Subject: Robust curve fitting
Posted by Craig Markwardt on Mon, 03 Aug 1998 07:00:00 GMT
View Forum Message <> Reply to Message

There has been some recent discussion on this newgroup about curve fitting. Specifically, people wanted a faster system with more features. I also wanted a curve fitting routine that didn't cause IDL to crash.

I recently had an opportunity to translate the MINPACK-1 curve-fitting package into IDL. MINPACK is a minimization package available from netlib, and has an excellent reputation. I have found that it is much more robust, able to cope with singular matrices, etc. Since people have been requesting, I polished it up a little bit, and am making it available via my IDL web page:

http://astrog.physics.wisc.edu/~craigm/idl/idl.html

In addition to three IDL procedures (MPFIT, MPFITFUN, and MPFITEXPR) which are extensively documented, I have written a short tutorial page on how to use them (http://astrog.physics.wisc.edu/~craigm/idl/fittut.html). You should download all three routines.

The easiest to use routine, MPFITEXPR, does not even require you to compile a separate IDL function. You just type the expression you want, as a string! I have found this indispensable for interactive analysis.

Benefits:

* can fit arbitrary expressions from the command line without compiling a special IDL function (see MPFITEXPR).

* you can fix any parameters you wish (see PARINFO keyword).

* you can place upper and lower limits on parameter values. (see PARINFO keyword).

* you can pass additional keywords to your function in a manner similar to the _EXTRA mechanism (see the FUNCTARGS keyword).

* the function evaluation is a vector operation, so it avoids time-consuming FOR loops.

* it computes the entire covariance matrix (see COVAR keyword)

* partial derivatives are calculated automatically and numerically,

freeing you from the need to compute them analytically yourself.

I get very good performance on my machine! Download them and give a try. As always, feedback is appreciated.

Craig

--

---------- ----------
Craig B. Markwardt, Ph.D. EMAIL: craigmnet@astrog.physics.wisc.edu
Astrophysics, IDL, Finance, Derivatives | Remove "net" for better response
---------- ----------