AIoT & it's Applications

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SMART WIFI DOOR LOCK USING ESP32-CAM AND TELEGRAM

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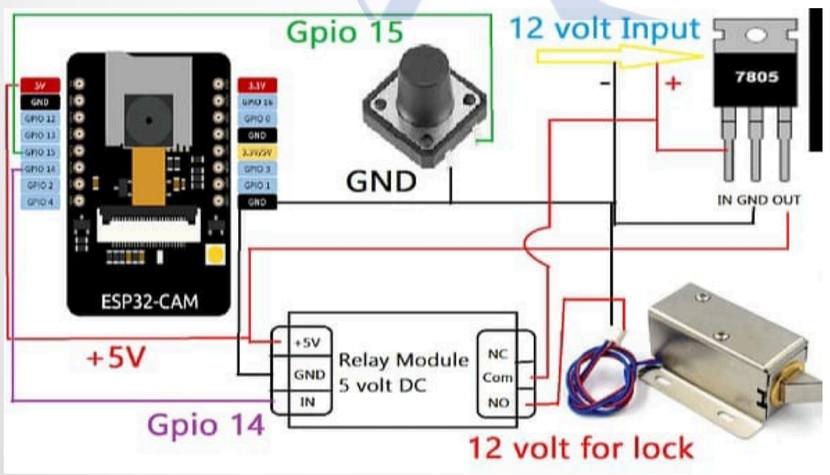
Overview

The smart door lock system using the ESP32-CAM with Telegram integration is a modern solution that combines security and convenience for home automation. The ESP32-CAM module, equipped with Wi-Fi and camera capabilities, captures images and facilitates real-time monitoring of the entrance. Integrated with a relay module to control the electronic lock, the system allows users to lock and unlock their door remotely via the Telegram app. This setup provides instant notifications and remote access, ensuring enhanced security by allowing users to verify visitors through captured images and control access from anywhere, making it a sophisticated addition to any smart home setup.

Schematic Diagram



1. Software

➢Programming environment

- Arduino IDE

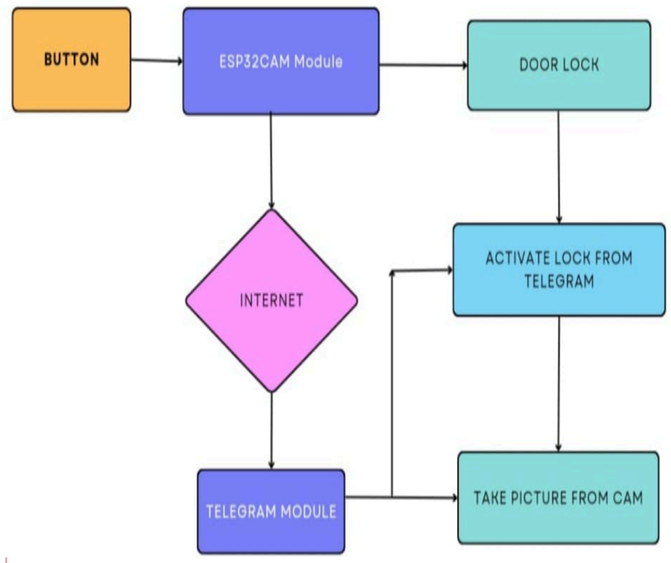
➢Languages

- embedded C

2.Hardware

- ESP32-CAM
- FTDI 232
- 12V Electronic lock
- 7805 5V regulator
- Relay Module
- Push Switch

FlowChart

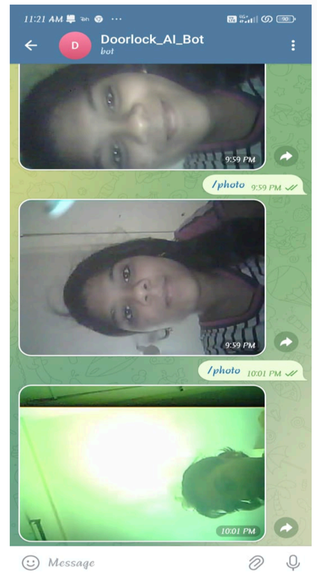


Future Enhancements

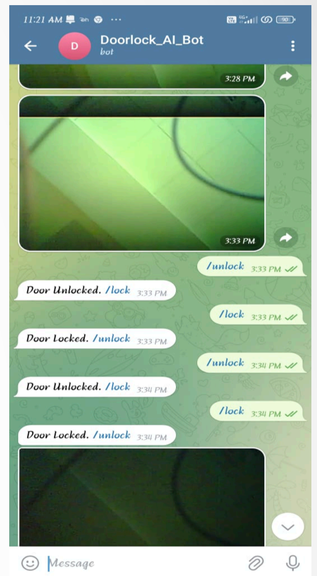
Enhancements for the WIFI door lock system using ESP32-CAM and Telegram could include adding a rechargeable battery backup, integrating fingerprint or facial recognition, and improving the locking mechanism. Software improvements might involve implementing two-factor authentication, maintaining access logs, and integrating with cloud platforms for real-time monitoring. Security can be bolstered with encryption and OTA firmware updates, while user experience can be enhanced through a dedicated mobile app and customizable notifications. These upgrades will enhance the system's security, reliability, and user-friendliness.

Results

Detecting Photos from Telegram :



Unlocking the door's wirelessly:



Conclusion

The smart Wi-Fi door lock system using ESP32-CAM and Telegram offers remote control, video surveillance, and secure communication, enhancing home security. Future improvements include a better Telegram interface, optimized power consumption, and features like motion detection. These will make the system even more effective and user-friendly, addressing modern security needs.

References

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Acknowledgments

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