DESIGN AND IMPLEMENTATION OF A VAULT SECURITY SYSTEM

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Abstract

This project is about designing and implementing a four-step security system for protecting a Vault for any heist situation. Security is a big concern for any kind of vault so to provide the maximum security a four-step security system embedded with raspberry pi was used. The security system has Face recognition capability, password protection system, fingerprint recognition system and RFID card reading system. Face recognition has been done in the open-cv environment. A camera module is used for detecting and taking an image of an authorized person. A fingerprint scanner is used for taking the fingerprint of an authorized person. Keypad and RFID scanner is used for confirming the person who wants to enter the vault. All four-steps are dependent on each other. In case of any failure, a person will not able to go the next step. A person has to confirm all the four steps otherwise that person will not able to enter the vault. This system can be used in bank vault, confidential area, room etc.

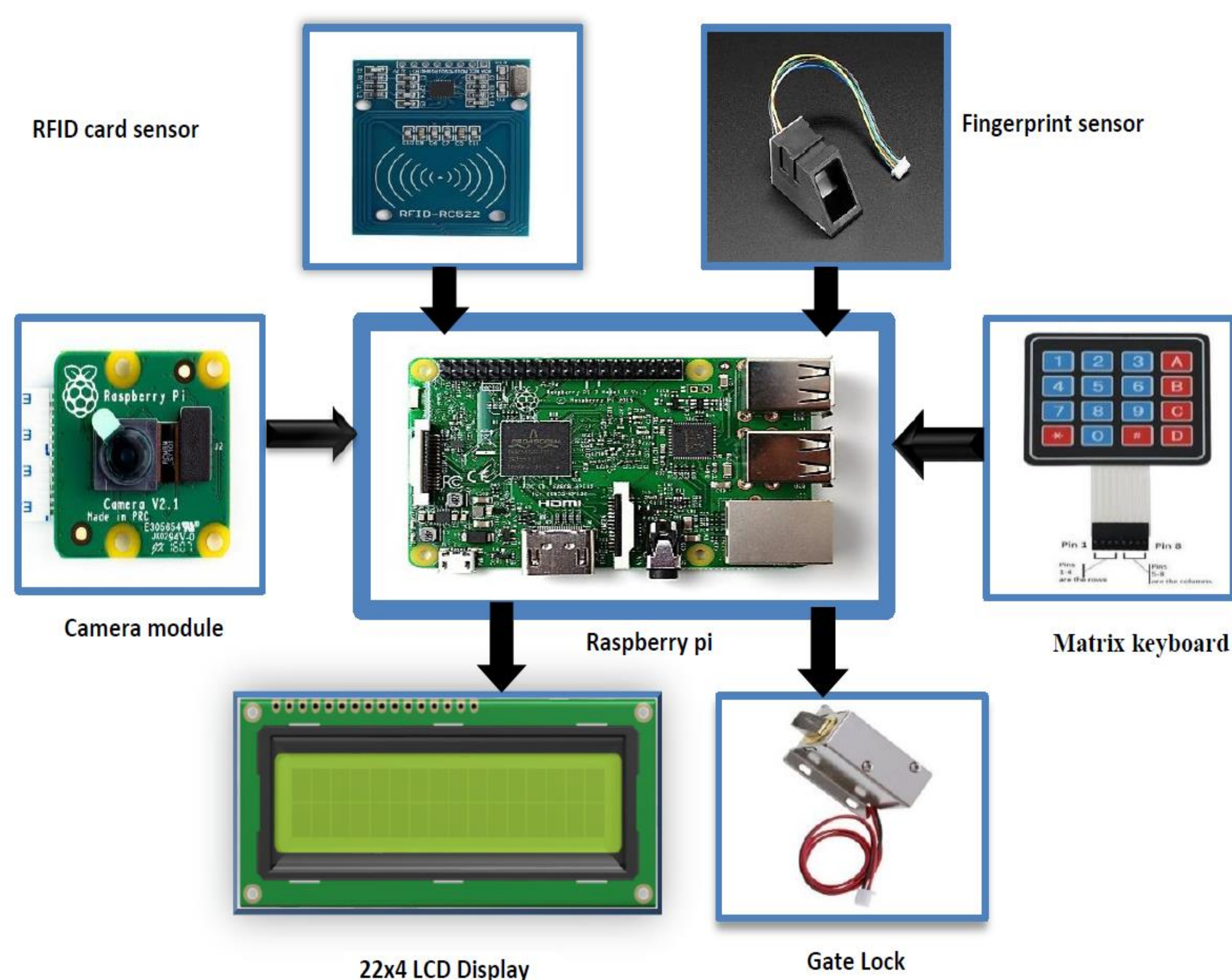## Methodology for Achieving Goal

Figure 1: Block diagram of four-step security system using raspberry pi

Experimented Results

Designed Prototype

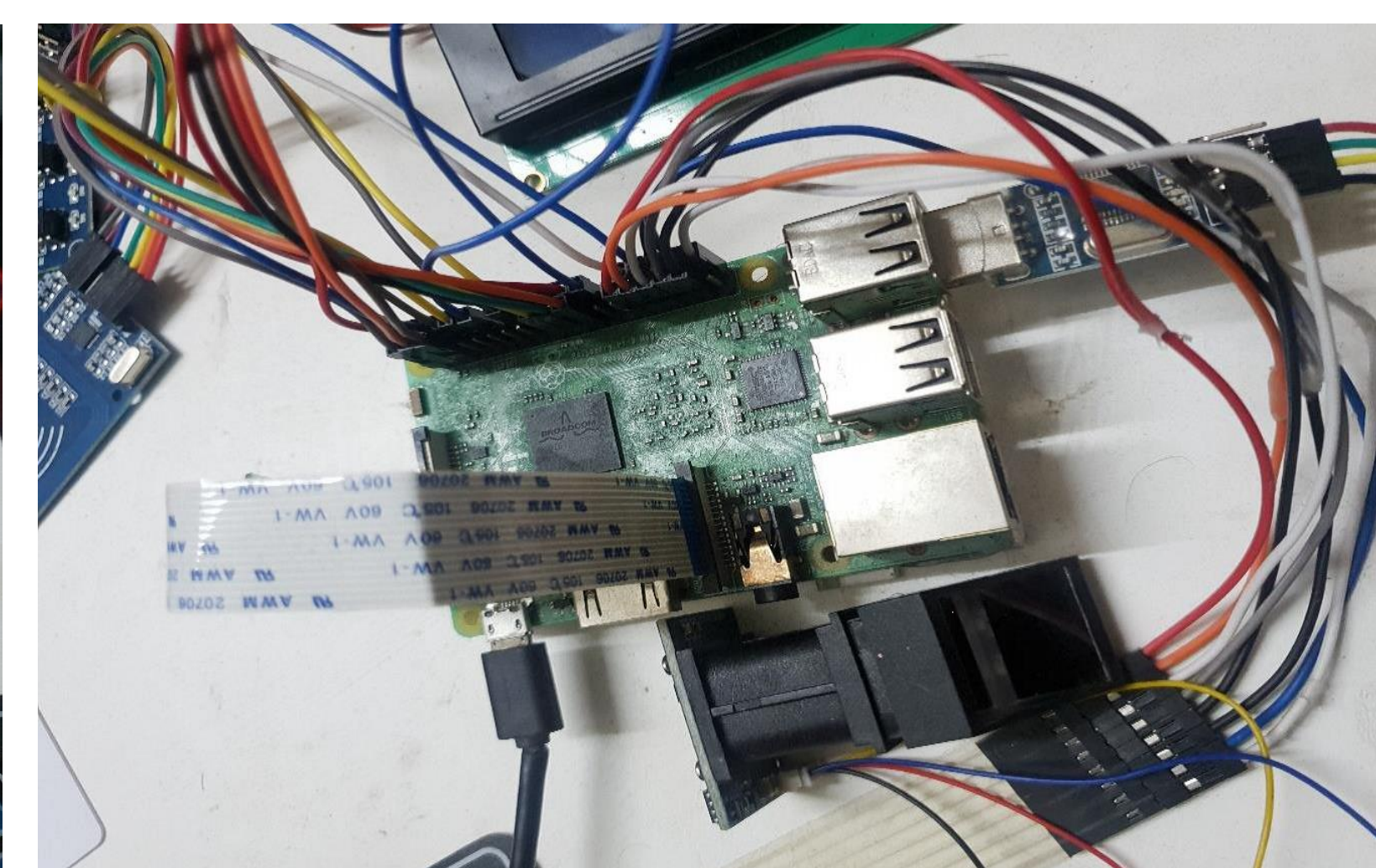Figure 2: raspberry pi camera module with raspberry pi.

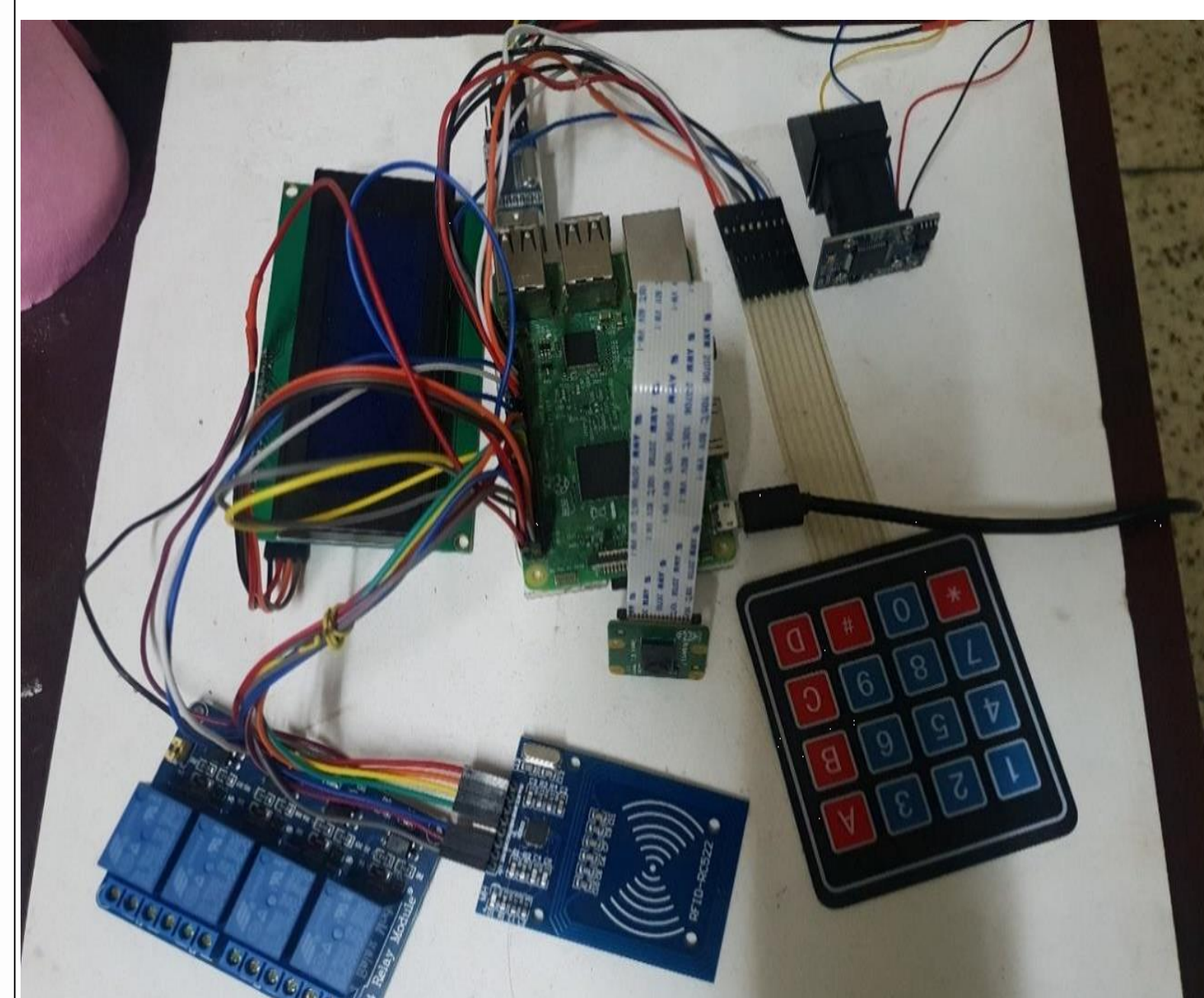Figure 3: fingerprint module with raspberry pi.

Figure 4: whole hardware implementation

Figure 5: prototype of the project

Conclusion & Future Work

The main focus of this project was to establish a security system that can protect a vault from any heist situation. For face detection an open-cv environment in Raspberry Pi by using Python language was created. Later, password and fingerprint system were incorporated using another open-cv environment. Next, RFID card reading was added.

In near future, this project can be development further by adding 3D face recognition, voice recognition, iris scanner.

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Key References

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[2]"Futronic FS80H USB2.0 Fingerprint Scanner," CCS.com.ph. [Online]. Available: https://ccs.com.ph/products/futronic-fs80h-usb2-0-fingerprint-scanner?variant=40214790025. [Accessed: 27-Oct-2018].