ABSTRAK

Biometrika merupakan pengembangan dari metode dasar identifikasi yang menggunakan karakteristik alami manusia sebagai basisnya. Salah satu sistem biometrika yang sering digunakan adalah sidik jari. Sistem identifikasi menggunakan sidik jari telah diaplikasikan secara meluas, diantaranya sebagai verifikasi absensi. Dalam membangun sistem verifikasi absensi terdiri dari dua tahap yaitu, pra-pemrosesan dan ekstraksi fitur. Pada tahap pra-pemrosesan terdiri dari tahap perubahan citra sidik jari menjadi grayscale dan segmentasi. Pada tahap ekstraksi fitur terdiri dari tahap penentuan reference point, Region of Interest (ROI), serta konvolusi dengan Gabor Filter (0°, 22.5°, 45°, 67.5°, 90°, 112.5°, 135°, 157.5°). Kemudian, setelah melalui tahap-tahap tersebut dihasilkan fingercode yang disimpan ke dalam database. Selanjutnya, pada tahap pencocokan citra sidik jari digunakan Jarak Euclidean untuk menghitung nilai kecocokan antara citra sidik jari pengguna dengan data citra sidik jari yang telah tersimpan dalam database. Pada proses pengujian sistem diambil data sidik jari dari 8 orang responden yang merupakan pegawai dari S1 Ilmu Komputer Universitas Sumatera Utara. Data sidik jari diambil melalui alat fingerprint tipe Biofinger FRR-099 dengan ukuran 256x304 piksel. Dari hasil pengujian, diperoleh nilai False Acceptance Rate (FAR) 4,6%, nilai False Rejection Rate (FRR) 1,34 % dan nilai Genuine Acceptance Rate (GAR) 98,66%.

Kata kunci : biometrika, verifikasi, sidik jari, metode Gabor Filter
ANALYSIS AND IMPLEMENTATION GABOR FILTER METHOD ON IMAGE FINGERPRINT AS ABSENCES VERIFICATION
(CASE STUDY: COMPUTER SCIENCE UNIVERSITY OF NORTH SUMATERA)

ABSTRACT

Biometrics is the development of identification basic method which uses the natural characteristics of human as its base. One of the biometrics system which is often used is the fingerprint. The identification system by using fingerprint has been applied widely, such as attendance verification. In building attendance verification system, consists of two stages: pre-processing and feature extraction. In the pre-processing stage consists of changing of fingerprint image into grayscale and segmentation. In the feature extraction stage, consists of the reference point determination stage, Region of Interest (ROI), and convolution with Gabor Filter ($0^\circ$, $22.5^\circ$, $45^\circ$, $67.5^\circ$, $90^\circ$, $112.5^\circ$, $135^\circ$, $157.5^\circ$). Then after going through these stages, the fingercode was generated and stored into the database. Next on the fingerprint image matching stage, Euclidean distance is used to calculate the match value between the user fingerprint image and fingerprint image data which has been stored in the database. The test running process of the system, the fingerprint data was taken from 8 respondents who are employees of Computer Science, University of North Sumatra. Fingerprint data was taken by using a fingerprint tools Biofinger type FRR-099 with a size of 256x304 pixels. From the test results, the value of False Acceptance Rate (FAR) is equal to 4.6%, the value of False Rejection Rate (FRR) is equal to 1.34% and the value of Genuine Acceptance Rate (GAR) is equal to 98.66%.

Keywords: biometrics, verification, fingerprint, Gabor Filter method