Subject: Re: amoeba/mpfit/etc with a quantized variable?
Posted by James Kuyper on Fri, 27 Feb 2004 16:20:25 GMT
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Craig Markwardt wrote:
>
> henrygroe@yahoo.com (Henry Roe) writes:
>> I've a function representing a physical phenomenon where some
>> variables are continuous and some should be quantized as integers.
>> It's not obvious to me how to force amoeba or mpfit or any of my other
>> favorite minimization/fitting routines to only move certain variables
>> in integer steps.
>>
>> Has anybody else run into this type of challenge? Any suggestions?
>
> I'm not sure. One suggestion I have is to search in a grid of the
> discrete values, and optimize the continuous variables at each grid
> point. This is what is commonly done for chi-square fitting
> confidence regions.

That's a great approach if the number of possible combions of values for the discrete variables is small. If it isn't, then you're in the domain of combinatorial optimization. I'm not as up-to-date in this field as I'd like; the best method I'm aware of for combinatorial optimization is the Metropolis method, with simulated annealing. There are probably better references, but there's a decent description in section 10.9 of my 1988 copy of "Numerical Recipes in C". A google search with "Metropolis and annealing" gives 8150 results, with no obvious basis for choosing the best one.