Subject: Re: Avoiding a for cicle
Posted by Craig Markwardt on Wed, 12 Apr 2000 07:00:00 GMT
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davidf@dfanning.com (David Fanning) writes:
> Craig Markwardt (craigmnet@cow.physics.wisc.edu) writes:
>
>> dd = d(1:*)-d
>> nh = (n-1)/2
>> wh = where(convol((dd GT 0) AND (dd(nh:*) LT 0), bytarr(nh)+1, nh) EQ 1, ct)+1
>>
>> For the goobledy-gook impaired (aka DF :-),
>> dd is the first difference of the data
>> nh is the half-width of the peak
>> (dd GT 0) AND (dd(nh:*) LT 0) locates up-going followed by down-going points
>> convol(...) locates runs of length nh
>>
>> This one does exactly what was requested, which I'm not sure of about
>> your solution, J.D. On the other hand, your solution may be more
>> physically meaningful since it involves smoothing.
>
> Alright, now that Craig has oriented me a little bit,
> I find that I, uh..., have a *need* for this sort of thing. :-)
>
> I presume you gentlemen are testing these little theories of yours
> on a test data set. Could you supply such a data set for the
> rest of us to fool around with? And if you gave us just a little
> hint about how such a thing might be useful to *you*, that might
> help too. I might even take a stab at writing an article about
> it all, especially if I feel like it has been a day or two since
> I really embarrassed myself.

Okay, try this:

ftp://cow.physics.wisc.edu/pub/craigm/spiky_data.sav

It's the cumulative sum of normally distributed random deviates, so it
has lots of peaks and valleys to practice on.

Personally, I was responding to the challenge that J.D. put forth.
I've never used this snippet "for real." I just did it today. I said
that smoothing might be more appropriate for real life situations
because real-life data often has noise. My algorithm does not really
tolerate noise.

Peak finding has obvious uses. Need I say more? I personally don't
do too much of it. I do have time series with peaks, but I know where
to expect the peaks so I can just fit an amplitude.

For a noisy signal with many potential (but unknown) peaks I would probably perform a cross correlation between the signal and a template, and then threshold. This prevents a single noisy point from ruining an otherwise nice peak.

For a noisy signal with a single peak, an algorithm such as IDL's GAUSSFIT(), or my own MPFITPEAK() might be worthwhile. Those two algorithms are different; I assert mine is better :-)

Craig

MPFITPEAK is found at
http://cow.physics.wisc.edu/~craigm/idl/idl.html

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