
Subject: Re: Point of intersection

Posted by [Juggernaut](#) on Wed, 30 Jul 2008 15:55:14 GMT

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

On Jul 30, 11:46 am, kishore1...@gmail.com wrote:

> Hello,
>
> I hope this is simple question for experienced guys.
> How to find out perfect point of intersection of x value and
> corresponding y value.
> For example:
> x1=[0.1,0.2,0.6,0.7]
> x2=[0.5,0.4,0.5,0.3]
> y=[1,2,3,4]
> plot,x1,y,xran=[0.,0.8]
> oplot,x2,y
>
> In this, two plots are intersection at one point, how to find out that
> particular intersection x and y value.
>
> Thanking you,
>
> Kishore

Well if the y values are always equal like you have there then they will intersect where the x values are equal. Unless I'm thinking the wrong way? Which is entirely possible....

Subject: Re: Point of intersection

Posted by [Juggernaut](#) on Wed, 30 Jul 2008 16:11:27 GMT

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

On Jul 30, 11:55 am, Bennett <juggernaut...@gmail.com> wrote:

> On Jul 30, 11:46 am, kishore1...@gmail.com wrote:
>
>
>
>> Hello,
>
>> I hope this is simple question for experienced guys.
>> How to find out perfect point of intersection of x value and
>> corresponding y value.
>> For example:
>> x1=[0.1,0.2,0.6,0.7]
>> x2=[0.5,0.4,0.5,0.3]
>> y=[1,2,3,4]
>> plot,x1,y,xran=[0.,0.8]

>> oplot,x2,y
>
>> In this, two plots are intersection at one point, how to find out that
>> particular intersection x and y value.
>
>> Thanking you,
>
>> Kishore
>
> Well if the y values are always equal like you have there then they
> will intersect where the x values are equal. Unless I'm thinking the
> wrong way? Which is entirely possible....

Think I may have jumped the gun there...what you really want to do since your dataset does not have any x that match (what I neglected to see because I'm not the brightest bulb) is to interpolate both your x's over a longer range and then find where they match within some error...like the following

```
x1_int = interpol(x1, 100)
x2_int = interpol(x2, 100)
location = where(abs(x1_int-x2_int) LT 0.001) ; - Where you can set
your error to whatever it is that you want..which I assume will depend
on the degree to which you interpolate
```

For your case this gives the intersection to be 0.4666

Hope this helps get you in the right direction....as well as myself

Subject: Re: Point of intersection
Posted by [Bob\[3\]](#) on Wed, 30 Jul 2008 16:14:05 GMT
[View Forum Message](#) <> [Reply to Message](#)

On Jul 30, 11:46 am, kishore1...@gmail.com wrote:

> Hello,
>
> I hope this is simple question for experienced guys.
> How to find out perfect point of intersection of x value and
> corresponding y value.
> For example:
> x1=[0.1,0.2,0.6,0.7]
> x2=[0.5,0.4,0.5,0.3]
> y=[1,2,3,4]
> plot,x1,y,xran=[0.,0.8]
> oplot,x2,y
>
> In this, two plots are intersection at one point, how to find out that

> particular intersection x and y value.
>
> Thanking you,
>
> Kishore

The lines cross where $(x1(i)-x2(i))$ changes sign.
ie. between the indices given by $\text{MAX}(\text{WHERE}((x2-x1)>0))$ and
 $\text{MIN}(\text{WHERE}((x2-x1)<0))$

The exact intersection can then be found by determining the
intersection of the 2 straight lines defined by those points.

Bob.

Subject: Re: Point of intersection
Posted by [Wox](#) on Thu, 31 Jul 2008 08:51:15 GMT
[View Forum Message](#) <> [Reply to Message](#)

On Wed, 30 Jul 2008 08:46:30 -0700 (PDT), kishore1818@gmail.com wrote:

> ...how to find out that
> particular intersection x and y value.

The could below works for any x and y values but might be simplified
in your case (special y values).

```
function segmentintersect,L1x,L1y,L2x,L2y,xy=xy
```

```
; code:  
; 0: no intersecting  
; 1: intersect in 1 point  
; 2: parallel  
; 3: coincident
```

```
denom=float(L2y[1]-L2y[0])*(L1x[1]-L1x[0])-(L2x[1]-L2x[0])*( L1y[1]-L1y[0])  
numa=(L2x[1]-L2x[0])*(L1y[0]-L2y[0])-(L2y[1]-L2y[0])*(L1x[0] -L2x[0])  
numb=(L1x[1]-L1x[0])*(L1y[0]-L2y[0])-(L1y[1]-L1y[0])*(L1x[0] -L2x[0])
```

```
if denom eq 0 then code= (numa eq 0 and numb eq 0)+2 $  
else begin  
  ua = numa / denom  
  ub = numb / denom
```

```

code= ua ge 0 and ua le 1 and ub ge 0 and ub le 1
if code then $
xy=[L1x[0]+ua*(L1x[1]-L1x[0]),L1y[0]+ua*(L1y[1]-L1y[0])]
endelse

```

```

return,code
end;function segmentintersect

```

```

;%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%
%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%

```

```

pro segtest

```

```

x1=[0.1,0.2,0.6,0.7]
x2=[0.5,0.4,0.5,0.3]
y1=[1,2,3,4]
y2=y1

```

```

window
plot,x1,y1,psym=-2
oplot,x2,y2,psym=-2

```

```

n=n_elements(x2)
y2_1=interpol(y1,x1,x2)
b=y2_1 gt y2
interval=where(b[0:n-2]-b[1:*],ct)
if ct ne 0 then begin
xy=fltarr(2,ct)
for i=0,ct-1 do begin
j=interval[i]
L2x=x2[j:j+1]
L2y=y2[j:j+1]
j=value_locate(x1,L2x)
k=0
repeat begin
L1x=x1[j[k]:j[k]+1]
L1y=y1[j[k]:j[k]+1]
code=segmentintersect(L1x,L1y,L2x,L2y,xy=tmp)
b=code eq 1
if b then begin
xy[*,i]=tmp
plots,[tmp[0],tmp[0]],,[0,tmp[1]],/data
endif
k++
endrep until b or (k eq 2)
endfor
endif

```

end;pro segtest

;%%%%%%%%%%
%%%%%%%%% %%%%%%%%%%

Subject: Re: Point of intersection
Posted by [Wox](#) on Thu, 31 Jul 2008 08:54:04 GMT
[View Forum Message](#) <> [Reply to Message](#)

On Thu, 31 Jul 2008 10:51:15 +0200, Wox <nomail@hotmail.com> wrote:

> On Wed, 30 Jul 2008 08:46:30 -0700 (PDT), kishore1818@gmail.com wrote:
>
>> ...how to find out that
>> particular interesection x and y value.
>
>
> The could below works for any x and y values but might be simplified
> in your case (special y values).
<snip>

Note that xy will contain all intersection points (i.e. 1 point in your case).

Subject: Re: Point of intersection
Posted by [Wox](#) on Thu, 31 Jul 2008 08:58:26 GMT
[View Forum Message](#) <> [Reply to Message](#)

On Thu, 31 Jul 2008 10:51:15 +0200, Wox <nomail@hotmail.com> wrote:

> On Wed, 30 Jul 2008 08:46:30 -0700 (PDT), kishore1818@gmail.com wrote:
>
>> ...how to find out that
>> particular interesection x and y value.
>
>
> The could below works for any x and y values but might be simplified
> in your case (special y values).

could = code ;-)

I knew I posted this before:

<http://objectmix.com/idl-pvwave/343059-there-quick-way-find-intersection-two-lines.html#post1247556>

Subject: Re: Point of intersection

Posted by [kishore1818](#) on Thu, 31 Jul 2008 13:42:35 GMT

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

On Jul 30, 1:11 pm, Bennett <juggernaut...@gmail.com> wrote:

> On Jul 30, 11:55 am, Bennett <juggernaut...@gmail.com> wrote:

>

>

>

>> On Jul 30, 11:46 am, kishore1...@gmail.com wrote:

>

>>> Hello,

>

>>> I hope this is simple question for experienced guys.

>>> How to find out perfect point of intersection of x value and

>>> corresponding y value.

>>> For example:

>>> x1=[0.1,0.2,0.6,0.7]

>>> x2=[0.5,0.4,0.5,0.3]

>>> y=[1,2,3,4]

>>> plot,x1,y,xran=[0.,0.8]

>>> oplot,x2,y

>

>>> In this, two plots are intersection at one point, how to find out that

>>> particular intersection x and y value.

>

>>> Thanking you,

>

>>> Kishore

>

>> Well if the y values are always equal like you have there then they

>> will intersect where the x values are equal. Unless I'm thinking the

>> wrong way? Which is entirely possible....

>

> Think I may have jumped the gun there...what you really want to do

> since your dataset does not have any x that match (what I neglected to

> see because I'm not the brightest bulb) is to interpolate both your

> x's over a longer range and then find where they match within some

> error...like the following

>

> x1_int = interpol(x1, 100)

> x2_int = interpol(x2, 100)

> location = where(abs(x1_int-x2_int) LT 0.001) ; - Where you can set

> your error to whatever it is that you want..which I assume will depend

> on the degree to which you interpolate

>

> For your case this gives the intersection to be 0.4666

>

> Hope this helps get you in the right direction....as well as myself

Hi Bennett
Thanks for nice suggestion.

Kishore

Subject: Re: Point of intersection
Posted by [kishore1818](#) on Thu, 31 Jul 2008 13:44:09 GMT
[View Forum Message](#) <> [Reply to Message](#)

On Jul 31, 5:51 am, Wox <nom...@hotmail.com> wrote:

> On Wed, 30 Jul 2008 08:46:30 -0700 (PDT), kishore1...@gmail.com wrote:

>> ...how to find out that

>> particular interesection x and y value.

>

> The could below works for any x and y values but might be simplified
> in your case (special y values).

>

> function segmentintersect,L1x,L1y,L2x,L2y,xy=xy

>

> ; code:

> ; 0: no intersecting

> ; 1: intersect in 1 point

> ; 2: parallel

> ; 3: coincident

>

> denom=float(L2y[1]-L2y[0])*(L1x[1]-L1x[0])-(L2x[1]-L2x[0])*(L1y[1]-L1y[0])

> numa=(L2x[1]-L2x[0])*(L1y[0]-L2y[0])-(L2y[1]-L2y[0])*(L1x[0] -L2x[0])

> numb=(L1x[1]-L1x[0])*(L1y[0]-L2y[0])-(L1y[1]-L1y[0])*(L1x[0] -L2x[0])

>

> if denom eq 0 then code= (numa eq 0 and numb eq 0)+2 \$

> else begin

> ua = numa / denom

> ub = numb / denom

>

> code= ua ge 0 and ua le 1 and ub ge 0 and ub le 1

> if code then \$

> xy=[L1x[0]+ua*(L1x[1]-L1x[0]),L1y[0]+ua*(L1y[1]-L1y[0])]

> endelse

>

> return,code

> end;function segmentintersect

>

;%%%%%%%%%%%%%%
%%%%%%%%%%%%%% %%%%%%%%%%%%%%%

>

> pro segtest

```

>
> x1=[0.1,0.2,0.6,0.7]
> x2=[0.5,0.4,0.5,0.3]
> y1=[1,2,3,4]
> y2=y1
>
> window
> plot,x1,y1,psym=-2
> oplot,x2,y2,psym=-2
>
> n=n_elements(x2)
> y2_1=interpol(y1,x1,x2)
> b=y2_1 gt y2
> interval=where(b[0:n-2]-b[1:*],ct)
> if ct ne 0 then begin
>     xy=fltarr(2,ct)
>     for i=0,ct-1 do begin
>         j=interval[i]
>         L2x=x2[j:j+1]
>         L2y=y2[j:j+1]
>         j=value_locate(x1,L2x)
>         k=0
>         repeat begin
>             L1x=x1[j[k]:j[k]+1]
>             L1y=y1[j[k]:j[k]+1]
>             code=segmentintersect(L1x,L1y,L2x,L2y,xy=tmp)
>             b=code eq 1
>             if b then begin
>                 xy[*,i]=tmp
>                 plots,[tmp[0],tmp[0]],,[0,tmp[1]],/data
>             endif
>             k++
>         endrep until b or (k eq 2)
>     endfor
> endif
>
> end;pro segtest
>
;%%%%%%%%%%
%%%%%%%%%% %%%%%%%%%%%

```

Hi,

Thanks for your program. This is useful for multiple intersection of two lines. It is very interesting.

Kishore