

# IoT BASED DIAMOND SECURITY SYSTEM WITH VIDEO SURVEILLANCE

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**Abstract:-** This project focus on designing a LASER and video surveillance based security system. LASER ray goes through a large distance without scattering effect and the ray is almost invisible. So by implementing this project we can make an invisible boundary to an sensitive area or specific object. LDR are used to detect the LASER rays. A camera is for live surveillance and monitoring of object or the specified area, it also used to record the event and sending E-mail notification and calling about the event to authorities. This event is build efficient with low cost, high performance, high end technology and eliminating human errors.

**Keywords:** Raspberry Pi, Security, GSM module, Laser, camera

## Introduction:

In modern age Security is the most important factor for the betterment of human life as criminal behaviour is at its high peak. So security must be very advanced. Hence we decided to implement security system as our project.

In this project a laser module is used to provide a sharp laser ray and a LDR is used to detect the light ray. Whenever the laser ray falls on the LDR the system is in rest and when the laser is cut then the LDR will not detect the laser ray and hence the alarming system is ON and the recording starts while the event occurring and the alarming system starts working and information is send to the authorities by communication by calling or messaging. The recording doesn't stop unless the authorities willing to do so. Hence this project is fully functional and working automatically on software.

## Purpose:

The purpose of the project is to provide security to a valuable things materials files top secret documents etc. So that they are not stolen. This would be done by providing boundary by laser ray and it can be detected by the DLSR and whenever someone try to steal in it, it should be detected and necessary alarming and notifications must be given to the authorities.

The purpose is the need to stop the modern era crimes and hence the protection system should be

modernise in every way to stop criminal activities and on every attempt of system should be updated likewise.

## Block Diagram:

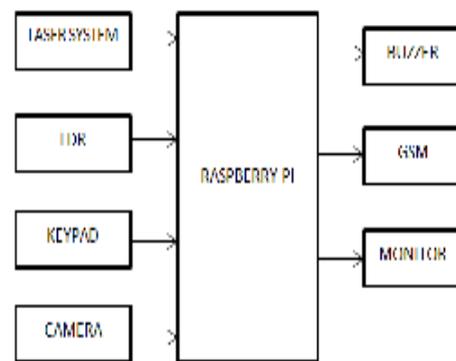


Fig1. Block diagram of diamond security system

FIG.1 shows the block diagram of the IOT Based Diamond Security System. The LASER module is used to produce laser ray and the LDR detects the laser ray based on detection of the laser ray the system stays in the rest and when the laser is cut the LDR does not detect the laser ray and hence the trespassing is detected and then the raspberry pi turns the Buzzer ON and the camera starts recording the events and live coverage can be seen on the monitor and through Wi-Fi we send E-mail and using GSM module we can communicate the Police officers and also the security and authorities. Keypad is used to provide the password to the system and the system can be stopped by entering the password.

## LASER SYTEM:

The LASER stands for Light Amplification by Stimulated Emission of Radiation. A laser system is a subsystem that make a amplified single colour source of light which generates high power beam. The laser beam travels through a large distance without the Voltage scattering effect.

## Specifications:

- Voltage: 3.0-5V
- Output: red laser straightly

- Operating current:40mA
- Operating temperature:-36~65c
- Transmit power:58mW

**RASPBERRY PI:**

Raspberry pi 3 model B is the processor in which the GPU provides open GL ES 2.0, hardware-accelerated open GV, and 1080p30 H.264 high-profile decode and is capable of 1Gpixel/s,1.5Gtexel/s or 24 GFLOPs of general purpose compute. The raspberry pi 3 is an upgrade to a next generation main processor and improved connectivity with Bluetooth Low Energy(BLE) and BCM43143 Wi-Fi on board.

**Specifications:**

- Processor:-
- Broadcom BCM2387 chipset
- ARM Quad-Core ARM Cortex-A53 (64 Bit)
- 802.11 b/g/n wireless LAN and Bluetooth 4.1(Bluetooth Classic and LE)
- GPU: Dual core video core IV multimedia co-processor. Provides open GL ES 2.0, hardware-accelerated Open VG and 1080p30 H.264 high-profile decode.
- 1 GB LPDDR2
- 40 GPIO connector pins with 27 GPIO pins as well as +3.3v,+5v and GND supply.

**CAMERA:**

Camera is a device used for recording visual image in the form of photograph, film or video signals. Here camera is used for continuous monitoring and recording purpose.

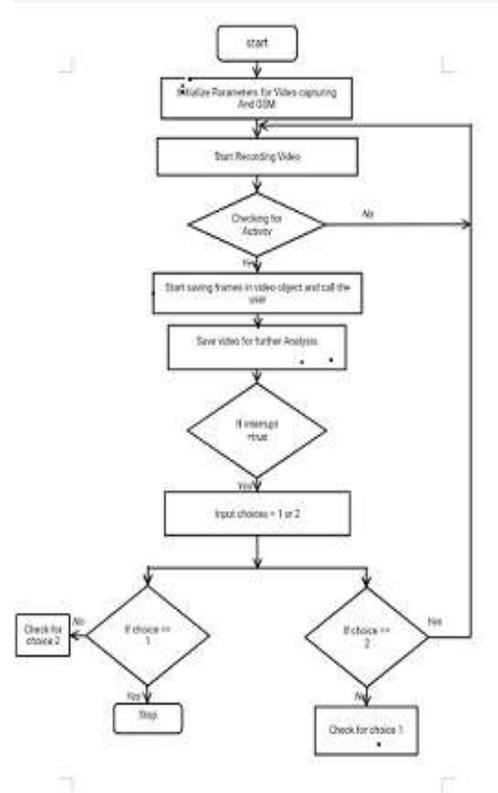
**GSM Module:**

SIM800C is a quad-band GSM module, its performance is very stable with small appearance and high cost-performance to meet the various needs of customers. The operating frequency of SIM800C is GSM/850/900/1900MHZ can be used worldwide, you can achieve low power consumption of voice, SMS and data transmission.

**Software Required:**

- Operating system: Windows 10
- Coding language: Python
- Framework used: CV2

Fig.2 Shows the flow chart of IoT based diamond security system with video surveillance.



**Conclusion:**

The main purpose of this project is to implement an security system to provide security for valuable things using laser and LDR and detecting any intruder and develop a notification system to police and the authority.

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