ShieldWatch

Group A1

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Background

The main challenges faced by households today include the increasing risk of crimes such as burglary and theft. Therefore, this project aims to provide a more efficient and intelligent security solution through the utilization of cutting-edge technology

Smart Home Guardian

intelligent home security and automation system that combines cutting-edge technology to provide a comprehensive solution for your home. This project features Intruder Detection with PIR sensors for image capture and notifications, Home Monitoring for environmental data display, and Smart Home Automation for lights control.

Our Features

Intruder Detection

with PIR Sensor and Facial Recognition we're able to detect intruder moving around and notify you

Home Monitoring

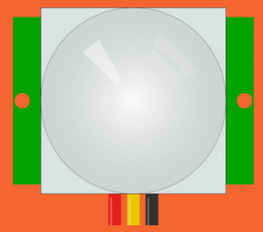
Usign the DHT11 sensor we're able to monitor the Temperature and Humidity of your home

Smart Home Automation

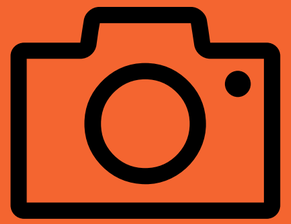
With the LDR sensor we're able to automaticaly turn the light off during the day and turn the light on during the night

How It Works (ESP32-CAM)

ESP32-CAM in Sleep Mode



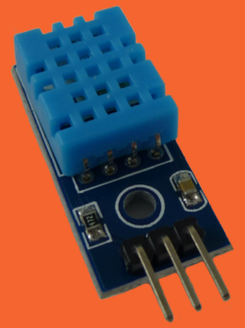
PIR Sensor Triggered



Take Picture

Send it to the MQTT broker

How It Works (ESP32)



Read DHT11

READ LDR

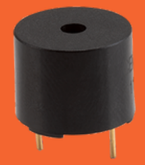
MQTT

Receive Alert form BackEnd

MQTT

Send data to MQTT

Adjust LED Accordingly



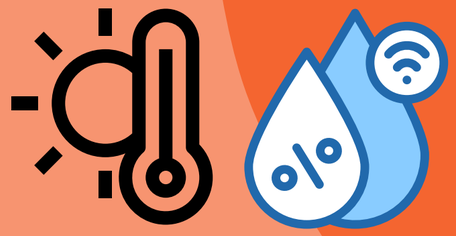
Activate Buzzer

How It Works (Front End)

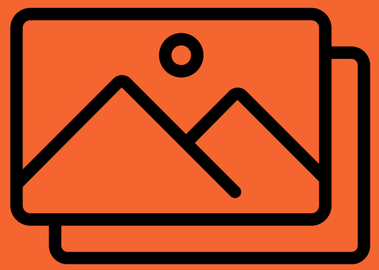
Communicate with Backend

MQTT

Receive data from MQTT



Display Environment Data



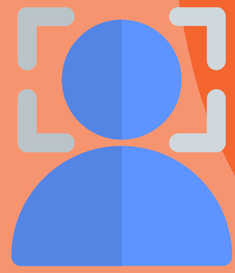
Display Image

How It Works (Back End)

Communicate with Front End

MQTT

Receive image from MQTT



Face Recognition

Alert ESP32

Testing

ESP32-CAM

Test and verify the functionality of PIR sensor, camera, and MQTT transmission

01

02

ESP32

Test and verify the functionality of DHT11, LDR, buzzer, LED, and MQTT transmission

Back End

Retrieve image from MQTT server, analyze for intrusion, and send alert.

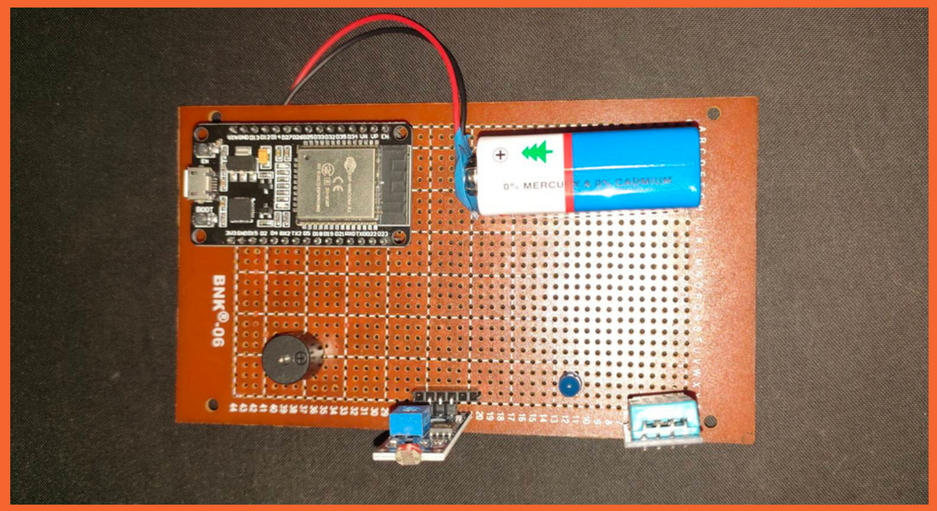
03

04

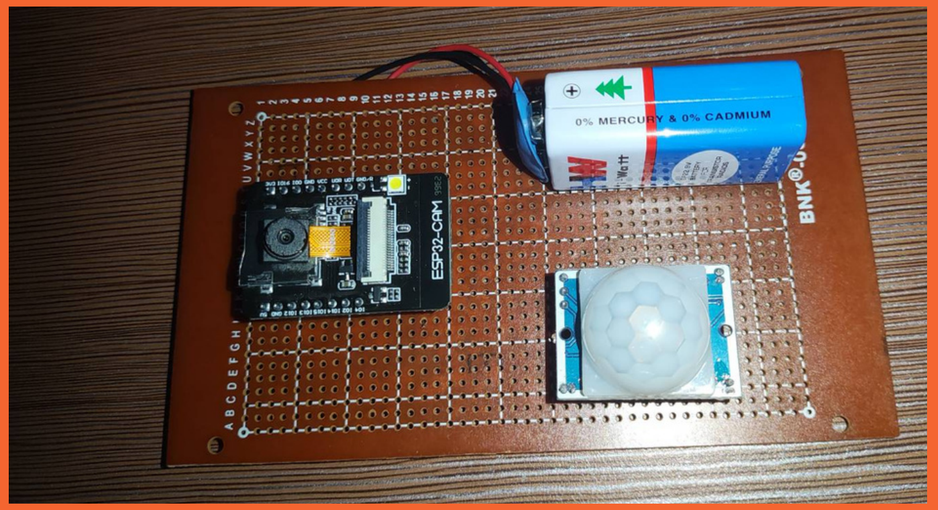
Front End

Display ESP32 sensor reading and ESP32-CAM image accurately.

Result



ESP32



ESP32-CAM

Result

Frontend

- Login, provides users with a secure and authenticated entry point to access the system.
- Register, allow new users to seamlessly create accounts within the system.
- Add New Device, allow users to integrate new IoT devices into their smart home ecosystem.
- Monitoring, provides users real-time insights into their smart home's security status

Result

Backend

- Connecting to database, establish a secure and reliable link between the backend and the MongoDB database.
- Face comparison, compare facial data captured by the ESP32 CAM with entries in the database.
- Auto email warning, automatically generating and sending timely email notifications in response to detected intrusions.
- Device and user management, manage and control connected device.

Thanks!