Subject: Re: Antes de FAC Club
Posted by James Kuyper on Fri, 27 Apr 2007 22:00:59 GMT
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David Fanning wrote:
> kuyper@wizard.net writes:
>
>> What precisely do you mean by "put this tower back in the proper
>> orientation"? Do you actually want to modify the tower. If so, what
>> kinds of modification are permitted, and whjch are prohibited?
>> Alternatively, are you trying to find a point of view that makes it
>> look "similar" in some sense to the way it would look if it didn't
>> list? If so, in what way should the appearance be "similar"?
>
> Here is one approach I have thought about, and haven't tried
> to implement yet. If I took contours through the several
> cans piled on top of each other, as I got closer to the
> top of the tower the contours would get more and more like
> ellipses, rather than circles, because the cans at the top
> lean more than the cans at the bottom.
>
> If I found the center of each contour, and fitted a line
> though them, say with a stiff wire. I would like to be able to
> bend the stiff wire into a straight line and tilt the
> entire structure until the straight line was perpendicular
> to the XY plane and pointing in the +Z direction. As I did
> so, I would carry the cans with me.
>
> The effect I am trying to achieve is to stack each can on
> top of the other, so that if I look down on them from above
> (you can imagine gazing into your lover's eyes), I would
> see a sort of bulls-eye pattern.

I sort of get the picture of what you're trying to do, but what I'm not quite sure I understand is in what sense the transformed surface should remain similar to the original image. I'm going to describe a solution. If it's the solution you're looking for, then it's just a matter of figuring out how to implement it (right now, I have no idea). If not, at least it will give you an example of the kind of questions you need to answer before you can solve this problem.

You have surface that looks similar to a series of cans on a bent wire. Let s be the distance, measured along the wire, from it's starting point to a particular position along the wire. The wire may be described by the coordinates [x(s), y(s), z(s)]. Can number 'i' is centered at a position s[i] along the wire with its axis of rotation tangent to the wire at that position. It has a length l[i] and a radius r[i]. I would presume that s[i+1]-s[i] = 0.5*(l[i+1]+l[i]).

I think that what you'd like to do is create a new surface which is similar to the original, in that it can be described in exactly the same fashion, using exactly the same values of s[i], l[i], and r[i]. The only difference would be that, for the new surface, xnew(s)=0, ynew(s)=0, and znew(s)=s. Is that what you're looking for?
