

A method of detecting singular points of fingerprint images using a directional field

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Abstract

Personal identification by fingerprint recognition generates sustainable interest and is important for security purposes. Currently, most fingerprint recognition systems include computer-intensive operations. The works [3, 4] investigate the method of fingerprint recognition based on the directional field. However, this method is only suitable for small databases (not exceeding 10^4 elements). The main problem preventing the use of this method with larger databases is the dependence of the directional field on the fingerprint orientation. In order to use the directional field method for recognizing fingerprints in larger databases (up to 10^6 elements), it is necessary to define fingerprint global singular points to expand the feature set. It is necessary to find the position of the singular points on the filtered directional field and determine their type. This paper proposes an original method of automatic search for special points in images.

Keywords: detecting singular point, fingerprint image, directional field, personal identification, security purpose, fingerprint recognition system, database.

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