**Fingerprint Compression Based on Sparse Representation**

**ABSTRACT:**

A new fingerprint compression algorithm based on sparse representation is introduced. Obtaining an over complete 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, andWSQ), especially at high compression ratios. The experiments also illustrate that the proposed algorithm is robust to extract minutiae.

**EXISTING SYSTEM:**

Lossy compression technologies usually transform an image into another domain, quantize and encode its coefficients. During the last three decades, transform-based image compression technologies have been extensively researched and some standards have appeared. Two most common options of transformation are the Discrete Cosine Transform (DCT) and the Discrete Wavelet Transform (DWT).

**DISADVANTAGES OF EXISTING SYSTEM:**

The existing systems techniques have a common shortcoming, namely, without the ability of learning. The fingerprint images can’t be compressed well now.

**PROPOSED SYSTEM:**

* In this paper, a novel approach based on sparse representation is given. The proposed method has the ability by updating the dictionary.
* The specific process is as follows: construct a base matrix whose columns represent features of the fingerprint images, referring the matrix dictionary whose columns are called atoms; for a given whole fingerprint, divide it into small blocks called patches whose number of pixels are equal to the dimension of the atoms; use the method of sparse representation to obtain the coefficients; then, quantize the coefficients; last, encode the coefficients and other related information using lossless coding methods.
* We will take it into consideration. In most Automatic Fingerprint identification System (AFIS), the main feature used to match two fingerprint images are minutiae (ridges endings and bifurcations). Therefore, the difference of the minutiae betweenre- and post-compression is considered in the paper.

**ADVANTAGES OF PROPOSED SYSTEM:**

* A new compression algorithm adapted to fingerprint images is introduced. Despite the simplicity of our proposed algorithms, they compare favorably with existing more sophisticated algorithms, especially at high compression ratios. Due to the block-by-block processing mechanism, however, the algorithm has higher complexities.
* The experiments show that the block effect of our algorithm is less serious than that of JPEG.

**ALGORITHM USED:**

Fingerprint Compression Based on Sparse Representation

**SYSTEM REQUIREMENTS:**

**HARDWARE REQUIREMENTS:**

* System : Pentium IV 2.4 GHz.
* Hard Disk : 40 GB.
* Floppy Drive : 1.44 Mb.
* Monitor : 15 VGA Colour.
* Mouse : Logitech.
* Ram : 512 Mb.

**SOFTWARE REQUIREMENTS:**

* Operating system : Windows XP/7.
* Coding Language : MATLAB
* Tool : MATLAB R 2007B

**REFERENCE:**

Guangqi Shao, Yanping Wu, Yong A, Xiao Liu, and Tiande Guo, “Fingerprint Compression Based on Sparse Representation”, IEEE TRANSACTIONS ON IMAGE PROCESSING, VOL. 23, NO. 2, FEBRUARY 2014