INTRUSION DETECTION SYSTEM

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Abstract : As we know nowadays, the robbery & theft increases day by day, so for that reasons security is one of the most important part in modern daily life. The main goal of this paper is to design and implement Intruder Detection System based on the Arduino which can be organized in jewelry shops, bank locker room, personal office cabin, homes, etc. The system develops along with the automatic door lock system which can authenticate and validate the user. This system is supported by the GSM module which can able to receive alert messages to the user. The proposed system is standalone and provides high security in many areas. The system gives security access control by using various IoT based sensors. The proposed system is better, efficient to detect and prevents unauthorized activities by using IoT based applications from a remote place.

Keywords - Intruder, Security, Access control, Locks.

I. INTRODUCTION

In present days, the need for safety is an essential issue which makes many people look for different way to protect their property [1]. To overcome security threat different types of sensors and alarm systems are available in the market. In this paper, we have implemented a infrared motion sensor, light sensor and automatic door lock system with the help of Arduino for the safety of bank lockers, jewelry lockers, homes, etc. Infrared motion sensor detects the motion of a person during a specific period of time [4]. When any unauthorized motion will get sensed, the system will glow the lights by using a light sensor and at the same time the door will get automatic lock by using automatic door lock system so the intruder will get lock inside the room and alert message will send to the user, so the user will get aware about the attack and will take some action. It provides both intruder detection and provides security for door access control [2].

Immediately Email sending to the user is one of the method of security which alerts to the user. Ubidots is a platform which is used for mail sending, data is send the cloud and then receive to the user. The proposed system provides us easy and efficient email sending and feel the user secure.

II. RESEARCH METHODOLOGY

2.1 Existing System

The existing security consists of Pyroelectric sensor along with CCTV cameras to detect the intruder which is costly because of use of computers and requires more hardware and highly complex. It does not aware the user immediately at the time of attack happens [3]. The traditional locking system is based on lock and key but, managing such mechanism is hard work for a person who has authority to lock. It has to physically check and maintain the multiple keys which are not efficient and it was created lots of issues [9]. So, for that reasons, the digital locking system is invented. There are various types of door lock systems are used like password based system, biometrics-based system, RFID card or ID card and also with the use of face recognization system is used to lock the doors which need to improve reliability and robustness [7]. But, these systems are used to prevent the unauthorized or intruder to enter into the sensitive area.

2.2 Proposed System

We have to implement those type of system which will work after the intruder will enter into such sensitive areas. We have to not only detect the intruder but also prevent them. So, the current systems are work only for detecting the intruder not to prevent [5]. In this paper, we are invented such type of system which is useful for a monitor as well as control the intruder with the help of automatic door lock system after the intruder's motion is sensed by a infrared motion sensor which is more reliable[6].

By using various wireless communication techniques it is possible to aware the user by sending the alert emails. In Intrusion Detection System, we have used two types of sensors i.e. Infrared motion sensor and Light sensor. We have connected both the sensors to Arduino with the help of jumper wires. Arduino is the interface between hardware and software which is connected by using USB 2.0. When an intruder enters the room at that time motion is detected by the Infrared motion sensor and at the same time, lights will glow with the help of the Light sensor. At that same time, the door will be lock automatically with the door lock system. Then automatically email is sent to the user by using IoT module i.e Ubidots. Ubidots is the platform which is used for email sending which sends sensor data to the cloud and with the help of Ubidots, email is sent to that particular user. So the user will aware regarding the attack and will take further actions against robbery from a remote location. For automatic door locking we will use ultrasonic sensor for better safety which detects presence of person.
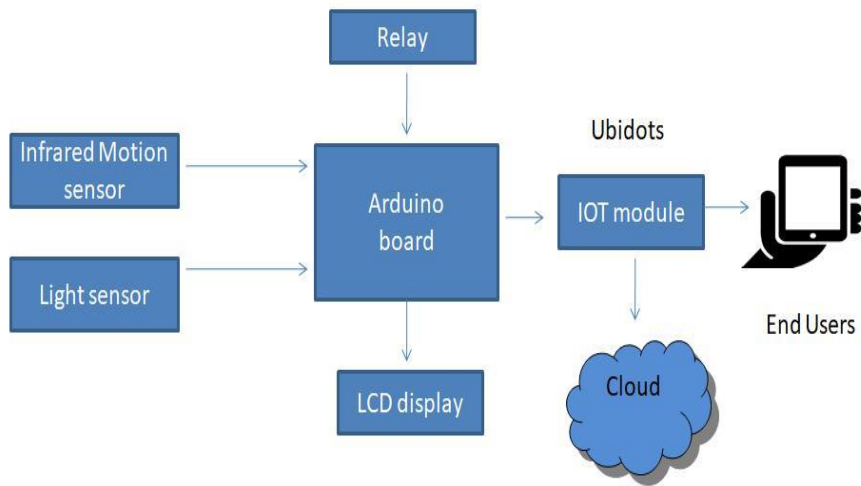
figure 2.1 block diagram of intrusion detection system

III. RESULTS AND DISCUSSION

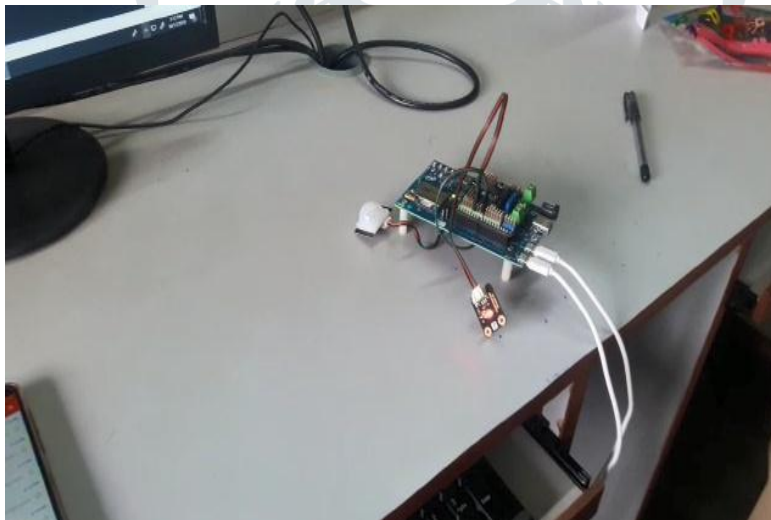### 3.1 Results of Intrusion Detection System

figure 3.1.1 connection of arduino with infrared motion sensor and light sensor

Figure 3.1.1 Shows the connection of Infrared motion sensor and Light sensor with Arduino. This connection is established via jumper wires. Arduino is connected to Pc with USB 2.0
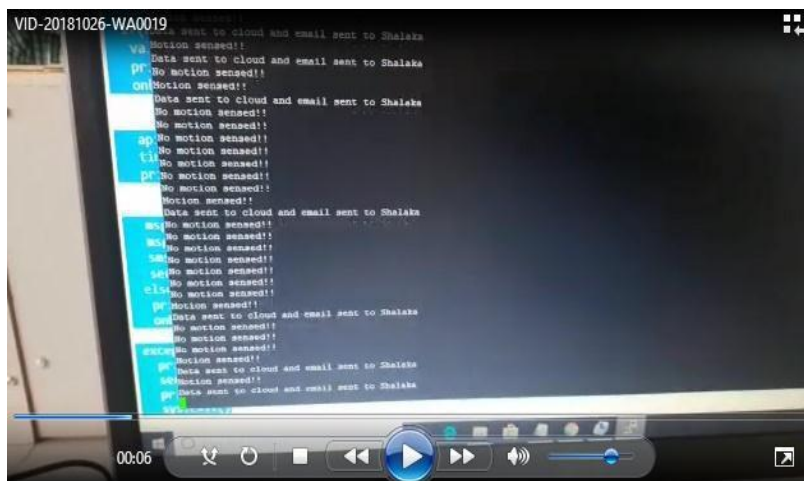

figure 3.1.2 motion detected

Figure 3.1.2 Shows when motion is detected by Infrared motion sensor and message is displayed on screen that is "Motion Sensed". After that data sent to the cloud and email is send to the user. If motion is not detected by Infrared motion sensor then "No Motion Detected" message is displayed on the screen.
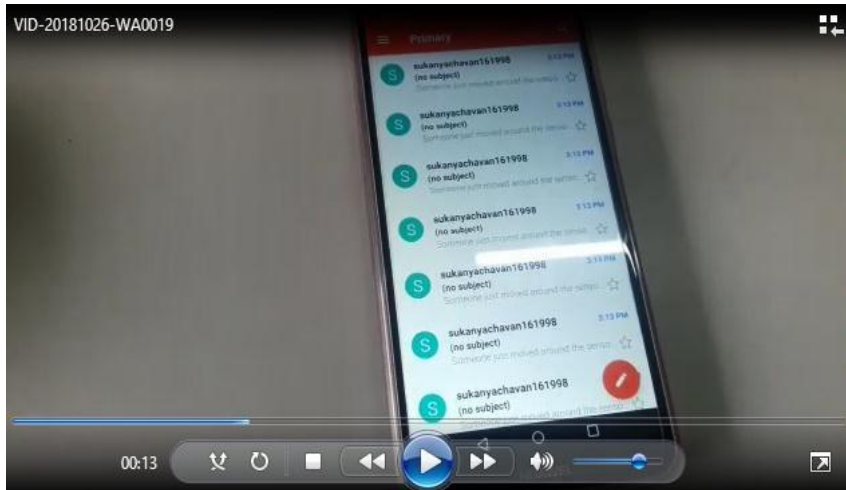

figure 3.1.3 email receive to the user

Figure 3.1.3 Shows Email is receive to the user that is Motion is detected after that user will get alert about unauthorized movement and will take further actions.
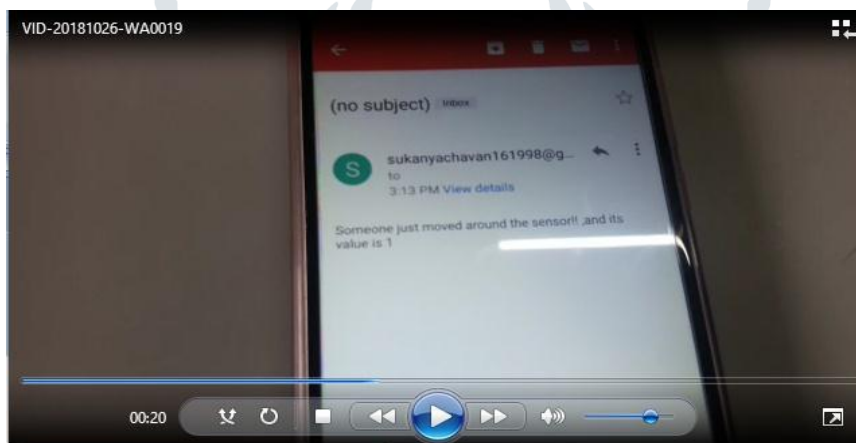

figure 3.1.4 example of email

Figure 3.1.4 Shows example of Email and it displays Email is open into the user's cellphone that is "Someone just moved around the sensor and its value is 1".
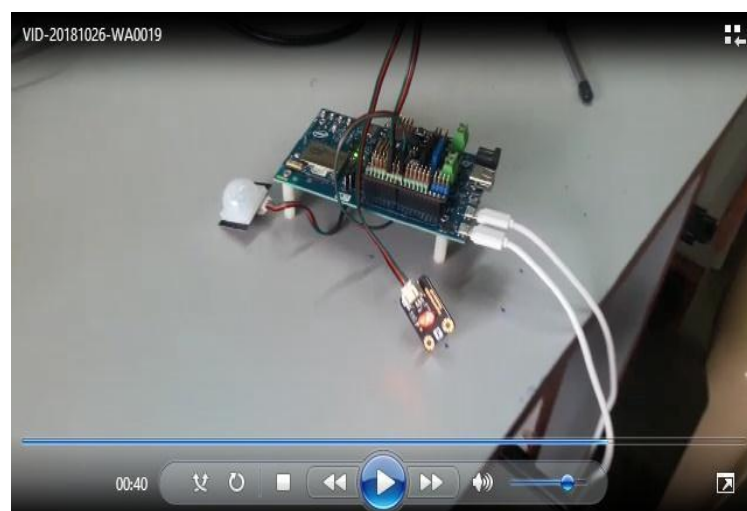

figure 3.1.5 light turn on

Figure 3.1.5 Shows Light is glow after motion is sensed by Infrared motion sensor.
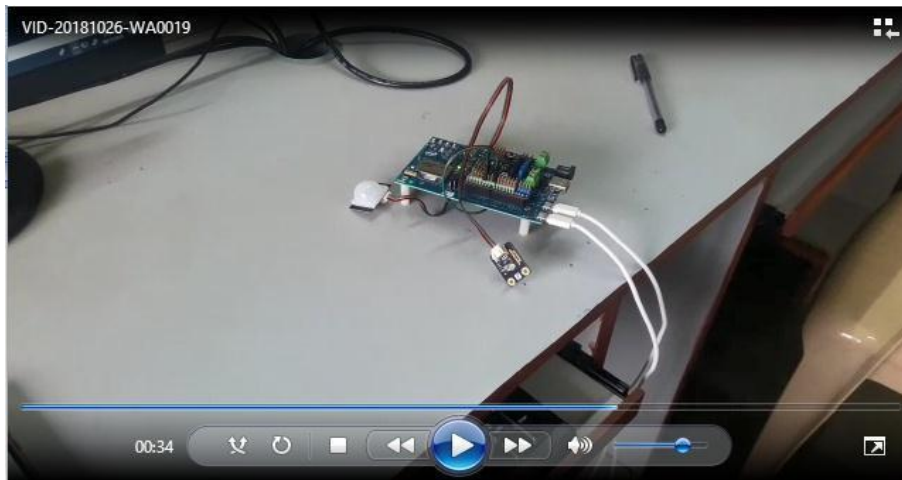
figure 3.1.6 light turn off

Figure 3.1.6 Shows Light is turn off after motion is not sensed.

III. CONCLUSION AND FUTURE SCOPE

This system replacing different types of traditional locks or locking systems by applying automatic door locking. By implementing this system robbery gets decreases and people will survive freely and live without any fear about their property. The Internet of Things provides better security to the citizens [8]. This proposed system has more features will be added for the future scope for enhancing better security.

In this paper, we only lock the intruder inside the room but, in upcoming days we will implement the system which is an auto-triggered report about the robbery and theft into the nearest police station along with the address [10]. This improves our proposed system more secure and better and it easily handles the robbery.

IV. REFERENCES

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