

Thesis Title	Fingerprint Input Preprocessor for Automated Fingerprint Identification System
Student	Pol.Capt.Ukrit Srisuakam
Thesis Advisor	Assoc.Prof.Dr.Kanchit Mitree
Thesis Co-advisor	Assoc.Prof.Vichein Srisuakam
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Abstract

The picture of unclear fingerprint (low-quality ridge and blur) are always rejected from Input Subsystem (I-SUB) of Fingerprint Reader (FR). However, because of their essence in fingerprint identification these pictures must be improved. The main purpose of this research was to develop appropriate digital image processing method and its computer program to enhance the quality of the pictures of fingerprint before these pictures were returned to the I-SUB.

The results indicated that appropriate digital image processing method should follow the subsequent steps: (1) smoothing out noise by median filter of 3*3 mask, (2) converting the results to binary picture by dividing the pictures into portions of 8*8 mask, (3) finding the appropriate threshold through statistic means for each portion by moving window in steps of 4 pixel overlap, (4) using the fully parallel thinning algorithm with tolerance to boundary noise to retain only skeleton of ridge essential for further fingerprint identification.

The developed program may reduce time; the amounts of machines, instruments and manpower; and the complication of the work process. It also increases the automation of the system.