D Y PATIL
COLLEGE of
ENGINEERING & TECHNOLOGY
(AN AUTONOMOUS INSTITUTE)
KASABA BAWADA, KOLHAPUR

DEPARTMENT OF ELECTRONICS AND TELECOMMUNICATION ENGINEERING

'MINI PROJECT REPORT'

Name of Project: - Motion Detection Sensor

(Smart Automation)

D Y PATIL
COLLEGE of
ENGINEERING & TECHNOLOGY
(AN AUTONOMOUS INSTITUTE)
KASABA BAWADA, KOLHAPUR

CERTFICATE

This is certify that following students of Electronics and Telecommunication has completed 'Motion Detection Sensor' Mini project in the Laboratory guided by Professor.

Members: -

Ajinkya Kathar (Roll no. 33)

Tejas Shirke (Roll no.25)

Samrat Bhise (Roll no. 29)

Prof. Kavita. V. Thorushe

(Project Guide)

Prof. Dr. Mrs. S.V. Sankapal

H.O.D

INDEX

Synopsis of the proposed work

Name of College: - D. Y. Patil college of engineering and Technology, Kolhapur

Name of Course: - S. Y (Electronics and Telecommunication)

Name of Student: -

1. **Ajinkya kathar (Roll no. 33)**
2. **Tejas Shirke (Roll no. 25)**
3. **Samrat Bhise (Roll no. 29)**

Name of Guide: - Prof. K. V. Thorushe

Proposed Title: - Motion Detection Sensor

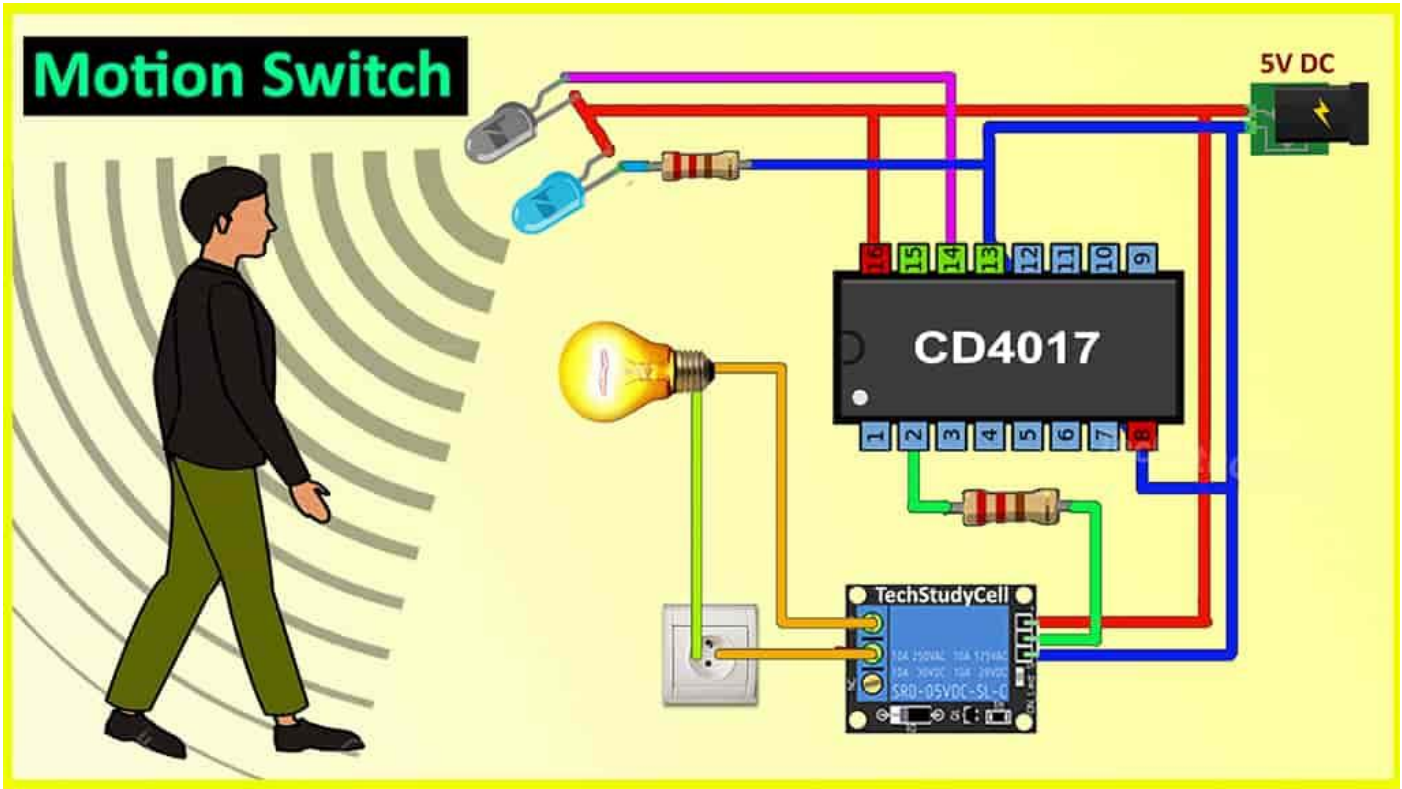
Place of Work: - D. Y. Patil college of engineering and Technology,

Kasaba bawada, Kolhapur.

Introduction

A motion sensor light triggers a response when motion is detected. They can be installed indoors, on walls, ceilings, and in doorways, or outside, on the exterior of buildings and homes. Some kinds of motion sensor lights, called occupancy sensors, operate by turning off lights in unoccupied rooms and spaces.

Block diagram



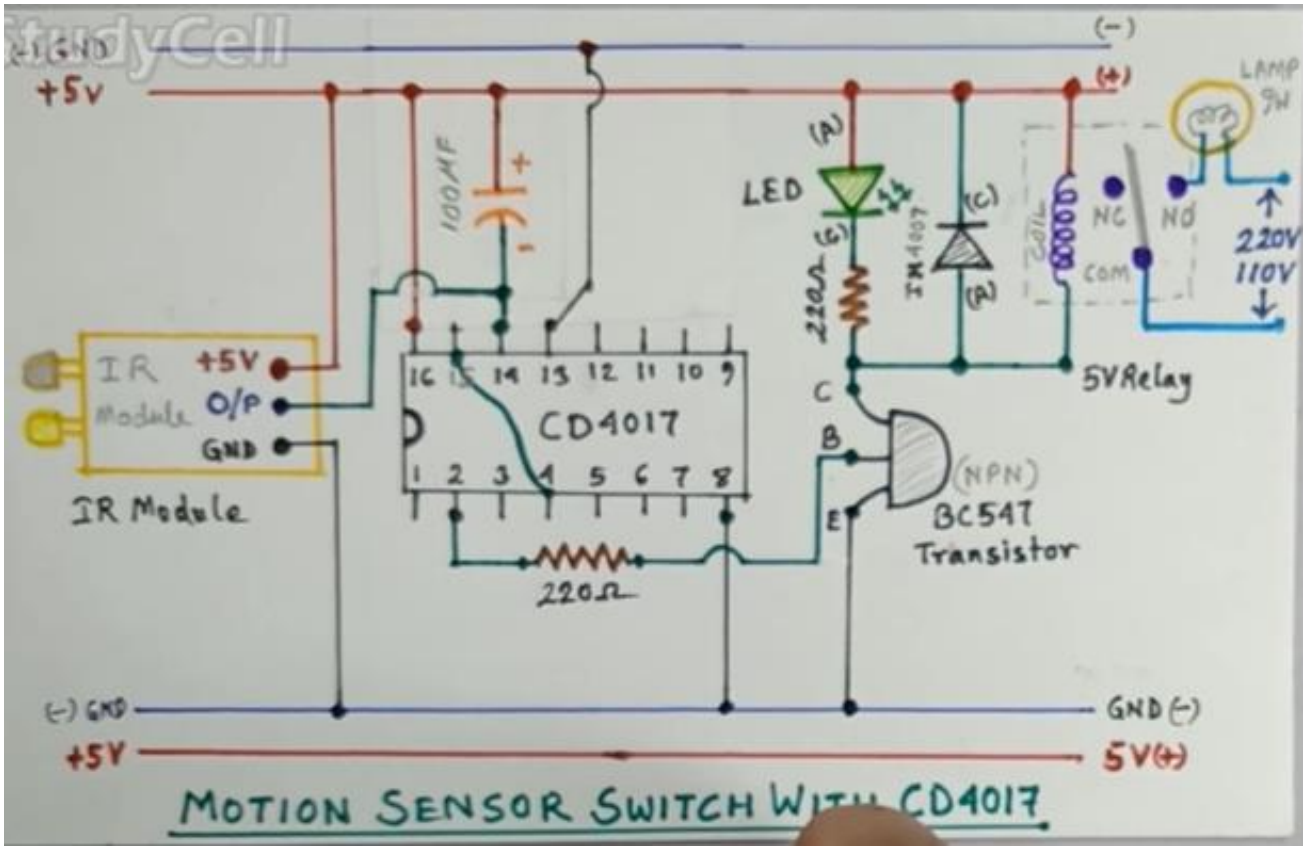
Description: -

- The IR sensor will make the high frequency beam of 5 khz with the help of 555timer which is set to a stable multivibrator mode at the transmitter section.

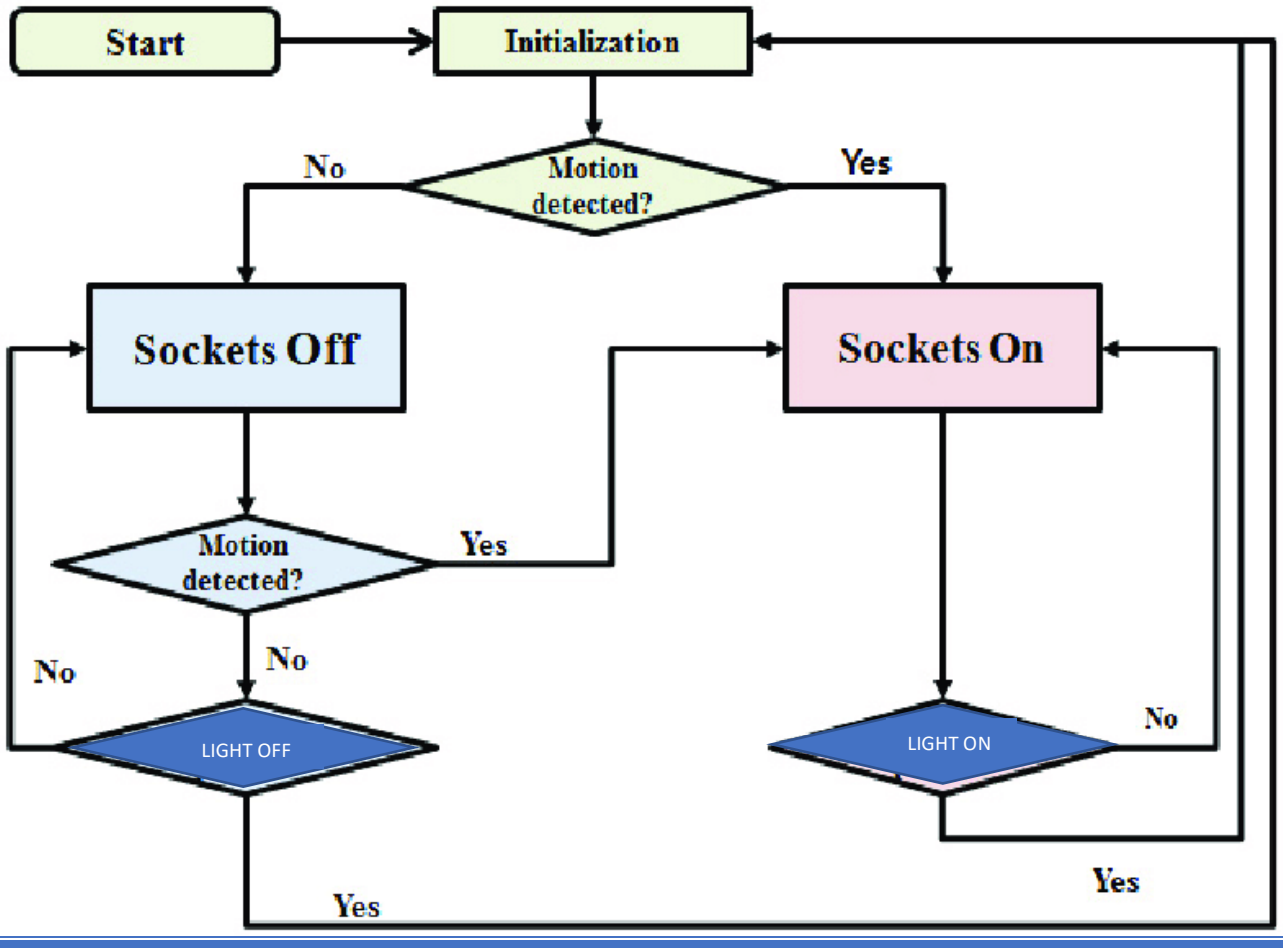
- The IR sensor will produce the high frequency beam which is received by the photo resistor at the receiver section. This frequency will be in one phase when there is no interruption between the IR sensor and photo transistor. Total circuit will not give any output in this phase. When there is an interruption between IR sensor and photo transistor, the beam produced by the IR sensor will be in different phase. This different phase will be immediately detected by the Photo resistor and make the 555 timer to give alarm through speaker.

- When there is no intrusion, the photo transistor will make the pin2 high of 555timer which is set in monostable mode, and there will be no output given in this configuration. When there is intrusion, the pin 2 of monostable timer is made low which will make the alarm to alert. The alarm time depends on the capacitor C1 and variable resistor POT.

Circuit Diagram :-



FLOWCHART



Working principal

When the detector senses an object moving across its field of view — especially IR LED objects such as people, animals, and cars — it electronically turns on the lights.

IR Sensor is an electronic device that emits or detects IR radiation to sense the aspects of its background. This consists of an IR LED source that emits the light with the specific IR wavelengths. This frequency of the IR beam is received by the detector circuit which also consists of an optical component to focus the infrared radiation and to limit the spectral response.

1. The IR emitter LED continuously emits infrared. When any object comes within the range, some amount of infrared reflects from the object surface and that reflected infrared can be detected by the IR receiver LED.
2. The LM358 compares the voltage across the IR receiver LED with the predefined value. When any motion detected the voltage across the IR receiver crosses the predefined value, so the output pin (pin 1) of LM358 becomes high.
3. The clock pin (Pin-14) of CD4017 IC is connected with the output pin of LM358. So, when any motion detected, the 4017 IC receives a clock pulse and changes the current state of Pin-2.
4. The Pin-2 of CD4017 is connected with the base of the BC547 NPN transistor, So when the Pin-2 becomes high the transistor turns on.
5. When the transistor turns on, the current can flow through the relay coil. So the load connected with the relay also turns on.
6. When the IR leds detects any motion second time, it sends the next clock pulse to CD4017 IC. Then the Pin-2 becomes low.
7. If the Pin-2 becomes low, the transistor turns off and accordingly the load connected with the relay also turns off.
8. Now connect the 5V DC supply and AC bulb as per the circuit.

Components List: -

1) CD4017 IC

2) LM358 IC

3) BC547 TRANSISTOR

4) 100uf 25V CAPACITOR

5) 1000uf 25V CAPACITOR

6) 220ohm RESISTOR – 4

7) 10K RESISTOR

8) 10K TRIMMER

9) LED 5mm - 2

10) IR LED PAIR (DETECTOR AND EMITTER)

11) 1N4007 DIODE

12) 5V SPDT RELAY

13)CONNECTORS & IC BASE

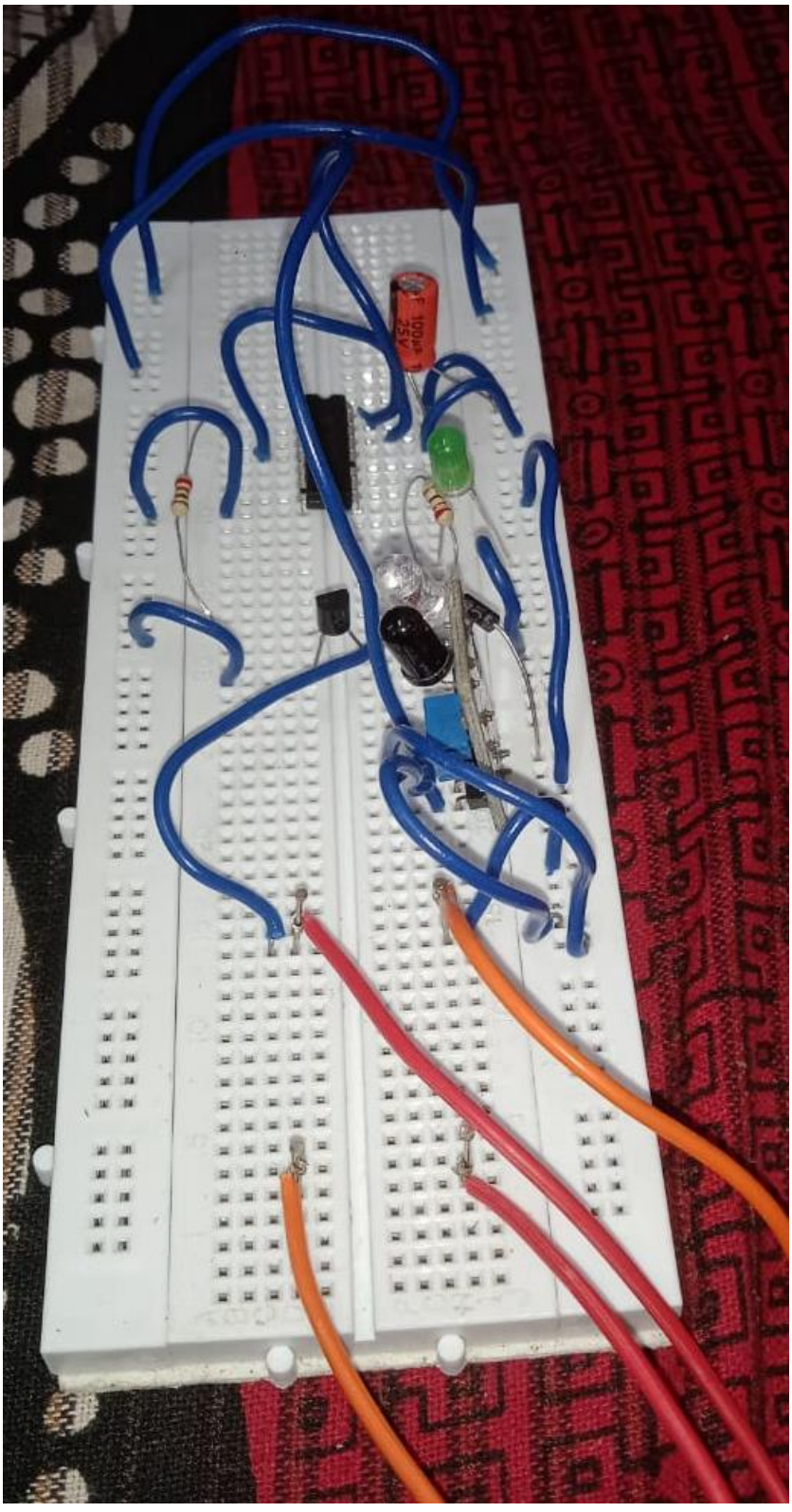
Relevance: -

The Importance of Motion Detectors. A motion sensor is a security device that is installed in buildings to detect unauthorized movement in restricted areas, particularly after hours. The device is used in commercial and residential properties, as well as on industrial and military premises. Additionally, motion sensor lights conserve power and will help you save on your electric bill. By shutting off automatically when they no longer detect movement, you'll never have to check if you turned the lights off before bed again

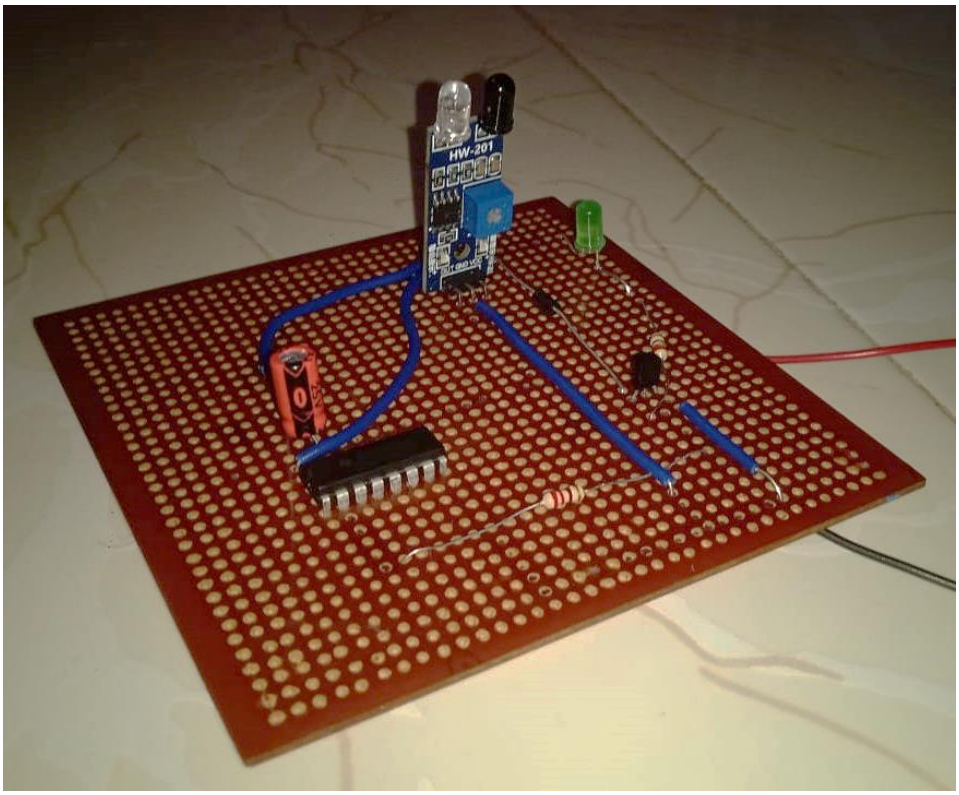
IR Sensor is an electronic device that emits or detects IR radiation to sense the aspects of its background. This consists of an IR LED source that emits the light with the specific IR wavelengths. This frequency of the IR beam is received by the detector circuit which also consists of an optical component to focus the infrared radiation and to limit the spectral response.

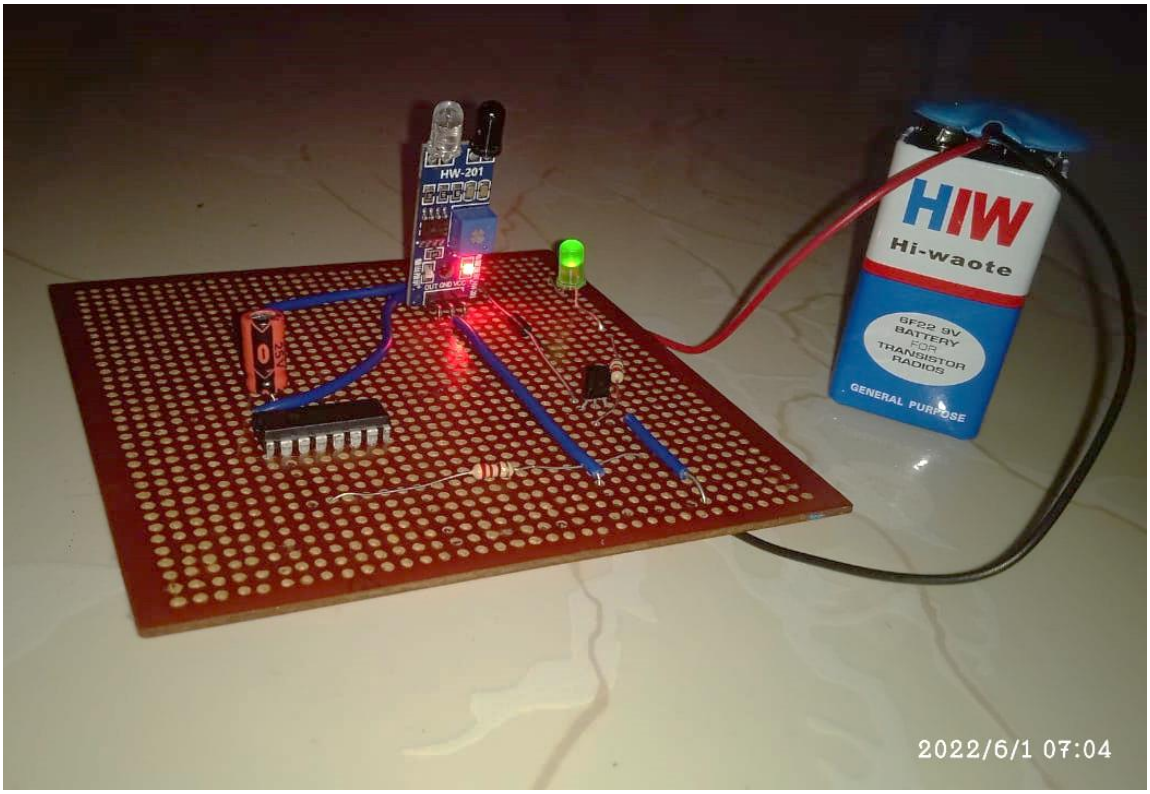
A motion sensor light triggers a response when motion is detected. They can be installed indoors, on walls, ceilings, and in doorways, or outside, on the exterior of buildings and homes. Some kinds of motion sensor lights, called occupancy sensors, operate by turning off lights in unoccupied rooms and spaces.

Making: -



Pcb Making :-


HW-201


HW-201
HIW
Hi-waote
GF22 9V
BATTERY
FOR
TRANSISTOR
RADIOS
GENERAL PURPOSE
2022/6/1 07:04

Motion Sensor Applications: -

Some of the key applications of motion detectors include:

- Intruder alarms
- Automatic ticket gates
- Entry way lighting
- Security lighting
- Automated sinks/toilet flusher
- Hand dryers
- Automatic doors
- Building Automation
- Motion Detection

Advantages: -

Grab Attention: Motion sensors are reactionary; this means once they sense motion they're activated and illuminate the area. Drawing attention to the vicinity they are in.

Simple to Install: Motion sensors usually come with security lighting units now**,** saving you extra installation bother and maintenance. They're simple to put up and work immediately, making them a great security option.

Long Lifespan: Motion sensors are incredibly durable and long-lasting. They work well with no defects for many years as the technology of them has been working on for a long time. They will work and require no maintenance for a long time while protecting your home. Making them a low-cost good investment.

Energy Saving: Especially using LED security lights, the amount of light you get compared to the energy consumed you will save a lot of money. LED security light systems work incredibly efficiently, using D2D modes, switching off in the day and on at night. Saving you heaps on energy costs!

Result: -

The result shows the final hardware design of the proposed system. This result clearly shows how all the components required
For our system is connected. By connecting 9v battery or dc supply of 9v and connecting 220v 9watt led lamp the motion sensor works properly i.e., the motion sensor automatically turns on and off if someone enters and exit and the lamp connected also turn on and off respectively. The circuit is similar to the pir sensor.we have used ic CD4017 and the IR module for the is position to detect is someone entering or exiting.

Conclusion

Hereby we come to an end of or project "**MOTION DETECTOR USING IR SENSOR".** This project gives us an idea to
Detect the motion. This project can be used anywhere either at home or offices. This is also cost efficient. Thus by this
Attempt of ours circuit can be used as protecting device and can be used for security also. It can be used as a kind of antitheft device. It is very much cost efficient and can be used easily and efficiently.

Reference: -

www.thoerycircuit.com

Online platform such as YouTube videos.

Approx. Cost of Project: -

Including all resistors, transistor, capacitor, IR sensors, pcb board the approximate cost of the project is Rs. 500-600.

Expected Date of Completion: - May 2022

Name of Student	Roll no.	Student sign
Ajinkya Kathar	33	
Tejas shirke	25	
Samrat bhise	29	

Prof. Kavita. V. Thorushe

(Project Guide)

Prof. Dr. Mrs. S.V. Sankapal

H.O.D