Subject: overlying an image and a contour plot
Posted by tebbens on Fri, 12 Nov 1999 08:00:00 GMT
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We are trying to overlay an image and a contour plot, but can't get a perfect match in position and size.

On the contour plot, the x axis is 652 values and the y axis is 5048 values. We want to fit the image exactly into the contour plot.

The following commands are used:

```
position=[.6,.05,r,.95]
tv, image, .6, .05, $
  xsize=position(2)-position(0), $
  ysize=position(3)-position(1), /normal
xvalue = 652.
yvalue = 5048.

;  r should be the length of the x-axis in the
;  normal coordinate system (x and y window
;  size=1)
r= 10./7.*(.9 * xvalue/yvalue) + .6

contour, xstyle=1, ystyle=1, /iso, $
  position=[.6,.05,r,.95], /noerase
```

The image and contour overlay, but the x-axis of the image is too long to fit the contour plot. When the command tvimage is used instead of tv, the images are the same size, but are offset in both x and y direction by a few pixels.

We think the problem is with the r value, but we don't know why the simple commands above don't work.

Any suggestions to get these to overlay?

Thanks in advance.

Subject: Re: overlying an image and a contour plot
Posted by Craig Markwardt on Tue, 16 Nov 1999 08:00:00 GMT
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davidf@dfanning.com (David Fanning) writes:

>
> Craig Markwardt (craigmnet@cow.physics.wisc.edu) writes:
>
>> P.S. PLOTIMAGE uses parts of TVIMAGE. The good parts. Thanks David!
>
> Uh, I think the reason TVImage works so well for me
> is that I have the Congrid routine I downloaded
> from you in my Path. Thanks, Craig!
>

Maybe. :-) You really only notice it when you have an image with just a few pixels. PLOTIMAGE is fully self-contained, including a correct interpolation routine instead of the buggy CONGRID.

After looking at my download logs I realized that people just weren't getting the additional required programs for things like PLOTIMAGE. Since then I've made a concerted effort to keep the programs self-contained, which usually means including a few small functions or subroutines.

Craig

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Craig B. Markwardt, Ph.D. EMAIL: craigmnet@cow.physics.wisc.edu
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Subject: Re: overlying an image and a contour plot
Posted by davidf on Tue, 16 Nov 1999 08:00:00 GMT
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Craig Markwardt (craigmnet@cow.physics.wisc.edu) writes:

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Cheers,

David
--
David Fanning, Ph.D.
Fanning Software Consulting
Phone: 970-221-0438 E-Mail: davidf@dfanning.com
Coyote's Guide to IDL Programming: http://www.dfanning.com/
Toll-Free IDL Book Orders: 1-888-461-0155

Subject: Re: overlying an image and a contour plot
Posted by Craig Markwardt on Tue, 16 Nov 1999 08:00:00 GMT
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Getting the right pixel alignment can be a problem. I also totally agree with Mr. Bennett's suggestion that you may need to "add" an extra half-pixel on either side.

I like to think about it this way: CONTOUR applies to data at the pixel *centers*, but when displaying an image you want to show every pixel out to its edges, and that's where the two half pixels comes from. I would also like to point out that TVIMAGE uses CONGRID, which has a bug in the way it interpolates, which *guarantees* that you will be off by at least a half a pixel. Not good.

To solve these problems I use the PLOTIMAGE procedure available from my web page (listed below). It makes putting images on the screen or Postscript page easy -- especially aligning everything.

Here's how it works. This little script assumes you have an image, and your X and Y values:

```
;; Usually you want to BYTSCL your image first - I like this algorithm
IDL> b = bytscl(image, min=-100, max=100, top=!d.n_colors-3b)+1b

;; Then you compute your image boundaries. Remember those half-pixels!
IDL> dx = x(1) - x(0) & dy = y(1) - y(0)
IDL> imgxrange = [min(x)-0.5*dx, max(x)+0.5*dx]
IDL> imgyrange = [min(y)-0.5*dy, max(y)+0.5*dy]

;; Finally, plot the image and overlay the contours
IDL> PLOTIMAGE, b, imgxrange=imgxrange, imgyrange=imgyrange
IDL> CONTOUR, image, x, y, ...
```

You see, most of it is a little bookkeeping. PLOTIMAGE is nice because you can specify an XRANGE and YRANGE independent of the image boundaries, meaning that you can zoom in to a sub image for example. And for astronomers, it will automatically reverse the image if

needed!

Good luck,

Craig
http://cow.physics.wisc.edu/~craigm/idl/idl.html

P.S. PLOTIMAGE uses parts of TVIMAGE. The good parts. Thanks David!

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Craig B. Markwardt, Ph.D. EMAIL: craigmnet@cow.physics.wisc.edu
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Subject: Re: overlying an image and a contour plot
Posted by davidf on Wed, 17 Nov 1999 08:00:00 GMT
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Craig Markwardt (craigmnet@cow.physics.wisc.edu) writes:

> Silly me. For some reason I hardcoded the image position in
> PLOTIMAGE, which prevents !P.MULTI from working. I have a fixed
> version on my web page with the following entry under MODIFICATIONS:
>
> ; Correct behavior with no POSITION keyword, 17 Nov 1999, CM
>
> Now !p.multi works fine.

Let's see, ... the woes of software distribution. Now,
where were we? :-)

Cheers,

David

--
David Fanning, Ph.D.
Fanning Software Consulting
Phone: 970-221-0438 E-Mail: davidf@dfanning.com
Coyote's Guide to IDL Programming: http://www.dfanning.com/
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Posted by Craig Markwardt on Wed, 17 Nov 1999 08:00:00 GMT

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