AuthenTec, Inc.
Personal Security for the Real World™

Algorithm Interface Requirements

Minutiae
047 018 287
106 021 192
070 023 210
053 024 000
073 032 230
108 032 428
091 033 174
058 039 248
108 054 402
125 059 400
099 060 400
070 061 256
048 068 340
065 070 338
104 071 358
115 075 358
041 077 096
123 079 384
063 083 064
053 091 052
028 097 052
084 100 031
050 102 044
103 106 050
117 111 046
104 118 282

Apps Note

2096 Rev 1.0
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Post Office Box 2719
Melbourne, Florida 32902-2719
321-308-1300
www . authentec . com

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AuthenTec, Inc.
Post Office Box 2719
Melbourne, Florida 32902-2719
321-308-1300
www. authentec. com
apps @ authentec . com

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Introduction

This document outlines the basic requirements for a third-party fingerprint-matching algorithm in order to facilitate an easy interface with the AuthenTec FingerLoc™ system software. Algorithms that conform to these guidelines will operate readily with the FingerLoc Sensor control software, minimizing time-to-market delays.

The use of the approach detailed here also allows the third-party algorithm to be supplied in object code format, thus preventing unintended dissemination of the original source code.

Guidelines

The AuthenTec database executive routine expects a "dll" (Dynamic Link Library) file (having the extension **.dll**) with its associated export "lib" (Library) file (having the extension **.lib**). Using the standard #define,

```
#define DllExport __declspec( dllexport )
```

The actual declarations (such as `int DllExport algname`) may be provided in a separate header file or embedded in the dll. The images provided to the algorithm by the FingerLoc sensor integrated circuit are 128 x 128 bytes (pixels) in size, where each pixel comprises eight bits (gray scale) and will be referenced by a character pointer. AuthenTec can resample this basic image size into other densities (500 dpi and 1000 dpi) in order to conform to the requirements of the matcher.

In a similar manner, the storage area for a derived template (of size to be specified by the algorithm developer) will be referenced by a character pointer. Thus, as a minimum, the algorithm calls would be of the form;

```
Alg_enroll (unsigned char *image, unsigned char *template);

Alg_image_templ_verify (unsigned char *image, unsigned char
     *templ, [result]);
```

and, if the algorithm allows template to template match,

```
Alg_templ_templ_verify (unsigned char *templ1, unsigned char *templ2,
[result]);
```

where [result] represents one or more scoring parameters whose number and type will be as required by the specific algorithm. These scoring parameters are compared to a threshold value or values in order to decide whether a given fingerprint match will be accepted or rejected. The developer must supply the range of these scoring parameters and the values to use as thresholds for matching acceptance or rejection.

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The foregoing constitutes the minimum required by the platform but other configurations, such as an augmented parameter may be accommodated on an individual basis.

In order to take full advantage of the Dynamic Optimization™ capabilities of the FingerLoc sensor, the developer may also supply an "image quality index", along with the range and threshold value for this index. If the index value falls below the threshold required by the matching algorithm, the sensor will be adjusted to try to obtain a better image using the dynamic optimization feature.

AuthenTec, Inc.
Post Office Box 2719
Melbourne, Florida 32902-2719
321-308-1300
www.authentec.com
apps@authentec.com

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