Subject: Re: Local max filter
Posted by Martin Downing on Tue, 28 Aug 2001 09:47:29 GMT
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Hi All,

I almost have a solution for N dimensional arrays, but since it is a SHIFT based solution I need help on solving the wrap problem (well its a problem to me!) -
i.e.. I need to prevent wrap and instead replicate the last elements of the array in that dimension: e.g.: what we have is:

```
> print, shift([-2,1,3,8],1)
 8    -2    1    3
```

we would like

```
> print, shift([-2,1,3,8],1, /REPLICATE_BORDER)
 -2    -2    1    3
```

So in trying to solve this problem I am laying down another challenge for the boys ;)
Anyway - heres my code for those interested - its still ok for large arrays and could always be padded round the edges.

```
function  local_maxima, array, width, INDEX=INDEX
;+
; Purpose:  Calculates local maxima of ARRAY of any dimension
; Restrictions: incorrect results around the array border of WIDTH elements
; maybe be produced due to maxima wrapping from use of shift
; allows multiple maxima within WIDTH if identical
;  - should be fairly fast even for large WIDTHs
; MRD 26/08/2001
;-
marr=array  ; temp array in which maxima "dilate"
s = size( marr )
ndims = s[0]
sarr = intarr(ndims)   ; array for controlling shift
sarr[0] = 1   ; set to shift one dimension at a time

for w = 1, width do begin
 for d = 1, ndims do begin
  marr  = shift(marr, sarr) > shift(marr, -sarr) > marr
  ; NOTE need shift to replicate border pixels rather than wrapping
  sarr = shift(sarr, 1)
 endfor
endfor

if keyword_set(INDEX) then begin
 return, where(marr eq array)
```

```
endif else begin
 return, (marr eq array)*marr
endelse

end
; END OF LOCAL_MAXIMA
```

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"Craig Markwardt" <craigmnet@cow.physics.wisc.edu> wrote in message
news:onn14ryalz.fsf@cow.physics.wisc.edu...
>
> JD Smith <jdsmith@astro.cornell.edu> writes:
>>> 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..."
>
> Yeah, I was just baiting you a little. :-)
>
>
>
>> 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?
>
> I feel fine about that. Of course, someone *else* will provide the
> support, not me. :-) Any more details?
>
> Craig
>