Smart Garage

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ABSTRACT

Smart home appliances have gone from a luxury item to a trend that most of us are willing to use. There are daily, repetitive actions that can be automated like managing your garage door with license plate detection and using a mobile application which is convenientto have in your pocket.

KEYWORDS

RaspberryPi, iOS, Android, License Plate Detection, Motion Sensor, Servo Motor

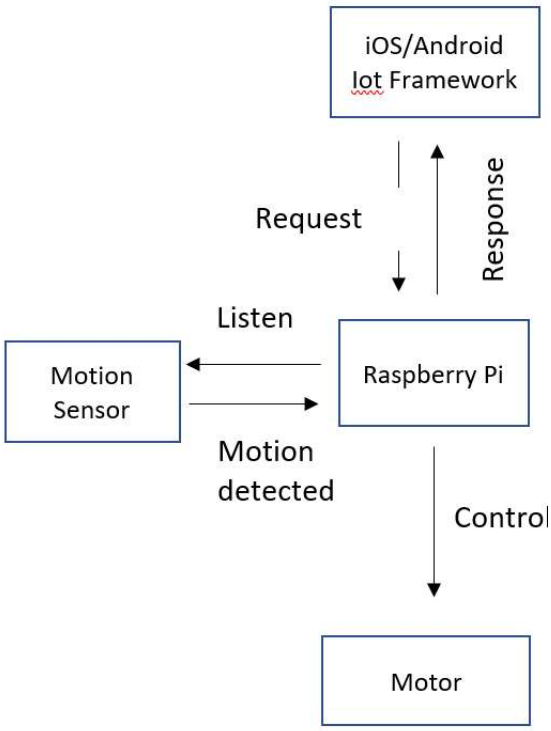
1.INTRODUCTION

Automating garage involves two phases of control. We are proposing a system that involves using a third-party application platform Blynk which enables users to communicate with their little computers, which is Raspberry Pi to control the motor of the garage door.We also propose a system which offers users to be able to control the door with image processing techniques to do license plate recognition on car plates to enhance convenience.

2.DESIGN

The approach we took in designing the system was to divide it into four component We used pir motion sensor to detect motion. Whenever a motion is captured by the sensor, a picture is taken which is embedded to RaspberryPi If there is a contour can be extracted in the picture which contains strings that matches user's car plate, raspberry pi monitors the motor. Third

component is the cross platform mobile application that gives direct accessibility to control motor



3.IMPLEMENTATION

Raspberry Pi

Raspberry Pi is the core component of the system. It communicates with other components and controls the motor.

PIR Motion Sensor

An electronic sensor that measures infrared (IR) light radiating from objects in its field of view. It captures motion through variation in the heat through IR rays and triggers

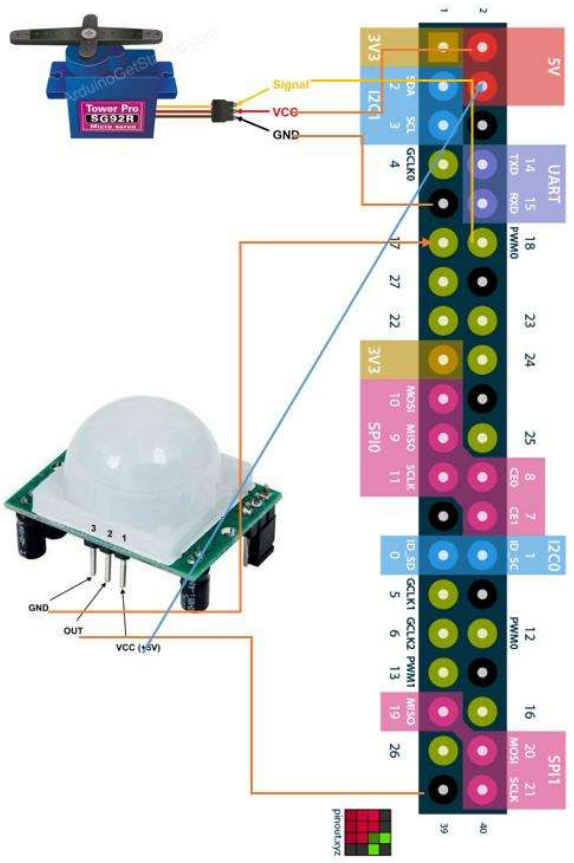
Servo Motor

Servo Motor is used to stimulate the action for opening and closing the door.

Mobile Application

Blynk mobile application platform is used to communicate with Raspberry Pi using same network. Once user interacts with the app and action is forwarded to RaspberryPi for further processing.

4. CONNECTIONS TO PI GPIO PINS



Connected the PIR sensor ground to GPIO 18 which give input to the pi when there is a motion is sensed, the Vcc is conncted to the 5 V pin and the Out is connected to ground of the pi. The servo signal is connected to the GPIO 17 which is GP out which is signaled when there is motion detected, the Vcc connected to 5 V and GND is connected to the ground of the raspberry pi.

5. EVALUATION

We have successfully evaluated our project by using PIR motion sensor, Servo motor, Raspberry pi and the android mobile application. We have tested the system with different scenarios