Subject: Re: negative return values after FFT
Posted by adisn123 on Fri, 28 Jul 2006 19:52:37 GMT
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Thanks. It makes sense more now.

kuyper@wizard.net wrote:
> adisn123@yahoo.com wrote:
>> The returned (inversely fourier transformed) values are in a complex
>> number format, but
>> I realized that those imaginary parts are very small, almost close to
>> zero with ~10^-8 floating
>> point.
>
> OK, that's a normal consequence of the fact that all floating point
> mathematics have a certain inherent inaccuracy. Values that
> mathematically should be exactly 0 come out numerically as "almost" 0;
> it's unfortunately unavoidable. In that case extracting the real
> component and ignoring the imaginary components is the appropriate
> solution.
>
> ...
>> I have another question related to the returned values.
>>
>> How do I interpret the "negative" spacial pixel values after inverse
>> FFT?
>
> If your unfiltered image frequently goes close to zero, filtiering it
> is likely to cause it to sometimes go negative. That's because each
> component in the frequency domain represents a function in the spatial
> domain that oscilates between positive and negative values. No matter
> how you change the value of a frequency component, either by increasing
> it or by decreasing it, you'll be increasing the image in some
> locations, and decreasing it somewhere else. If you're unlucky enough,
> the places where it decreases the image brightness might be places
> where the brightness is already so low that the changes made by the
> filter make it go negative.
>
> If you're sure your filter implements what you want it to implement,
> I'd recommend treating the negative pixels as zeros. However, if you
> ever decide to rebin the data to a lower resolution, use the original
> values, including the negatives - don't replace the negative values
> with zeros until after re-binning, because otherwise you'll be creating
> a systematic bias, making the darkest parts of your image slightly
> brighter than they should be.