Subject: Re: New Image Processing Routines
Posted by David Fanning on Fri, 21 Apr 2006 13:45:27 GMT
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Marshall Perrin writes:

> But on to my main point. I think your ASINHSCL can be simplified considerably,
> because the Alpha parameter is unnecessary. Or rather, Alpha and Beta aren't
> independent. What actually sets the shape of the scaling law is their product.
>
> Try varying them inversely (i.e. move Alpha up by a factor of 5, Beta
> down by a factor of 5, so that their product remains constant) and I
> think you'll see that the scaled image is unchanged. I've also
> verified this behavior with some simple 1D plots (code attached
> below). I've thought about the equations for a bit, but I don't yet
> have a rigorous proof that this is true, but it is in all the
> numerical examples I've tried. Then again, it's 4:30 am and
> even on astronomer hours that's a bad time for doing math, so maybe
> I'll figure it out tomorrow.
>
> In any case, I think you can just remove alpha entirely and use beta
> alone to tune the scaling. I note that Lupton et al. only mention
> Beta as a tuning parameter as far as I can tell. I see there's
> an alpha in Eric Sheldon's tvasinh.pro that you based your code on,
> but I have no idea where he got it from...

Yes, I discovered this disquieting state of affairs myself.
But after playing with it late into the night, I had pretty
much convinced myself that if it didn't exactly do any good
to have two parameters, it didn't appear to do any harm, either.
And I noticed if I held my mouth just right and squinted,
I could even justify the two parameters as doing something
different, which made the shape of the curve easier to
control. (I don't remember at the moment, but I thought one
factor affected the steepness of the curve, while the other
affected where the "bend" in the curve started.)

I've since moved on to more pressing things, but maybe
I'll have to revisit this. Let me know if a few hours of
sleep leads you to some more ideas. :-)

Cheers,

David

Cheers,

David
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