Subject: filtering problem
Posted by Dave Brennan on Thu, 16 Nov 2000 08:00:00 GMT
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Hi,

i don't know if anyone can help but it's worth a try!

I am trying to filter an array say (256x256) with a window of size 65x65 which scans across the array pixel by pixel. It should compare the statistics of the area within the kernal with the global statistics of the image to produce a correction image. (This is a particular type of inhomogeneity correction)

In detail: 'the algorithm should correct the pixel value by a multiplicative factor found by dividing the global mean by the window mean'
A further problem is I want the ability to set a threshold where data below the threshold are not included in the statistics and not corrected by the algorithm.

At first I though I could just use convol to produce a correction map but this does not allow me to set a threshold.

Does anyone have any ideas? It needs to be as fast as possible as it will work on 128 images at a time.

Cheers

Dave Brennan

Subject: Re: filtering problem
Posted by John-David T. Smith on Tue, 21 Nov 2000 08:00:00 GMT
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Dave Brennan wrote:
>
> Once again thanks for the help.
>
> However, life is not quite as simple as I imagined. Previously I said :
>
>> In detail: 'the algorithm should correct the pixel value by a
>> multiplicative factor found by dividing the global mean by the window
>> mean'
>> A further problem is I want the ability to set a threshold where data
>> below the threshold are not included in the statistics and not corrected
>> by the algorithm.

>
> I have later found that this is not entirely correct.
>
> Although any value below the thershold should not be included in the
> statistics, pixels below the threshold should be corrected by the algorithm.
>
> Therefore is it possible to change the code:
>
> pro thresh, a, n, t
> m = a ge t
> wh = where(m,cnt)
> if cnt eq 0 then return
> a[wh] = a[wh] * mean(a[wh]) * (smooth(float(m),n,/EDGE) / $
> (smooth(a*m,n,/EDGE)+1.e-30))[wh]
> end

You can simply remove the [wh] from everywhere but the mean. By the way, I rarely use constructs like adding 1.e-30 (I took that from the previous poster's version to ensure comparable runtime penalties). If you were ever using this on data arrays which were quite small, you'd be in trouble. Dealing with overflows is why the !VALUES sysvar was invented. And, on the other hand, if your sub-threshold pixels dominated, such that it may be impossible to correct certain locations (no window mean defined), you should explicitly test for this, and do something sensible (either relax your threshold, warn the user, etc.)

JD

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Ithaca, NY 14853 |

Subject: Re: filtering problem
Posted by Dave Brennan on Tue, 21 Nov 2000 08:00:00 GMT
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Thanks jaco. You just hit the nail on the head. I forgot to remove the [wh] after the smooth operation (changed a[wh] to a and couldn't work out why it wasn't working!!!), therefore I was getting array size errors. There were a few further lines I had to add to do exactly what I wanted but that seems to have solved my problem. Thanks folks. Now on to the next part of the code.....

Cheers

Dave Brennan

>
> If I understand you correctly, you want to correct the below-threshold
> pixels by the factor calculated from the valid pixels surrounding it.
> Couln't you just leave out some of the specific subscripting [wh] in the
> final assignment?
> a = a * mean(a[wh]) * (smooth(float(m),n,/EDGE) / $
> (smooth(a*m,n,/EDGE)+1.e-30))
> Correct me if I'm wrong here...
>
> Jaco
>
> ----------
> Jaco van Gorkom e-mail: gorkom@rijnh.nl
> FOM-Instituut voor Plasmafysica "Rijnhuizen", The Netherlands

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Subject: Re: filtering problem
Posted by Jaco van Gorkom on Tue, 21 Nov 2000 08:00:00 GMT
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"Dave Brennan" <9147261b@clinmed.gla.ac.uk> wrote in message
news:3A1A445B.14A912A3@clinmed.gla.ac.uk...
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Jaco

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FOM-Instituut voor Plasmafysica "Rijnhuizen", The Netherlands

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```

to allow this.

After scratching my head for a while I can't think of a simple solution without
going back to my clunky method where I manually scan through the data and
threshold the window each time. There must be a better way!!

Any help would be greatly appreciated!!

Cheers