Subject: Re: Local max filter
Posted by John-David T. Smith on Wed, 22 Aug 2001 17:16:08 GMT
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Craig Markwardt wrote:
>
> rkj@dukebar.crml.uab.edu (R. Kyle Justice) writes:
>> I am trying to implement a local max filter
>> without loops. Has this been done?
>>
>> (Given an array and a filter width, return an
>> array containing the array value if it is
>> a local max, 0 if not)
>>
>> For instance,
>>
>> 3 4 7 2 6 4 9 8 3
>>
>> would be
>>
>> 0 0 7 0 0 0 9 0 0
>>
>> for a width of 5.
>
> JD and I had a contest doing this kind of thing -- finding maxima -- a
> year or so ago. Of course I popped his socks off, but he will tell
> you a different story :-)

Hmmmph... from my posting before of April 2000:

"Nice entry Craig. But unfortunatly it doesn't *alway* do exactly what
was
requested. It works fine for n=5, but for n>5 (7,9,...), the index is
off..."

So it looks like your method owes me at least a bit of bug fixing ;)

This is the thread for those interested:

http://groups.google.com/groups?hl=en&safe=off&th=f2 0f62ee42b51402,20&start=0

The bottom line of my method was, for simple 3 pt maxima:

>>>>
maxes = where(arr gt median(arr,3))
<<<<

which I guess when compared with Craig's:

```
>>>> >>
arr2 = arr(2:*)                  ;; Center points
b = (arr2 GE arr(0:*)) AND (arr2 GE arr(1:*)) AND $
   (arr2 GE arr(3:*)) AND (arr2 GE arr(4:*))  ;; Compare against
neighbors
result = [0, 0, b*arr2, 0, 0]  ;; Replace boundaries
<<<<<<
```

does get its socked knocked off, at least in terms of amount of typing required, space used on disk, or impressive complex subscripts to more quickly glaze the boss's eyes over ;)

As for variable width, n-point maxima (n odd), I came up with:

```
wh=where(d gt ((m=median(d,3))) and smooth((d eq m)*(n-2),n-2) eq n-3)
```

Not a for loop (or a histogram) in there! For the interested, the details of this technique were well described (a.k.a. "How the hell does that work?").

JD

P.S. Craig, now that I have your attention, I have an unrelated question, the answer to which might be of general interest. How do you feel about your excellent fitting/minimization routines being distributed with a large scale freely available system for scientific reduction and analysis?
