Subject: Re: gamma correction
Posted by Rick Towler on Thu, 27 Jun 2002 18:06:08 GMT
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"David Fanning" <david@dfanning.com> wrote in message
> Dick Jackson (dick@d-jackson.com) writes:
>
>> Usually, colortables are used with 2D (nx, ny) images where the byte values are
>> looked up in the RGB colortables, while 3D images (3, nx, ny) have their byte
>> values used exactly as given.
>>
>> Less common, but equally valid, is to display a 3D image where each plane's byte
>> values are looked up in the colortables. Gamma_CT changes the colortables so
>> that an image that uses them appears to have had its 'gamma' changed.
>>
>
> Well, it does on PCs and Macs. I'm not sure it
> does on UNIX machines, at least not in all versions
> of IDL. :-)
>
> But here is an alternative point of view. Normally, we
> think of gamma as affecting the "brightness" of an
> image. Dick's example has the effect of actually
> changing the colors in the image, which may lead
> us away from the gamma idea.
>

Gamma is not really brightness but color intensity. Gamma correction adjusts your image data to compensate for the nonlinear relationship between the image's RGB values and the displayed intensity of the pixel on the screen. On 8 bit systems gamma correction is usually applied to the LUT but on 24 bit systems it is applied to the image data at some point between the frame buffer and the phosphor on your screen. Many newer computers ship with some type of gamma correction in place. As far as I understand, *and I don't*, the basic idea is:

```
;typical gamma for a typical monitor
gamma=2.5

;read an image
image_file = filepath('elev_t.jpg', $
   subdirectory=['examples', 'data'])
read_jpeg, image_file, image_data
```

```
;display original image
window, 0
tvimage, image_data

;display "gamma corrected" image
gc_image =  byte(0 > image + image^(1/gamma) < 255)
window, 1
tvimage, gc_image
```

Now I can't stress more that there are all sorts of details I am ignorant of and thus are omitted from the example above.

So to answer the original posters question:

As David and Dick pointed out the built in gamma correct functions act on the LUT which is meaningless for your average 24 bit image. There isn't a function in IDL to gamma correct a 24bit image but it should be fairly easy to implement. Search the web and newsgroups for info and example code.

-Rick
