Subject: Re: XROI - how to invoke region growing
Posted by Ted Cary on Fri, 08 Feb 2002 21:44:21 GMT
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Hello Dr. Mueller,

I'll have to ask you to excuse my ignorance as well, but to help with this I need to know exactly what you mean by "region growing." I don't have experience with XROI or CT scans, but I did not find any mention of the region growing function you are trying to invoke during a quick reading of the XROI help files. If something like this exists, I could use it too. I'm not sure if region growing has a special meaning in your field, but here are my suggestions, for what they're worth:

If you want to simply scale the regions, you can call scale methods on them individually, since they are just IDLgrROI objects. It looks to me as though you can get them using the REGIONS_OUT keyword to XROI, scale them all, then use the scaled ROIs as the REGIONS_IN in another XROI call if you want. Of course if the regions are concave, then the margins of your new "grown" regions might actually intersect the margins of the smaller regions from which they were grown, which might not be what you want at all, since the grown region won't contain all of the points in the smaller region.

If instead you want to "expand" or dilate the regions, maybe POLYFILLV the ROI vertices and use DILATE. The array results will not be in a form you can put back into an IDLgrROI, since there will be no margin vertices identified nor a connectivity array, but they will allow you to extract data from your scans easily, and you can continue to DILATE or ERODE the regions at will. Unfortunately, unless you "hull" the interior points to get the connectivity array and the margin vertices, you won't be able to use XROI on the regions you've grown. This method will work fine if all you want to do is 1) Draw ROIs in XROI, 2) "Grow" or "shrink" them, and 3) Extract data from their interiors. You can even display the new margins if you want by finding the contours of the interiors--you'll know every point on the border in no particular order, but not every vertex. I do this kind of thing all the time, and it should not require any or much modification to those 50 pages of XROI code. Hope this helps.

"Dr. Stefan P. Mueller" wrote:

> Hi,
>
> I am new to IDL, so please excuse my ignorance:
>
> XROI looks like a good starting point for what I am planning to do:
> define a region-of-interest on a CT scan by region growing (to segment
> reproducible a lesion) and then go on to sovle my real problem.

> I just installed the demo for IDL 5.5 and ran XROI. I am able to
> display the CT Image. I can manually define all sorts of ROI's, and I
> can get statistics or a histogram. I have been unable, however, to
> figure out how to invoke the region growing function. Yes, I looked at
> the dokumentation too.
> As a beginner, trying to understand the code (probably over 50 pages)
> is daunting to me...
>
> Does anybody know what I have to do?
>
> Thanks a lot!
>
> Stefan

Subject: Re: XROI - how to invoke region growing
Posted by David Fanning on Sat, 09 Feb 2002 00:06:15 GMT
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Dr. Stefan P. Mueller (stefan.mueller@uni-essen.de) writes:

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> define a region-of-interest on a CT scan by region growing (to segment
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> As a beginner, trying to understand the code (probably over 50 pages)
> is daunting to me...
>
> Does anybody know what I have to do?

I don't think XROI is what you want, although
I have used SEARCH2D to fairly good effect.
You could use your XROI selection to get
the values and seed point for the SEARCH2D
criteria.

Cheers,

David

--
David W. Fanning, Ph.D.
Fanning Software Consulting
Phone: 970-221-0438, E-mail: david@dfanning.com

Subject: Re: XROI - how to invoke region growing
Posted by Ted Cary on Sat, 09 Feb 2002 00:25:06 GMT
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>> Does anybody know what I have to do?

Um, not me I guess--but David Fanning probably knows. I *really* did not know what "region growing" meant--I thought maybe you just wanted to make the regions bigger... I should have paid more attention to the word "segment." Sorry about that. And here I was thinking I had made my first contribution.
>
> --
> 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: XROI - how to invoke region growing
Posted by David Fanning on Sat, 09 Feb 2002 04:04:22 GMT
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David Fanning (david@dfanning.com) writes:

> I don't think XROI is what you want, although
> I have used SEARCH2D to fairly good effect.
> You could use your XROI selection to get
> the values and seed point for the SEARCH2D
> criteria.

It has been brought to my attention that the XROI demo in the IDL demo distributed with IDL 5.5 does in fact have a button that allows one to set the "Region Grow" properties of the ROI. Apparently the demo takes advantage of a new function in IDL named (oddly enough) REGION_GROW. You can read all about this in the on-line he...er, well, you can read all about it somewhere (I'm sure).

Apparently REGION_GROW does much of what SEARCH2D used to do, but adds the capability of doing it

in 3D, something my ...uh, wife found interesting. :-)

Cheers,

David

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Subject: Re: XROI - how to invoke region growing
Posted by Ted Cary on Sat, 09 Feb 2002 13:49:51 GMT
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Oh. I have IDL 5.4 and no demo. I feel even more stupid. But maybe I could use a "region grow"... where can I read about it, since I don't have the demo or 5.5?

"David Fanning" <david@dfanning.com> wrote in message news:MPG.16ce4dad81bcbe59897fe@news.frii.com...
> David Fanning (david@dfanning.com) writes:
>
>> I don't think XROI is what you want, although
>> I have used SEARCH2D to fairly good effect.
>> You could use your XROI selection to get
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> David

>
> --
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Subject: Re: XROI - how to invoke region growing
Posted by Benno Puetz on Sat, 09 Feb 2002 20:19:52 GMT
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Ted Cary wrote:
> Oh. I have IDL 5.4 and no demo. I feel even more stupid. But maybe I
> could use a "region grow"... where can I read about it, since I don't have
> the demo or 5.5?
>
It is described in the whatsnew55.pdf file that is distributed with 5.5
which seems to be identical to the whatsnew.pdf that you can find on
RSI's site

http://www.rsinc.com/idl/whatsnew.cfm

It looks quite interesting - thanks for pointing it out

Subject: Re: XROI - how to invoke region growing
Posted by dw on Sun, 10 Feb 2002 10:37:29 GMT
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> David Fanning (david@dfanning.com) writes:

>> Apparently REGION_GROW does much of what SEARCH2D
>> used to do, but adds the capability of doing it
>> in 3D, something my ...uh, wife found interesting. :-)
>>

Do you know what the difference is then between the old SEARCH3D (5.4)
and the new REGION_GROW (in 5.5)? Also, are any of you familiar with a
3-d equivalent of CONTOUR? I use CONTOUR to retrieve perimeter, area
etc. for 2D objects (and thanks to this newsgroup and Dave Fanning I
have learnt that it's necessary to smooth the object before! using
CONTOUR to get decent results (error < 1%), but I don't think SURFACE
will do the same in 3D, i.e., give me surface area for instance, of a
3D object?
Cheers,

Dorthe

Subject: Re: XROI - how to invoke region growing
Posted by David Fanning on Wed, 13 Feb 2002 14:05:22 GMT
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Dorthe Wildenschild (dw@er.dtu.dk) writes:

> Do you know what the difference is then between the old SEARCH3D (5.4)
> and the new REGION_GROW (in 5.5)?

Haven't you had the experience of spending a week writing
a great new routine, only to accidentally discover that
you had written (and forgotten) something very much like
it the year before? I don't know that this is the case here,
but it seems like it. REGION_GROW is definitely more robust
than SEARCH3D (n-dimensional arrays vs. 3D arrays, for example),
but they do very similar things. I'd like to think of them as two
approaches to the same problem. You should try them both and see which
you like better.

> Also, are any of you familiar with a
> 3-d equivalent of CONTOUR? I use CONTOUR to retrieve perimeter, area
> etc. for 2D objects (and thanks to this newsgroup and Dave Fanning I
> have learnt that it's necessary to smooth the object before! using
> CONTOUR to get decent results (error < 1%), but I don't think SURFACE
> will do the same in 3D, i.e., give me surface area for instance, of a
> 3D object?

I should think either ISOCONTOUR or ISOSURFACE is what you
are looking for.

Cheers,

David

--
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