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Sparse Projections Matrix Binary Descriptors for Face Recognition

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Abstract

In recent years, the binary feature descriptor has achieved great success in face recognition (FR) field, such as local binary pattern (LBP). It is well known that the high-dimensional feature representations can contain more discriminative information, therefore, it is natural for us to construct the high-dimensional binary feature for FR task. However, the high-dimensional representations would lead to high computational cost and overfitting. Therefore, an effective sparsity regularizer is necessary. In this paper, we introduce the sparsity constraint into the objective function of general binary codes learning framework, so that the problem of high computational cost and overfitting can be somehow solved. There are three main requirements in our objective function: First, we require that the high-dimensional binary codes have the minimized quantization loss compared with centered original data. Second, we require the projection matrices are sparse, so that the projection process would not take lots of computational resource even faced with high-dimensional original data. Third, for a mapping (hashing) function, the bit-independence and bit-balance are two excellent properties for generating discriminative binary codes. We also empirically show that the high-dimensional binary codes can obtain

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