Subject: Re: faster minimization needed - maybe mpfit?
Posted by Craig Markwardt on Mon, 26 Mar 2012 19:04:25 GMT
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On Monday, March 26, 2012 9:15:30 AM UTC-4, chris wrote:
> Hi folks,
> the following expression runs successfully with AMOEBA but requires
> for large matrices (columns < 512, rows up to 30000), for small
> tolerances (e.g. ftol=1e-06) and a high number of iterations
> (nmax>=10000) to converge years:
>
> expr = total(abs(convol(im-rebin(p[*],size(im,/dim),/samp),
> [-1.,0.,1.])))
>
> where p is the parameter vector (one row) to be found and im is the
> matrix.
>
> Is there a way to do it faster? Maybe with mpfit (I don't get an idea
> how...)

If you can express your problem as minimize{TOTAL(RESID^2)}, then you can use MPFIT, where RESID is signed. In your case you can do this, but there's a few little tricks.

Your problem looks like minimize{TOTAL(ABS(XXX))}.

You might want to define RESID=SQRT(ABS(XXX)), and then in principle it looks like an MPFIT problem. Unfortunately you need to preserve the sign of XXX. So this is what you do:
RESID = SIGN(XXX)*SQRT(ABS(XXX))
where SIGN(XXX) is the sign of XXX (-1 or +1 depending on XXX).

Happy equation solving...
Craig