

Fitting a 3D circle to a lobsided set of points

Source: <http://sci.tech-archive.net/Archive/sci.math.num-analysis/2008-11/msg00275.html>

- *From:* Dave the Funkatron <dave.rudolf@xxxxxxxx>
 - *Date:* Mon, 24 Nov 2008 23:12:08 -0800 (PST)
-

Hi all,

Suppose I have a set of 3D points that are roughly in one quadrant of a circle, and I want to find the plane that they are on, as well as the center of the circle (and, maybe its radius). Finding the plane isn't too hard -- simple least-squares fit. Getting the actual circle is somewhat harder.

I have seen least-squares types of approaches that use SVD, but they all assume that the center of the circle is at the centroid of the 3D points. In my case, this is not true.

I have also seen global optimization methods that try to solve similar problems (like for the center and radius of a sphere). However, I am worried that such an approach will be quite slow if I do not have some bounds on how large the circle's radius can be.

So, I'm wondering what other options are out there. Any ideas would be appreciated.

Thanks.

Dave

.