TrueSecure™
GTU Series Fingerprint Module
User Manual

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Table of Contents

1 Introduction 3

2 Functional Description 3

View Image 5
Enroll 6
Verify 7
Identify 8
Select User 9
Delete User 10
Save Image 10
View Log 10
Settings 11
Similarity Threshold 11
Exit 11

1 Introduction

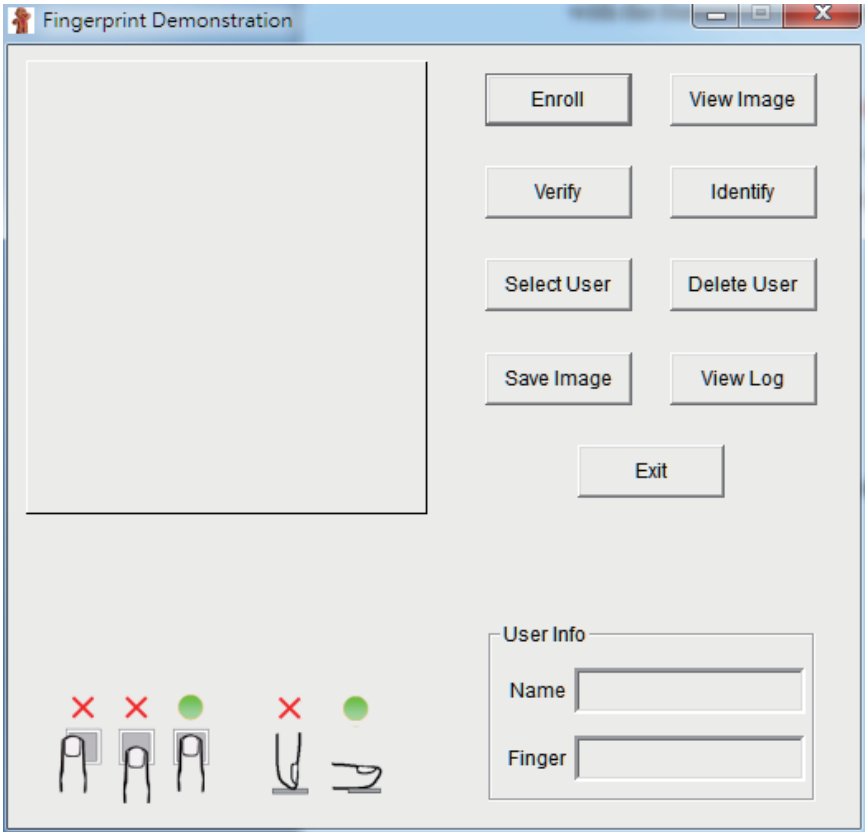
This demonstration program is a simple but helpful program that will assist users to become familiar with the features of the GTU series of fingerprint modules. The program allows easy implementat of all the major functions required for fingerprint recognition.

2 Functional Description

After program installation, execute the program by double-clicking on the Gingy_Demo.exe in the SDK program directory. After execution the following start up screen will be displayed.

The program includes the following fingerprint recognition functions:

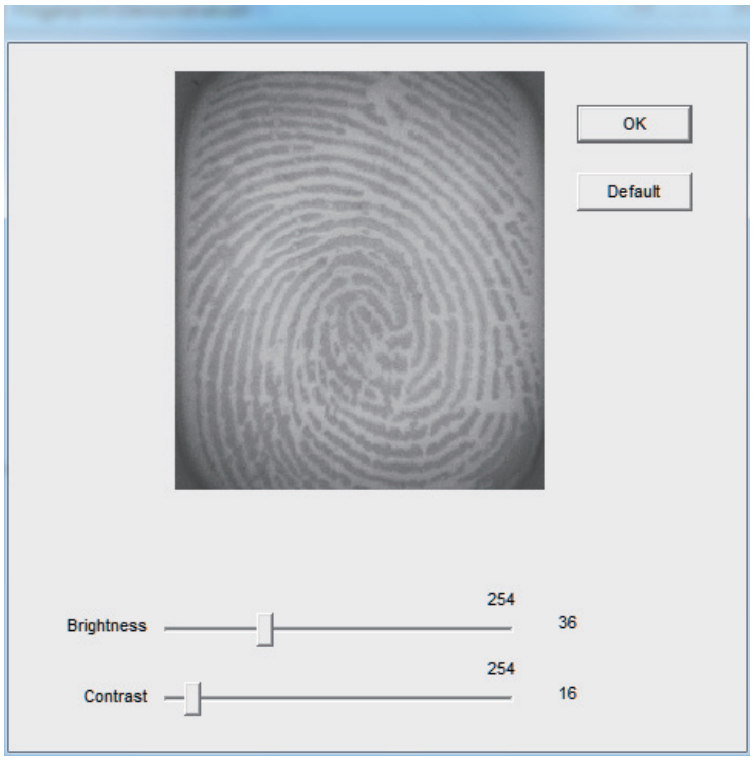
Function Name	Function Description
View Image	Examine the fingerprint image
Enroll	Store a new user's fingerprint image
Verify	Check a newly recorded fingerprint image against a previously enrolled image
Identify	Identify image from database
Select User	Select a user for verification
Delete User	Delete a user from the database
Save Image	Save a fingerprint image to a file
View Log	View the operation history



This start up screen contains a set of fingerprint module functions which are described in the following section.

View Image

The View Image can be selected to view the recorded fingerprint image. This function is used to adjust the image quality for the CMOS optical device. As the default settings may be not suitable for certain environment or finger types, the user can adjust the brightness, contrast and gamma to get a satisfactory image quality for later enrollment or authentication.



Enroll

The Enroll function is used to enroll a new fingerprint as the current user. At least three fingerprints are required to complete the enrollment. Place the finger on the reader for at least three times until the enrolled quality is displayed.

The fingerprint reader will take the common features of these fingerprints and after a few seconds of processing, the reader will inform the user of the enrolment result.

The following table shows the five levels of quality that are provided.

Quality Level	Criteria
A	Successful fingerprint enrollment with very good clarity, features are stable and is suitable for later verification.
B	Successful fingerprint enrollment with good clarity, features are stable and is suitable for later verification.
C	Successful fingerprint enrollment, with average clarity and enough stable features for later verification.
D	Although indicating a successful enrollment, the fingerprint may not be very clear or may not have very good features. In this case, the false rejection rate in identifying this kind of fingerprint may be higher than that of Quality A, b or C.
Failed	Unsuccessful enrollment so need to try again. If enrollment of the same finger fails many times, then other fingers should be tried. Select the one with the highest quality and enroll that finger.

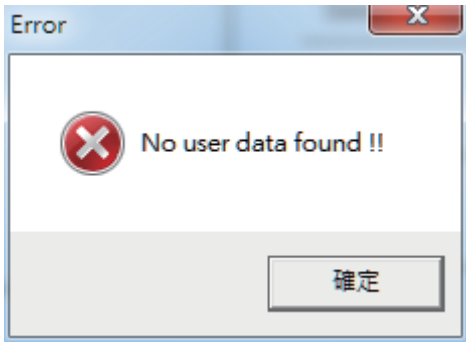
You can Select Enroll to enter the enrollment mode. The screen is the same as the snap function. After enrolling a fingerprint successfully, a dialog box will appear which shows the enrolled quality. The user is now requested to input a name and choose the enrolled finger. After inputting the desired data, select “Save” to save the data.

Verify

The Verify function is used to check a live-scanned fingerprint from the current user. It implements only a one-to-one matching. The matching compares a live-scanned fingerprint image against a previously enrolled fingerprint image, to verify that they came from the same finger. To use this function place a finger on the reader and the fingerprint reader will check it out automatically according to the security level settings.

The objects to be compared are the live-scanned fingerprint image and the final fingerprint template - EnrlTemplate, which is the data that was saved during enrollment. After a successful snapping, the live-scan fingerprint image data is stored in the main memory. The EnrlTemplate can be chosen by clicking Select User or by creating a new user through the enrollment process.

The Verify function can be selected to enter the matching fingerprint mode. Before clicking the Verify button, a user must first be selected, otherwise the following screen will appear.

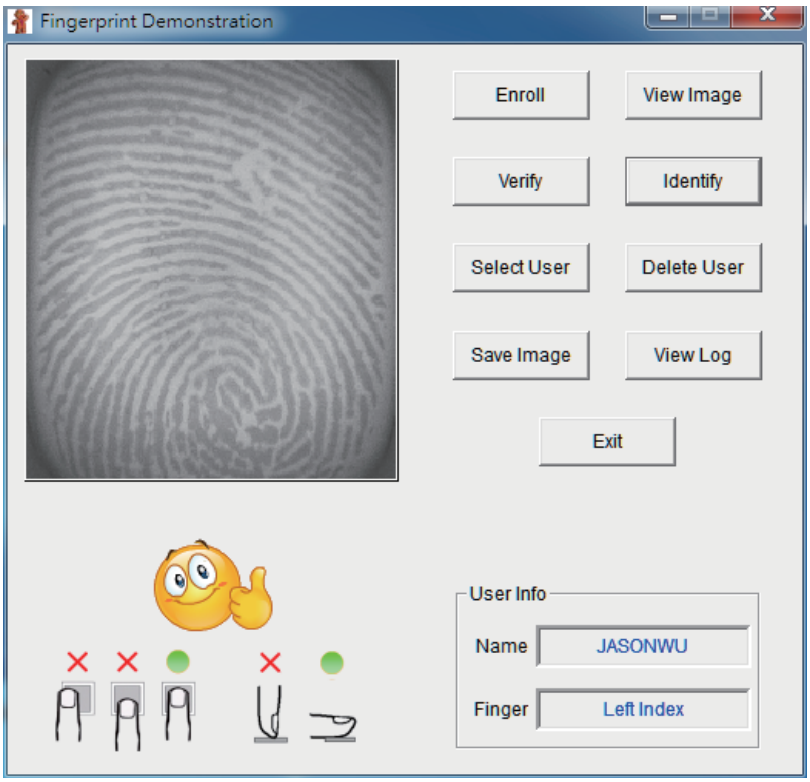


After verification, the result will be displayed on the screen to show if the verification achieved a match or if it failed. See Identify for details.

Identify

The Identify function is used to identify a live-scanned fingerprint image from the database. This function implements a one-to-many matching. The matching process compares a live-scanned fingerprint image with a previously enrolled database. To use this, a finger should be placed upon the reader to allow the fingerprint reader to check it out automatically according to the security level settings.

The Identify function can be selected to enter the matching fingerprint mode. After identification, the result will be displayed on the screen to show if the identification has achieved a match or if it has failed. If the identification is successful the user information will also be shown on the screen.



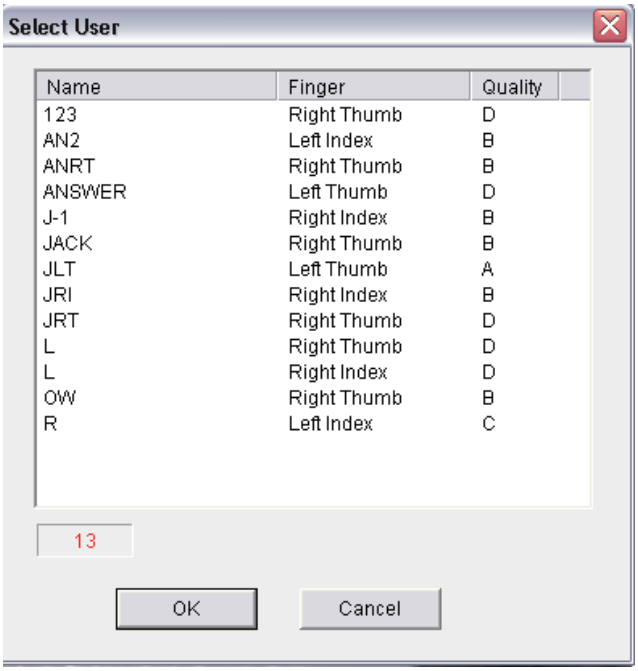
Select User

The Select User function is used to select a User for verification. The user data files are created after enrollment. Once a user has been selected, it will become the target for verification. The name of the user will be displayed on the demo program screen.

There are two methods to change the target that is to be verified:

- Select another user from the function of Select User.
- After enrollment, the enrolled user will become the new matching target automatically.

The Select User can be selected to enter the Select User mode. The following screen will appear showing the user list, containing the name, enrolled finger and enrolled class. To select a user, choose the user and click the "OK" button or double-click on the desired user.



Delete User

The Delete User function will delete a User from the database. Once you have selected a user, the user will be deleted from the list.

Save Image

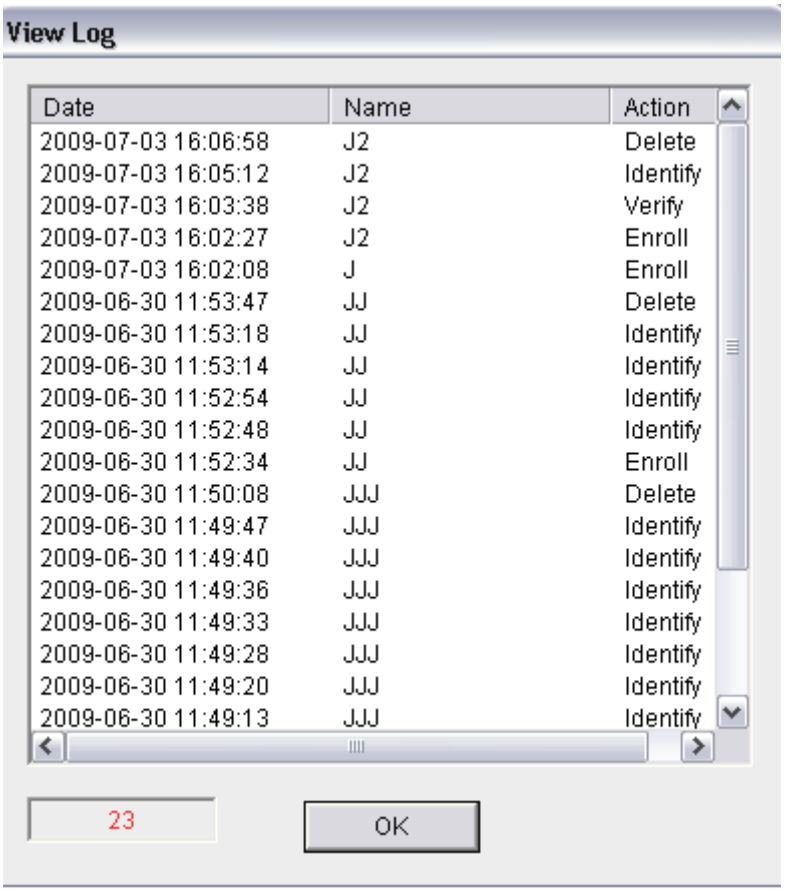
The Save Image function is used to save the fingerprint image to a file. After a successful fingerprint snap operation, the fingerprint image will be stored in the main memory. A fingerprint image can be saved using this function. Select the Save Image function to enter the Save Image mode. Select a specified folder and input the filename.

According to the user's requirements, there are two file types that can be selected:

- File Type
  BMP: Save the fingerprint image in bitmap file format.

View Log

The View Log is used to view the operation history. The log can be sorted by "Date", "Name" or "Action" by clicking the relative radio buttons. See the dialog box below.



Settings

Security Level

The default security level is Medium. Set up the security level for matching by setting the verification threshold. High is the safest mode, providing a FAR of less than 1/100,000. Fair is a less tight mode, providing a FAR of less than 1/1000.

Device

Select a device for the system.

Enroll Mode

Select an enrolled mode for the enrollment. All three modes will give high matching performances. However, larger template sizes will require the storage of more fingerprint data, giving higher accuracy but lower speed. The user may use the different modes depending upon their applications.

For smaller capture device areas or 1-1 verification or 1-few identifications, the 504-byte mode is recommended. Where it is required to identify a large number of fingerprints, then speed may be the main concern and subsequently the 168-byte or 336-byte mode is recommended.

Similarity Threshold

The Similarity Threshold function is used to adjust the Security Level. The higher the Similarity Threshold, the higher the security levels. However higher security levels will also result in enrollment difficulties.

Exit

The Exit function is used to terminate the demo program.

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Note that Holtek's fingerprint recognition products have been designed in conjunction with Gingy Technology.