
Subject: Re: Index of a sector

Posted by [Craig Markwardt](#) on Thu, 05 Apr 2001 18:42:34 GMT

[View Forum Message](#) <> [Reply to Message](#)

"Pavel A. Romashkin" <pavel.romashkin@noaa.gov> writes:

> Hi,
>
> I tried to solve this yesterday, but it gave me a headache. I tried
> again today, but the headache is back and I did not get any closer to
> the solution. It is very simple. Well after all, what can you ask from a
> Mac user.
>
> If you have a (square) 2D array, let's say, DIST(200, 200), how to
> obtain the index of points enclosed by a sector of a given radius, drawn
> from the corner of the array (point [0, 0])? For instance, radius 50?
> So, I will have
>
> 0,1,2,...50
> 101,102,...,149 (or so)
> 201,202,...
> ...
> 501,...?

Complex geometric selections can be easy if you do the right thing.
Pavel, I'm sure that Med's suggestion can work for you but I thought I
would expand on it a little more for the general case.

You start by labelling your pixels in X and Y. You might have
physical labels attached to each pixel, or they could just be pixel
numbers.

```
x = findgen(200) & y = findgen(200) ;; Just an example here!
```

Now expand these vectors into matrices along their respective axes:

```
xx = x # (fltarr(200)+1) ;; Now XX labels every pixel in image  
yy = (fltarr(200)+1) # y ;; as does YY
```

Now compute anything you want in this coordinate system, say radius:

```
rr = sqrt(xx^2 + yy^2) ;; could compute theta as, th = atan(yy, xx)
```

And then do your selection:

```
wh = where(rr LE 50 AND xx GE 0 AND yy GE 0)
```

You are done. As you can see you can form very complex expressions
involving the radius and angle, and if you have multiple centers this

can be accomodated too. The above expansions of X into XX and Y into YY are also the basis of fitting images in MPFIT2DFUN.

Good luck,
Craig

--

Craig B. Markwardt, Ph.D. EMAIL: craigmnet@cow.physics.wisc.edu
Astrophysics, IDL, Finance, Derivatives | Remove "net" for better response
