

Fingerprint Minutiae Converter Software

Introduction

Digent Technology is currently developing a new software that provide functionality 1) to convert the existing fingerprint minutiae store in Card or Database into a new minutiae template format, and 2) to allow authentication and verification process between the new template and the existing template that is stored in the system.

Currently in Malaysia, fingerprint feature, that is retrieved from MyKad chip, is saved under PK MAT or MK MAT NORM format (***.pkmn) which could only be used with SAGEM fingerprint devices and therefore, setting up the limit for our prospective clients. This software converts the ***.pkmn format into international standard of ISO/IEC 19794-2 Fingerprint Standard.

It would be very beneficial because we could convert the existing fingerprint minutiae template in MyKad to a different International Standard format. Our clients could use the existing fingerprint feature in MyKad without the needs to spend more on new registration (enrolment) of fingerprints (e.g. additional ID Card, devices, new fingerprint system) which means huge cost reduction to our prospective clients.

This software would also give our clients the freedom to choose any type of fingerprint devices to be integrated into their system. It would also allow the server (existing or new) to cross verify the fingerprint template and fetch the record of the previously enrolled user data associated with a matching finger print, without the need to perform fingerprint enrollment process for existing data.

This converter software is already being tested and evaluated by various partners and prospect clients in Malaysia. We will be soon applying for Intellectual Property (IP) for this software in Malaysia.

Technical Requirement

SPECIFICATION

Platform	Window based
Authentication Speed	0.2 sec (Maximum 1.5 sec)
FAR	0.001%
FRR	0.1%
Template Size	480 Bytes
Template Data Structure	Conversion from PK MAT or MK MAT NORM format to a standard ISO/IEC 19794-2 Fingerprint Minutiae Data (Normal Size Finger Minutiae format)

Software Development Tools:

Visual Studio that uses Microsoft Software Development Platform.

Combination of languages are used by for this software which includes:

C/C++, C#, due to its stability for Windows and Linux environment. Provide little limitation on integration with other system not developed by Digent.

Java, Delphi.

Functions of Fingerprint Minutiae Converter

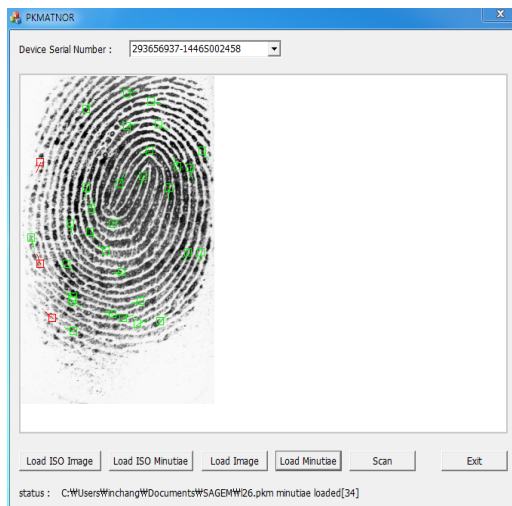


Figure 3.1.3.i is the sample taken for current fingerprint feature in MyKad that is using PK MAT or MK MAT NORM format. The feature is then converted into ISO/IEC 19794-2 Fingerprint Minutiae Data (Normal Size Finger Minutiae format)

We are able to decode this fingerprint feature and to determine:

- 1) image quality score (accuracy of the template),
- 2) the number of feature,
- 3) x/y position of feature,
- 4) the direction of feature.

Figure 3.1.3.i: Fingerprint feature extracted from MyKad

The feature is then processed for comparison using feature-based algorithm and also block orientation global feature algorithm if necessary. Refer to Figure 3.1.3.ii.

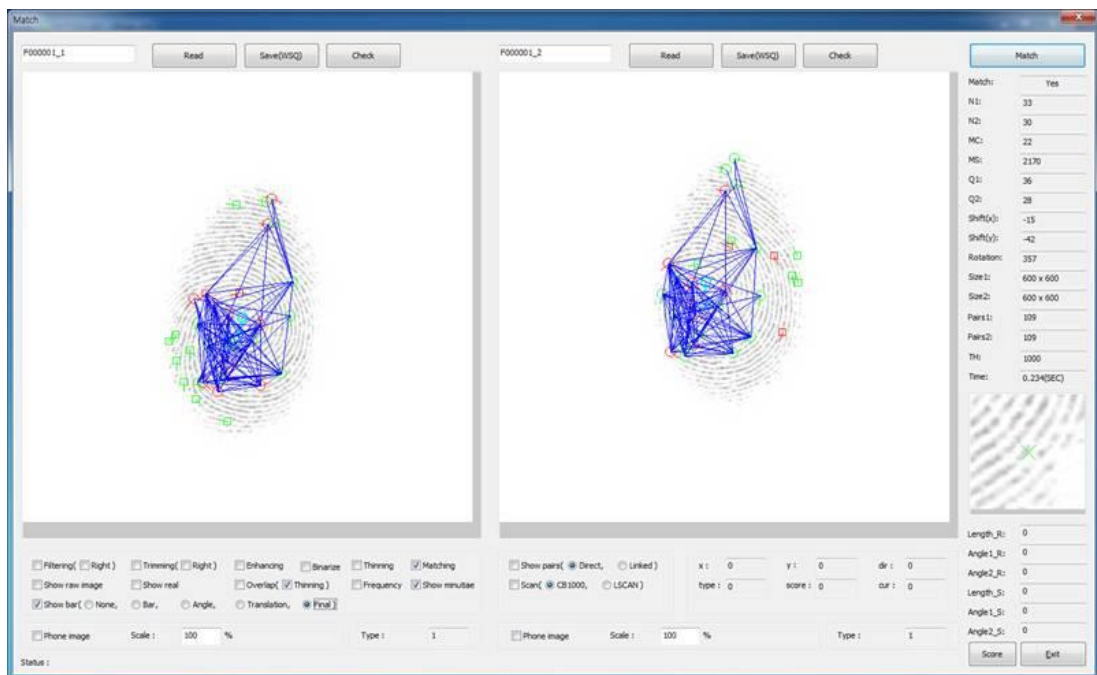


Figure 3.1.3.ii: Fingerprint feature processing stage

Diagram

OVERALL PROCESS OF DIGENT FINGERPRINT MINUTIAE CONVERTER SOFTWARE

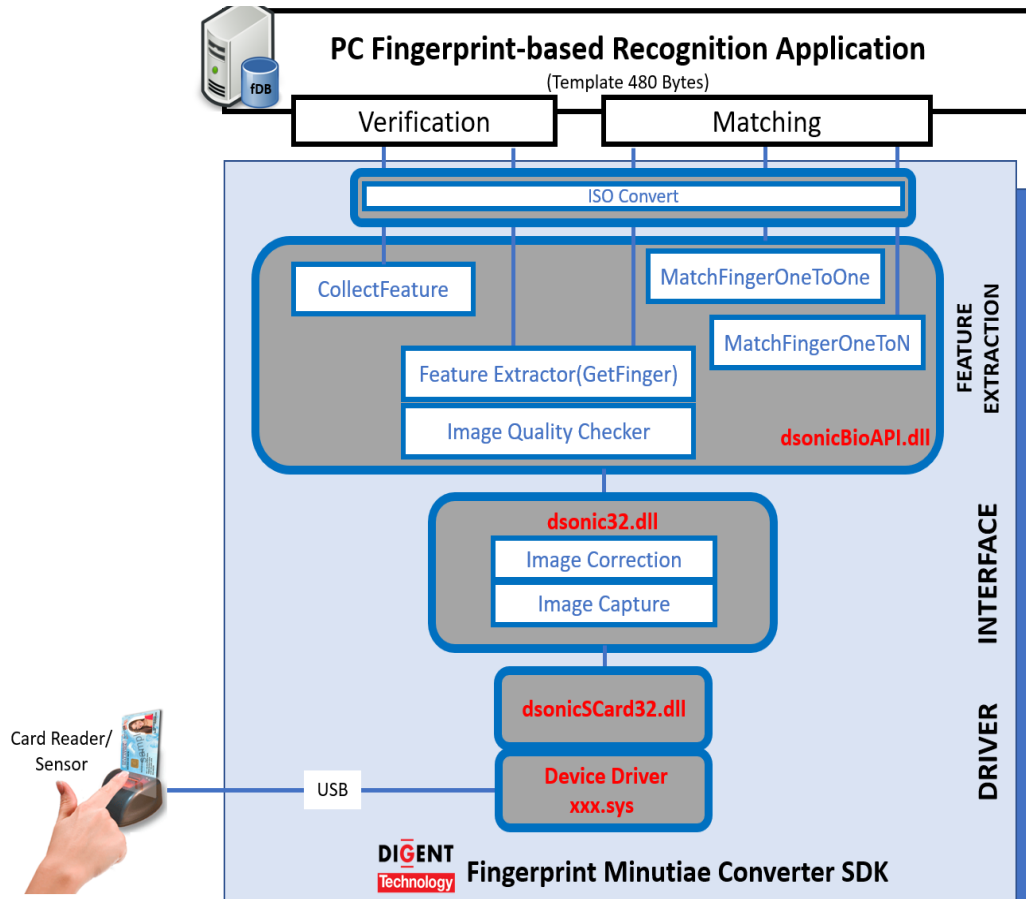


Diagram 3.1.4.i : Digent Fingerprint Minutiae Converter Structure

FLOWCHART FOR DIGENT FINGERPRINT MINUTIAE CONVERTER SOFTWARE

MyKad Biometric System Components

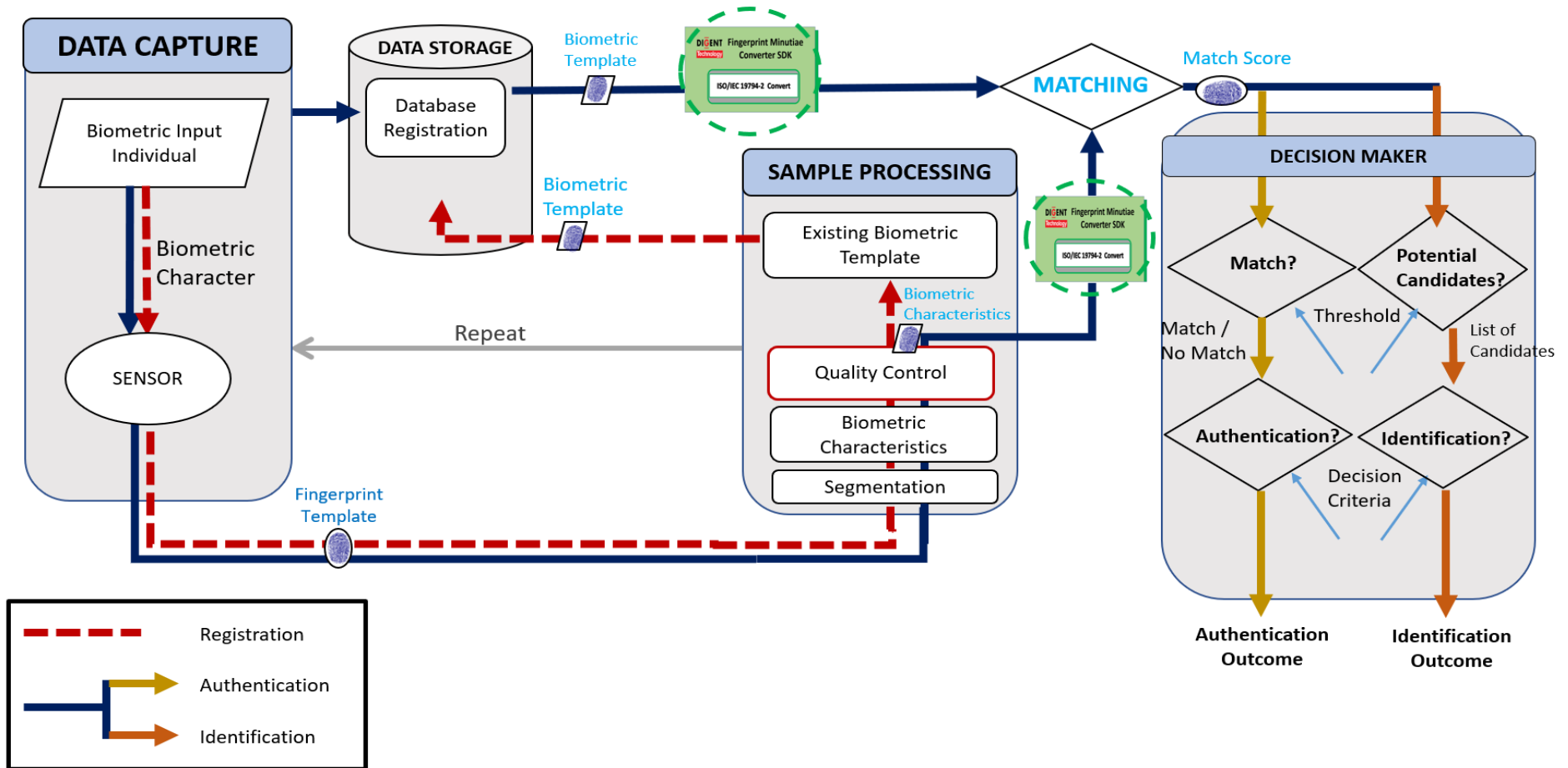


Diagram 3.1.4.ii: Digent Fingerprint Minutiae Converter Flowchart