Subject: Re: Any 1D functional minimization routines out there?
Posted by geomagic on Sun, 02 Apr 1995 08:00:00 GMT
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In article <DAFT.95Mar31084204@debussy.crd.ge.com> daft@debussy.crd.ge.com (Chris Daft) writes:

> I need a couple of functions corresponding to MNBRAK (golden section
> search for brackets for a function's minimum) and BRENT (1D
> non-derivative function minimization) in Numerical Recipes. I can't
> find these in the IDL distribution I use (3.6.1). Has anybody typed
> them in as IDL functions?
>
> If not, I guess I will use the C code and CALL_EXTERNAL (quite risky
> in my experience).

You might try FX_ROOT. It uses Muellers method.

Dan (I speak for no organization) O'Connell
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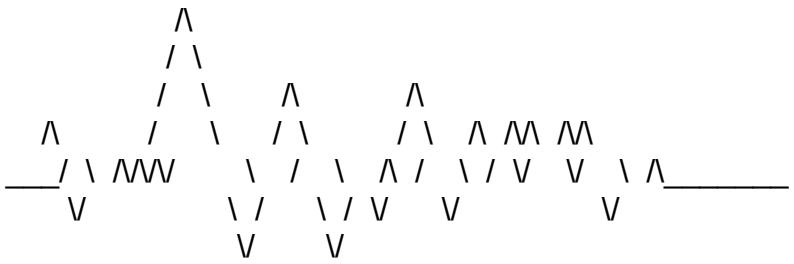
Denver Federal Center, P.O. Box 25007 D-8330, Denver, CO 80225
"We do custom earthquakes (for food)"
or
"Just more roadkill on the information superhighway"



Subject: Re: Any 1D functional minimization routines out there?
Posted by daft on Tue, 04 Apr 1995 07:00:00 GMT
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dan> You might try FX_ROOT. It uses Muellers method.
dan> Dan (I speak for no organization) O'Connell

Hi Dan,

Thanks for your post. I checked out Muller's method in the IDL docs and I understand what it does. I wonder if you, or someone else more versed in numerical analysis than I, could comment on this:

Obviously, I can minimize my function by forming its derivative and root finding. But my function is not analytic and I am not keen on doing numerical differencing (because this is ill-conditioned, I imagine). Is there a deeper link between root finding and minimization which I am missing?

If not, I guess I'll translate some C routines into IDL (I can't CALL_EXTERNAL, for another unrelated reason). But this will be slooow (loops) unless I spend a long time on it.

--
Chris M.W. Daft <daft@crd.ge.com>
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Schenectady, N.Y. 12301-0008

Subject: Re: Any 1D functional minimization routines out there?
Posted by landsman on Wed, 05 Apr 1995 07:00:00 GMT
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> In article <DAFT.95Mar31084204@debussy.crd.ge.com> daft@debussy.crd.ge.com (Chris Daft) writes:
>
> I need a couple of functions corresponding to MNBRAK (golden section
> search for brackets for a function's minimum) and BRENT (1D
> non-derivative function minimization) in Numerical Recipes. I can't
> find these in the IDL distribution I use (3.6.1). Has anybody typed
> them in as IDL functions?
>
The the /math directory of the IDL Astronomy Library has the procedures MINF_BRACKET and MINF_PARABOLIC, which, respectively, incorporate the algorithms in MNBRAK and BRENT from Numerical Recipes. The IDL Astronomy Library is available at the URL

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

--Wayne Landsman landsman@stars.gsfc.nasa.gov

Subject: Re: Any 1D functional minimization routines out there?
Posted by geomagic on Thu, 06 Apr 1995 07:00:00 GMT
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In article <DAFT.95Apr4133459@debussy.crd.ge.com> daft@debussy.crd.ge.com (Chris Daft) writes:

dan> You might try FX_ROOT. It uses Muellers method.
dan> Dan (I speak for no organization) O'Connell

> Thanks for your post. I checked out Muller's method in the IDL docs
> and I understand what it does. I wonder if you, or someone else more
> versed in numerical analysis than I, could comment on this:
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> Obviously, I can minimize my function by forming its derivative and
> root finding. But my function is not analytic and I am not keen on
> doing numerical differencing (because this is ill-conditioned, I
> imagine). Is there a deeper link between root finding and
> minimization which I am missing?

Muller's method does not require the evaluation of the function's
derivative and is global in the sense that the user need not supply
an initial approximation (in the IDL version you need to provide
3 non-equal numbers as the "initial guess" to get the routine started).

> If not, I guess I'll translate some C routines into IDL (I can't
> CALL_EXTERNAL, for another unrelated reason). But this will be slooow
> (loops) unless I spend a long time on it.

Try FX_ROOT first, it might be fine and it's easy to do. A more
general Muller's method alogorithm can be found in, Conte and de Boor's
elementary numerical analysis textbook. It does root deflation, so
it can return all possible roots.

Dan (I speak for no organization) O'Connell
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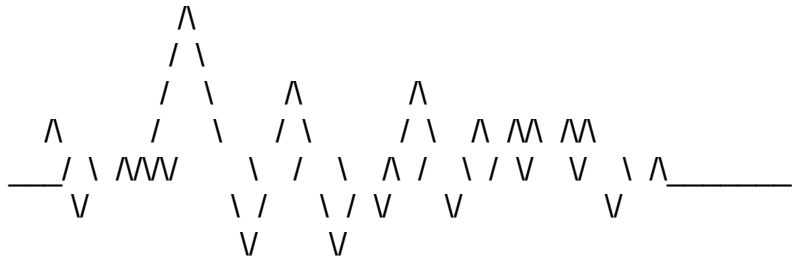

Subject: Re: Any 1D functional minimization routines out there?
Posted by volker on Fri, 07 Apr 1995 07:00:00 GMT

Chris Daft (daft@debussy.crd.ge.com) wrote:
: Hi,
Hello

: I need a couple of functions corresponding to MNBRAK (golden section
: search for brackets for a function's minimum) and BRENT (1D
: non-derivative function minimization) in Numerical Recipes. I can't
: find these in the IDL distribution I use (3.6.1). Has anybody typed
: them in as IDL functions?
Why don't you try 'NR_POWELL'?
It's a function, which does the same than the powell-function in the
Numerical Recipies.
See IDL Mathematics Guide

ciao
 volker