Subject: Working with color, cursor, and png to extract information
Posted by Brian Larsen on Mon, 04 Feb 2008 19:59:12 GMT
View Forum Message <> Reply to Message

OK,

So I am no exactly sure how to ask this question but here goes. As such I am open for reinterpretation or another solution all together...

What I want to do:
- Start with a png image from old research (like http://www.dfanning.com/programs/docs/read_toms_aerosol.jpg)
- read in the png (yes I know the example is a jpg, but it should be the same procedure)
- extract the "value" at each pixel in the image based on the colorbar

This seems like it should in principle do doable...

Here is what I tried for this attempt:
- read in the image
IDL> image=selectimage(palette=palette)
IDL> help, image, palette
IMAGE BYTE = Array[3, 672, 708]
PALETTE BYTE = Array[256, 3]
- display it
IDL> window, /free, xs=672, ys=708
IDL> tv, image, /true
- select out the part that is the data with cursor and save it separately
IDL> cursor, x1, y1, /dev ; clicked lower left
IDL> cursor, x2, y2, /dev ; clicked upper right
IDL> image2=image[*,x1:x2, y1:y2]
IDL> window, /free, xs=x2-x1, ys=y2-y1
IDL> tv, image2, /true
- set the x-y vectors using cursor and inspection, and scale_vector (easy)

now I am stuck, I thought I could set the colortable with
IDL> tvlct, palette
but this seems to still be gray scale (according to cindex)
then I thought I could just pull out the value at each pixel from the color table then map that back to the values in the colorbar. But I dont know how, anyone else done something like this?

Normally I extract line plots with g3data (http://www.frantz.fi/software/g3data.php) but it only does lineplots and not color plots.

Ideas? Comments?

thanks much,

Brian

---------- ----------
Brian Larsen
Boston University
Center for Space Physics

Subject: Re: Working with color, cursor, and png to extract information
Posted by David Fanning on Mon, 04 Feb 2008 22:24:26 GMT
View Forum Message <> Reply to Message

Brian Larsen writes:

> I am not sure I agree with you entirely on this, if it were as
> hopeless as you say then why do we make those plots, our eyes can
> obviously decode the "meaning" in the color. Since you have the
> colorbar, it seems that gives a one-to-one mapping of colors to data
> value. At the worst case maybe just at the points in the colorbar
> where you have the value.
>
> If I ask the question another way does it make more sense? How can
> one choose out of an image a particular color and then display that?
> For example in that aerosol image of yours say I wanted to know where
> the data was between 3 and 3.5 (red), I can presumably "select" red
> and then pull out the red pixels from the image? No? Is this as easy
> as the 3 elements in image[*,0, 0] and a where statement? I am not
> too clear on exactly how the colors are built.

Normally, the color encoding of the color bar is different
from the color encoding of a 24-bit image. The former typically
uses indexed color, the latter used decomposed color. They
may be related. For example, suppose we load a "yellow" color
in color index 10:

```
r = 255 & g = 255 & b = 0
TVLCT, r, g, b, 10
```

And we decide that all pixels in our data between 3 and 3.5
are going to be colored with yellow:

```
index = Where(data ge 3 and data le 3.5)
```

We color our 24 bit image with this color:

```
s = Size(data, /Dimensions)
image = BytArr(s[0], [s[1])
rimage = image [index] = r
gimage = image [index] = g
bimage = image [index] = b
image24 = [[[rimage]], [[gimage]], [[bimage]]]
```

Now, the question is, how can you go from the 24-bit image
back to the data value? We can click on the image. We learn that
the pixel we clicked on has a value (255, 255, 0). Can we
find such a color triple in the color table? Maybe, we have
to search for the proper value in each of the three color vectors
at the same time. We find that color located in bin 10 of the
color table vectors. What does that tell us about the data
values? Absolutely nothing. I could have chosen to represent
data between 2000 and 3000 with this color index.

To make sense of this, you will have to know what color index
10 represents in the color table. You may have this information
somewhere. But you *don't* have it in the image. You can't go
anywhere with an index value of 10 and recover useful information
from either your images or your data array.

Cheers,

David

David Fanning, Ph.D.
Fanning Software Consulting, Inc.
Coyote's Guide to IDL Programming: http://www.dfanning.com/
Sepore ma de ni thui. ("Perhaps thou speakest truth.")
