Subject: MORPH_HITORMISS "Don't care" pixels?
Posted by Andre on Sat, 02 Jul 2011 01:23:24 GMT
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Hello,

I'm experimenting with structuring elements to enhance the connectivity of linear networks extracted with image filtering. I read somewhere in the posts that trying to implement series of asymmetric structuring elements may yield series headaches. I can largely confirm that and here is what came out of my headache so far...

The image is a binary array where 0s mark the extracted lines and 1s mark the background, so I try to find 1-pixels that would serve to connect 0-pixels using IDL MORPH_HITORMISS.

Below there are some pieces of the code to find gaps with horizontal, vertical gaps and asymmetric neighbors but when it comes to the diagonal case I really get confused. In the following case for example I would like to to find the the connecting pixel in the middle.

```
0 1 1          0 1 1
1 1 1    ->    1 x 1
1 1 0          1 1 0
```

...easy it seems!
However, if for example one of the zeros already has diagonal neighbors I would like to avoid the connection:

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

Only a few pixels are interesting here and ignoring the rest could significantly reduce the number of possible combinations. I thought of something like that:

```
. . 1 . .          . . 1 . .
. 0 1 . .          . 0 1 . .
1 1 1 1 1    ->    1 1 x 1 1
. . 1 0 .          . . 1 0 .
. . 1 . .          . . 1 . .
```

In some tutorials on hit or miss morphology the possibility to ignore some positions ("Don't care" pixels) is given. Is there any possibility to do so with the IDL morpholghy commands?

Thanks in advance for any suggestion
Best wishes

Andre

```
; horizontal gaps
miss = [[0b,0b,0b],$
      [1b,0b,1b], $
      [0b,0b,0b]]

hit = [[1b,1b,1b], $
     [0b,1b,0b], $
     [1b,1b,1b]]

matches = matches + (morph_hitormiss(binary, hit, miss))

; vertical gaps
miss = rotate(miss,1)
hit = rotate(hit,1)
matches = matches + (morph_hitormiss(binary, hit, miss))

; asymetric gaps
miss = [[1b,0b,0b],$
      [0b,0b,1b], $
      [0b,0b,0b]]

hit = [[0b,1b,1b], $
     [1b,1b,0b], $
     [1b,1b,1b]]

 for i=0, 7 do begin
       missi=rotate(miss, i)
       hiti=rotate(hit, i)
       matches= matches + (morph_hitormiss(binary, hiti, missi))

 end
```