Subject: Classification of objects in 2D image
Posted by hahn on Fri, 01 Dec 2000 08:00:00 GMT
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Hi,

I'm looking for a tool box to classify objects that
occur in 2D images (TV quality). This could be part
of biological cells as well as crystall structures.

A public domain supplement for IDL would be most
welcome.

Thanks for any replies...

Norbert

Subject: Re: Classification of objects in 2D image
Posted by hahn on Fri, 15 Dec 2000 14:24:51 GMT
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Ben Tupper <pemaquidriver@tidewater.net> wrote:

> Hello,
>
> Could you describe the images you have in hand? I have a
> number of thought, but it helps to know where your staring
> point is.

The images are greyscale images of crystals viewed under
a microscope. This is an attempt to classify the quality
of food by dissolving some salt in milk and evaporating
the liquid. Other components are removed too until the
salt crystals are left over.
>
> Here are some questions that might determine the approach
> you take:
>   -Are the images of 'natural' samples with lots of
> detritus/junk floating around?

There is little junk floating around when the experiment
is correctly done.

>   -Is the background uniform or varying?

The background is uniform in a single picture but varies
from picture to picture. The threshold has to be adjusted

for each picture, but that seems to be manageable.

> -Are the features detectable with a simple threshold
> applied to the entire image, or do you need to consider
> regional thresholding?

A simple threshold for the entire image should be sufficient.

> -Do you have only one image per field of view or do you
> have multiple images for each field of view?

There is only one image per sample of the fluid under test.

One of the major problems is that the crystals have a varying orientation from picture to picture. Other properties such a shape, size and clustering vary little within one class. So variations of shape, size and clusterings should be detected and grouped into various classes.

Norbert

Subject: Re: Classification of objects in 2D image
Posted by Ben Tupper on Mon, 18 Dec 2000 14:33:06 GMT
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Hello,

If I understand you correctly, you have the the image segemented into 'features' and 'background'. I do have an object (still in the development stage that will spit out 'feature' characteristics given a segemented image with only one 'feature'. I don't have it handy here, but I could send it to you soon.

One limitation it has (a least a limitation for me) is a 'good' way of finding the perimeter of the feature. I use the CONTOUR procedure on a binary version of the image. The results are OK for me, but IDL may not be calculating that perimeter the way you would want.

Ben

Norbert Hahn wrote:

> Ben Tupper <pemaquidriver@tidewater.net> wrote:
>

>> Hello,
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>> Could you describe the images you have in hand? I have a
>> number of thought, but it helps to know where your staring
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> varying orientation from picture to picture. Other
> properties such a shape, size and clustering vary little
> within one class. So variations of shape, size and
> clusterings should be detected and grouped into various
> classes.
>
> Norbert

--
Ben Tupper

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Subject: Re: Classification of objects in 2D image
Posted by Paul van Delst on Mon, 18 Dec 2000 17:04:27 GMT
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Ben Tupper wrote:
>
> Hello,
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> for me, but IDL may not be calculating that perimeter the way you
> would want.

I thought that's what Sobel filters were for? Finding edges of features in images and such. An image
consisting of crystals or crystal aggregates/clumps on a uniform background should show up well under edge enhancement.

paulv

--
Paul van Delst Ph: (301) 763-8000 x7274
CIMSS @ NOAA/NCEP Fax: (301) 763-8545
Rm.207, 5200 Auth Rd. Email: pvandelst@ncep.noaa.gov
Camp Springs MD 20746

Subject: Re: Classification of objects in 2D image
Posted by Ben Tupper on Tue, 19 Dec 2000 01:46:11 GMT
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Hello,

Yes, Sobel filters and a lengthy list of other techniques are used. Which tool to use depends upon the
quality of you image (signal/noise) and what you hope to pull out of the image. I have been astounded
by the number of different techniques used (most of which sail right over me.) In this case, it sounds
to me like Nobert has the image filtered to the point where features of interest stand out from the background. Now what is needed is a routine to make pretty much standard measurements of features size,
orientation relative to horizontal, etc. Of course, I could have missed the boat and misread Nobert's
needs.

Ben

Paul van Delst wrote:

>
>
> I thought that's what Sobel filters were for? Finding edges of features in images and such. An image
> consisting of crystals or crystal aggregates/clumps on a uniform background should show up well
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>
> paulv
>
> --
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