Subject: Two Lines Crossing Problem
Posted by Jye on Thu, 10 Dec 2009 01:51:45 GMT
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Hi Everyone,

I currently have a small script that determines if a line projected out from a point on an array cross another defined line. Plus it also calculates the angle of intersection. Below is an example of how Ive been doing it.. and probably a good example of how not to do it. My question (challenge) is what would be a more elegant approach to this problem? and as a result decrease the processing time?

Cheers
Jye

```
PRO CROSS_AND_ANGLE

; Array Dimensions
X = 400
Y = 400
; Point on the array
pX = 10
pY = 30
;  Coordinates defining the ends of a line
x1 = 200
x2 = 200
y1 = 100
y2 = 300

Cross = FINDGEN(X, Y) * 0
Angle = FINDGEN(X, Y) * 0

p = [pX, pY]
L = [x1, x2, y1, y2]

Xarray = REBIN(FINDGEN(X, 1), X, Y)
Yarray = REBIN(FINDGEN(1, Y), X, Y)

x1 = L[0] * 1.
y1 = L[2] * 1.
x2 = L[1] * 1.
IF x2 EQ x1 THEN x2 += 1
y2 = L[3] * 1.

u1 = p[0] * 1.
v1 = p[1] * 1.
u2 = Xarray
```

```
u2[where(u2 eq u1)] += 1
v2 = Yarray

b1 = (y2 - y1) / (x2 - x1)
b2 = (v2 - v1) / (u2 - u1)
a1 = y1 - b1 * x1
a2 = v1 - b2 * u1
xi = -(a1 - a2)/(b1 - b2)
yi = a1 + b1 * xi

Index = where( (x1-xi)*(xi-x2) GE 0 AND (u1-xi)*(xi-u2) GE 0 AND (y1-
yi)*(yi-y2) GE 0 AND (v1-yi)*(yi-v2) GE 0 )
IF Index[0] NE -1 THEN BEGIN
 Cross[Index] = 1
 Angle[Index] = (ABS(ABS(ATAN(b1)*180/!PI - ATAN(b2)*180/!PI) - 90))
[Index]
ENDIF

window, 0, xsize=X, ysize=Y
tvscl, Cross
window, 1, xsize=X, ysize=Y
tvscl, Angle

END
```