Subject: Re: uniform expansion
Posted by Herbert Ramoser on Fri, 08 Oct 2004 10:10:33 GMT
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mark wrote:
> 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... preferrably of an IDL nature?

If I am not mistaken you are asking for morphological dilation:
help bwmorh

-Herbert

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> wrote in message
news:a9116224.0410072307.6c4cb6d0@posting.google.com...
> Hello,
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> 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... preferrably 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  1  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  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  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
```

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  0  1  1  0
  0  0  1  1  0  0  0  0  0  0  0  0  1  1  0
  0  0  1  1  1  1  0  0  0  0  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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