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IOT Based Smart Door Lock Security System Using Raspberry Pi

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ABSTRACT; Today's world is a smart world, in day-to-day life everyone is moving towards the automation and automation makes the life easier than the conventional system with more security and benefits with less efforts. It's related to home security as well, by understanding the problem statement of home security, In the present world situation people use the conventional lock and key system to secure their houses. as the result they will not get that much security and the comfort with the existing system and today house security is becoming progressively important as the potential for intrusion grow by the day thus, we implemented the face recognize IOT based door unlocking system. This designed system will authenticate the user by using the face recognition, if the user is authorized then system will give access to enter inside of the home and if the user is unauthorized then system will denied the access and send alert message to the owner by sending messages with photo over the installed mobile application on the mobile of the user, to avoid the any kind of loss of the house owner and this will increase the safety, security and comfort of user. also the system will maintain the record of the people who enter inside of the house. The proposed system uses the Raspberry pi main controller for image processing and camera module for image signal with IOT

KEYWORDS: Raspberry Pi, Camera Module, Solenoid Lock, Buzzer, PIR sensor.

I. INTRODUCTION

Engineers with business methodologies are the greatest support to our society. The advancements in technologies drive their notice conceptions and notionally theorizes to achieve sundry goals in fields of science. Arduino has been utilized as a platform to work for a long time. But with the dispatch of Raspberry pi, a credit card size low-price affordable computer, Arduino is no longer utilized in application platform. Raspberry pi platform is being used widely from the past few years as it provides facile use support and documentation. It is rarely available to all the terminus users. From simple scholastic to perspicacious application projects, Raspberry Pi has proved its consequentiality in the development of applications spreading out in sundry fields.

Project is predicated on home automation and Raspberry pi is the heart of our project. The hardware and software are the two consequential areas in our project.

Also nowadays, technology plays an essential role in our life in which different domain of interests are taking advantage of technology. Recently, computers and smart phones have significantly contributed our daily life where numerous computations and adjustments are being accomplished by such technologies. Securing homes has become one of the concerning issues that facing many people. With the expanded duration of leaving the home due to work, study and other duties, homes are being more vulnerable for several threats especially being burgled. Apart from the threats, there are different cases where securing or monitoring the house is very critical such as the existence of elderly individuals or kids with baby sitter. For this manner, home security system or so-called Home OS has been proposed in order to provide more secure arrangements.

Such concept aims to turn the home into a smart in which different tasks especially monitoring can be performed remotely. Monitoring and controlling some tasks inside the house would have the ability to provide maximum safety. Home automation system is a computer-based application that has the ability to connect different electronic devices for the sake of monitoring and controlling the home appliances. Home automation system is an area that has caught several attentions by both the academic and business fields. The earliest effort of home security system was relied on wired home networks however, due to the appropriate planning and construction works required to offer a wired home, such effort tend to be insufficient. As a solution for this problem, wireless communication has been

emerged to provide more flexible platform where the installation cost is significantly lower than the wired one. Therefore, it has been applied for different security home systems in order to provide an alarm for critical threats such as intrusions or other environmental risks such as gas leaking or fire.

Recently, electronic door lock systems are one of the most popular security systems that is being installed for many residents and business places. The key characteristic behind such systems lies on the reliability in which the authorized individuals can gain the permission to access the doors throughout a secure system that has an interactive interface. A new system has been emerged which is called Near Field Communication (NFC) door lock system [3]. Such system is based on a pattern recognition technology where the individuals' faces are being analyzed in order to identify their personalities.

Such analysis takes different forms such as analyzing facial image or video stream. In addition, the size and position of the face's elements are being also considered in the analysis This Project aims to present a novel security home system based on Bluetooth network. The main goal is to develop a prototype that has the ability to simulate the wireless tasks including monitoring and controlling digital door lock. Such system would have the capability to provide secure and controlled home appliances

II. METHODOLOGY

Generally, people lock their doors to be safe from thieves or other people. There are various security access control systems such as keys, Barcode ID, or another system any unauthorized person can still brake in. But with face recognition system there is no such limitation, the face data are stored on Linux operating system-based Raspberry pi and it'll compare real-time with the persons before the webcam. Raspberry Pi3 has been used because it's a creditcard sized computer that work faster than some other huge size computers.

- The architecture of the Raspberry pi facial recognition system is smaller, easier than the PC-based facial recognition system, and has lower power consumption. It is freer to build applications on Linux due to open-source code. For the face recognition and identification method, the principal component analysis (Eigen faces) algorithm is used. The system is inexpensive, fast, highly durable and offer sufficient versatility to satisfy the requirements.

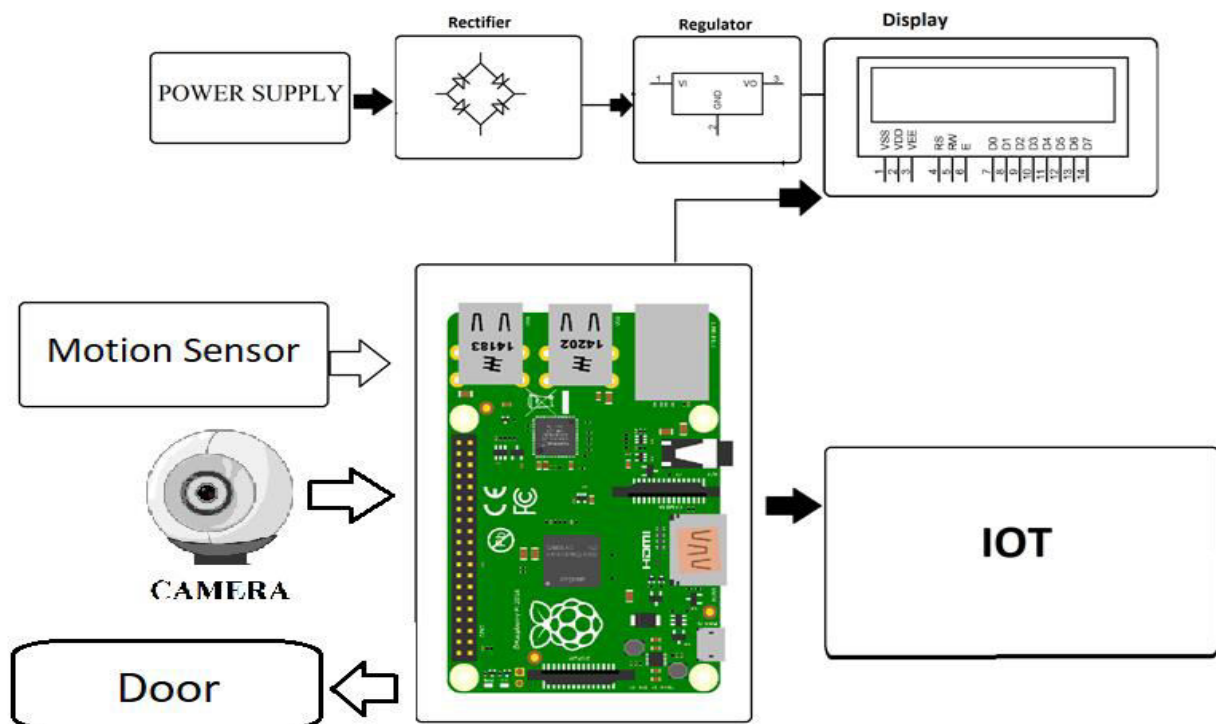
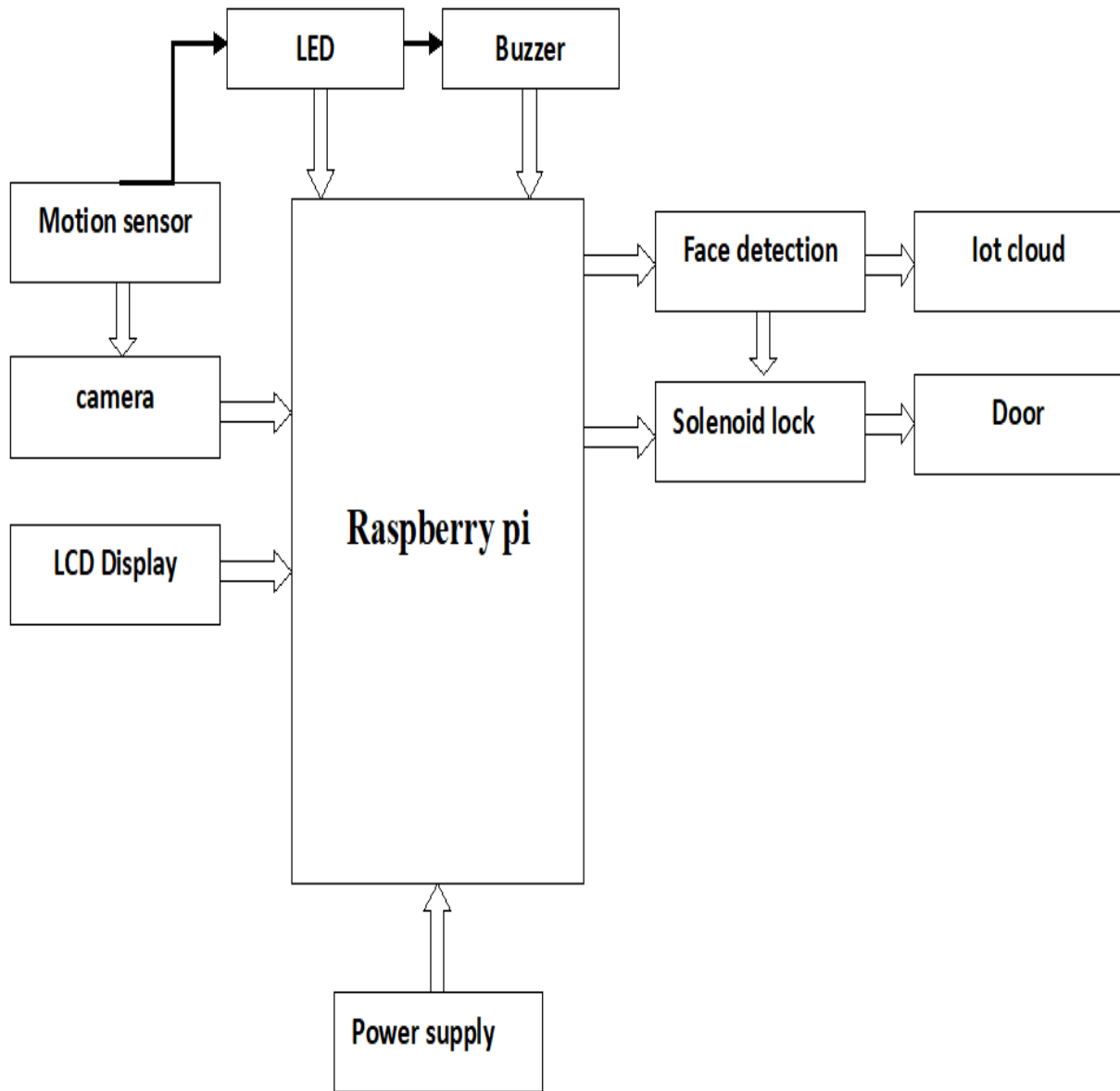


Fig. 3.2. Methodology diagram



Working:

SMART door lock system using face recognition in this system door will be unlocked by using face recognition. When user comes front of the door then camera will send the data to the controller for authentication and controller proceed the data if person is authorized then controller will send command to the solenoid lock for open the door and user will take entry and if user is unauthorized then door will remain in lock condition only, and the controller will take picture of the

III. CONCLUSION

Smart home locks definitely offer some perks like security and convenience, but you also need to understand fully the potential issues it comes with before going ahead and installing them.

This project demonstrated a Raspberry Pi based face recognition smart door lock system implementation has been finalized, with the output of the face recognition algorithm locking or unlocking the solenoid lock and solenoid lock is used for lock and unlock the door

REFERENCES

- [1] S. Chitnis, N. Deshpande, and A. Shaligram, "An investigative study for smart home security: Issues, challenges and countermeasures," *Wirel. Sens. Netw.*, vol. 8, pp. 61-68, 2016.
- [2] A. Lee, D. Tyroler, H.-J. Chen, and H. Yuk, "Home automation system monitored by security system," ed: Google Patents, 2016.
- [3] C.-H. Hung, Y.-W. Bai, and J.-H. Ren, "Design and implementation of a single button operation for a door lock control system based on a near field communication of a smartphone," in *Consumer Electronics-Berlin (ICCE- Berlin)*, 2015 IEEE 5th International Conference on, 2015, pp. 260-261.
- [4] Y. Jiang, S. Liu, X. Yang, and L. Liao, "Application of fishface algorithm to face recognition system," in *Conference Anthology, IEEE*, 2013, pp. 1-4.
- [5] I.-K. Hwang and J.-W. Baek, "Wireless access monitoring and control system based on digital door lock," *IEEE Transactions on Consumer Electronics*, vol. 53, 2007.
- [6] Y. T. Park, P. Sthapit, and J.-Y. Pyun, "Smart digital door lock for the home automation," in *TENCON 2009-2009 IEEE Region 10 Conference*, 2009, pp. 1-6.
- [7] C.-H. Hung, Y.-W. Bai, and J.-H. Ren, "Design and implementation of a door lock control based on a near field communication of a smartphone," in *Consumer Electronics- Taiwan (ICCE-TW)*, 2015 IEEE International Conference on, 2015, pp. 45-46.
- [8] A. Ibrahim, A. Paravath, P. Aswin, S. M. Iqbal, and S. U. Abdulla, "GSM based digital door lock security system," in *Power, Instrumentation, Control and Computing (PICCC)*, International Conference, 2015, pp. 1-6.
- [9] S. R. Khan, A. Al Mansur, A. Kabir, S. Jaman, and N. Chowdhury, "Design and Implementation of Low Cost Home Security System using GSM Network," *International Journal of Scientific & Engineering Research*, vol. 3, p. 1, 2012.
- [10] M. P. V. Kale and S. D. Sharma, "Intelligent Home Security System using illumination sensitive background model," *International Journal of Advance Engineering and Research Development (IJAERD)*, vol. 1, 2014.
- [11] <https://www.ijraset.com/research-paper/smart-door-lock-system-using-face-recognition>.
- [12] https://www.researchgate.net/publication/347371861_Automatic_Door_Lock_System_by_Face_Recognition
- [13] <https://ieeexplore.ieee.org/document/9247836>
- [14] https://www.irjmets.com/uploadedfiles/paper/issue_4_april_2022/21036/final/fin_irjmets1650289808.pdf
- [15] https://www.researchgate.net/publication/360182339_Automatic_Door_Lock_System
- [16] https://www.researchgate.net/publication/344256856_Automated_Door_Lock_System_Using_Arduino
- [17] https://www.academia.edu/30893883/Automatic_Door_Locking_System



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