Quadratic estimation from non-independent uncertain observations with coloured noise

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Abstract

Recursive least-squares quadratic filtering and fixed-point smoothing algorithms for signal estimation from uncertain observations are derived when the uncertainty is modeled by non necessarily independent variables and the observations contain white plus coloured noise. The proposed estimators do not require the knowledge of the state-space model generating the signal, but only the moments, up to the fourth one, of the processes involved, along with the probability that the signal exists in the observations and the (2, 2)-element of the conditional probability matrix of the sequence describing the uncertainty.

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