Subject: Re: connected component labeling problem in a graylevel image without background
Posted by Karsten Rodenacker on Tue, 15 Oct 2002 07:52:12 GMT
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Julia schrieb:
>
> I am not quite familiar with watershed algorithm. But in my understanding,
> "considering the gray scale image
> as a surface, each local minimum can be thought of as the point to which
> water falling on the surrounding
> region drains. The boundaries of the watersheds lie on the tops of the
> ridges. This operator labels each
> watershed region with a unique index, and sets the boundaries to zero.
> Typically, morphological gradients,
> or images containing extracted edges are used for input to the watershed
> operator."
>
> If I use watershed operator on the image, since it labels some pixels as
> boundaries, it will eliminate some regions
> with one-pixel width and label them as boundaries. That is not what I want.
> Can watershed algorithm really solve this?

1 px width boundaries guarantee connected regions which can lateron relabelled e.g. by label_region. However the algorithm implemented by rsi generates boundaries, there are other watershed algorithms which generate touching regions without boundaries. I have a pure idl implementation under http://www.gsf.de/ILIAD/Rodenacker/IDL/MM.html#Watershed designed in times before morph_... and n-dim label_region existed which performs in that way (doc. in German). (Still I wait for idl watershed on 3d data which comprises a very simple extension of the original watershed algorithm).

>
> Regards,
>

--
Karsten Rodenacker ()
---------- ----------:-)
GSF - Forschungszentrum Institute of Biomathematics and Biometry
D-85758 Oberschleissheim Postfach 11 29
Tel: +49 89 31873401 | FAX: ...3369 | rodena@gsf.de | Karsten@Rodenacker.de
http://www.gsf.de/ibb/homepages/rodenacker

Subject: Re: connected component labeling problem in a graylevel image without background
Posted by Julia on Wed, 16 Oct 2002 15:55:49 GMT
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Thanks for your suggestion.

I tested the algorithm on a 1730*2210 image with 364 gray levels. If I use the label_region in IDL to mask and relabel, it takes about 80s. While if I use the watershed algorithm tm_wshe1.pro, it takes more than 4000s. I saw on your webpage that there is another version of watershed algorithm implemented in C that can be called by IDL, I think that will be faster. Can you send the file to me? My email address is: julia65201@yahoo.com.

Regards,

Julia

"Karsten Rodenacker" <rodena@gsf.de> wrote in message news:3DABC92C.DB809DD9@gsf.de...
>
>
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> Karsten Rodenacker ()
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Subject: Re: connected component labeling problem in a graylevel image without background
Posted by Jaco van Gorkom on Wed, 16 Oct 2002 16:22:28 GMT
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"Julia" <julia65201@yahoo.com> wrote in message news:aok20mefp1@dipsy.missouri.edu...
> ...
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> the label_region in IDL to mask and relabel, it takes about 80s. While if I
> use the watershed algorithm tm_wshe1.pro, it takes more than 4000s.

Hello Julia,

for this size of image and number of gray levels, a fast solution is probably not possible in IDL. I am aware of a routine by Harvey Rhody at http://www.cis.rit.edu/class/simg782/ that does exactly what you want. (hr_label_region, this was a tip from Jason on this newsgroup sometime.) It loops over the elements of the image and is therefore not very fast, but may be quite instructive.

If speed of this operation is really important to you, then you should consider writing it in C as a dlm. Or, if you do not want to learn how to do that, find someone to do it for you. And who knows, maybe RSI can be convinced that this is the one feature that would make IDL complete?

Good luck,
Jaco
