Subject: Re: Variance in sub-sections?
Posted by Jaco van Gorkom on Mon, 18 Feb 2002 14:04:23 GMT
View Forum Message <> Reply to Message

"Joshua Nipper" <nipperjc@ufl.edu> wrote in message
news:a4jph3$qdi$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& amp;meta=group%3Dcomp.la
ng.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
View Forum Message <> Reply to Message

Joshua Nipper wrote:

> 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?

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
View Forum Message <> Reply to Message

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

> 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& amp;meta=group%3Dcomp.la
> ng.idl-pvwave
>
> Things should then be as simple as
> variance = IMAGE_VARIANCE(image, 1, MEAN=mean) .

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.
Fanning Software Consulting
Phone: 970-221-0438, E-mail: david@dfanning.com
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
View Forum Message <> Reply to Message

"David Fanning" <david@dfanning.com> wrote in message
news:MPG.16dadbebbee0f1e398980c@news.frii.com...
> 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. :-)

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
View Forum Message <> Reply to Message

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

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

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
--
David W. Fanning, Ph.D.
Fanning Software Consulting
Phone: 970-221-0438, E-mail: david@dfanning.com
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 Joshua Nipper on Mon, 18 Feb 2002 21:04:21 GMT
View Forum Message <> Reply to Message

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 extensivly.  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:
>
>> P.S.:  As for the /POPULATION_ESTIMATE keyword, I am afraid
>> that thread only served to increase my confusion...
>
> 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
> --
> David W. Fanning, Ph.D.
> Fanning Software Consulting
> Phone: 970-221-0438, E-mail: david@dfanning.com
> Coyote's Guide to IDL Programming: http://www.dfanning.com/
> Toll-Free IDL Book Orders: 1-888-461-0155