Penentuan nilai standar distorsi berminyak pada akuisisi citra sidik jari = Determining the standard value of the oily distortion of acquisition the fingerprint images

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Abstrak

Penelitian ini menjelaskan sebuah prosedur baru untuk menentukan nilai standar distorsi berminyak pada akuisisi citra sidik jari berdasarkan skor kejelasan dan rasio ketebalan ridge-valley. Citra sidik jari dikuantisasi ke dalam blok berukuran 32 x 32 piksel. Setiap blok dihitung orientasi garis yang tegak lurus terhadap arah ridge. Bagian tengah blok sepanjang arah ridge, vektor dua dimensi V1 dengan ukuran 32 x 13 piksel diekstraksi dan ditransformasi ke vektor
vertikal dua dimensi V2. Regresi linier diterapkan pada vektor satu dimensi V3 yang merupakan rata-rata dari V2 untuk menghasilkan determinant threshold (DT1). Area yang lebih kecil dari DT1 adalah ridge, sebaliknya adalah valley. Ujicoba kejelasan dilakukan dengan menghitung luasan citra yang tumpang tindih dari distribusi tingkat keabuan ridge dan valley yang telah dipisahkan. Ukuran rasio ketebalan ridge terhadap ketebalan valley dihitung per blok, ketebalan
ridge dan ketebalan valley diperoleh dari nilai tingkat keabuan per blok citra dalam arah normal ke arah ridge, nilai rata-rata rasio diperoleh dari luas keseluruhan citra. Hasil penelitian menunjukkan bahwa nilai standar distorsi berminyak pada akuisisi citra sidik jari dikatakan berminyak apabila citra memiliki nilai skor kejelasan lokal (LCS) antara 0,01446-0,01550, skor kejelasan global (GCS) antara 0,01186-0,01230, dan rasio ketebalan ridge-valley (RVTR) antara 6,98E-05-7,22E-05.
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Abstract
This research describes a novel procedure for determining the standard value of the oily distortion of acquisition the fingerprint
images based on the score of clarity and ridge-valley thickness ratio. The fingerprint image is quantized into blocks size 32 x 32 pixels. Inside each block, an orientation line, which perpendicular to the ridge direction, is computed. The center of the block along the ridge direction, a two-dimension (2-D) vector V1 (slanted square) with the pixel size 32 x 13 pixels can be extracted and transformed to a vertical 2-D vector V2. Linear regression can be applied to the onedimension (1-D) vector V3 to find the determinant threshold (DT1). The lower regions than DT1 are the ridges, otherwise are the valleys. Tests carried out by calculating the clarity of the image from the overlapping area of the gray-level distribution of ridge and valley that has been separated. Thickness ratio size of the ridge to valley, it is computation per block, the thickness of ridge and valley obtained from the gray-level values per block of image in the normal direction
toward the ridge, the average values obtained from the overall image. The results shown that the standard value of the oily distortion of acquisition the fingerprint image is said to oily fingerprint when the images have local clarity scores (LCS) is between 0.01446 to 0.01550, global clarity scores (GCS) is between 0.01186 to 0.01230, and ridge-valley thickness ratio (RVTR) is between 6.98E-05 to 7.22E-05.