Subject: Re: Does IDL has histogram matching function?
Posted by Paul Sorenson on Thu, 21 Nov 2002 22:23:30 GMT
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I'm not sure if the implementation of FCN is correct. I'm still thinking about it. Here is an example:

```
    pro histogram_test

    filename = filepath('ctscan.dat', subdir=['examples', 'data'])
    image = read_binary(filename, data_dims=[256, 256])

    x = findgen(256)/255.      ;Ramp from 0 to 1.
    y = exp(-((x-.5)/.2)^2)    ;Gaussian curve

    fcn = total(y, /cumulative)
    gauss_image = hist_equal(image, fcn=fcn)

    d = total(histogram(gauss_image, min=0, max=255), /cum) ;density
function

    device, decomp=0
    loadct, 39
    ;
    ;When we request a custom distribution curve, the result (in white)
    ;doesn't touch the ideal curve (in red).  Is this an indication
    ;that the implementation of keyword FCN is incorrect?
    ;
!    p.multi = [0, 2, 1]
    plot, bytscl(d)
    oplot, bytscl(fcn), color=254 ;red

    uniform_image = hist_equal(image)

    d = total(histogram(uniform_image, min=0, max=255), /cum) ;density
function
    ;
    ;When we request the default uniform distribution, the result (in white)
    ;touches the ideal curve (in red).
    ;
    plot, bytscl(d)
    oplot, bindgen(256), color=254 ;red

    end
```

"David Fanning" <david@dfanning.com> wrote in message news:MPG.18432a801e0db738989a2e@news.frii.com...

> Paul Sorenson (aardvark62@msn.com) writes:
>
>> There is an undocumented keyword to HIST_EQUAL that looks like it
>> might do the same thing as Davids HistoMatch. Here is an example:
>>
>> filename = filepath('ctscan.dat', subdir=['examples', 'data'])
>> image = read_binary(filename, data_dims=[256, 256])
>>
>> desired_hist = histogram(hist_equal(image), min=0, max=255)
>>
>> window, xsize=3*256, ysize=256
>> tv, image, 0
>> tv, hist_equal(image), 1
>> tv, hist_equal(image, fcn=total(desired_hist, /cumulative)), 2
>> end
>
> I think this is probably right, but I think
> both this function and the code that I threw off
> in a couple of minutes earlier in the week suffers
> from a deficiency.
>
> As it happens, I need a histogram-match-by-region
> capability. In other words, the user wants to select
> a region in an image, and use the histogram of that
> region to adjust the histogram of the entire image.
>
> This example and my previous code work if the histograms
> are taken from images of the same size. They do not work
> correctly (I think) if the histograms use images of different
> sizes. In that case, you must normalize the histograms to the
> same "total number" of pixels. I'll probably have this on
> my web page soon, with the corrections in it. I just didn't
> want anyone getting too far down the wrong road here. :-)
>
> Cheers,
>
> David
>
>
> --
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