Subject: Re: clip polyhedron mesh
Posted by Guneshwar Thangjam on Wed, 20 May 2015 21:48:44 GMT
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On Wednesday, 20 May 2015 20:39:19 UTC+2, Dick Jackson wrote:
> Hi Guni,
>
> On Tuesday, 19 May 2015 10:51:48 UTC-7, guni wrote:
>> Dear all,
>> I have a 3-dimensional polyhedron mesh where two polyhedrons are overlapped. I want to clip the polyhedron to make new polyhedrons where one portion belong the overlapping region and other non-overlapping region. If somebody knows how to do this, please let me know.
>
> First, it's a much simpler problem if you know you're working with *convex* polyhedra.
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> A Google search on [intersection of convex polyhedra algorithm] shows that at least *somebody* knows how to do this. :-) For example:
> "Finding the intersection of two convex polyhedra" from 1977:
> http://www.sciencedirect.com/science/article/pii/03043975789 00518
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> There are lengthy algorithms that might take a lot of work to implement. Some even give solutions for intersecting convex and non-convex polyhedra.
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>> 2nd option:I saw IDL's 'mesh_clip' but it is a clip using a planar surface. I dont prefer to clip using a plane, but in case if I have to use it, how I can get the coordinates of the overlapping portion?
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> Something like this came up some time ago, and it may be the easiest way to go (assuming convex polyhedra). If you use each polygon from mesh 1 as a clipping plane into mesh 2 (and keep the correct piece each time!), when you're done, you'll be left with the intersection. This link includes another link to a useful example:
> https://groups.google.com/forum/#!searchin/comp.lang.idl-pvw
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> I haven't tracked it down, but I'm guessing that those discussions are about polygons in 2-D, not polyhedra in 3-D.
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> I hope this helps!
>
> Cheers,
> -Dick

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> Dick Jackson Software Consulting Inc.
> Victoria, BC, Canada --- http://www.d-jackson.com
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> P.S.: This was a nice example you gave:
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>> Anyway my script/polyhedron is something like this. Dick helped me to create polyhedrons, but here I used iplot, and ipolygon.
>>
>> ;;1st polyhedron
>>   x=randomu(seed,4)
>>   y=randomu(seed,4)
>>   z=randomu(seed,4)
>>   xyz=[transpose(x),transpose(y),transpose(z)]
>>   iPLOT,xyz,LINESTYLE=6,AXIS_STYLE=2,identifier='1'
>>   QHULL,xyz,Vert
>>   conn=[REPLICATE(3,[1,N_ElEMENTS(Vert)/3]),Vert]
>>   iPOLYGON,xyz,/DATA,CONNECTIVITY=conn,visualization='1',transparency=50,/FILL_BACKGROUND,FILL_COLOR='SKY BLUE'
>>
>> ;;2nd polyhedron
>>   x=randomu(seed,12)
>>   y=randomu(seed,12)
>>   z=randomu(seed,12)
>>   xyz=[transpose(x),transpose(y),transpose(z)]
>>   iPLOT,xyz,LINESTYLE=6,/OVERPLOT,identifier='2'
>>   QHULL,xyz,Vert
>>   conn=[REPLICATE(3,[1,N_ElEMENTS(Vert)/3]),Vert]
>>   iPOLYGON,xyz,/DATA,CONNECTIVITY=conn,visualization='2',transparency=50,/FILL_BACKGROUND,FILL_COLOR='red'
>>
>>   Thanks,
>> Guni

Hi Dick

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>> Thanks,
>> Guni

Hi Dick,
Thanks a lot for your help.
Well, I would like to see how MESH_CLIP works in my convex polyhedrons. I looked the link, and also the example. But, I dont know how to derive the plane coefficients in my polyhedron mesh. In the example it is defined as [1., 1., 1., 0.].
How can I derive these plane coefficients? "Plane--Input four element array describing the equation of the plane to be clipped to. The elements are the coefficients (a,b,c,d) of the equation ax+by+cz+d=0."
When I placed the mouse pointer in the plot (mesh), it shows x,y,z co-ordinates, Is it something related to the coefficients I am looking?
Thanks
Guni