

Re: Linear Optimization problem.....

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- *From:* "Ray Koopman" <koopman@xxxxxx>
 - *Date:* 24 May 2005 20:35:14 -0700
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madvlad@xxxxxxxx wrote:

> Thanks for the help. Your explanation was extremely helpful.
> The whole thing makes much more sense to me now. I have one
> further question related to the actual minimization process:
>> Then $\sum_i d_i^2 = (y-z)'(y-z) + (y-z)'X*t + t'X'X*t$,
>> which can be minimized with respect to t in the usual way.
>
> I'm assuming this means that I need to minimize the gradient
> of the distance function?

It's probably better to say that you need to minimize the norm of the gradient than it is to say that you need to minimize the gradient itself. Or, better yet, just say that you need to set the gradient to zero.

>
> $\text{grad}(d_i^2) = -2X'X*t - 2X*(y-z)$
>
> Minimization occurs when the gradient is zero hence:
>
> $X'X*t + X*(y-z) = 0$
>
> Is this correct?

Yes, except you've used the formula from my initial post, which was wrong. The correct expression for $\sum(d_i^2)$ is $(y-z)'(y-z) - 2(y-z)'X*t + t'X'X*t$, its gradient is $-2X*(y-z) + 2X'X*t$, and the equation to be solved is $X'X*t = X'y$.

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- *Follow-Ups:*
 - ◆ *Re: Linear Optimization problem.....*
◇ *From:* Ray Koopman

- *References:*

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 - ◇ From: madsvlad
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 - ◇ From: Ray Koopman
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