Subject: Re: Least squares fit of a model to a skeleton consisting out of 3D points.
Posted by pgrigis on Mon, 24 Nov 2008 15:13:10 GMT
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Johan wrote:
> I have the following problem to solve and was wondering whether the
> mpfit routines of Craig Markwardt will do the job?
>
> Do have the following model:
> Let g(X,Y,Z)=1 be a quadratic function in the coordinate system
> (O,Z,Y,Z) defined by the long, horizontal and vertical axes
> (ellipsoid). Write the equation of this quadratic function in matrix
> notation as follows:
>
> g(X,Y,Z) = [X, Y, Z]*[[A1,A4,A5],[A4,A2,A6],[A5,A6,A3]]*[[X],[Y],[Z]]
> + [X, Y, Z]*[[A7],[A8],[A9]]
>
> Need to fit this model to a 3D skeleton of N points by using least
> squares by calculating the coefficients Ai .
>
> This is achieved by minimizing the total squared error between the
> exact position of the points (Xi, Yi, Zi) on the quadratic surface and
> their real position in the coordinate system (O, X, Y, Z).
I am confused by this statement. In which system are Xi,Yi,Zi
measured?
What are "exact" and "real" position? This is very confusing...

Paolo

> The
> minimizing is performed from the derivative of the equation below with
> respect to A1 ... A9:
>

>
> This equation yields a linear system of nine equations in which the
> values of coefficients A1 ... A9 are unknown.
>
> Anyone that can help?
> Johan Marais