

ABSTRACT

The solution of ε -contamination observation model is obtained as the optimal robust filter. For linear systems, the optimal robust estimator and its associated covariance can be computed recursively. In this thesis, we apply four different filters to linear systems with four different examples. The performance of this robust filter is numerically evaluated and compared with performances of another three filters including the Kalman filter which is one of the best filters.

From these examples, when data is clean, estimates given by all four different filters are not much different, and the optimal robust estimator is identical to the Kalman filter. In the presence of data outlier or in the absence of observation data, estimates given by the optimal robust filter deviate less from the 'clean' estimates than estimates given by another three filters.

