
Subject: Re: Filter image with moving window and averaging pixels

Posted by [Jean H.](#) on Wed, 31 Jan 2007 19:48:58 GMT

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rpertaub@gmail.com wrote:

> Hello,
> I need to filter some noise out of an image and was pointed towards
> making a moving/sliding window (size, say 7x7) and compare the center
> pixel with surrounding pixels right next to border (ignoring middle
> pixels). And compare the value of center pixel with the border average
> pixels and thus filter out noise. However, I am not sure how to do
> this.
> Anyone has any idea?
> Did I say I was new to IDL...?
> Thanks for all your help,
> my last query was met by very helpful replies, and I am grateful!
> rp
>

A way to do this would be to define your neighborhood, based on 0;0 and then to use it to compute whatever you want.

```
dimX = ... (of your image)
```

```
dimY = ...
```

```
computeForPixel = indgen(dimX*dimY) ; <== consider the border effect...  
you might want to leave every pixels within 3 pixels of the borders..)
```

```
nbValidPixel = n_elements(computeForPixel)
```

```
Neighborhood = [-2*dimX-3,-2*dimX-2, -2*dimX-1,-2*dimX,-2*dimX+1,  
-2*dimX+2,-2*dimX+3,-2,2,2*dimX-3,2*dimX-2, 2*dimX-1,2*dimX,2*dimX+1,  
2*dimX+2,2*dimX+3] ;if you want to change the neighborhood size, write  
a function that would compute this indices!
```

```
NbPixelsInNeighborhood = n_elements(Neighborhood)
```

Now, if your image is rather small, you can do something like:

```
pixelIndices =  
  transpose(rebin(computeForPixel,nbValidPixel,NbPixelsInNeighborhood)) +  
  rebin(neighborhood,NbPixelsInNeighborhood,nbValidPixel)
```

```
meanNeighborhoodValue = total(image[pixelIndices],1) /  
float(NbPixelsInNeighborhood)
```

==> you now have the mean value for every pixel you have specified and you can easily compare it with the value of the pixel.

If your image is quite huge and you run out of memory, you can do a simple loop...

```
for i=0I, nbValidPixel do begin
    meanValue = mean(image[i+Neighborhood])
    ;save or compare this value.
endfor
```

Jean

Subject: Re: Filter image with moving window and averaging pixels

Posted by [Jean H.](#) on Wed, 31 Jan 2007 19:52:49 GMT

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> Neighborhood = [-2*dimX-3,-2*dimX-2, -2*dimX-1,-2*dimX,-2*dimX+1,
> -2*dimX+2,-2*dimX+3,-2,2,2*dimX-3,2*dimX-2, 2*dimX-1,2*dimX,2*dimX+1,
> 2*dimX+2,2*dimX+3] ;if you want to change the neighborhood size, write
> a function that would compute this indices!

oops, read -3 and +3 instead of -2 and +2!

Subject: Re: Filter image with moving window and averaging pixels

Posted by [David Fanning](#) on Wed, 31 Jan 2007 19:55:05 GMT

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rpertaub@gmail.com writes:

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> making a moving/sliding window (size, say 7x7) and compare the center
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> this.
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> Did I say I was new to IDL...?
> Thanks for all your help,
> my last query was met by very helpful replies, and I am grateful!

I think I would start with SMOOTH, or perhaps MEDIAN,
and then let us know how you are getting on. :-)

Cheers,

David

--

Subject: Re: Filter image with moving window and averaging pixels

Posted by [Jean H.](#) on Wed, 31 Jan 2007 20:23:11 GMT

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David Fanning wrote:

> rpertaub@gmail.com writes:

>

>

>> I need to filter some noise out of an image and was pointed towards
>> making a moving/sliding window (size, say 7x7) and compare the center
>> pixel with surrounding pixels right next to border (ignoring middle
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>> my last query was met by very helpful replies, and I am grateful!

>

>

> I think I would start with SMOOTH, or perhaps MEDIAN,
> and then let us know how you are getting on. :-)

>

> Cheers,

>

> David

... these 2 functions seems to be considering the pixels adjacent to the
center one... 'rp' wants to leave a gap of one pixel between the center
one and the ones used for the computation...

Jean
