Subject: Re: Finding the mean of a set of images
Posted by David Oesch on Wed, 23 Oct 2002 05:18:29 GMT
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Jaco van Gorkom wrote:
<blockquote type="cite" cite="mid:ap3uhr$erme$1@zam602.zam.kfa-juelich.de">
<pre wrap="">"Craig Markwardt" <craigmnet@cow.physics.wisc.edu> wrote in message
news:onznt6k38x.fsf@cow.physics.wisc.edu...
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<blockquote type="cite">
<pre wrap="">David Oesch <oesch@giub.unibe.ch> writes:
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<blockquote type="cite">
<pre wrap=""> ...
Does anyone have an algorithm for finding the mean/standardeviation etc
at each pixel position for a set of equal size 2-D images? Currently the
only way I have to do this is to extract all the values for a given
pixel position into a 1-D array and find the mean/standardeviation etc
on that. Doing it pixel by pixel like this is inefficient in IDL so I am
looking for an *array* based algorithm that would find all
the mean/standardeviation etc in parallel. ...
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</blockquote>
<pre wrap="">Sure, if you stack your image into a 3D image cube, then you would
have something like IMAGE = FLTARR(NX, NY, NIMAGES)

Then the mean image is:

 mean = total(image,3)/nimages

The standard deviation is:

 meancube = rebin(reform(mean,nx,ny,1),nx,ny,nimages)
 std = sqrt(total((image - meancube)^2,3)/(nimages-1))

Now, what you meant by "etc" can get a little hairier. If you want to
do median you are probably in trouble, but min and max are easy too:

minimage = image(*,*,0)
 maximage = minimage
 for i = 1, nimages-1 do begin
minimage = minimage < image(*,*,i)
 maximage = maximage > image(*,*,i)
endfor
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<pre wrap=""><!---->
I believe that IDL 5.5 offers the luxury of
 maximage = MAX(image, MIN=minimage, DIMENSION=3)

As for median, well, there was a thread on "Finding the median of a set
of images" back in '96. Should be valid still, I guess. Improvising with
transpose(), reform(), median(image, Nimages) and rebin() should be fun, but
not be very fast.

 Jaco

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</blockquote>
Ok, I think now is the time to upgrade from IDL 5.4 to 5.5 :-)....

Thanks for your tips

Dave
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