Subject: Re: New Image Processing Routines
Posted by George N. White III on Sun, 05 Mar 2006 19:35:00 GMT
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On Fri, 24 Feb 2006, David Fanning wrote:

> OK, sports fans. Here are two new programs. I have
> to admit, with the right images (low signal to noise)
> this inverse hyperbolic sine function is GREAT!
> I can't wait to try this out on images with the new
> CCD camera we just got for the school.
>
> ASINHSCL -- Like BYTSCL and IMGSCL, but for images
> with "asinh magnitudes" ala Lupton, et. al.
>
> XSTRETCH_ASINH -- Like XSTRETCH, but with ASINH
> scaling instead of gamma scaling. GUI front
> end for ASINHSCL.
>
> Found in the usual places. Normal images can look
> a little weird, as JD suggests. Astronomers and
> people with bad photographic skills will probably
> find these programs useful. :-)

You might find techniques for "high dynamic range" images interesting,
include an IDL implementation of the iCAM (image color appearance model)
<http://www.cis.rit.edu/mcsl/iCAM/>.

At lot of this work comes out of places like Industrial Light and Magic,
who use a file format called EXR based on the same 16-bit f.p. format as
nVidia graphics engines. This protects against posterization that is a
problem when doing heavy image transformations on 8-bit data. With IDL I
think we are stuck with floats in tiff files for the present, although
there has been some discussion of using the graphics engine for image
processing.

In remotes sensing there are some variables (ocean chlorophyll, which
ranges from 0.01 to 100 mg/m^3) with a natural range far beyond any
display device. It is customary to display these with bytscl(image) and
a color lookup table with 150-255 entries, thereby demolishing much of the
fantastic detail in the original dataset. Ultimately this needs a
different approach from the problem of digital photos taken in poor light,
but I expect there are useful tools from the HDR domain that can be
adapted for use with remote sensing images.

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