

Gate-Crasher Precluding Security System Using Particle Photon

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Abstract: In today's scenario the Internet of things has made our life easier and effortless. It is possible to control and monitor a device from anywhere in the world. Although there are plenty of security systems that are established, yet they are expensive, so our objective is to create a system that is very efficient but at the same time, a system that is of very good quality yet at a moderate price and of course a very compact system compared to any other home security system. The idea of the project is to notify the motion of a gate-crasher and then send the information to the particle photon which in turn sends messages to the phone using certain software applications. In other words, an alternate for an Arduino. This is an easy do it yourself security systems which is college-hostel friendly. We are connecting it to a PIR motion sensor which would detect the motion and the particle photon will report the event happenings to your phone using IFTTT application. The additional service that is added is the digitized images that are captured using a camera. The images are sent to the phone or electronic message using the software application such as ThingSpeak and the particle is operated using the particle IDE to write the code and activate it. The code can be written as a C or C++ language.

Keywords: (home security, particle photon, ThingSpeak application, camera)

I. INTRODUCTION

This project is an effective system. It focuses on the compactness yet the quality is not compromised. Even though an alternate for an Arduino is used called the particle photon which is not famous or often used in India yet is considered to be the best device to use for an internet of things project. The most striking highlights of IoT incorporate computerized reasoning, availability sensors, dynamic commitment, and little execute use. Any gadget withdrawn basically be inserted with physical science, programming, sensors to talk with various gadget is "Things". A Thing, inside the Internet of Things, are regularly a person with a screen embed, microchip a placental vertebrate with a microchip electronic gadget, Associate in nursing vehicle that has worked in sensors to caution the main thrust once tire weight is low or the other normal or unbelievable article that may be distributed partner in nursing

data science online convention address and provided with the adaptability to exchange information over a system. The movement sensor can be situated a couple of feet away covered up in the growth and the camera can be mounted over the entryway or even inside a patio light for ideal camouflage. When the trespassers keep running past the movement sensor the camera will be prepared to get their character. Using the IFTTT application the notification is sent to the phone and you can recover the camera and view the photos on any gadget with a USB port. IFTTT application must be set in prior and can be setup such that you receive a customised message. For this project we need two particle photons. Each of the particle photons are connected to the camera and the PIR motion sensor.

II. ADVANTAGES OVER EXISTING SYSTEM

This section elaborates on how our system is beneficial compared to other existing systems. There are already many devices used in the detection of intruders. Some paper was to reduce risk during this operation of security system, the security system mainly focuses on considering to be efficient without any kind of hacking or risks involved. Our system is definitely risk-free and uses applications that are completely trust-worthy. Our system sends the signals at the considerably fast speed. It will send the proprietor the notification at an instance along with an image at a higher resolution than other systems. The particle photon is an efficient module. Some paper clearly emphasizes about the on the short alert time which is nothing but notifying the proprietor at very small intervals of time at a very fast speed. This paper uses the proximity sensor which is also an important factor. It will detect and then inform the proprietor as soon as possible. Some papers deal with an effective IoT security system has been developed and monitored continuously in order to inform the authorized person in case of intrusion is detected. An alarm is used to alert the neighbouring people about the presence of the thief. In this paper Theft control unit has been designed using IoT technology. This system has proved in sending messages and raising an alarm successfully during theft. Some enables IoT with smart security system to home and provides continuous monitoring of the surrounding parameters and can control them by collecting data and exchanging of data between things. The Raspberry Pi3 is an important factor. This system is used to capture the image and sends it to the proprietary over Simple Mail Transfer Protocol. Microcontroller used in this system is Raspberry Pi3 for all processing and controlling operations. This system also uses various sensors.

Manuscript published on 30 April 2019.

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III. PROPOSED METHODOLOGY

The main components are the PIR motion sensor and the camera that captures pictures of the intruder. The PIR sensor (movement sensor) is the principle part in the framework, controlling the camera and yielding data to the ThingSpeak chart. The PIR sensor has 3 pins situated on the base (ground, yield, and V in); the power for V in is provided by the Vin stick and the yield is associated with the D7 stick on the photon. When the PIR faculties movement it sends an advanced compose of HIGH to the photon and distributes that movement has been detected. When the advanced compose has occurred the data is sent to ThingSpeak by means of a web-hook combination in the molecule reassure. Inside the code there is an expanding tally that will yield another all out check number and diagrams the occasions that the sensor has been stumbled in a foreordained time interim. This time interim can be arranged inside the ThingSpeak channel being utilized and once the client needs to restore the tally to zero and begin gathering information they can utilize the "unmistakable channel" alternative in the channel settings page. The camera is constrained by a particle photon, and two transistors. The transistors utilized for the undertaking were 2N3904 NPN transistors. The transistors go about as a switch on the camera, controlling the shade switch and the mode catches on the camera. When someone strolls past the PIR sensor, an occasion is distributed which the camera's photon buys in to. The photon at that point turns on the camera, takes one picture, and turns back off. One shared conviction must be associated with the photons ground and the negative side of the battery in the camera. The quality of the image is mentioned on the camera as well a maximum of around 18 images can be stored or recorded in the random access memory. At the point when a photograph is taken, the number abatements to show what number of more photographs can be taken and put away in the camera. The PIR sensor and the camera are housed in two separate holders with the goal that the movement can be detected before the camera catches an image because of the little deferral between the movement being distributed and the camera buying in to the distributed occasion.

A. HARDWARE REQUIREMENTS

Particle Photon: Particle photon is a finished IoT(Internet of Things) equipment advancement unit, it gives everything that we have to assemble an associated item. It has ground-breaking 120Mhz ARM Cortex M3micro controller with a Broadcom Wi-Fi contribute a minor thumbnail-sized module. Particle gives access to a free cloud administration of the molecule cloud. The Particle Cloud has some amazing features including a Rest-API and the Particle IDE is an easy to use coding platform.

Breadboard: A breadboard is a solder-less gadget fortransitory model with hardware and test circuit structures. Most electronic parts in electronic circuits can be interconnected by embeddings their leads or terminals into the openings and after that creation associations through wires where fitting. The bread board consists of metal pieces. The metal strips are spread out as appeared as follows. Note that the best and base columns of openings are associated on a level plane and split in the centre while the rest of the gaps are associated vertically.

PIR Motion Sensor: The PIR sensor itself has twoopenings in it, each space is made of a unique material that is delicate to IR. The focal point utilized here isn't generally doing much thus we see that the two openings can 'see' out past some

separation (fundamentally the affect ability of the sensor). At the point when the sensor is inactive, the two spaces identify a similar measure of IR, the encompassing sum transmitted from the room or dividers or outside. At the point when a warm body like a human or creature cruises by, it first captures one portion of the PIR sensor, which causes a positive differential change between the two parts. At the point when the warm body leaves the detecting zone, the invert occurs, whereby the sensor produces a negative differential change. These change beats are what is distinguished.

Camera:More or less, these cameras record both withinand the outside of your home, and spare the recording some place (it may be in the cloud, it may be in the gadget itself, depending which one you purchase). Regularly, they likewise interface with your cell phone so you can stream live everything that is going at home, wherever you are in the web associated world. Adding to this, the project requires led, resistor.

The below diagram shows the circuit or wiring of the PIR motion sensor circuit. The photon controls the sensor

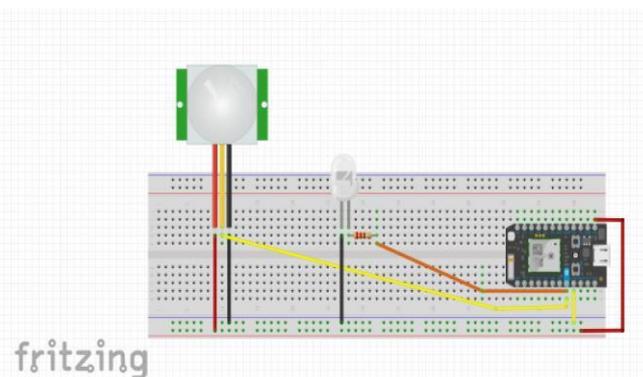


Fig. 1. Circuit diagram of the PIR motion sensor

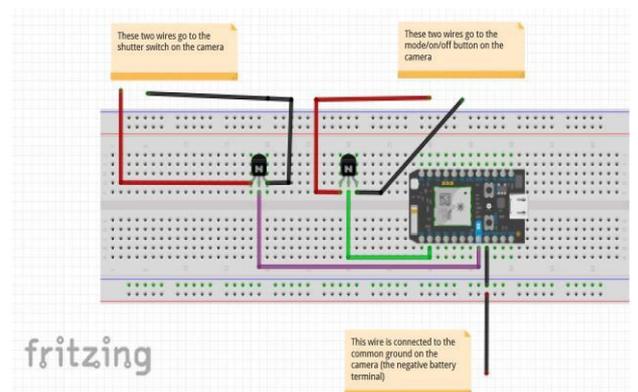


Fig. 2. Camera controlled by the second photon



Fig. 3. IFTTT application

Getting notices sent to your telephone by means of pop-up messages, SMS, or email is simple with IFTTT! First make an IFTTT account at that point go to applets for you. Select "new applet" and look for "molecule" and snap on the molecule symbol. Next snap on "this" in blue and pick "new occasion distributed". Enter your criteria, like what we have above and select "make trigger" when done. At that point select "that" and scan for notices. Next, select "send a notice from the IFTTT application", select "make", and afterward "wrap up". Presently you ought to have a warning sent to your telephone at whatever point the occasion you picked distributes.

B. FLOW CHART

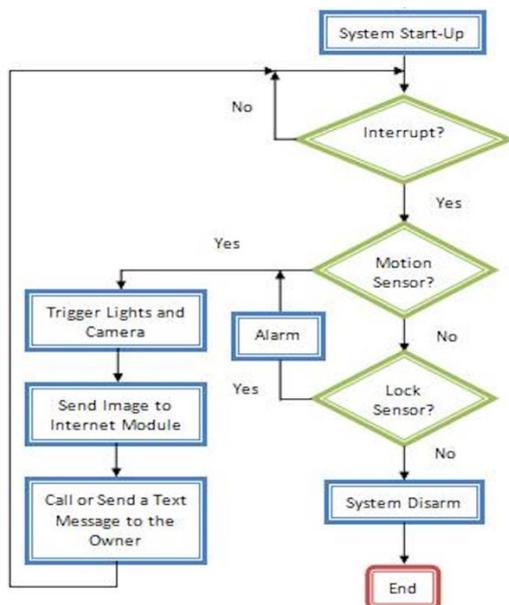


Fig. 4. Flow chart

The above figure represents the system, as it executes the code when the system is started up. In the program, there will be a hinder for every sensor so the framework can perceive what sensor was initiated. Contingent upon which sensor is actuated is the move that will be made. In the event that the movement sensor is enacted, the microcontroller will send a flag to turn on the house lights and to the camera so it takes a preview of the zone where the movement sensor was initiated by the conceivable gate-crasher. It will be sent to the web module so it very well may be posted on the site page. In the event that any of the lock sensors gets enacted, the bell will go off and the camera takes another preview of the region and sends it to the web module so it can likewise be posted on the website page. Additionally, when any of these sensors are actuated, the framework will send a notice through phone call or by means of instant message to the proprietor so he gets saw of what's moving on in his or her home. The program will proceed in a circle until the framework gets incapacitated by the client by entering the stick to legitimately distinguish that person. In other words, it is said to be in a low power mode until the system is started by an interrupt that is detected by the PIR motion sensor and then it triggers the lights and camera to take an image which is then sent to the Particle Photon, which is the WiFi-based microcontroller used. It sends a notification to the user using IFTTT application.

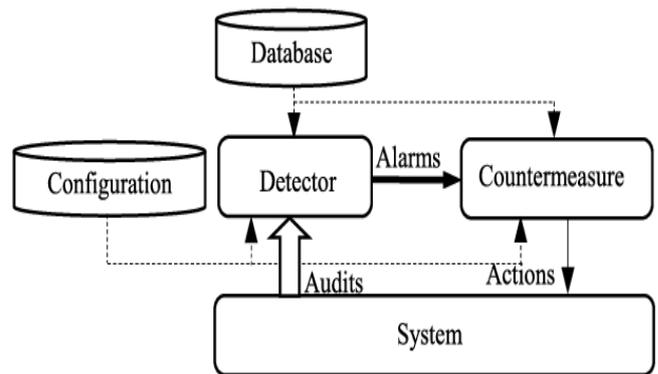


Fig. 5. Block Diagram

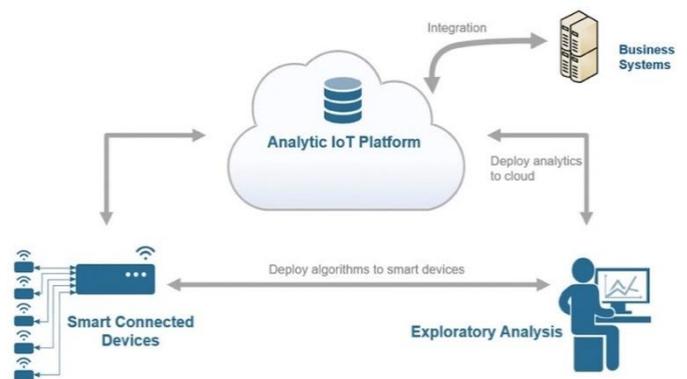


Fig. 6. Internet of Things working

SENSING THE DATA

A savvy associated gadget produces sensor information and eventually sends information to the cloud. These gadgets are regularly savvy enough to run information decrease calculations on their installed processors.

STORING THE DATA

An explanatory IoT stage procedures and stores the sensor information. It might coordinate data from different sources, for example, business frameworks. It breaks down and makes a move on the approaching information.

ANALYSING THE DATA

A frameworks architect or information researcher gets to the chronicled information from the cloud or the gadget and creates calculations to pre-process and investigate it. These calculations may include machine learning systems for anticipating future estimations of a sensor amount or for arranging the sensor information.

OPERATING THE DATA

The calculation is conveyed in the cloud or on a keen gadget, where it works on approaching live information.

C. CODING

This code controls the camera which is subscribed to an event published by another photon connected to a PIR sensor.

```

int shutter = D7;

int mod = D1; //mode button on camera used to turn
camera on/off

void setup() {
  pinMode(shutter, OUTPUT);
  pinMode(mod, OUTPUT);
  Particle.subscribe("Camera", myHandler); //receives
signal from photon with PIR sensor
}

void loop() {
  delay(500);
  digitalWrite(shutter,LOW);
  digitalWrite(mod,LOW);
}

void myHandler(const char *event,const char *data){ if
(strcmp(data,"1")==0) {
  digitalWrite(mod, HIGH);// switches mode button to
turn the camera on
  delay(300);
  digitalWrite(mod,LOW);
  delay(200);
  digitalWrite(shutter, HIGH);//takes picture
  delay(300);
  digitalWrite(shutter,LOW);
  delay(600);
  digitalWrite(mod, HIGH);//changes the mode to
OFF
  delay(300);

```

```

digitalWrite(mod,LOW);
  delay(200);
  digitalWrite(shutter, HIGH);//switches
camera
off
  delay(300);
  digitalWrite(shutter,LOW);
  Particle.publish("CamON","HIGH",60);
  delay(5000);
}
}

```

This code below is for the PIR sensor to Thingspeak and Camera.

```

int PIR = D7;
double count=0;
int var1=0;
int last = 0;
void setup() {
  pinMode(PIR,INPUT);
  // Subscribe to the integration response event
  Particle.subscribe("hook-response/PhotonMotion1",
myHandler, MY_DEVICES);
}
void myHandler(const char *event, const char *data)
{
  // Handle the integration response
}
void loop() {
  var1=digitalRead(PIR) }
  if ((var1 == HIGH) && (last == LOW)) { //basically
just determining if motion has been sensed or not and if so
inducing the count and publishes
  count++; //running count to send
to
  ThingSpeak for graphing
  Particle.publish("PhotonMotion1",String(count),60);
//publish command to trigger the data to be sent to
ThingSpeak
  Particle.publish("Camera","1"); //publish that the other
photon is subscribed to to capture a picture with the camera
  delay(10000); //10 second delay, make sure to
have a long enough delay not to overload the console and trip
things up
}
  last = var1; //the other aspect of the count function
to keep a running count ie. 1,2,3,4,5,6.....
  //you can reflash the code to reset the
count
}

```

D.RESULTS



Fig. 7. ThingSpeak Graph

Using the webhook combination inside the molecule reassure to send information to ThingSpeak gives the above diagram. The Y-pivot shows the running tally of movements detected and the X-hub shows the time interims of the movements.

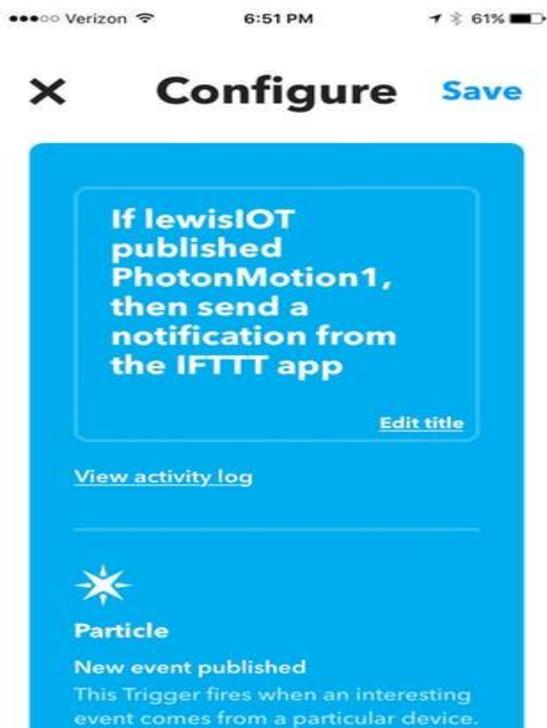


Fig. 8. Notifications sent through IFTTT

E. FUTURE WORK

This displayed desk work can be additionally broadened to send the video recorded in the scene to the adjacent police headquarters promptly to give better security. A cheaper security system can be introduced.

IV. CONCLUSION

This system focuses on the hostel friendly security system. The framework gives the remote alarm ascending if there should be an occurrence of gate-crasher is identified with the goal that the proprietor and other critical individuals

can be educated about the undesirable happenings which may happen at vaults of the sanctuary, Banks, Data focus and other cherished spots. This is a low spending plan and effectively worked interruption identification framework, with the goal that anyone whether rich or poor, youthful or old can make utilisation of this interruption location system. This framework is easy to understand and reasonable to everybody. From this framework individuals can lead a protected, quiet and cheerful life. The efficiency is very high because of the particle photon yet it is an alternative for Micro-controller which is not yet very recognised in India.

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