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Subject: Re: Histogram shift

Posted by [David Fanning](#) on Tue, 22 Feb 2005 01:39:36 GMT

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Michael Wallace writes:

- > Okay, another object graphics question for everyone. Is there an easy
- > way to shift a histogram over such that the bars are left justified with
- > the data point rather than having the bars centered on the data point?
- >
- > I realize that I could shift the data itself and then draw the
- > histogram, but there's a voice in the back of my mind that tells me
- > "you're gonna shoot yourself in the foot, kid." Is there some other way
- > to left justify the plot?

I thought the whole point of object graphics was that you could do anything you wanted to do if you were willing to spend enough time with inadequate documentation to do it?

Cheers,

David

P.S. I don't have any ideas about how to do this in object graphics. About a fourth of my book is about how to do it in direct graphics. Presumably some of those techniques could be extended to object graphics.

Here is the relevant part of the code:

```
; Calculate the histogram.

histdata = Histogram(image, Binsize=binsize, Max=Max(image), $
Min=Min(image))

; Have to fudge the bins and histdata variables to get the
; histogram plot to make sense.

npts = N_Elements(histdata)
halfbinsize = binsize / 2.0
bins = Findgen(N_Elements(histdata)) * binsize + Min(image)
binsToPlot = [bins[0], bins + halfbinsize, bins[npts-1] + binsize]
histdataToPlot = [histdata[0], histdata, histdata[npts-1]]
xrange = [Min(binsToPlot), Max(binsToPlot)]

; Plot the histogram of the display image. Axes first.
```

```
Plot, binsToPlot, histdataToPlot, $
  Background=backcolor, $
  Charsize=thisCharsize, $
  Color=axiscolor,
  Max_Value=max_value, $
  NoData=1, $
  Position=histoPos, $
  Title='Image Histogram', $
  XRange=xrange, $
  XStyle=1, $
  XTickformat='(I6)', $
  XTitle='Image Value', $
  YMinor=1, $
  YRange=[0,max_value], $
  YStyle=1, $
  YTickformat='(I6)', $
  YTitle='Pixel Density', $
  _Extra=extra
```

; Overplot the histogram data in the data color.

```
OPlot, binsToPlot, histdataToPlot, PSym=10, Color=dataColor
```

; Make histogram boxes by drawing lines in data color.

```
FOR j=1L,N_Elements(bins)-2 DO BEGIN
  PlotS, [bins[j], bins[j+1]], [!Y.CRange[0], histdata[j] < max_value], $
  Color=dataColor
ENDFOR
```

--

David Fanning, Ph.D.

Fanning Software Consulting, Inc.

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

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Subject: Re: Histogram shift

Posted by [Michael Wallace](#) on Tue, 22 Feb 2005 03:07:26 GMT

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> I thought the whole point of object graphics was that  
> you could do anything you wanted to do if you were  
> willing to spend enough time with inadequate documentation  
> to do it?

I've already been doing that. Nevertheless, I managed to have a great IDL Object Graphics victory over the weekend and I'm not about to embark on another epic journey back into the bowels of the language so soon.

There are some laurels that need to be rested on first! :-)

- > P.S. I don't have any ideas about how to do this in
- > object graphics. About a fourth of my book is about
- > how to do it in direct graphics. Presumably some of
- > those techniques could be extended to object graphics.

What you lined out was about the only think I could think of -- rolling your own histogram drawing routine. There might come a day when I try such a thing, but today's not the day -- I need to get comfy with those laurels and get my energy back. :-)

-Mike

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Subject: Re: Histogram shift  
Posted by [David Fanning](#) on Tue, 22 Feb 2005 03:50:28 GMT  
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Michael Wallace writes:

- > I've already been doing that. Nevertheless, I managed to have a great
- > IDL Object Graphics victory over the weekend and I'm not about to embark
- > on another epic journey back into the bowels of the language so soon.
- > There are some laurels that need to be rested on first! :-)

Well, do tell! We are starved for good news the past week or so. :-)

Cheers,

David

--  
David Fanning, Ph.D.  
Fanning Software Consulting, Inc.  
Coyote's Guide to IDL Programming: <http://www.dfanning.com/>

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Subject: Re: Histogram shift  
Posted by [Michael Wallace](#) on Tue, 22 Feb 2005 06:44:10 GMT  
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- > Well, do tell! We are starved for good news the past week
- > or so. :-)

Well, if you really want to know about my world ...

I'd always hated setting hard values for VIEWPLANE\_RECT because there was invariably one case that'd throw a wrench into the works and cause your once nice looking plot to look now like crap. For me, it was always my Y axis that'd get pushed off the left side of the viewplane. Given that you're using the same font sizes all the time, you can pretty easily calculate the top and bottom of the viewplane. However, you never really know where the left side is going to end up because the positioning of the text is totally dependent on the length of the tick mark strings on the Y axis. A longer string means your Y title is further out. And if you ever decided that Courier looks better than Helvetica, there you were having to redo the viewplane numbers.

Long story short, I created a function which takes in x and y data vectors as well as title text strings, various fonts, dimensions and a few other inputs and spits out an IDLgrWindow or IDLgrBuffer with the appropriate view, models, IDLgrPlot, etc. stored in the GRAPHICS\_TREE. The VIEWPLANE\_RECT is calculated based on the positioning of all the graphics objects and so it's never too big or too small. Everything fits just right. I've also now created an equivalent function for an IDLgrImage rather than IDLgrPlot.

And since you're so starved, here's another one but it doesn't deal with Object Graphics. I needed to use the aforementioned plotting from Java. I didn't want to use the IDL-Java Bridge because the Bridge is clunky and the Bridge only goes one direction. You can instantiate a Java virtual machine in IDL, but you can't instantiate an IDL session from within Java. Anyway, I settled on the easy solution of having my Java process spawn an IDL process. I could form the IDL commands within Java and write the commands to the IDL process and let IDL do it's thing. However, I had to send quite a bit of data across between Java and IDL. Sending the data across the pipe would get very complex very quickly and writing out the data to a file only to be read into IDL could be time consuming. What I wound up doing was using shared memory just as if you wanted to transfer data between two IDL processes. It's quick because you don't hit the I/O subsystems of Java or IDL or of your operating system and it's pretty easy to read and write directly to memory. This solution worked like a champ. I thought it was pretty cool.

Now to wrap things up and put a nice bow on it all, I have a website where I'm using Java to handle the back-end processing and dynamic content. A user will go to the website and request certain data. A Java program will then go and get the appropriate data from an Oracle database and send the data on to IDL using the process above. IDL will then create a plot or two (now with automatic viewplane sizing!) and

these images will be served back to the user. All the user knows is that they click a button and they're taken to a page with their plots on it. And in a typical case, it only takes a couple seconds for ALL of this to happen. Naturally, complex plots or querying over huge data ranges will make it slow down, but it's not bad for on-the-fly plot creation.

All in all, it's pretty cool stuff.

-Mike

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Subject: Re: Histogram shift  
Posted by [David Fanning](#) on Tue, 22 Feb 2005 14:35:43 GMT  
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Michael Wallace writes:

> All in all, it's pretty cool stuff.

Indeed. :-)

Cheers,

David

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David Fanning, Ph.D.  
Fanning Software Consulting, Inc.  
Coyote's Guide to IDL Programming: <http://www.dfanning.com/>