Subject: Re: Stretching an image
Posted by Liam Gumley on Fri, 10 Dec 2004 15:14:10 GMT
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Julio wrote:
> Hello there!
>
> I'd like to know how to apply a stretch in an image using 2% of
> saturation. That's what ENVI does when I open any image.
>
> How can I do that using an IDL code?
>
> Any comments wellcome,
>
> Thanks,
> Julio

I believe ENVI uses what is known as histogram clipping, as a way to remove outlier values from the stretch range. I describe an implementation of histogram clipping in Chapter 7 of my book. Here is the code from the book (imclip.pro):

```
;---start of imclip.pro---
FUNCTION IMCLIP, IMAGE, PERCENT=PERCENT

;- Check arguments
if (n_params() ne 1) then $
  message, 'Usage: RESULT = IMCLIP(IMAGE)'
if (n_elements(image) eq 0) then $
  message, 'Argument IMAGE is undefined'

;- Check keywords
if (n_elements(percent) eq 0) then percent = 2.0

;- Get image minimum and maximum
min_value = min(image, max=max_value)

;- Compute histogram
nbins = 100
binsize = float(max_value - min_value) / float(nbins)
hist = histogram(float(image), binsize=binsize)
bins = lindgen(nbins + 1) * binsize + min_value

;- Compute normalized cumulative sum
sum = fltarr(n_elements(hist))
sum[0] = hist[0]
for i = 1L, n_elements(hist) - 1L do $
  sum[i] = sum[i - 1] + hist[i]
```

```
sum = 100.0 * (sum / float(n_elements(image)))

;- Find and return the range
range = [min_value, max_value]
index = where((sum ge percent) and $
   (sum le (100.0 - percent)), count)
if (count ge 2) then $
   range = [bins[index[0]], bins[index[count - 1]]]
return, range

END
;---end of imclip.pro---
```

NOTE: The TOTAL function with the /CUMULATIVE keyword may be used in IDL 5.3 and higher to compute the cumulative sum.

To use this function, assuming you have an image array named IMAGE:

```
IDL> range = imclip(image)
IDL> tv, bytscl(image, min=range[0], max=range[1])
```

If you use IMCLIP in conjunction with my IMDISP program (see my website), you can just do this:

```
IDL> imdisp, image, range=imclip(image)
```

Cheers,
Liam.
Practical IDL Programming
http://www.gumley.com/