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Subject: Re: uniform expansion

Posted by [Dick Jackson](#) on Sat, 09 Oct 2004 16:13:42 GMT

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"mark" <[mruschin@hotmail.com](mailto:mruschin@hotmail.com)> wrote in message  
news:a9116224.0410072307.6c4cb6d0@posting.google.com...

> Hello,  
> Say I have a random 2D shape (a blob) with an irregular border (all  
> pixel values equal to one). What I want to do is uniformly expand it  
> in all directions such that it's increased by a constant integer  
> number of pixels all around the perimeter. Subtraction of the  
> original shape from the new one should yield a thin border with a  
> constant width corresponding to the # of pixels the object was  
> enlarged by.  
> Does anyone have any suggestions... preferably of an IDL nature?  
>  
> Regards,  
> Mark

[comp.lang.idl removed from list, as I think you mean the IDL language from  
RSI]

Hi Mark,

In IDL, you will want the Dilate function. Here's an example:

; Make sample data

```
IDL> a = Dist(15) GT 8
```

```
IDL> print,a
```

```
0 0 0 0 0 0 0 0 0 0 0 0 0 0 0
0 0 0 0 0 0 0 0 0 0 0 0 0 0 0
0 0 0 0 0 0 0 0 0 0 0 0 0 0 0
0 0 0 0 0 0 0 0 0 0 0 0 0 0 0
0 0 0 0 0 0 0 1 1 0 0 0 0 0 0
0 0 0 0 0 0 0 1 1 0 0 0 0 0 0
0 0 0 0 0 0 1 1 1 1 0 0 0 0 0
0 0 0 0 1 1 1 1 1 1 1 0 0 0 0
0 0 0 0 1 1 1 1 1 1 1 1 0 0 0
0 0 0 0 0 0 1 1 1 1 0 0 0 0 0
0 0 0 0 0 0 0 1 1 0 0 0 0 0 0
0 0 0 0 0 0 0 1 1 0 0 0 0 0 0
0 0 0 0 0 0 0 0 0 0 0 0 0 0 0
0 0 0 0 0 0 0 0 0 0 0 0 0 0 0
0 0 0 0 0 0 0 0 0 0 0 0 0 0 0
```

```
; Make a simple square structuring element for enlarging blob
; by desired width
```

```
IDL> width = 2
IDL> structElement = Replicate(1B, width*2+1, width*2+1)
IDL> print, structElement
  1  1  1  1  1
  1  1  1  1  1
  1  1  1  1  1
  1  1  1  1  1
  1  1  1  1  1
```

```
; Perform dilation
```

```
IDL> b = Dilate(a, structElement)
IDL> print, b
  0  0  0  0  0  0  0  0  0  0  0  0  0  0  0
  0  0  0  0  0  0  0  0  0  0  0  0  0  0  0
  0  0  0  0  0  1  1  1  1  1  1  0  0  0  0
  0  0  0  0  0  1  1  1  1  1  1  0  0  0  0
  0  0  0  0  1  1  1  1  1  1  1  1  0  0  0
  0  0  1  1  1  1  1  1  1  1  1  1  1  1  0
  0  0  1  1  1  1  1  1  1  1  1  1  1  1  0
  0  0  1  1  1  1  1  1  1  1  1  1  1  1  0
  0  0  1  1  1  1  1  1  1  1  1  1  1  1  0
  0  0  1  1  1  1  1  1  1  1  1  1  1  1  0
  0  0  0  0  1  1  1  1  1  1  1  1  0  0  0
  0  0  0  0  0  1  1  1  1  1  1  1  0  0  0
  0  0  0  0  0  1  1  1  1  1  1  1  0  0  0
  0  0  0  0  0  0  0  0  0  0  0  0  0  0  0
```

```
IDL> print, b-a
  0  0  0  0  0  0  0  0  0  0  0  0  0  0  0
  0  0  0  0  0  0  0  0  0  0  0  0  0  0  0
  0  0  0  0  0  1  1  1  1  1  1  0  0  0  0
  0  0  0  0  0  1  1  1  1  1  1  0  0  0  0
  0  0  0  0  1  1  1  0  0  1  1  1  0  0  0
  0  0  1  1  1  1  1  0  0  1  1  1  1  1  0
  0  0  1  1  1  1  0  0  0  0  1  1  1  1  0
  0  0  1  1  0  0  0  0  0  0  0  1  1  1  0
  0  0  1  1  0  0  0  0  0  0  0  1  1  1  0
  0  0  1  1  1  1  0  0  0  1  1  1  1  1  0
  0  0  1  1  1  1  1  0  0  1  1  1  1  1  0
  0  0  0  0  1  1  1  0  0  1  1  1  0  0  0
  0  0  0  0  0  1  1  1  1  1  1  0  0  0  0
  0  0  0  0  0  1  1  1  1  1  1  0  0  0  0
  0  0  0  0  0  0  0  0  0  0  0  0  0  0  0
```

If this dilation is too 'blocky' you may want a structuring element that is 'rounder' (say, with the four corner elements as 0 instead of 1). For more info, have a look at Online Help for Dilate.

Hope this helps!

Cheers,

--

-Dick

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