
Subject: Re: Avoiding a for cicle
Posted by [Craig Markwardt](#) on Wed, 12 Apr 2000 07:00:00 GMT
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"J.D. Smith" <jdsmith@astro.cornell.edu> writes:

```
>> 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.
>>
>
> Nice entry Craig. But unfortunately it doesn't *always* do exactly
> what was requested. It works fine for n=5, but for n>5 (7,9,...),
> the index is off. Part of the reason is in the way convol works.
> For n=5, nh=2, and convol subscripts are left of center (t+i-1 for
> i=0,1). For n=7, nh=3, and convol subscripts are (t+i-1 for
> i=0,1,2), which is centered. For n=9, nh=4, and you again have
> (t+i-2 for i=0,1,2,3), left of center again... and so on. The
> additional complication is that you are finding the center of the
> *wrapped* up-going and down-going entries... the center of the peak
> is offset from this by (nh+1)/2 (which happens to equal 1 when n=5
> or n=3). Adding this rather than 1 to the returned indices would
> make it correct. Here's an example for n=9 (^=up-go,
> v=down-go):
> ...
```

Arghh. I stand corrected. This turns out to be the kind of "feature" in CONVOL which we can turn off, by setting the keyword CENTER=0. I actually read the documentation for the function, intended to put CENTER=0 in, but forgot. I think now it works as advertised.

```
dd = d(1:*)-d
nh = (n-1)/2
wh = where(convol((dd GT 0) AND (dd(nh:*) LT 0), bytarr(nh)+1, nh, center=0) $
          EQ 1, count) + 1
```

```
> Now I'll explain my solution, which does indeed produce identical
> results ...
```

I must admit your entry was the cruftier. Nice explanation.

Here is the algorithm I used to make my random spiky_data.sav. You will find a 13-peak about every 4000 data points with this.

```
m = 1024L
d = randomn(seed,m)
for i = 1L, m-1 do d(i) = d(i-1)+d(i)
```

Craig

--

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