Subject: Re: Image segmentation programs in IDL?
Posted by Tim[2] on Thu, 14 Dec 2006 14:13:17 GMT
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Thanks to everyone for their interest.

1) As mentioned, I do not have any experience in identifying objects in images, so I may be using the terminology incorrectly. By "image segmentation" what I meant was that I wanted to know, for each black region in the image, a list of the grid points in that region. (I didn't mention in my original posting that since I have hundreds of these images to analyze I wanted a completely automatic algorithm, unlike some algorithms I have seen described that require user interaction.)

2) My goal is to come up with a single number that characterizes the image. For example, a number that is zero for the images composed all circles, but which gets bigger as the objects depart from circularity. I have tried some quantities such as the total perimeter to total area ratio which are global in the sense that they don't require me to know which grid points are in which object. These numbers show some systematic variation, but the variations are small and vary with the average size of the objects, that is, they are not clean measures of object "circularity". To improve them, I would at least have to know how many separate objects were in the image.

3) So my purpose now is to get a list of grid points in each black region. Then I will calculate, for example, the moment of inertia of each object about its center of mass (to use the physics terms) then subtract the moment of inertia of a circle of the same area, then divide by the moment of inertia of the circle of the same area. Finally, I will average this quantity over all the objects in the image. That should give me a number which quantifies the "non-circularity" of the objects in the image.

I think my IDL skills are up to the challenge of calculating the moments, once I learn to identify which black grid points are in which object.

Again, thank you all for your time and help.

Tim

On Dec 14, 3:09 am, hel...@gmx.net wrote:
> I think your images are already segmented. There is one value for the
> objects and there is a distinct value for the background. Do you want a
> morphological characterization of the objects, such as how irregular or
> rough the objects are? The seed images are very irregular evolving to

> target images, that are more regular.
> Regards,
> Helmut
>
> Tim wrote:
>> I am looking for image segmentation routines that are available in or
>> written in IDL. I think my images are not very challenging. They have
>> been thresholded, so that the regions I want to segment all have values
>> of -1, and the background is +1. The boundaries are smooth. Examples of
>> the images can be found about a third of the way down the page at
>> http://physics.kenyon.edu/people/sullivan/Research/CahnHilli ard/.
>
>> I am aware of the particle tracking algoriths of Crocker, Weeks, and
>> Spalding, et al., but their problem is identifying same size circular
>> images and my objects vary in widely size and shape.
>
>> There is one complication that I can live without at first, but would
>> eventually need to rectify. My fields are have periodic boundary
>> conditions, so eventually I would like an algorithm that identified as
>> one object, an object that wraps around the top and bottom and left and
>> right sides of the image.
>
>> If I knew anything about image segmentation, I suspect this would be
>> easy. But I don't. Any help would be appreciated.
>
>> Tim Sullivan
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