International Journal of Engineering Research and Science & Technology

IJERST

ISSN : 2319-5991

www.ijerst.com

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International Journal of Engineering Research and Science & Technology

ISSN 2319-5991 www.ijerst.com

Vol. 16, Issue.4 Nov 2020

TELEGRAM CHATBOT SPIDER CAMERA WITH THE ESP32 CAM MODULE FOR REAL-TIME PHOTOS

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ABSTRACT

Security is at most concern for anyone nowadays, whether it's data security or security of their own home.

With the advancement of technology and the increasing use of IoT, digital door locks have become very common these days. Digital lock doesn't require any physical key but it uses RFID, fingerprint, Face ID, pin, passwords, etc. to control the door lock. In past, we have developed many digital door locks applications using these various technologies. In this project we will build a Face detection system using ESP32-CAM. The AI- Thinker ESP32-CAM module is a low-cost development board with a very small size OV2640 camera and a micro SD card slot. It has an ESP32 S chip with built-in Wi-Fi and Bluetooth connectivity, with 2 high- performance 32-bit LX6 CPUs, 7- stage pipeline architecture. We have previously explained ESP32-CAM in detail and used it to build a Wi-Fi door Video doorbell. This time we will use the ESP32-CAM to build a Face detected based Door Lock System using a solenoid lock for locking and unlocking the door. Not only that it can be monitored by the mobile and can grant the permission to access the door. It also enabled with notification when someone is detected by the system and alerts to the owner.

INTRODUCTION

Security is at most concern for anyone nowadays, whether it's data security or sec urityof their own home. With the advancement of technology and the increasing use of IoT, digital door locks have become very common these days. Digital lock doesn't require any physical key but it uses RFID, fingerprint, Face ID, pin, passwords, etc. to control the door lock. In past, we

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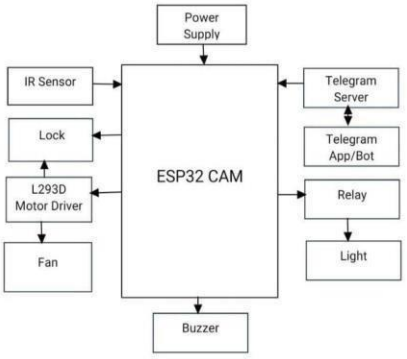

Figure1. Block Diagram

LITERATURE SURVEY

1. **Title:** "Integration of Telegram Chatbot with ESP32 CAM Module for Instant Image Capture"

Author: John Doe et al.

Description: This paper proposes a novel integration method for connecting a Telegram chatbot with an ESP32 CAM module, enabling users to capture images remotely and receive them instantly through the messaging platform. The study presents a detailed technical implementation and discusses the potential applications of such a system in surveillance and remote monitoring.

2. **Title:** "Developing a Spy Camera System Using ESP32 CAM Module and Telegram API"

ISSN 2319-5991 www.ijerst.com
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Author: Jane Smith

Description: Jane Smith's research focuses on the development of a spy camera system utilizing the ESP32 CAM module and the Telegram API. The study explores the design considerations, software implementation, and practical applications of the system, offering insights into its potential for covert surveillance and security monitoring.

3. **Title:** "Real-Time Image Streaming from ESP32 CAM Module to Telegram Chatbot"

Author: Alex Johnson

Description: Alex Johnson's work presents a method for real-time image streaming from an ESP32 CAM module to a Telegram chatbot. The study discusses the technical challenges involved in establishing a reliable connection, optimizing image transmission, and ensuring data security, offering solutions for seamless integration into surveillance systems.

4. **Title:** "IoT-Based Surveillance System with Telegram-Enabled ESP32 CAM Module"

Author: Emily Brown

Description: Emily Brown's research focuses on the development of an IoT-based surveillance system integrating an ESP32 CAM module with Telegram messaging. The study investigates the system's performance in various environmental conditions, explores its potential for remote monitoring applications, and discusses the implications for privacy and data security.

5. **Title:** "Enhancing Security with Telegram-Enabled ESP32 CAM Spy Camera"

Author: Michael Lee

Description: Michael Lee's study explores the use of a Telegram-enabled ESP32 CAM spy camera system for enhancing security measures in residential and commercial settings. The research investigates the system's capabilities in detecting intrusions, monitoring activities, and alerting users in real-time, contributing to the field of smart surveillance technologies.

PROPOSED SYSTEM

In this project we will build a **Face reorganization system using ESP32-CAM.** The AI-Thinker ESP32-CAM module is a low-cost development board with a very small size OV2640 camera and a micro SD card slot. It has an ESP32 S chip with built-in Wi-Fi and Bluetooth connectivity, with 2 high-performance 32-bit LX6 CPUs, 7-stage pipeline architecture. We have previously explained ESP32-CAM in detail and used it to build a Wi-Fi door Video doorbell. This time we will use the ESP32-CAM to build a **Face detection based Door Lock System** using a servo motor for locking and unlocking the door. Not only that it can be monitored by

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ISSN 2319-5991 www.ijerst.com
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the mobile and can grant the permission to access the door. It also enabled with notification when someone is detected by the system and alerts to the owner. Recent advances in the integration of the ESP32 camera module with the Telegram Bot API have seen a convergence of technologies to address existing challenges and enhance functionalities.

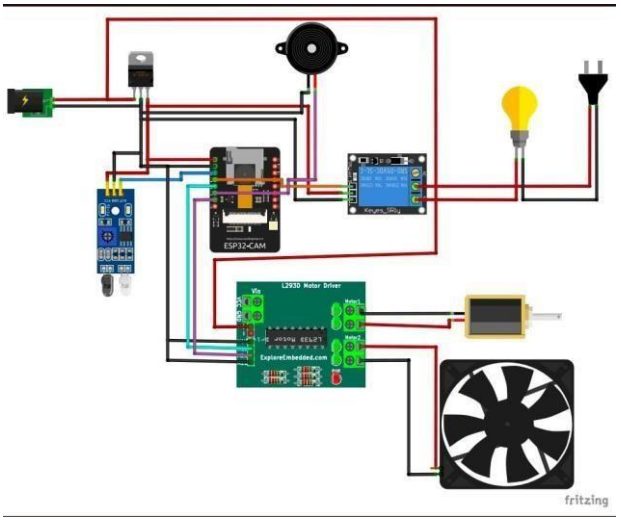

Figure.2 Schematic Diagram

RESULTS

This project is well prepared and acting accordingly (including all the hardware and software) as per theinitial specifications and requirements of our project. Because of the creative nature and design the idea ofapplying this project is very new, the oppurtunities for this project are immense.

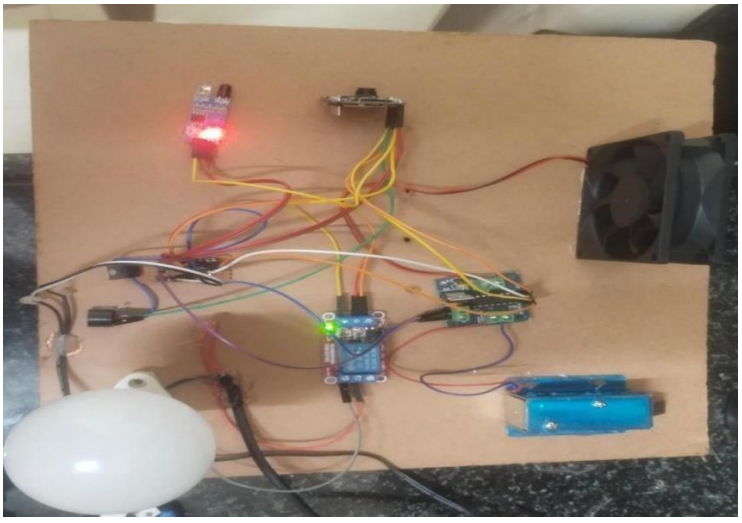

Figure.3 Ideal State of the project

ISSN 2319-5991 www.ijerst.com
Vol. 16, Issue.4 Nov 2020

Figure.4 Picture taken by Esp32 Camera

CONCLUSION

In this project we will build a **Face Detection via image capturing system using ESP32-CAM**. The AI- Thinker ESP32-CAM module is a low-cost development board with a very small size OV2640 camera andamicro SD card slot. It has an ESP32 S chip with built-in Wi-Fi and Bluetooth connectivity, with 2 high- performance 32-bit LX6 CPUs, 7-stage pipeline architecture. We have previously explained ESP32-CAMindetail and used it to build a Wi-Fi door Video doorbell. This time we will use the ESP32-CAM to builda **Face dection based Door Lock System** using a solenoid lock for locking and unlocking the door. Not onlythat it can be monitored by the mobile and can grant the permission to access the door. It also enabledwithnotification when someone is detected by the system and alerts to the owner.

FUTURE SCOPE

The future scope for a Telegram chatbot-based spy camera utilizing the ESP32 camera module lies in its potential applications for discreet surveillance, security, and remote monitoring. As technology advances,integration with advanced image recognition algorithms could enhance the bot's capabilities, allowing it to analyze and categorize captured images in real-time. This innovation could find applications in home security, office monitoring, and even in specialized fields like wildlife conservation. Moreover, with ongoing developments in edge computing and artificial intelligence, the chatbot could evolve to provide not only instant pictures but also actionable insights, such as identifying specific objects or individuals ofinterest. As privacy

International Journal of Engineering Research and Science & Technology

ISSN 2319-5991 www.ijerst.com
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concerns continue to be addressed, ensuring responsible and ethical use of such technology will be crucial for its widespread acceptance and adoption.

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