Subject: Re: RMS error
Posted by James Kuyper on Wed, 12 May 2004 15:02:19 GMT
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Craig Markwardt wrote:
> David Fanning <david@dfanning.com> writes:
>
>
>> Julio writes:
>>
>>
>>> I'd like to calculate Root Mean Square error using a base image and a
>>> secondary image. How can I do that? Clues are welcome!
>>
>> rms_error = Sqrt(Total((img_1 - img2)^2)/N_Elements(img_1))
>
>
> Hey David, I'll pile on too. The problem I see with the above
> expression is that there could be an offset between the two images,
> which you are including in your TOTAL expression, and hence biasing
> the rms value. How about the following instead?

The Root Mean Square difference between two images is defined as the
square ROOT of the MEAN of the SQUAREd differences between the images.
If there's an offset between the two images, that offset is supposed to
be squared, and is supposed to contribute to the mean, and therefore to
an increase in the RMS error.

> rms_error = stddev(img_1 - img2)

That's a different statistic, also useful, but it's not the RMS error.

Note: if there's an offset difference, there might also be a scaling
difference. Then the most appropriate statistic to use gets even more
complicated.