ABSTRACT

Human fingerprint identification is a process to recognize and decide someone's identity. Technology of fingerprint identification included on biometric which use natural human characteristics. Biometric was built from uniqueness of someone's physics characteristic that can be applied for identification. Basically biometric based on human's natural characteristic such as fingerprint, palm print, iris, or retina, face contour, and voice characteristic. Advantage of biometric is its high complexity. Because of that reasons, if biometric data used for security system input, it has small probability of errors or forgery.

The identification system that will be designed is using Fuzzy Logic based on Genetic Algorithm and Gabor Wavelet filter. Like another image processing method, this system gets important feature information by feature extraction process using Gabor Wavelet. 2D Gabor Filter used for enhancing image acquisition quality, and to get macro and micro feature that contained on fingerprint image for a constant feature number output for every fingerprint. The use of Gabor filter on fingerprint image could increase ridge structure and valley. Image recognition and classification of inputs done by Fuzzy Logic based on Genetic Algorithm that is a system that mapping an input value to an output value.

From simulation result, the accuracy of fingerprint image recognition reaches 74.67 % with errors on recognition 0 %. And untrained image rejection rate reaches 100 %

Keywords: *Biometric, fuzzy logic, genetic algorithm, Gabor Wavelet, fuzzyfication, defuzzyfication.*