
Subject: Re: Calculate gradient
Posted by [pgrigis](#) on Fri, 12 Mar 2010 22:37:33 GMT
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Hi,

the simpler solution would be to use the "shift" function to calculate the dx and dy component of the gradient (whose norm is $\sqrt{dx^2+dy^2}$) - similarly to the one-dimensional case when you can compute the numerical derivative of x as $(x-\text{shift}(x,-1))/dx$.

However you should be careful doing that with non-smooth datasets.

Ciao,
Paolo

On Mar 12, 4:41 pm, mslarkin <enhlw...@gmail.com> wrote:
> Hi IDL experts,
> I have a 2-D array (2708x4060), containing reflectance data. Is it
> possible to calculate the reflectance gradient (i.e. the rate of
> reflectance change over distance or array grid) throughout the array,
> and then draw lines of equal gradient (note that they're NOT contour
> lines)?
> Thank you very much for your help!
> IDL beginner

Subject: Re: Calculate gradient
Posted by [R.G.Stockwell](#) on Fri, 12 Mar 2010 22:40:53 GMT
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Perhaps it would be better to use `Deriv()` or something like that, instead of differences.

cheers,
bob

>
> "Paolo" <pgrigis@gmail.com> wrote in message
> news:b7420af6-f104-4e00-968c-28afc378f8ac@g26g2000yqn.google groups.com...
> Hi,
>
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Subject: Re: Calculate gradient
Posted by [James\[2\]](#) on Sat, 13 Mar 2010 08:35:54 GMT
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You could use the SOBEL operator. This convolves the image with kernels like so:

```
-1 0 1   1 2 1  
-2 0 2   0 0 0  
-1 0 1  -1 -2 -1
```

to get approximations of the x and y gradient respectively. IDL's built-in SOBEL routine returns the magnitude, i.e. the sum of the absolute values of each of these convolutions. It would be simple to make the kernels yourself and use CONVOL if you want to keep the x and y gradients separate.

I don't know much about contour plotting in IDL, but the CONTOUR function is probably a good place to start...

On Mar 12, 1:41 pm, mslarkin <enhlw...@gmail.com> wrote:
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