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Smart Doorbell Using ESP32 Cam Based on IoT

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Abstract: *When we consider house security, the door is crucial. To ensuresafety, the owner will keep the door locked at the time. Often, when leaving the house in a hurry, the owner forgets to lock the door or may not be aware that the door is locked. We have presented a Smart Door Bell utilizing the ESP32 CAM and an App. The proposed Door Bell System uses Wi-Fi Door Lock with ESP32 CAM and IoT technology to monitor the door, manage it, and improve security in the home.*

Key Word: *IoT based door lock, Wi-Fi lock system, House security, ESP32Camera, PIR.*

I. INTRODUCTION

Nowadays, everyone is concerned about security, whether it be data security or the security of their own home. As technology has advanced and the use of IoT has grown, digital door locks have become quite common. In contrast to a physical key, a digital lock makes use of RFID, fingerprint, Face ID, pins, passwords, and other methods to operate. We have built several digital door lock applications using these diverse technologies. In this paper, we use ESP32 CAM to create an IoT-based Wi-Fi Door Lock. The AI-Thinker ESP32-CAM module is a low-cost development board equipped with a micro-SD card port and a small OV2640 camera (from OmniVision). In addition to the built-in Wi-Fi ESP32 S processor, it has two high-performance 32-bitLX6 CPUs and a 7-stage pipeline architecture. The door Security System uses ESP32 CAM and Internet of Things (IoT) technology to monitor the door status. The Door Security System is available on Android.

II. MATERIAL AND METHODS

The idea of a Wi-Fi door lock using ESP32 CAM has recently become a very important subject in home appliances. Security couldbe a top priority for everybody nowadays, whether it's data security or personal security. Digital door locks have grown quite prevalent in recent years as technology has advanced and therefore the use of IoT has increased. A digital lock doesn't require a physical key to operate; instead relies on RFID, fingerprint, Face ID, pins, passwords, and other methods to try and do so. Using these diverse technologies, researchers have previously built a variety of digital door lock applications. We used the ESP32 CAM to form a Wi-Fi Door Lock system during this project. The AI-Thinker ESP32 CAM module may be a low-cost development boardwith a micro-SD card port and a little OV2640 camera. It contains a built-in Wi-Fi and Bluetooth chip, as well as two high-performance 32-bit LX6 CPUs and 7-stage pipeline architecture. To create a Face Recognition-based Door Lock System, we utilized the ESP32 CAM and,we created a Face Recognition-based Door Lock System with a Relay module and Solenoid Lock.

A. Software and Hardware Requirements

The major purpose of this project was to develop and build a door lock system that permits users to unlock a door using face recognition via a door camera. We began our investigation by confirming the demand for such a system among possible customers,and so built a door lock system employing a customized version of the ESP32 Cam. We used the subsequent software and hardware to construct the Wi-Fi door lock system.

1) Software Requirements:

ARDUINO Integrated Development Environment (IDE). This is a cross-platform application (for Windows, Mac OS X, and Linux) written in C and C++ functions. It's used to write and upload programs to Arduino-compatible boards, as well as other vendor development boards with the support of third-party cores.

2) Hardware Requirements:

- ESP32-CAM
- Electronic door lock 12V
- Breadboard
- 7805 voltage Regulator (5V)
- 10k Resistors (2no.)
- Capacitor 220uF
- 12V DC adaptor

• Future Technology Devices International Limited's FTDI232 USB to Serial Interface
This FT232 USB to Serial Interface Board is the core hardware component of this model and the features of this chip are as follows:
• Dual Channel Serial/Parallel Single Chip USB Ports with a variety of configurations
• Entire USB protocol is handled on the chip. No USB specific firmware programming required
• FT232BM-style Universal Asynchronous Receiver/Transmitter (UART) interface option with full Handshaking & Modem interface signals
• UART Interface supports 7- or 8-bit data, 1/2 stop bits, and Odd/Even/Mark/Space/No Parity
• Transfer Data Rate 300 to 1 Mega Baud (RS232)
• Transfer Data Rate 300 to 3 Mega Baud (TTL and RS422/RS485)
• "Auto Transmit Enable control" for RS485 serial applications

B. System Design

The prototype is made using an iterative process that matches the look specifications during the event and implementation phase. we can create and test in repeating sequences by breaking down the look into little bits.New features are developed and evaluated in each iteration until we have a totally functional system that meets the thesis's goals. From the pilot research, an entire prototype specification is produced and regarded. Based on the pilot research, a complete prototype specification is developed. When designing IoT systems, we have to take into account the protection problems as well as the common architecture. Microcontrollers that can handle the functionality of the SDL, wireless devices that can transmit an endless radio wave that may be detected by smart devices (e.gSmartphones) via a connective protocol (e.gBluetooth), a cloud to aid secure and stable communication, and an API for handling the SDL's functionality were among the preferences. Wi-Fi Door Lock with ESP32 CAM uses Internet of Things (IoT) technology to watch the status of the door, control it, and improve home security. Blynk could be a communication protocol that's used to increase the protection of a home. Blynk is a communication protocol that connects a smartphone to a door lock system. The prototype is constructed using an iterative process that matches the planning specifications during the event and implementation phase. We will create and test in repeating sequences by breaking down the look into little bits. New features may be developed and evaluated in each iteration until we've got a totally functional system that meets the thesis's goals.
The following block diagram represents the system architecture of the system proposed in this article.

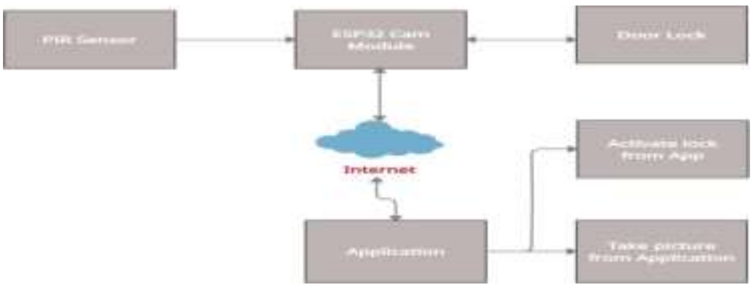
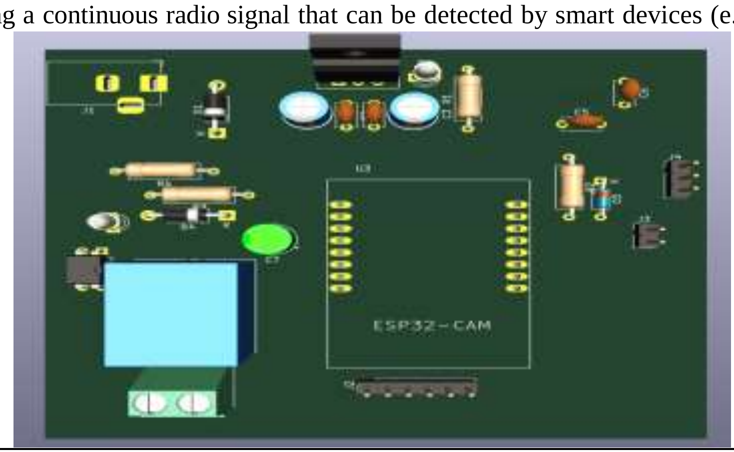


Figure 1: Architecture of proposed system

A connective protocol (e.g.,Bluetooth), a cloud to aid in secure and stable communication, and an API to handle the SDL's functionality were among the preferences. Wi-Fi Door Lock with ESP32 CAM uses Internet of Things (IoT) technology to monitorthe status of the door, control it, and improve home security. From the pilot research, a complete prototype specification is produced and considered. The security problems and the common architecture of IoT systems are taken into account while making design decisions. A suitable microcontroller to serve the SDL's functionality, wireless devices transmitting a continuous radio signal that can be detected by smart devices (e.g., Smartphones) via a



connective protocol (e.gBluetooth), a cloud to aid in secure and stable communication, and an API to handle the SDL's functionality were among the preferences.

III.RESULT

The picture below is to represent the result of this work. In this IOT based working model, we have made a Smart WIFI door lock using ESP32-CAM and the App. In this model, when someone presses the doorbell, the house owner will get a notification on the mobile with a photo of the visitor. After checking the photo, owner can unlock the door from an authenticated mobile phone

IV.CONCLUSION

With the WiFi Door Lock with ESP32 CAM, you'll be able to monitor the status of your door, control it, and enhance home security using Internet of Things (IoT) technology. An example of Blynk can be a communication protocol want to make a home safer. During the event and implementation phase, the prototype is made in an iterative process that reflects the design specifications. Creating and testing in repeating sequences are going to be done by breaking down the look into little bits. With each iteration, we'll develop and evaluate new features until we've got a very functional system that meets the thesis' objective

References

1. *Norarzemi, Ummi Annisa, et al. "Development of Prototype Smart Door System with IoT Application." Progress in Engineering Application and Technology 1.1 (2020): 245-256.*
2. *Aldawira, Cornelio Revelivan, et al. "Door security system for home monitoring based on ESp32." Procedia Computer Science 157 (2019): 673-682.*
3. *Babiuch, Marek, and Jiri Postulka. "Smart Home Monitoring System Using ESP32 Microcontrollers." Internet of Things. IntechOpen, 2020.*
4. *Ethamukkala, Kosalendra, et al. "Automatic Detection, Controlling and Monitoring of Temperature in Sericulture Using IOT," IJTEMA 12.8 (2020): 1099-*
5. *1103.*
6. *Pavelić, Marko, et al. "Internet of things cyber security: Smart door lock system." 2018 international conference on smart systems and technologies (SST).*
7. *IEEE, 2018.*
8. *Guduru, Tabu Sravani, and SURYA NARAYANA MURTHY THATAVARTHY. "IoT Based Home Monitoring System." (2019).*
9. *Nascimento, David Barbosa de Alencar, and Jorge de Almeida Brito Júnior. "Application of the Internet of Things in the Development of a "Smart" Door."*