



# SMART SECURITY SYSTEM BASED ON MOTION DETECTION.

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**Abstract:** We have prepared a project named as 'Arduino based security system using PIR sensor'. In this project, we use Arduino (Microcontroller) because; it is open source for hardware use. Arduino boards are able to read inputs - light on a sensor, a finger on a button, or a Twitter message - and turn it into an output - activating a motor, turning on an LED, publishing something online. Basically, we are going to make a system which use sensors like PIR sensor, MQ9 sensor, IR flame sensor. Process of system, first of all system will using MQ9 sensor to detect the leakage of LPG, CO, CH4 & it will forward the flow to PIR sensor so it, will detects the range of flame/fire coverage area. After this it will send message to the user that the fire is in low/high level. This system has proper coordination with their allocated sensors.

**Keywords :** Arduino UNO, PIR sensor, GSM Module, MQ9 sensor, Ultrasonic sensor, Android device.

## I. INTRODUCTION

A security framework that can recognize and respond viably to security threats is in incredible need. Since there has been a growing number of dishonest activities, the need for a high-quality security framework is important. There are now loads of security frameworks in the realm of innovation as of now, in the market for both indoor and outdoor applications, for example, Ultrasonic identifiers, CCTV, microwave indicators, photoelectric finders, infrared locators and so forth. Anyway, the greater part of these frameworks of being costly in the market, or they require increasingly electrical force development, more memory space of usage of the account framework and complex circuit, and so on. Accordingly, an answer for conquer these issues could be by utilizing a sensor of minimal effort which can identify the interlopers, and other security astonishingly inside the sensor's discovery run and creates and yield. This yield is can likewise be utilized to additionally flagging and actuating other security gadgets like caution framework, helping framework and other comparable security danger gadgets. Which means this framework can spare force utilizations on the grounds that these segments get activated just when there are gate crashers and security dangers in the sensor's discovery run. A Passive Infrared radiation motion sensor is a security-based system that saves the power consumption and the memory space of the

recording system. Passive infrared sensor (PIR sensor) detects the change of infrared radiation and warm-blooded moving objects. According to the change in infrared radiation, there will also be a change in the voltages generated which was amplified and then used to turn ON webcam or lighting through a relay system. The use of motion detectors goes back to ancient societies that developed agriculture and motion detection of people and things can be traced back to the early decades of the 20th century, with many of the same principles still in use today. The objective of this work is to develop a simplified version of a PIR sensor which can be installed on campus and houses for lightening systems, shops and malls for security systems and other major applications and places all over the globe. In order to understand the full ideal of this project, we need to review the history of motion detection and how it came to surface between the 20th and 21st century.

## II. RELATED WORK

This project is based on the security system using a PIR sensor, Arduino UNO and SIM900A. The PIR sensor detects intruders. When a suspicious person is detected, a warning message is sent to the chosen phone number. A relay module is also connected with the Arduino Uno which can be used to turn on an Alarm or it can be used to turn on any light as an indication that intruder is detected. The PIR Motion sensor module is an automatic control module based on infrared technology. It adopts LHI788 probe, which has high sensitivity, high reliability, low voltage working mode and low power consumption. It can be widely used in various types of automatic induction electrical equipment.

## III. EXISTING SYSTEM

The Passive Infrared motion sensor was designed using the Arduino IDE software. The software is used to program the Arduino and PIR circuits. For the programming, C language was used due to the fact that Arduino Nano uses C for its programming. The program was written, compiled and uploaded to the Arduino Nano. Several essential parts are required in the implementation of this project. It is thus split into several subprojects so as to make the testing, troubleshooting and implementation of the whole system easier. The goal of this system is to introduce the basic concepts of home security using a PIR sensor and a microcontroller. This safety will work if the PIR (Passive

Infra- Red) sensor recognizes any individual that would not like to go into the house, and afterward the micro- controller process and instructs a mobile phone to send an alarm signal in the form of Short Message Service (SMS). After the program was successfully uploaded to the circuit, a test was carried out to determine if the PIR worked perfectly and it came out with positive results as it detected motion. As a motion was detected, the sensor became active, therefore gave a signal to the Arduino which gave an output signal to the led and thereby making the buzzer to sound an alarming noise.

#### IV. METHODOLOGY

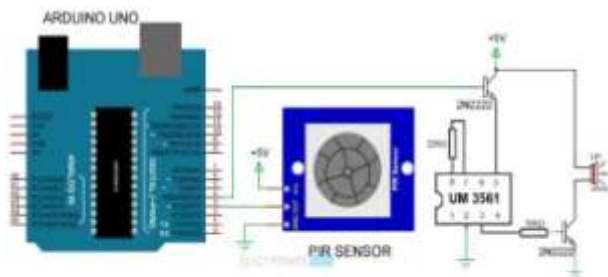
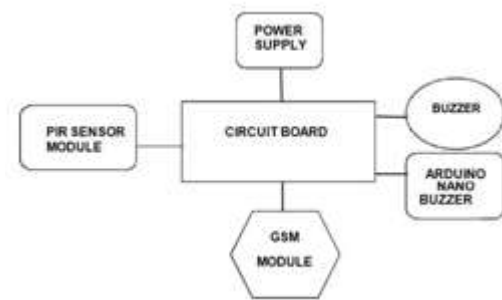


Fig 2: Proposed Architecture

Microcontroller based sensors are a new, exciting way to build in security into your home. They can be configured to detect motion and sound, sending an alert to your phone so you're never left in the dark again. In this system we'll focus on how to configure a simple home security framework using a PIR sensor (Passive Infra-Red) in light of a microcontroller. This safety will work if the PIR sensor is placed in a room facing a door.

#### V. RESULT AND DISCUSSION

Some professionals likewise argue that merely depending on a fingertip sensor is not wise because it is quite simple to put someone fingertip on something and reproduce it, that is to duplicate the fingertip, that is why it is consistently considered to make use of fingertip scanners in two ways authentication systems whereby an added layer of security system is made in the form of the passcode, PIN, or voice recognition. Some researchers suggested an idea of a powerful internet of things security system whenever a defect in one of the components used in the security system would not fail the whole security system.



#### VI. CONCLUSION

The utilization of sensors in our day-to-day life has significantly improved the security in our regular day to day existence. This research focuses on how to configure a simple home security framework utilizing a passive infra-red sensor in light of a microcontroller. This safety will work if the passive infra-red sensor recognizes any individual that would not like to go into the house, and afterward the microcontroller process and instructs a mobile phone to send an alarm signal in the form of short message service (SMS). This work has shown that utilization of sensors ought to be utilized in shops and homes in Nigeria and African nations in this way.

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