
Subject: Polygon filling oddities

Posted by [Mark Hadfield](#) on Thu, 04 Oct 2001 00:47:30 GMT

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Hello all

I have been experimenting with different methods of generating images representing filled polygons. (My motivation comes from attempts at drawing filled coastlines on various devices.) I have found some oddities when using the POLYFILLV routine and the IDLanROI object. Before I take this issue to RSI tech support I thought I'd show it to the group and ask whether what I am doing makes sense.

The procedure below (and attached) illustrates the problem. It displays a 500 x 500 image with a centred circle of radius 300 using several methods, controlled by the option argument:

- 0 Call POLYFILL directly to window
- 1 Use POLYFILLV to create an image then display image
- 2 Use POLYFILL to create the image in a Z buffer then display image
- 3 Create an IDLanROI object and use its ComputeMask method to create an image, then display image.

These all seem to work and to give identical results, except perhaps for some minor differences around the edge of the polygon.

The routine also accepts a SHIFT keyword that lets the caller shift the circle around on the image plane. With options 0 and 2 this works exactly as expected: as SHIFT is increased the circle moves to the edge of the window and eventually disappears. But with options 1 and 3 the results are unexpected: as SHIFT is made more negative the circle vanishes abruptly when it passes a threshold.

For example "mgh_test_polyfill, 1, -143" (using POLYFILLV) produces a circle with its edge not quite touching the lower left corner of the image and "mgh_test_polyfill, 1, -144" produces a blank image. Similarly "mgh_test_polyfill, 3, -101" (using IDLanROI::ComputeMask) produces a circle with its edges touching the bottom and left sides of the image and "mgh_test_polyfill, 3, -101" produces a blank image.

I guess POLYFILLV and IDLanROI are intended for dealing with regions of interest on images and it is anticipated that the vertices of the ROI will be in the positive quarter-plane. But I don't see any reason why they shouldn't be able to work with negative vertex coordinates.

So is what I've found a bug or a feature? Can others reproduce my results? (I've been using IDL 5.4.)

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----- mgh_test_polyfill -----

; Testing various methods of polygon filling

pro mgh_test_polyfill, option, SHIFT=shift

compile_opt IDL2

if n_elements(option) eq 0 then option = 0

if n_elements(shift) eq 0 then shift = 0

if n_elements(shift) eq 1 then shift = [shift,shift]

; Create a window dimensioned [500,500]

window, XSIZE=500, YSIZE=500

; Set up coordinates defining a circle, radius 150, centred at 250

n_vert = 50

angle = 2.*!pi*findgen(n_vert+1)/float(n_vert)

x = 250 + 150*sin(angle)

y = 250 + 150*cos(angle)

; Shift the circle

x = x + shift[0]

y = y + shift[1]

; Generate & display an image using different methods depending on
option argument

case option of

0: polyfill, x, y, /DEVICE

1: begin

image = replicate(0B, 500, 500)

p = polyfillv(x, y, 500, 500)

if min(p) gt 0 then image[p] = 255B

tv, image

end

2: begin

 dname = !d.name

 set_plot, 'Z'

 device, SET_RESOLUTION=[500,500]

 erase

 polyfill, x, y, /DEVICE

 image = tvrd()

 set_plot, dname

 tv, image

end

3: begin

 roi = obj_new('IDLanROI', x, y)

 image = roi->ComputeMask(DIMENSIONS=[500,500])

 obj_destroy, roi

 tv, image

end

endcase

end

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