عنوان مقاله:

A PCA-Based Kalman Estimation Approach for System with Colored Measurement Noise

نویسندگان:

Mohammad Afshari - *Dept. Of Electrical and Computer Eng., Isfahan University of Technology*

Ahmadreza Tavasoli

Jafar Ghaisari

خلاصه مقاله:

In this article, principal component analysis (PCA) is applied to improve Kalman state estimator performance in the presence of colored measurement noise without extending thestate estimator dimension. Unlike the common methods the proposed PCA-based Kalman state estimator doesn't use theinformation of noise dynamics. First, measurements of the Sensors are entered to the PCA block. The new measurementdata and the previous ones, stored in PCA buffer, merged and processed. The PCA output will be noiseless data that increase the accuracy of the Kalman state estimator. An illustrativeexample is simulated for comparisons of standard Kalman estimator, state augmented Kalman estimator and the PCA basedKalman estimator. Finally the simulations demonstrate the significant improvement in accuracy and performance of state estimation using the proposed method

کلمات کلیدی:

State Estimation; Kalman State Estimator; Principal component Analysis

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