

Optimize sampling times

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I want to fit a nonlinear function $f(t;x)$ to set of data at time points $t[1-10]$ by varying the parameters x . I know the data will be corrupted by Gaussian noise and I want my estimate of one of the fitted parameters $x[1]$ to have the minimum variance. I am free to choose the time points.

Is there a clever solution to this problem? Right now I'm using brute force simulations to minimize variance of $x[1]$ w.r.t the time-points. However I'm getting the estimate of the variance from $n=10^3$ trials and it's subject to error so the optimization tends to terminate at a different solution each time I run the program.

Is there a cleverer way than increasing n ?

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