SMART DOORBELL SYSTEM

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Abstract: Smart doorbell is one type of website that uses Security has always been an important issue in the home or office. A remote home security system offers many more benefits apart from keeping homeowners, and their property, safe from intruders. The system is composed of the Doorbell interfaced with Raspberry pi, whoever presses the doorbell, the camera gets triggered and capture their face and it checking for their face with its database which already has registered faces, if it is an authorized person door will open, otherwise, it sends an OTP with their photograph of the intruder to server mail. Only when a non authorized person entered that OTP, does that face gets added to the authorized person's database to open the door.

Keywords: Door lock, Facial recognition, Internet of Things, Colour Image Edge Detection

I. INTRODUCTION

Technology has made it easier for humans to live comfortably in the modern world due to a growing number of facilities. As a result of the introduction of a number of technologies, people are now able to accomplish many things more easily in their day-to-day lives. However, it can lead to security concerns as well. Therefore, we must ensure the security of our lives and our personal belongings. It is imperative that researchers continue to pay more attention to gadgets and locks in order to safeguard our lives and properties are protected in the long run.

The problem with conventionally installed door locks is that almost anyone can break them and gain access to the home. With only a metal lock that can be disfigured or melted cannot neglect security issues. People are vulnerable to security threats due to the ease with which conventional door locks can be broken. Crime rates have increased in many countries that use mechanical locks due to the ease with which they can be broken. It is not even possible to identify who has illegally entered a house or apartment where mechanical locks are used. Thus, overcoming these obstacles is a very challenging task.

A new technological system, such that if any one step fails during the process, an immediate warning alarm is received by the administrator would be a solution for this. The smart door lock system concept comes at this time.

II. METHODOLOGY

The internet of things, or IoT, is a wireless link that works in a door lock. With the help of IoT-enabled applications, the user may unlock the door with his smartphone. The servo library is introduced after the application is developed by creating a string variable that contains the unique device ID for the lock. The essential concept underlying the door lock's operation is the ID supplied by the Android phone via the created website.

2.1 FEASIBILITY STUDY

Here, I will carry out a study to gain an understanding of the customers (tenants) current system and problems experienced in this system through interviews, observations, and participation. The information collected will be

used to evaluate the technical, economic and social feasibility of the proposed system.

2.2 Requirement and Analysis

At this stage, I will gather information about what the customer needs and define the problems the system is expected to solve. I will also include customers‟ business context, product functions and its compatibility. We will absorb information, including software, for example the programming language that will be used, database model, and hardware such as laptops, printers, and so on.

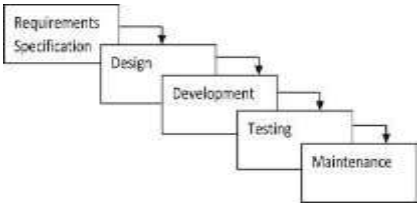

Figure 1.0 Diagram of waterfall model

2.3 Design

At this point, We will develop a general design of such proposed system as well as an interface layout that involves a front-end and data dictionary. We will discover any flaws at this level before proceeding to the next. The output of this stage is the design specification which is used in the next stage of implementation.

2.4 Problem Statement

People have faced several issues before the invention of intercom system and also before the invention of video intercom system. People had faced security issues. They could not see who had come to their door. There have been several criminal offenses because there was no way to check who is at the door. The implementation of this video intercom system is required at every home for the safety and security of the people.
The solution to this security issue can be solved by installing a wireless video intercom system at the door of every office and home. This system is cost effective and easy to handle. Implementing this video doorbell system solves the security problem of every house..

2.5 Advantages

The smart doorbell retains the recordings it records in case you have a break-in or other form of home invasion. The police or other authorities who have jurisdiction over the matter can then get these videos. This is not only a terrific way to stop trespassers, but it also guarantees that police or other authorities can track down the intruder and hold them accountable in the unfortunate event of an incident.

2.6 Disadvantages

It raises privacy issue.it i a high cost doorbell system. similar functionality with counterparts With low price the gadget that not only reduce the risk by corona virus headphone were not used to hear the audio of visitor it is not using AI it is very risky AHP evolution model for ecommerce security.Although "Wake-up" promises a rapid system startup, it is not as dependable as the manufacturers recommended. In our empirical study, the battery-operated smart doorbell occasionally doesn't respond when the call button is hit, and the app indicates the device is offline. Since you can't be alerted when a visitor is standing in front of your door or if you wish to watch the video, you could occasionally be unable to wake up the camera. The product is a piece of rubbish because it performs one of the doorbell's most crucial functions.

III. IMPLEMENTATION

3.1 Input Unit

This is the unit in which command is given to start the execution of a program and in this project the smartphone is the devices that serves the purpose of sending command as input. The mobile smartphone sends signal when connection is established between the device’s with wife connection. The smartphone sends the input command through a developed url which has lock and unlock slider in the web server which is to say a person operating the smartphone can either send lock (which is close) or unlock (which is to open) the respective door. The input command can only be executed when and only when a wifi connection is established between the device and the module.

3.2 Receiver Unit

This unit deals primarily with the receiving of command signals sent from the input. The command sent by the mobile smartphone is received in this unit with the help of the url. The module also serves as a link to establish connection between the mobile device and the Esp32 cam & ttl programmer.

3.3 Related Work

This IoT based application is devised to perform video surveillance of home premises and alert in case of any object detected. This system will detect the presence of person and alerts the user by sending the url web cam with the image of object as attachment

3.3 System Function

User will control web server system if they can allow face allow or not.

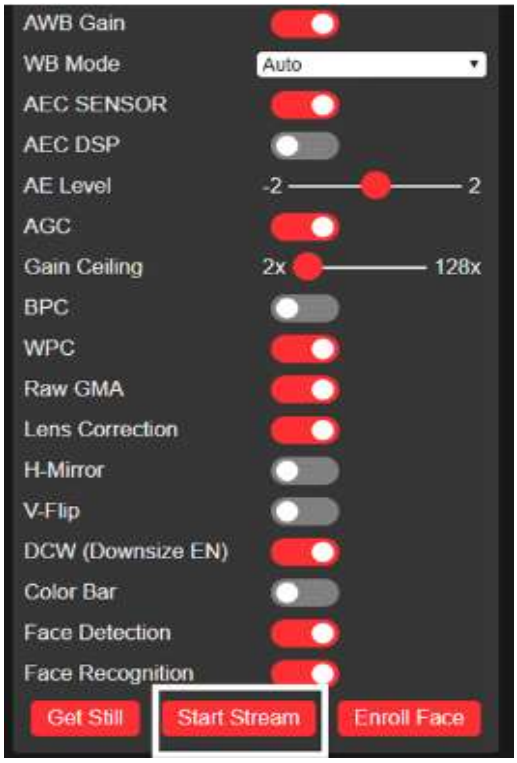

Figure 1.1 Diagram of function

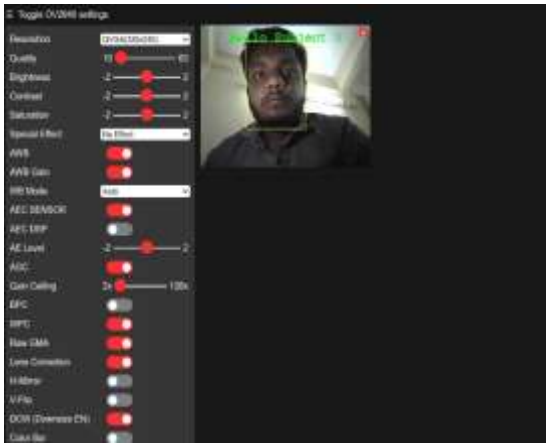

Figure 1.2 Diagram of face enroll

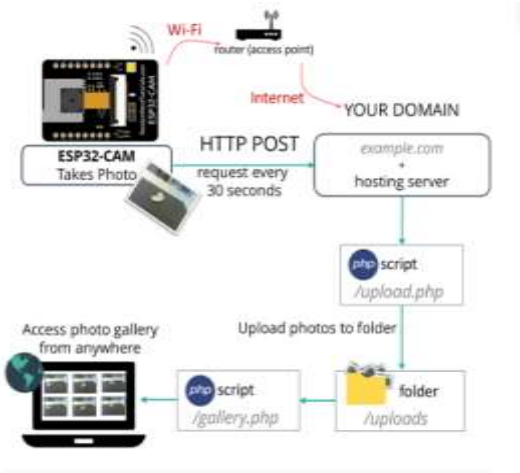

Figure 1.3 server of smart doorbell system

IV. CONCLUSION

We have presented the implications of Smart Doorbell based on IoT. This system can perform remote surveillance for home premises effectively. The information coming from the smart security system can be viewed from mobile phones, tablets, desktops/laptops etc. for taking instant decisions. Whenever the system detects an object, it alerts the user with an alarm and also by sending an e-mail with the image of the object as attachment to the mail. As future work, we have plans to identify the object too with some training data given to the system so that the system itself can identify the object before sending the alert.

V. REFERENCES

[1]. Chaudhari U, Gilbile S, Bhosale G, Chavan N, Wakhare P (2020) Smart doorbell security system using IoT. Technical report, EasyChair,2020.

[2]. Ding J, Nemati M, Ranaweera C, Choi J (2020) IoT connectivity technologies and applications: a survey. IEEE Access 8:67646–67673 ,2020.

[3]. Giorgi R, Bettin N, Ermini S, Montefoschi F, Rizzo A (2020) An Iris+ voice recognition system for a smart doorbell. In: 2020 8th Mediterranean conference on embedded computing (MECO). IEEE, New York,2020

[4]. Jain A, Lalwani S, Jain S, Karandikar V (2020) IoT-based smart doorbell using Raspberry Pi. In: International conference on advanced computing networking and informatics. Springer, Berlin, 2020.

[5]. Martınez C, Eras L, Dominguez F (2020) The smart doorbell: a proof-of-concept implementation of a bluetooth mesh network. In: 2020 IEEE third Ecuador technical chapters meeting (ETCM),2020.

[6]. Muqeet MA (2020) Fingerprint module based door unlocking system using Raspberry Pi. Sci Technol Dev, 2020.

[7]. Ojo MO, Giordano S, Procissi G, Seitanidis IN (2020) A review of low-end, middle-end, and high-end IoT devices. IEEE Access, 2020.

[8]. Park WH, Cheong YG (2020) IoT smart bell notification system: design and implementation. In: 2020 21th International conference on advanced communication technology (ICACT). IEEE, New York, 2020.

[9]. Pawar S, Kithani V, Ahuja S, Sahu S (2020) Smart home security using IoT and face recognition. In: 2020 Fourth international conference on computing communication control and automation (ICCUBEA). IEEE, New York, 2020.

[10]. Samuel SSI (2019) A review of connectivity challenges in IoT-smart home. In: 2016 3rd MEC international conference on big data and smart city (ICBDSC),2019.

[11]. Thabet AB, Amor NB (2021) Enhanced smart doorbell system based on face recognition. In: 2021 20th International conference on sciences and techniques of automatic control and computer engineering (STA). IEEE, New York, 2021.

[12]. Upadhyay Jaychand, Rida Parker, Gupta Sunidhi, Siddique Noman “smart doorbell system based on face recognition” International Research Journal Of Engineering & Technology, Vol 4, issue.3, 2020.

[13]. Quadros Bradley, Kadam Ronit, Lavaniya Devendra “Dashbell : A Low Cost Smart Doorbell Sysytem For Home Use” Department Of Eecs, University Of California, 2021.

[14]. Q. Bradley, K. Ronit, L. Devendra, “Dashbell: A Low-cost Smart Doorbell System for Home Use”, Department of EECS, University of California, CA92617, USA,2021.

[15]. F. Caroline, B. Srushti, S. Madhumita, G. Maithili, A.Aravind, “IOT Smart Doorbell Surveillance”, 2021.