Subject: TNMIN, IDL function minimizer
Posted by Craig Markwardt on Tue, 19 Jan 1999 08:00:00 GMT
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Greetings again folks!

I have put a general function minimizer called TNMIN on my web page:

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

TNMIN will attempt to minimize a function with respect to a set of parameters. How does it compare to MPFIT, also on my web page? MPFIT solves the least-squares problem: it allows you to perform curve fitting. TNMIN will seeks the minimum of a more general function, not necessarily involved in curve fitting. Perhaps optimization is a better buzzword.

Better yet, TNMIN has all the bells that MPFIT does. Namely, it allows you fix and unfix paramter values, and to place simple bounding constraints on parameters (ie, upper and lower limits). MPFIT and TNMIN have both recently gained the ability to tie parameter values to each other. They both share (virtually) the same calling interface to save you from larnin' the same thing twice.

TNMIN uses a gradient technique. That means (1) that you *DO* have to compute the gradient of your function (bummer I know); and (2) it generally converges faster and with fewer function computations than a simplex routine such as POWELL. It's also better than CONSTRAINED_MIN in the sense that the source code is visible for you to see, and it's available for all versions of IDL.

I am swamped with work right now; if somebody can come up with a clean numerical derivative computation, I'd gladly include it.

Happy optimization!

Craig

P.S. Credit: TNMIN is based on TN.F by Stephen Nash

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