NASA TECH BRIEF

Method of Statistical Filtering

Application of optimal linear filter theory, to situations in which the state forcing function is correlated with the state in an unknown way, can present serious problems. In many instances the cross correlation and forcing function must be modeled; if they are ignored, the filter gains tend to sink below their optimal levels, and useful measurement information is discarded.

A conservative and minimal formula has been developed for bounding of the cross correlation between a random forcing function and the state error when this correlation is unknown. The bound is conservative in the sense that its use always results in overestimation of the estimation-error covariance; it is minimal in the sense that it is less conservative than any other type of conservative bound.

Notes:
1. Designers and manufacturers of process-control equipment, as for the oil and chemical industries, may be interested.
2. Requests for further information may be directed to:

    Technology Utilization Officer
    Manned Spacecraft Center, Code BM7
    Houston, Texas 77058
    Reference: TSP70-10427

Patent status:

No patent action is contemplated by NASA.

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