
Subject: Re: Finding a points inside polygon
Posted by [James Kuyper](#) on Thu, 24 Oct 2002 14:47:38 GMT
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Gunho Sohn wrote:

>
> Dear All,
>
> I have a problem to determine whether a point (x,y) is inside the polygon.
> Simply I've used IDLanROI::ContainsPoints method in my code. However, it
> seems to make a serious problem. Please, check this problem together. I used
> following polygons and point
>
> polygon vertices (vx,vy):
> vx=[35.859278 55.591451 155.00000 155.00000]
> vy=[0.00000000 0.00000000 19.279154 23.105984]
>
> point (x,y):
> x=122.87897 y=13.049367
>
> When I simply coded this as follows, it printes as 0 which means this point
> is located outside of polygon. But, it is not!

```
IDL> vx = [35.859278, 55.591451, 155.00000, 155.00000, 35.859278]  
IDL> vy = [0.00000000, 0.00000000, 19.279154, 23.105984, 0.000000]
```

I added the extra point on the end, to close the polygon. ContainsPoint doesn't need that closure, but the follow commands do:

```
IDL> plot,vx,vy  
IDL> plots,[122.87897],[13.049367]
```

That's ambiguous - the point seems to be right on the edge.

```
IDL> plot,vx,vy,xrange=[122,123],yrange=[13,14]  
IDL> plots,[122.87897],[13.049367],psym=1
```

That doesn't help; it's still ambiguous.

```
IDL> plot,vx,vy,xrange=[122.87,122.88],yrange=[13.04,13.05]  
IDL> plots,[122.87897],[13.049367]
```

Finally! That looks to me like the point is slightly, but definitely, outside of the polygon. ContainsPoint is apparantly correct.

Subject: Re: Finding a points inside polygon

James Kuyper wrote:

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By the way, the range of values you were using made me wonder - by any chance are those values geographic latitudes and longitudes? In that case, you have to be very careful about how you define your polygon edges. Each map projection constitutes a different definition of what it means to be a "straight line". The most natural definition is that the edges are great circle arcs. In that case, to see the boundaries of your polygon properly, you need to use the gnomonic projection, because it's the only one that maps all great circle arcs as straight lines. Try the following:

```
IDL> map_set,21.0,92.0,/gnomic,/continents,/grid,/label,scale=2e8
IDL> oplot,vx,vy
```

That will give you the overview of the problem. To get down to the details, use:

```
IDL> map_set,13.049367,122.87897,/gnomic,/hires,/grid,/label,scale=2e7
IDL> oplot,vx,vy
IDL> plots,122.87897,13.049367, psym=2
```

So, if these are latitude-longitude values connected by great circle arcs, the specified point is not merely outside the polygon, it's hundreds of miles outside the polygon.

Subject: Re: Finding a points inside polygon
Posted by [Pavel A. Romashkin](#) on Thu, 24 Oct 2002 21:06:37 GMT
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I plotted the polygon and the point as you specify. It looks to me that the point does lie outside the polygon, some 0.0001x and 0.001y to the right and below the border, to be exact. Check the coordinates, make sure the floating point precision does not play a joke on you.

David's INSIDE returns zero also.

Make sure your polygon is closed:

```
vx = [vx, vx[0]]
```

```
vy = [vy, vy[0]]
```

```
IDL> print, inside(x, y, vx, vy)
```

```
0
```

So I suspect that there is nothing wrong with the ROI object in this case.

Good luck,

Pavel

Gunho Sohn wrote:

>

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> vy=[0.00000000 0.00000000 19.279154 23.105984]

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>

> When I simply coded this as follows, it prints as 0 which means this point
> is located outside of polygon. But, it is not!

> o_poly=obj_new('IDLanROI', vx,vy)

> print, o_poly->ContainsPoints(x,y)

>

> I compared this using fanning's inside.pro, as I expected 'inside.pro' said
> this point is in the polygon.

>

> Do I something wrong using IDLanROI object?

>

> I hope to hear anything from you soon.

>

> Many thanks,

>

> Gunho
