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Subject: Re: Clsuter analysis wiht IDL

Posted by [Craig Markwardt](#) on Fri, 23 Feb 2001 16:20:47 GMT

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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

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Craig B. Markwardt, Ph.D.      EMAIL: [craigmnet@cow.physics.wisc.edu](mailto:craigmnet@cow.physics.wisc.edu)

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Subject: Re: Re: Clsuter analysis wiht IDL  
Posted by [dw](#) on Thu, 01 Mar 2001 10:57:07 GMT  
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```
<html>
Benno,<br>
<br>
Thanks for the input.<br>
You suggested:<br>
&nbsp;<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>
tvscl,reform(cls,658,658)<br>
<br>
but when computing the weights it goes bad <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>
</html>
```

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Subject: Re: Re: Clsuter analysis wiht IDL  
Posted by [dw](#) on Thu, 01 Mar 2001 11:20:59 GMT  
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```
<html>
&lt; Craig writes:<br>
<br>
&lt; I am by no means a statistics or clusters analysis expert, but
from<br>
&lt; looking at the documentation it seems that both CLUST_WTS and
CLUSTER<br>
```



"kmeans" and the

<new "cluster" ?... In theory, with this procedures we get the same results, but<br>

&lt;I tested it with the same input parameters (same image, quantity of clusters,<br>

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

<http://www.irc.chmcc.org>

<br>

Good luck,<br>

Dorthe&lt;br&amp;gt

 <br>

&lt;/html&gt;