

REMOTE AUTHENTICATION GATEWAY

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Abstract: *This paper explains the importance of accessing modern properties such as homes, offices, hotels, banks, shops, parking spaces, exam board rooms and so on over the Internet. This paper explains the evolution of device which includes fingerprint recognition. This process uses fingerprint. Fingerprint is powerful personal authentication factors. Fingerprint recognition is more popular authentication system mostly used in many offices as it provides more accuracy. This automatic reporting is necessary as property owner may be remotely available. Telegram/WhatsApp is used for monitoring the home security remotely. Using Telegram/WhatsApp, you can control the opening and closing of doors, turning lights on/off, fan on/off, exhaust-fan on/off, real-time snapshot, windows and other appliances. All security camera photos will be sent to property owner on Telegram/WhatsApp. So, remote home security system using Telegram/WhatsApp is proposed with real time monitoring. Proposed system requires Fingerprint, data acquisition system for it, Raspberry Pi Models, Ethernet/Wi-Fi Interface for Internet access and Smart phone for monitoring. Telegram/WhatsApp is generally used by most of people and is easily accessible to all so generally preferred in this work. It aims at implementing smarter and better parking security mechanism which reduces risk significantly parking space.*

Keywords: *Fingerprint, GSM, IR Sensor, Telegram, Raspberry Pi*

1. INTRODUCTION

Project Idea: The project mainly deals with fast, secure, reliable, flexible, less cost property spaces security solution. The entire locus of control is given to user's smart phone via Telegram/WhatsApp account. Existing property security systems are costly and consist of many components.

All set of actions will be performed remotely through WhatsApp itself. 256 bit of encryption provides best end-to-end security. Along with the property spaces, this project also gives security for parking spaces.

2. MOTIVATION OF THE PROJECT

In this era, the property owner has to go to work everyday. To provide security to their properties when the owner is not at home, we came up with remote authentication gateway. Proximity/PIR sensors: We have also modified the concept of doorbell by installing proximity sensors at the bottom of the door. When any guest comes in front of the door the proximity sensors will get activated thereby ringing the door bell automatically.

Allowing the guest to enter the owner's property when property owner is not present at his own property place: When guest comes to property owner's place and if the owner is not present over there then the guest will have to wait unnecessarily. To avoid this we will send a photograph of providing commands through Telegram/WhatsApp to perform action: To automate door open and close action we can give commands from Telegram/WhatsApp. Depending upon the command, the corresponding action will get performed.

Security: Since Telegram/WhatsApp comes with 256bit end to end encryption hence security comes hand in hand. This will ensure that man in middle attack will not take place.

Telegram Cli and Telegram Bot: Telegram is a messaging app with a focus on speed and security, it's super-fast, simple and free. You can use Telegram on all your devices **at the same time** your messages sync seamlessly across any number of your phones, tablets or computers. With Telegram, you can send messages, photos, videos and files of any type (doc, zip, mp3, etc). Telegram is more secure than mass market messengers like WhatsApp and Line. We are based on the MTProto protocol, built upon time-tested algorithms to make security compatible with high-speed delivery and reliability on weak connections. 256-bit encryption. Diffie Helman Key Exchange. 2048 bit of RSA security features are included in Telegram.

Using Telegram Bot in Raspberry Pi is made possible by python package called Telepot. The Bot API allows you to easily create programs that use Telegram messages for an interface. The Telegram API allows you to build your own customized Telegram clients. This API allows you to connect bots to our system. Telegram Bots are special accounts that do not require an additional phone number to set up. These accounts serve as an interface for code running somewhere on your server. It is 100% open for all developers. Telegram CLI is used start to receive and send messages.

3. OBJECTIVES

- To improve Home Automation Security
- To provide security to property spaces remotely.
- To make this security procedure easy, reliable and flexible.
- To integrate Telegram/WhatsApp with security systems.
- To give entire locus of control to the owner.
- To reduce cost.

4. SCOPE OF STATEMENT

- To provide authentication security.
- The users of this system and owner and family members of property.
- Installation at property location.
- Unauthorized users will be rejected.
- Remote access

Raspreader is used to verify biometric fingerprint. However, it is less secured. Raspbian OS is needed for interfacing WhatsApp with Raspberry pi. It is necessary to have knowledge of Raspbian OS and python language.

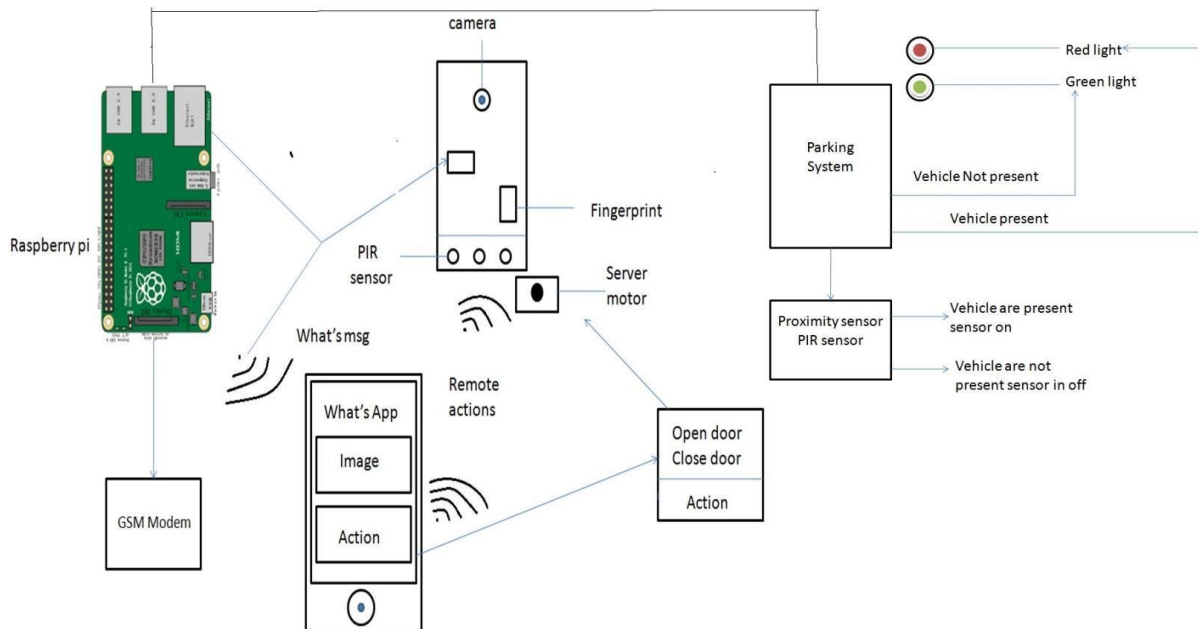


Fig.1: Architecture of the System

Flow of the system:

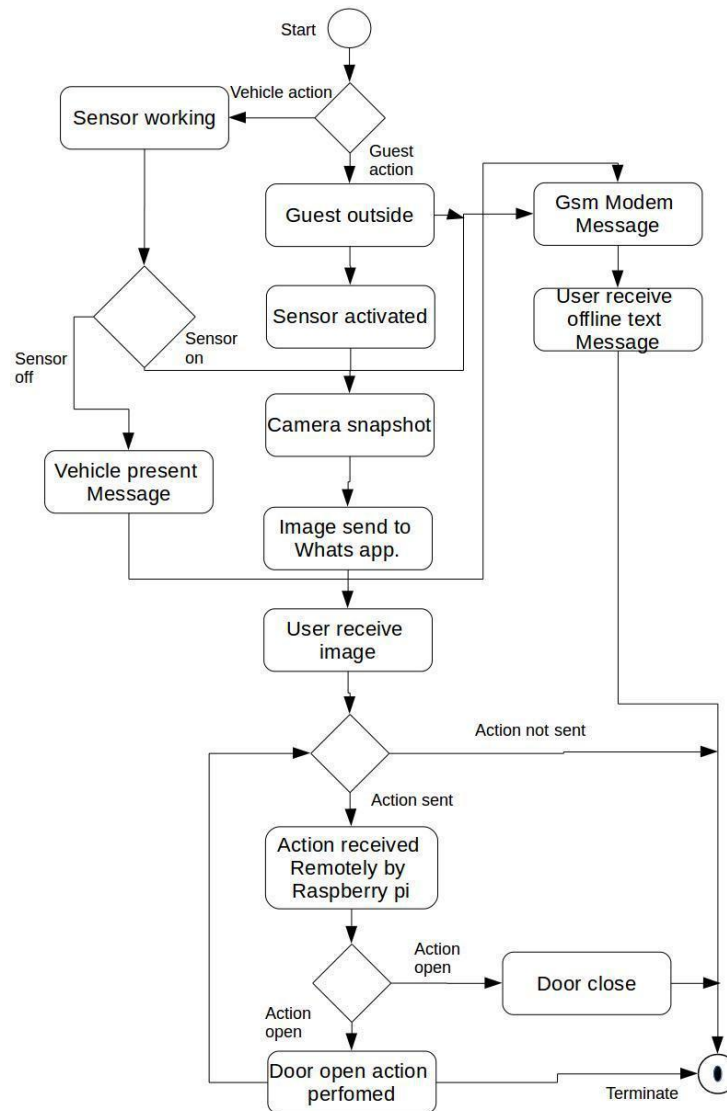


Fig.2: Activity Diagram

5. FUTURE SCOPE

- Future scope of the system is that we can extend it to complete home automation such as controlling lights, fans, windows, etc.
- Interfacing of emerging technologies to our system will become more easier.
- Integrating HVAC (Heating, ventilation and Air conditioning) system.
- Plug and play type of usability
- Integrating with Artificial Intelligence.

6. LIMITATIONS

- Poor network connectivity: If network connectivity is not as per system requirement, then remote actions will not be performed.
- Interfacing of components: If architecture design is not proper, system will malfunction and gives undesired results.
- Poor electricity supply: If not up to the mark, system will not come online.
- To raise of quality of camera snapshot, there may be the chances of cost increment.
- Telegram/WhatsApp Server failure: If there is traffic on server, your request may not be served within the stipulated time.

7. CONCLUSION

The proposed project provides security and various ways to control the devices in the house, it makes ones living comfortable and at the same time easily accessible through portable devices like mobile phones. It gives the administrator all the rights to decide which makes it reliable as it always asks before taking a decision, which helps when there are necessary decisions to be taken and they can be taken fast in case of an emergency. In today's era, the most important factor is Home Security. In this home security system we combine the features of WhatsApp messaging with image capture, fingerprint verification which will provide more security. As the WhatsApp is used in this system which is very easy to use for user and also for access the security remotely. As this system is remotely accessible so the user can control the security of home from anywhere anytime. The device fingerprint along with username/password based security proposed the verification of user as well as the device used to access the home, which significantly improves home security when they are accessed over the internet. Unlike any previous approaches to device fingerprinting, we use geolocation data in our algorithm which improves the fingerprint accuracy.

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