
Subject: Re: density color schemes in IDL8 scatterplots
Posted by [Paul Van Delst\[1\]](#) on Wed, 11 Jul 2012 15:58:35 GMT
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Hello,

On 07/11/12 10:22, patrickdgriffiths@gmail.com wrote:

> Hi,
>
> does anyone know if there is any way to use density color schemes for scatterplots using the new IDL8 PLOT functions?
> As this is a standard in ENVI scatterplot visualization, I would be surprised if it was not possible using IDL8
> graphics. I could not find anything so far, however... Thanks,

I will assume you mean a density map, or pdf, when you say "density color scheme". If not, ignore the following.

I recently had to do just this.

After creating a graphics window, referenced in a structure as gData.wref, and my own RGB colour table, referenced in an array called "rgb_table", this is how I display the image:

```
; Compute the 2-D histogram for x-y scatterplot data
qc_nbc_hist_2d = HIST_2D(x, y, BIN1=x_binsize, BIN2=y_binsize, $
                        MIN1=x_min, MAX1=x_max, $
                        MIN2=y_min, MAX2=y_max)

; Determine the x- and y-axis vectors
hist_info = SIZE(qc_nbc_hist_2d, /STRUCTURE)
n_x = hist_info.DIMENSIONS[0]
n_y = hist_info.DIMENSIONS[1]
x_locations = x_min + FINDGEN(n_x)*x_binsize
y_locations = y_min + FINDGEN(n_y)*y_binsize

; Display the axes for the 2-D histogram image
pi = PLOT( [x_locations[0], x_locations[n_x-1]], [y_locations[0], y_locations[n_y-1]], $
          /NODATA, $
          TITLE='insert title here', $
          XTITLE='insert xtitle here', $
          YTITLE='insert ytitle here', $
          CURRENT=gData.wref )

; Determine scaling factors for image
result = pi.CONVERTCOORD( pi.xrangle, pi.yrange, /DATA, /TO_DEVICE )
```

```
dx=result[0,1]-result[0,0]
dy=result[1,1]-result[1,0]
```

```
; Display scaled image
im = IMAGE( CONGRID(qc_nbc_hist_2d, dx, dy, /CENTER), $
            LINDGEN(dx), $
            LINDGEN(dy), $
            AXIS_STYLE=0, $
            RGB_TABLE=rgb_table, $
            CURRENT=gData.wref )
```

```
; Ensure the axes are visible over image
pi.Order, /BRING_TO_FRONT
```

Here's an example of the output:

<http://ftp.emc.ncep.noaa.gov/jcsda/CRTM/amsua-ch1.png>

The left-most plots are the regular scatterplots. The rightmost plots are the corresponding 2-D density map.

I do think this is a rather obtuse way of displaying an image with useful, numbered axes and I was going to post to this newsgroup on how to do this in a "better" way. Well, a more intuitive way at least.

I think the image should be "axis-aware" so the user doesn't have to dick around with the whole CONVERTCOORD thing. And it may be that there is a way to do that.... but I sure as hell couldn't find out how from the IDL documentation.

cheers,

paulv

Subject: Re: density color schemes in IDL8 scatterplots
Posted by [David Fanning](#) on Wed, 11 Jul 2012 16:04:24 GMT
[View Forum Message](#) <> [Reply to Message](#)

Paul van Delst writes:

> I do think this is a rather obtuse way of displaying an image with useful, numbered axes and I was going to post to this
> newsgroup on how to do this in a "better" way. Well, a more intuitive way at least.
>
> I think the image should be "axis-aware" so the user doesn't have to dick around with the whole CONVERTCOORD thing. And
> it may be that there is a way to do that.... but I sure as hell couldn't find out how from the IDL

documentation.

I'll make up something intuitive for you this afternoon in
Coyote Graphics, Paul. ;-)

Cheers,

David

--

David Fanning, Ph.D.

Fanning Software Consulting, Inc.

Coyote's Guide to IDL Programming: <http://www.idlcoyote.com/>

Sepore ma de ni thui. ("Perhaps thou speakest truth.")

Subject: Re: density color schemes in IDL8 scatterplots
Posted by [Paul Van Delst\[1\]](#) on Wed, 11 Jul 2012 16:32:13 GMT
[View Forum Message](#) <> [Reply to Message](#)

Hello,

On 07/11/12 12:04, David Fanning wrote:

> Paul van Delst writes:

>

>> I do think this is a rather obtuse way of displaying an image with useful, numbered axes and I was going to post to this

>> newsgroup on how to do this in a "better" way. Well, a more intuitive way at least.

>>

>> I think the image should be "axis-aware" so the user doesn't have to dick around with the whole CONVERTCOORD thing. And

>> it may be that there is a way to do that.... but I sure as hell couldn't find out how from the IDL documentation.

>

> I'll make up something intuitive for you this afternoon in

> Coyote Graphics, Paul. ;-)

There's no need - I used Coyote Graphics (and your book) to do it first so I knew what was possible and what it could look like. That, quite literally, took about an hour... and most of that time was spent re-reading your chapters on image display, colours, colorbars etc. Writing the code was trivial.

Then, because I'm a stubborn masochistic procrastinator, I duplicated the effort in the new function graphics. THAT took about 4 days (and it would've taken much much longer if not for your article on function graphics

colourbar display on
your webpage).

And I'm still struggling with the \$^@&#* colourbar in function graphics. When I display it horizontally, everything is great. When I display it vertically, the function suddenly decides to ignore my TICKNAME labels and just use the byte values of the image.... except for the first tick - that one is labelled correctly. Argh!

<...deep breathing...counting to 10....>

Anyhoo...

cheers,

paulv

Subject: Re: density color schemes in IDL8 scatterplots
Posted by [David Fanning](#) on Wed, 11 Jul 2012 16:38:58 GMT
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Paul van Delst writes:

> And I'm still struggling with the \$^@&#* colourbar in function graphics. When I display it horizontally, everything is
> great. When I display it vertically, the function suddenly decides to ignore my TICKNAME labels and just use the byte
> values of the image.... except for the first tick - that one is labelled correctly. Argh!

I wouldn't worry too much about it. I think it is still broken for doing most scientific work, and will be until they detach from a "target" in IDL 9.3. (Assuming they have any users left, of course.)

You can see my frustrations with the IDL 8.2 color bar in my comments to Mark Piper's blog article here:

[http://idldatapoint.com/2012/06/28/discrete-colorbar-in-new- graphics/](http://idldatapoint.com/2012/06/28/discrete-colorbar-in-new-graphics/)

Cheers,

David

--

David Fanning, Ph.D.
Fanning Software Consulting, Inc.

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Subject: Re: density color schemes in IDL8 scatterplots
Posted by [patrickdgriffiths](#) on Wed, 11 Jul 2012 17:10:48 GMT
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Thank you Paul, that is pretty much exactly what I meant. Will try that out soon..

Subject: Re: density color schemes in IDL8 scatterplots
Posted by [David Fanning](#) on Wed, 11 Jul 2012 19:11:28 GMT
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Paul van Delst writes:

> There's no need - I used Coyote Graphics (and your book) to do it first so I knew what was possible and what it could
> look like. That, quite literally, took about an hour... and most of that time was spent re-reading your chapters on
> image display, colours, colorbars etc. Writing the code was trivial.

Yikes! Amazon just placed an order for more books in the middle of the week. Can't remember when that last happened. Where can I send your commission check?

Cheers,

David

--

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Subject: Re: density color schemes in IDL8 scatterplots
Posted by [Paul Van Delst\[1\]](#) on Wed, 11 Jul 2012 19:36:57 GMT
[View Forum Message](#) <> [Reply to Message](#)

On 07/11/12 15:11, David Fanning wrote:

> Paul van Delst writes:
>

>> There's no need - I used Coyote Graphics (and your book) to do it first so I knew what was possible and what it could
>> look like. That, quite literally, took about an hour... and most of that time was spent re-reading your chapters on
>> image display, colours, colorbars etc. Writing the code was trivial.
>
> Yikes! Amazon just placed an order for more books
> in the middle of the week. Can't remember when that
> last happened. Where can I send your commission check?

Hmmm.... will this be like that Seinfeld episode where he has to endorse lots of cheques each written for about 5¢½?

:o)

Subject: Re: density color schemes in IDL8 scatterplots
Posted by [David Fanning](#) on Wed, 11 Jul 2012 19:56:28 GMT
[View Forum Message](#) <> [Reply to Message](#)

Paul van Delst writes:

> Hmmm.... will this be like that Seinfeld episode where he has to endorse lots of cheques each written for about 5¢?

Probably less than that if I am going to make any money myself. ;-)

David

--

David Fanning, Ph.D.
Fanning Software Consulting, Inc.
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