Subject: Re: point inside/outside of 3D object.
Posted by Wout De Nolf on Tue, 21 Jun 2011 09:24:01 GMT
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On Sat, 18 Jun 2011 11:34:42 -0700 (PDT), Junum <junshikum@gmail.com>
wrote:

> Thanks Karl.
> I wanted know whether IDLanROI::ContainsPoints can be applied to 3D
> case.

I'd guess the answer is no. You should implement this yourself (as
Karl suggested) or you could do something like below. I'm not sure
whether this is the best way, but it seems to work.

```
; Generate vertices
v=TetrahedronVertices(r=10,phideg=-20)

; Connectivity list: [n,i[0],...,i[n-1],n,j[0],...,j[n-1],...]
;   n: number of vertices for each face
;   i[0],...,i[n-1]: vertices for face 1, ordered so that the normal
;                    points outwards (right-hand rule)
;   j[0],...,j[n-1]: vertices for face 2, ordered so that the normal
;                    points outwards (right-hand rule)
conn=[3,0,3,1, 3,0,1,2, 3,0,2,3, 3,1,3,2]

; Remark: if the number of vertices > 4 then you could generate
; the list like this:
;Qhull, v, tr, /delaunay
;conn=tetra_surface(v, tr)

; Point
p=[0,0,0.]

; Volume of the polyhedron
volume=tetra_volume(v,conn)

; Expanded polyhedron (including your point)
; vertices and connectivity list
v2=[[v],[p]]
Qhull, v2, tr, /delaunay
conn2=tetra_surface(v2, tr)

; Volume of the expanded polyhedron
volumeexp=tetra_volume(v2,conn2)

; If the "expanded volume" is larger, the point lies outside
```

if volumeexp gt volume then print,'Exterior' else print,'Interior'