

Garage Door Opener Using IOT(using Opencv)

Introduction:

Overview:

As technology increased drastically in nowadays we can access any electronic device by using IOT. Present we all are using wireless devices to communicate with each other, we can also control any device wirelessly using IOT. They can be controlled because they will be connected to internet. By using IOT there are many advantages that increase in efficiency, cost is reduced, less power consumption. By using IOT, we can control the Garage door through mobile application (OpenCV).

Purpose:

A garage door opener is a motorized device that opens and closes garage doors controlled by switches on the garage wall. Most also include a handheld radio control carried by the owner, which can be used to open and close the door from a short distance.

Literature Survey:

Existing problem:

A number of related studies and projects were found in the area of garage door opener system that used various existing network architectures and various IoT technologies. On average, residential garage doors are opened and closed at least 1500 times per year. Considering how most doors rise from the ground at seven inches per second, the mechanisms that run a garage door opener are crucial to the functionality of a home.

Proposed Solution:

By using IOT and some smart devices like Camera, servomotor LED's, The garage door will be integrated with the camera which will detect the car and detect the number plate, if the number plate is recognised as the authorized one it will automatically open the garage doors to park the car. we can also train the authorized persons faces, based on the face recognition the garage doors will be opened whenever the person wants to take the vehicle out.

Theoretical Analysis:

Block diagram:

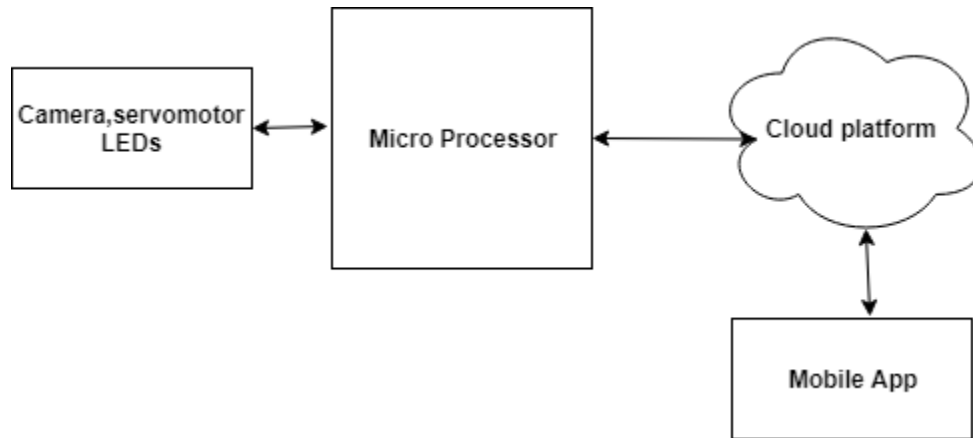


Figure1: Block diagram

Hardware or software designing:

The hardware part of the project involves the Raspberry Pi 3 Model. The four sensors are connected to the Pi via the I2C interface. The sensor values are read by the Pi, processed, and then sent to the IBM Cloud services using the Pi's Wi-Fi module. The data send to mobile application which was developed using MIT app Inventor. Here we use python language for coding. Node-Red, etc., Software tools are used

Experimental Investigation:

There are many challenges in IOT based on authentication of the devices. Based on some situations frequent authorization and authentication are necessary but potentially resulting in changes of the authorization of the IOT devices. To solve this problem automatic authentication is required to remember passwords of many devices.

Flowchart:

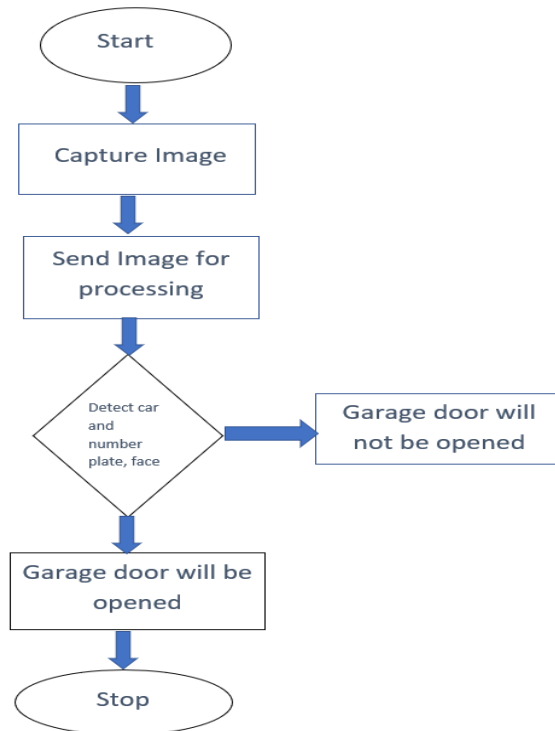
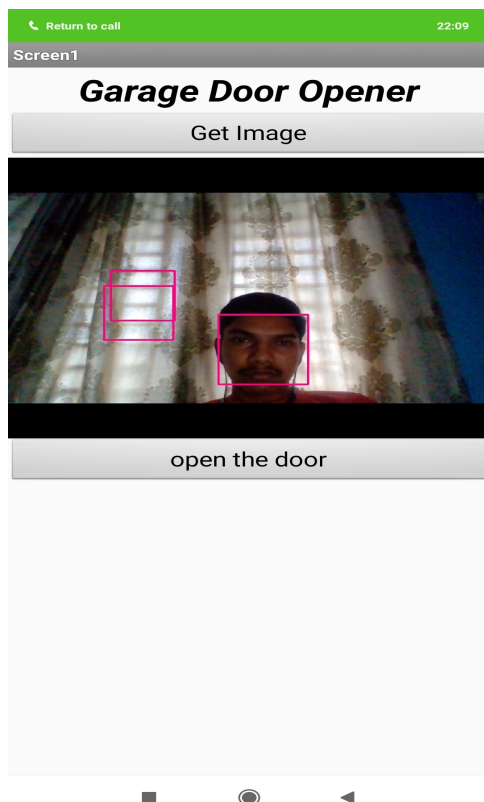


Figure2:Flowchart

Result:



Advantages and disadvantages:

Advantages of IOT for garage door opener:

- Increased efficiency
- Less power consumption
- Easy to access
- High productivity

Disadvantages of IOT for garage door opener:

As a coin has two sides for every device has both pros and cons

- Electric and remote problems
- Complex maintainance
- Complex installation

Applications:

- Controlling the garage door
- Smart home application

Conclusion:

By this we can conclude that Garage door opener using IOT system is effectively and continuously monitored by using ultra HD camera and obtained data is stored in the cloud platform and is accessed by using mobile application.

Future Scope: Opening the garage door on the detection and matching of the owner's car number plate using image processing and machine learning algorithms.

Biblography:

- Meeussen, Wim, et al. "Autonomous door opening and plugging in with a personal robot." *2010 IEEE International Conference on Robotics and Automation*. IEEE, 2010.
- Chowdhury, Somraj, et al. "Home automation and security systems using IoT and open source platforms." (2019).