A DESIGN OF RESIDENTIAL AUTOMATION SYSTEM VIA RFID AND FINGERPRINT RECOGNITION

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ABSTRACT

This project is aimed to design a RFID and Fingerprint Recognition System to improve the security for residential area. ID card and Fingerprint are unique and it is not easy to be copied. Thus it acts as an access control and recognition tool to bring convenience and safety.

The automatic door lock will be opened when the RFID and Fingerprint system detect the correct user. At least 3 different users can be identified by the system. A simple prototype can be built to demonstrate the above mentioned requirements.

Microsoft Fingerprint Reader is use as a reader and working together with fingerprint algorithm programming. It provides a good and affordable Fingerprint Recognition System for home use. Beside, RFID is used to make this technology easy to be adopted by the users. Moreover it's low cost and standard tag is very suitable for home application. With the help of electromagnetic door lock, the prototype produces up to 600 pounds of attach force that makes the security feature more safety.

RFID Recognition System works well, the reader able to read tags from 3cm distance and can identified different user ID. The Electromagnetic door lock also working properly and able to switch ON and OFF by control from PIC16F84A.Overrall all systems work well with only some error occur in Visual Basic programming. So this project meets its aims and objective.

This project is suitable for home application, but further development can be made to improve its security feature. Using high frequency (HF) RFID and active tags can improve reading distance to 50meters and can store up to 8MB of data. Beside the data store is highly secure so it can improve the security feature and bring more convenience to the user. Heat detecting Fingerprint reader has improvement in human temperature measurement. While facial recognition system is better biometric system because it required full facial scanning and it has more complex algorithm compares to fingerprint algorithm.