

ABSTRACT OF THE DISCLOSURE

Encoder apparatus and method for efficient data compression of fingerprint images consisting of minutiae points and binary-valued, single-pixel width ridges, and corresponding decoder apparatus and method are disclosed. The techniques exploit the intrinsic properties of this class of images, and generate a data stream that requires a smaller number of bytes to represent an approximated version of the fingerprint image. All the salient features of a fingerprint, including the exact positions of minutia, and approximated directions of minutia and ridges, are preserved in the data stream. The key is an adaptive and context-sensitive strategy to represent the global and local ridge directional information in a compact and efficient manner. The decoder recovers a good approximation of the image by decompressing the data stream, and rendering the minutia and ridges of the fingerprint. The generated data stream also supports a scalable representation of fingerprint information, in which decoding only a subset of the compressed data can provide a useful subset of fingerprint information that suits the requirements or limitations of the decoding system.

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