Subject: Re: Clsuter analysis wiht IDL Posted by Craig Markwardt on Fri, 23 Feb 2001 16:20:47 GMT View Forum Message <> Reply to Message

dw@isva.dtu.dk (Dorthe Wildenschild) writes:

- > I am trying to use the cluster analysis utility in IDL, and I can't work it
- > out. Perhaps due to my lack of knowledge in the statistical field.....
- > I have a 2D-image (658x658) with a single band of info (CT x-ray
- > intentities) that I want to classify (into three classes) using cluster
- > analysis. I assume I have to use the CLUST WTS function first and then the
- > CLUSTER function, but I can't work it out.
- > The on-line help isn't very helpful on this topic....

- > If I use
- > weights = clust\_wts(image, n\_clusters=3), with image= intarr(658x658) I get
- > alot of floating errors.
- > Do I need to reform the image to (658x658,1) before using the clust wts
- > function? Doesn't seem to work either, though. Also how do I get the
- > cluster numbers back as an overlay of my image? so that I can actually see
- > the result of the classification.

I am by no means a statistics or clusters analysis expert, but from looking at the documentation it seems that both CLUST\_WTS and CLUSTER require the n-dimensional \*positions\* of the data points, and not an intensity map. It is pretty clear that the cluster functions are based on an unweighted set of scatter-points. If you want to use your intensity information as a weighting, you may be out of luck.

Perhaps you could achieve what you desire with this code, which simply finds the non-zero pixels:

```
wh = where(image GT 0, ct)
if ct EQ 0 then message, 'ERROR: the image is blank!'
x = wh MOD 658
                    ; form x pixel positions
y = floor(wh / 658); form y pixel positions
xy = transpose([[x],[y]]); compute the 2-d scatter positions
weights = clust_wts(xy, n_clusters=3)
etc.
I haven't tried this, so it may take some tweaking. Good luck,
Craig
```

Craig B. Markwardt, Ph.D. EMAIL: craigmnet@cow.physics.wisc.edu

Subject: Re: Clsuter analysis wiht IDL Posted by dw on Thu, 01 Mar 2001 10:57:07 GMT

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Benno, <br>

<br>

Thanks for the input.<br>

You suggested:<br>

<br>

use something like<br>

ref\_img=REFORM(image,1,658\*658)<br>

weights = clust\_wts(ref\_img, n\_clusters=3)<br>

cls=cluster(ref\_img,weights,n\_cluster=3)<br/>br>

tvscl,reform(cls,658,658)<br>

<br>

but when computing the weights it goes bad <br/> <br/>br>

<font face="MS Sans Serif, Geneva" size=1>Program caused arithmetic

error: Floating underflow<br>

</font>and I get an array that is [1,3] and the values are<br>

<font face="MS Sans Serif. Geneva" size=1>5.60519e-045<br>

5.60519e-045<br>

5.60519e-045<br>

<br>

</font>tried converting to float before calculating weights, but same

result. Any suggestions anyone? realize per Craig's post that cluster analysis isn't what IDL has been used most for...<br

D<br>

<br>

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Subject: Re: Clsuter analysis wiht IDL

Posted by dw on Thu, 01 Mar 2001 11:20:59 GMT

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<Craig writes:<br>

<br>

&It; I am by no means a statistics or clusters analysis expert, but

<looking at the documentation it seems that both CLUST WTS and

CLUSTER<br>

<require the n-dimensional \*positions\* of the data points, and not an<br> <intensity map.&nbsp; It is pretty clear that the cluster functions are<br> &lt:based on an unweighted set of scatter-points. If you want to use your<br> &lt:intensity information as a weighting, you may be out of luck.<br> <br> < Perhaps you could achieve what you desire with this code, which simply<br> <finds the non-zero pixels:<br> <br> wh = where(image GT 0, ct)<br> if ct EQ 0 then message, 'ERROR: the image is blank!'<br>  $x = wh MOD 658\ \ \ \ form x pixel$ positions<br> y = floor(wh / 658); form y pixel positions<br/> <br> xy = transpose([[x],[y]]); compute the 2-d scatter positions<br/> weights = clust\_wts(xy, n\_clusters=3)<br> etc.<br> <br> &It;I haven't tried this, so it may take some tweaking. Good luck, <br> <Craig<br> <br> I'm such a beginner at this I don't know what the MOD function does? (no on-line help listing for it)<br> When trying to transpose, IDL corrects me with <br/> <br/>tr> <font face="MS Sans Serif, Geneva" size=1>Arrays are allowed 1 - 8 dimensions<br> <br> thanks for trying to help!<br> BTW I'm not a Mr. :-)<br> D<br> </font></html>

Subject: Re: Clsuter analysis wiht IDL Posted by dw on Mon, 05 Mar 2001 08:26:26 GMT View Forum Message <> Reply to Message

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<br/>br>

Hi Gonzalo, <br>

<br>

you wrote:<br>

< what is the difference between the obsolete IDL procedure

"kmeans" and the<br>

<new &quot;cluster&quot; ?... In theory, with this procedures we get the same results, but<br/>
th>

<etc, etc), and we got different results...<br>

<br>

I haven't responded to your earlier post of this question because I don't know the answer. In the last few days, I've managed to solve my problems with the CLUSTER function by not using it! I've downloaded a program written by Vincent Schmithorst called CCHIPS/IDL and there's a procedure in this program package called ksegment.pro which I've modified and am now using for my cluster analysis. And it works well!!<br/>

<br

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OH&nbsp: 45229<br>

and can be downloaded from their web site: <br>

<font color="#0000FF"><u>http://www.irc.chmcc.org<br>

<br>

</u></font>Good luck,<br>

Dorthe<br>

<br>

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