

## An Algorithm to Compute the State Estimation of a Bilinear Dynamical Systems

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**Abstract :** In this paper, we introduce a mathematical algorithm which is used for estimating the states in the bilinear systems. This algorithm uses a special linearization of the second-order term by using the best available information about the state of the system. This technique makes our algorithm generalizes the well-known Kalman estimators. The system which is used here is of the bilinear class, the evolution of this model is linear-bilinear in the state of the system. Our algorithm can be used with linear and bilinear systems. We also here introduced a real application for the new algorithm to prove the feasibility and the efficiency for it.

**Keywords :** estimation algorithm, bilinear systems, Kalman filter, second order linearization

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