
Subject: Re: RMS error

Posted by [Paul Van Delst\[1\]](#) on Wed, 12 May 2004 14:56:47 GMT

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Craig Markwardt wrote:

> David Fanning <david@dfanning.com> writes:

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>> Julio writes:

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>>

>>> 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.

Errmm... isn't that intended? RMS errors include the bias. Std deviations don't. At any rate, that's how I use 'em. This is what I've got on my wall:

$$\text{RMS} = \text{SQRT}(\text{TOTAL}(X_{\text{truth}} - X_{\text{predicted}})^2 / N)$$

and

$$\text{StdDev} = \text{SQRT}(\text{TOTAL}(X_{\text{predicted}} - \text{MEAN}(X_{\text{predicted}}))^2 / N)$$

I think it really requires the OP to state more precisely what it is he's looking for. Blind use of statistical formula is usually a no-no.

> rms_error = stddev(img_1 - img2)

That works - same as the RMS defn above where $X_{\text{truth}} = \text{img1} - \text{MEAN}(\text{img1})$ and $X_{\text{predicted}} = \text{img2} - \text{MEAN}(\text{img2})$. But is that what the OP needs/wants?

paulv
