
Subject: Check numerical derivatives

Posted by [geo85c](#) on Tue, 27 Jun 2017 10:30:58 GMT

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Hi there,

I wanted to calculate numerical derivatives of a function. I would like to check if the following are correct.

Consider the function F in \mathbb{R}^2 .

F is a 2D image.

I did the following:

```
dims = size(F, /dimensions)
```

```
nx = dims[0]
```

```
ny = dims[1]
```

```
xc = findgen(nx)
```

```
yc = findgen(ny)
```

Derivative with respect to x :

```
F_x = F[xc[1:nx-1],*]-F[xc[0:nx-2],*];first order deriv
```

```
F_xx = F_x[xc[1:nx-1],*]-F[xc[0:nx-2],*];second order deriv
```

```
F_y = F[* ,yc[1:ny-1]] - F[* ,yc[0:ny-2]]
```

```
F_xy = F_x[* ,yc[1:ny-1]] - F_x[* ,yc[0:ny-2]]
```

Then I wanted to differentiate F_{xy} with respect to x . I did the following:

```
F_xxy = F_xy[xind[1:nx-1],*] - F_xy[xind[0:nx-2],*]
```

Are the above correct?

Thanks.
