

Fingerprint Compression Based on Sparse Representation

Abstract:

A new fingerprint compression algorithm based on sparse representation is introduced. Obtaining an overcomplete dictionary from a set of fingerprint patches allows us to represent them as a sparse linear combination of dictionary atoms. In the algorithm, we first construct a dictionary for predefined fingerprint **image** patches. For a new given fingerprint **images**, represent its patches according to the dictionary by computing l^0 -minimization and then quantize and encode the representation. In this paper, we consider the effect of various factors on compression results. Three groups of fingerprint **images** are tested. The experiments demonstrate that our algorithm is efficient compared with several competing compression techniques (JPEG, JPEG 2000, and WSQ), especially at high compression ratios. The experiments also illustrate that the proposed algorithm is robust to extract minutiae.