An Improved Iterative Log Thresholding Algorithm for DFL in Subspace

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Abstract

In order to improve the efficiency and robustness of device-free localization (DFL) systems in harsh environments, this letter proposed an iterative log thresholding algorithm for DFL in subspace. The log regularizer is taken as the constraint to optimize the object function. To meet the requirement of real-time performance, the dimensions of learning dictionary and observed vector are reduced with principal component analysis (PCA), and the sparse coefficient vector is iteratively computed with sparse coding algorithm. Eventually, by projecting the reference points (RPs) index of the coefficient vectors to the location of objects, the location is estimated. Numerical experiment verified the effectiveness of the proposed algorithm over the alternatives.

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