

Chatri Sonkunthod 2007: Applying Computer Program for Fingerprint Identification. Master of Engineering (Industrial Production Technology), Major Field: Industrial Production Technology, Interdisciplinary Graduate Program. Thesis Advisor: Mr. Kunnayut Eiamsa-ard, Ph.D. 150 pages.

Physical characteristics cannot change as the time goes. Thus, physical characteristics such as Fingerprint, Iris, Retina Scan, Palm, and Face are used to identify person. This work focuses on the study and development of image processing techniques in order to be used for Fingerprint identification in a large database.

First, the processes start with the scanner. The quality of a scanned fingerprint is adjusted and improved in order to get a better fingerprint. Noises on the scanned picture are eliminated by using the average value at a specific point (location). Mask is used to overlay on top of the array of scanned fingerprint. Any locations satisfy the rules for deleting are deleted.

After that, the scanned fingerprint is converted to a Black-and-White picture. And also, all the lines and curves are thinned to reduce the size of the data input. Major characteristics of the fingerprints can be classified into Bifurcation and End Points. These characteristics are used for fingerprint comparison. Fingerprints are grouped in the database according to these main characteristics by comparing the new fingerprint with the ones in the database using weighted technique.

The program is tested using 100 fingerprints: 10 pictures per finger. At 90 tests, Fail Acceptance Rate (FAR) is 11.11 percents, Also, at 100 tests; Fail Reject Rate (FRR) is 20.00 percents. Even though the FAR and FRR are relatively high but the time for comparing is very fast at 8.1 second per comparison. Therefore, the proposed algorithm has a potential for a real application.

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