
Subject: Re: STANDARD DEVIATON

Posted by [Struan Gray](#) on Fri, 04 Aug 2000 07:00:00 GMT

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I think this works:

```
. *****  
;  
  
function smg_imageSD, image  
  
  fimage = float(image)  
  localmean = smooth(fimage, 3)  
  sum = (fimage - localmean)^2  
  sum = temporary(sum) + $  
    shift((fimage - shift(localmean, 1, 1))^2,-1,-1)  
  sum = temporary(sum) + $  
    shift((fimage - shift(localmean, 0, 1))^2, 0,-1)  
  sum = temporary(sum) + $  
    shift((fimage - shift(localmean,-1, 1))^2, 1,-1)  
  sum = temporary(sum) + $  
    shift((fimage - shift(localmean, 1, 0))^2,-1, 0)  
  sum = temporary(sum) + $  
    shift((fimage - shift(localmean,-1, 0))^2, 1, 0)  
  sum = temporary(sum) + $  
    shift((fimage - shift(localmean, 1,-1))^2,-1, 1)  
  sum = temporary(sum) + $  
    shift((fimage - shift(localmean, 0,-1))^2, 0, 1)  
  sum = temporary(sum) + $  
    shift((fimage - shift(localmean,-1,-1))^2, 1, 1)  
  
  sum = sqrt(temporary(sum)/8)  
  
  dims = size(sum, /dim)  
  sum[0,*] = 0.0  
  sum[* ,0] = 0.0  
  sum[dims(0)-1,*] = 0.0  
  sum[* ,dims(1)-1] = 0.0  
  
  return, sum  
end  
  
. *****  
;
```

You can generalise the shifting and put it into a double loop over the kernal indices. You can also deal with edge-effects (and avoid the zeroing of edge elements) if you creat an oversize image and pad it appropriately. On my machine this is approx ten times faster than Ben_imageSD.

Struan
