Robust Pattern Recognition via Correntropy Generalized Orthogonal Matching Pursuit

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Abstract : This paper presents a novel sparse representation method for robust pattern classification. Generalized orthogonal matching pursuit (GOMP) is a recently proposed efficient sparse representation technique. However, GOMP adopts the mean square error (MSE) criterion and assign the same weights to all measurements, including both severely and slightly corrupted ones. To reduce the limitation, we propose an information-theoretic GOMP (ITGOMP) method by exploiting the correntropy induced metric. The results show that ITGOMP can adaptively assign small weights on severely contaminated measurements and large weights on clean ones, respectively. An ITGOMP based classifier is further developed for robust pattern classification. The experiments on public real datasets demonstrate the efficacy of the proposed approach.