Subject: binning a point clouds in the xy plane
Posted by Nafiseh Masoumzadeh on Thu, 19 Dec 2013 21:53:11 GMT
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Hello,

I have three vectors, x, y, z having same size which I want to bin x and y and have average value of z corresponding to bin. and then get resample data in point clouds as an output.

rebin or reform are supposed to do it, but I couldn't find how, however I've studied http://www.idlcoyote.com/tips/rebin_magic.html. The example in this link for me it is more like to mask your data but I want to have an avarage of one of my vector z in bin x-y plane.

regards,
Nafiseh

Subject: Re: binning a point clouds in the xy plane
Posted by David Fanning on Thu, 19 Dec 2013 22:13:11 GMT
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Nafiseh Masoumzadeh writes:

> I have three vectors, x, y, z having same size which I want to bin x and y and have average value of z corresponding to bin. and then get resample data in point clouds as an output.
>
> rebin or reform are supposed to do it, but I couldn't find how, however I've studied http://www.idlcoyote.com/tips/rebin_magic.html. The example in this link for me it is more like to mask your data but I want to have an avarage of one of my vector z in bin x-y plane

I would use HIST_ND with the REVERSE_INDICES keyword to bin the data in X and Y. Then, I would loop through each bin and with the output from REVERSE_INDICES find the Z values falling in each bin and average those.

You can find NIST_ND in the Public directory of the Coyote Library, and you might find cgReverseIndices handy for returning the indices of the Z values in each bin:

  http://www.idlcoyote.com/idldoc/cg/cgreverseindices.html

Cheers,

David
--
David Fanning, Ph.D.
Fanning Software Consulting, Inc.
Coyote's Guide to IDL Programming: http://www.idlcoyote.com/
Sepore ma de ni thue. ("Perhaps thou speakest truth.")

Subject: Re: binning a point clouds in the xy plane
Posted by Nafiseh Masoumzadeh on Fri, 20 Dec 2013 00:11:15 GMT
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Thanks a lot,

it is really a brilliant idea. :)

I have just problem with cgReverseIndices to find indices of avg z values.

here is the code;

```
readcol, 'sampledata.txt', x, y, z

hist_xy=hist_nd(transpose([[x],[y]]),[0.05,0.05],$
 min=[min(x),min(y)],max=[max(x),max(y)],reverse_indices=ri)

 avg_hist_xyz=make_array(size(hist_xy,/DIMENSIONS),VALUE=!VAL UES.F_NAN)

for j=0,n_elements(hist_xy)-1 do if ri[j+1] gt ri[j] then $
      avg_hist_xyz[j]=mean(z[ri[ri[j]:ri[j+1]-1]])
```

;;;;;;;;;;;;;;; I am not sure how to use correctly "cgReverseIndices"
indicesz = cgReverseIndices(avg_hist_xyz[ri], 4, COUNT=cnt) ?????
help, indicesz ?????

regards,
Nafiseh

Subject: Re: binning a point clouds in the xy plane
Posted by David Fanning on Fri, 20 Dec 2013 00:20:46 GMT
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Nafiseh M writes:

> Thanks a lot,
>
> it is really a brilliant idea. :)
>
> I have just problem with cgReverseIndices to find indices of avg z values.
>
> here is the code;
>
> readcol, 'sampledata.txt', x, y, z
>
> hist_xy=hist_nd(transpose([[x],[y]]),[0.05,0.05],$

> min=[min(x),min(y)],max=[max(x),max(y)],reverse_indices=ri)
>
> avg_hist_xyz=make_array(size(hist_xy,/DIMENSIONS),VALUE=!VAL UES.F_NAN)
>
> for j=0,n_elements(hist_xy)-1 do if ri[j+1] gt ri[j] then $
> avg_hist_xyz[j]=mean(z[ri[ri[j]:ri[j+1]-1]])
>
> ;;;;;;;;;;;;;; I am not sure how to use correctly "cgReverseIndices"
>
> help, indicesz ?????

I would use it like this:

```
 for j=0,n_elements(hist_xy)-1 do begin
   indicesz = cgReverseIndices(ri, j, COUNT=cnt)
   if cnt gt 0 then avg_hist[j] = Median(z[indicesz])
 endfor
```

I would use Median rather than Mean so I wasn't being confused by
outliers, but you should decide what is best for you.

Cheers,

David
--
David Fanning, Ph.D.
Fanning Software Consulting, Inc.
Coyote's Guide to IDL Programming: http://www.idlcoyote.com/
Sepore ma de ni thue. ("Perhaps thou speakest truth.")

Subject: Re: binning a point clouds in the xy plane
Posted by Nafiseh Masoumzadeh on Fri, 20 Dec 2013 23:01:17 GMT
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thank you,

But I thought with indicesz, i would have my new x and y for mean z values. I cannot figure it how can I calculate them?

Subject: Re: binning a point clouds in the xy plane
Posted by Nafiseh Masoumzadeh on Fri, 20 Dec 2013 23:03:14 GMT
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thanks a lot for the answer,

But I thought with indicesz, i would have my new x and y for mean z values. I cannot figure it how can I calculate them?

when I write
print, indicesz
I will get just some number which I don't know what are they.

Subject: Re: binning a point clouds in the xy plane
Posted by David Fanning on Sat, 21 Dec 2013 00:06:01 GMT
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Nafiseh M writes:

> thanks a lot for the answer,
>
> But I thought with indicesz, i would have my new x and y for mean z values. I cannot figure it how can I calculate them?

Are you talking about how you calculate the new X and Y vectors that describe the binned data? I think I would do it like this. Given that you have this (and note I'm leaving out the max values since they will not be used if you are specifying the bin size, as you are):

```
hist_xy=hist_nd(transpose([[x],[y]]),[0.05,0.05],$
   min=[min(x),min(y)], reverse_indices=ri)
```

I would do this, where I add half a bin size to put the X and Y vector values in the center of the bin:

```
dims = Size(hist_xy, /Dimensions)
xvector = Findgen(dims[0])*0.05 + Min(x) + 0.025
yvector = Findgen(dims[1])*0.05 + Min(y) + 0.025
```

> when I write
> print, indicesz
> I will get just some number which I don't know what are they.

They are the indices of the Z values that were placed into that bin.

Cheers,

David
--
David Fanning, Ph.D.
Fanning Software Consulting, Inc.
Coyote's Guide to IDL Programming: http://www.idlcoyote.com/

Sepore ma de ni thue. ("Perhaps thou speakest truth.")

Subject: Re: binning a point clouds in the xy plane
Posted by Nafiseh Masoumzadeh on Thu, 23 Jan 2014 15:48:53 GMT
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hello again,

I have a problem that my final result for my sample data in IDl, it is the same if i use this code in Matlab

http://www.mathworks.com/matlabcentral/fileexchange/41386-bi
nning-a-point-cloud-3d-scattered-data-in-the-x-y-plane/all_f iles

or maybe it is not a good example to test how much the code written in Idl is correct?

for example my data have 10 elements, after bin i will get 9 elements and by using MATLAB code, I will get 8 elements.

regards,
Nafiseh