FINGERPRINT IMAGE ENHANCEMENT METHOD USING CHAIN CODE BASED ORIENTATION ESTIMATION AND DIRECTIONAL MEDIAN FILTER

A PROJECT REPORT PRESENTED BY

B. GAJASINGHA.

to the Board of Study in Statistics and Computer Science of the

POSTGRADUATE INATITUTE OF SCIENCE

in partial fulfillment of the requirement
For the award of the degree of

MASTER OF SCIENCE IN COMPUTER SCIENCE

of the

UNIVERSITY OF PERADENIYA

SRI LANKA

2007

Abstract

FINGERPRINT IMAGE ENHANCEMENT METHOD USING CHAIN-CODE BASED ORIENTATION ESTIMATION AND DIRECTIONAL MEDIAN FILTER

B. Gajasingha
Advanced Technical Institute
Sri Lanka Institute of Advanced Technological Education
Badulla

This paper describes an improved technique of chain-code based orientation estimation, which is a significant step in the procedure of fingerprint image enhancement. In brief, orientation estimation means deciding the actual direction of the ridges in a captured fingerprint image. Fingerprint images can be represented by a directional field of regular structure of ridge patterns. The dominant directional component of ridge plays a very important role in the pre-processing steps of fingerprint image analysis such as ridge's linking and noise removal before doing the minutiae extraction.

The improved computational method based on chain-code analyzes an input image in to directional sub images and synthesizes them to the perfectly constructed image. The software implementation results show that the proposed technique reduces the influence of noise on the ridge and valleys, enhances the ridge's moving shape by filling out the gaps between the broken ridges, and preserves the spatial characteristics at minutiae and singular points when compared with the input raw image.