Subject: Re: Averaging quaternions
Posted by John Lansberry on Fri, 19 Mar 2004 15:14:12 GMT
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"Graham" <GrahamWilsonCA@yahoo.ca> wrote in message
news:eda30d78.0403181434.229b3b53@posting.google.com...
> Does anyone know if it is possible to take an average of regularly
> sampled quaternions to get a mean orientation (i.e. a mean rotation
> matrix)? I seem to recall there being a trick involved but beyond
> re-normalizing the resuling (averaged) quaternion, I cannot remember
> what it is.
>
> Cheers,
> Graham

Hi Graham,

It might help a lot to explain a little more about what you mean by "regularly sampled" and "averaging."

Do you mean that you have time samples of quaternions over time? In other words, you have q(t1), q(t2), q(t3), etc., where t1, t2, t3, etc. are evenly spaced time points (not that even spacing is all that important).

Is each sample a valid quaternion?

By "averaging," what do you really want?

SLERP (as suggested by OUP) is generally used to interpolate between two (valid) quaternions. The result is always a valid quaternion. SLERP is in fact valid for any two unit vectors of equal dimension (not just quaternions). So, you can use SLERP to find the quaternion at the midpoint of your time interval and call that an "average".

My guess is that you need something more complex - try Googling on "averaging quaternions".

John