
Subject: Re: Variance in sub-sections?

Posted by [Jaco van Gorkom](#) on Mon, 18 Feb 2002 14:04:23 GMT

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"Joshua Nipper" <nipperjc@ufl.edu> wrote in message

news:a4jph3\$gdi\$1@spnode25.nerdc.ufl.edu...

> I have a 512x512 image, and I would like to calculate the mean/variance in

a

> 3x3 neighborhood around every pixel. What would be the easiest way to do

> this w/out for loops?

Martin Downing once posted a nifty routine IMAGE_VARIANCE to the group.

Look up a thread called "efficient kernel or masking algorithm ? UPDATE"

on Google.

<http://groups.google.com/groups?hl=en&q=variance+kernel&meta=group%3Dcomp.lang.idl-pvwave>

Things should then be as simple as

variance = IMAGE_VARIANCE(image, 1, MEAN=mean) .

Jaco

PS: I posted without thinking too much on Friday, in response to your Kuwahara filter post. The variance I suggested was calculated with respect to a 'sliding' mean value, and probably not a very good choice for this kuwahara thingie.

Subject: Re: Variance in sub-sections?

Posted by [Alex Schuster](#) on Mon, 18 Feb 2002 15:41:45 GMT

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Joshua Nipper wrote:

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> in a 3x3 neighborhood around every pixel. What would be the easiest way

> to do this w/out for loops?

For the mean, you can use smooth() : m = smooth(img, 3).

Or using convol:

k = (intarr(3, 3) + 1) / 9.0 ; 3x3 kernel, all elements set to 1/9

m = convol(img, k)

The variance is total((x_mean-x_i)^2) / n, so just subtract the mean image, square all elements, and use convol() to sum up 3x3 local pixels around each element:

v = convol((img-m)^2, k)

Alex

--

Alex Schuster Wonko@netcologne.de
alex@pet.mpin-koeln.mpg.de

Subject: Re: Variance in sub-sections?

Posted by [David Fanning](#) on Mon, 18 Feb 2002 16:42:38 GMT

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Jaco van Gorkom (j.c.van.gorkom@fz-juelich.de) writes:

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I just now wrote up a little synopsis of this thread,
and fixed a couple of grammatical and coding errors
in the IMAGE_VARIANCE program. Naturally, if I completely
obliterated Martin's inimitable style, I want to hear
about it. :-)

You can find it here:

http://www.dfanning.com/math_tips/variance.html

Cheers,

David

--

David W. Fanning, Ph.D.
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Coyote's Guide to IDL Programming: <http://www.dfanning.com/>
Toll-Free IDL Book Orders: 1-888-461-0155

Subject: Re: Variance in sub-sections?

Posted by [Jaco van Gorkom](#) on Mon, 18 Feb 2002 18:12:14 GMT

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"David Fanning" <david@dfanning.com> wrote in message
news:MPG.16dadbebbbee0f1e398980c@news.frii.com...

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> and fixed a couple of grammatical and coding errors
> in the IMAGE_VARIANCE program. Naturally, if I completely
> obliterated Martin's inimitable style, I want to hear
> about it. :-)

Funny, only a few hours ago that Coyote search engine apologized
to me for not finding any tips on variance. Nice work, this is what I
call instant service!

Jaco

P.S.: As for the /POPULATION_ESTIMATE keyword, I am afraid
that thread only served to increase my confusion...

Subject: Re: Variance in sub-sections?

Posted by [David Fanning](#) on Mon, 18 Feb 2002 18:31:01 GMT

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Jaco van Gorkom (j.c.van.gorkom@fz-juelich.de) writes:

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I'll offer a little insight into how to read between
the lines of any article you find on the Coyote site.
If a specific individual is mentioned in the article,
there is a very good chance I don't understand what
the hell he is saying either, and I am trying to
shift responsibility for answering questions about
it to the appropriate person. See, for example, any
article with "histogram" in its title.

Cheers,

David

--

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Subject: Re: Variance in sub-sections?

Posted by [Joshua Nipper](#) on Mon, 18 Feb 2002 21:04:21 GMT

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Regardless of who understands what, I'd like to say "Thank you" to everyone who has helped. I got the filter I wanted running much faster (from 48 seconds to 0.3). I'm sure it could be faster still, but it's good enough for me.

--Josh Nipper

PS... Mr. Fanning, Thank you so much for maintaining such an informative website. I've had to teach myself IDL over the past year, and I've used your site extensively. It's always the first place I check for answers to any questions I have. Thanks again,
Josh

"David Fanning" <david@dfanning.com> wrote in message
news:MPG.16daf64f5f49844c98980d@news.frii.com...

> Jaco van Gorkom (j.c.van.gorkom@fz-juelich.de) writes:

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