Dr. D. Y. Patil Institute of Technology, Pimpri, Pune18

DEPARTMENT OF ELECTRONICS & TELECOMMUNICATION

Project Based Learning Seminar
On
"MOTION DETECTING STREET LAMP WITH GAS DETECTING SMART STREET SYSTEM"

| NAME OF STUDENT	ROLL NO.
1. ANIMESH JAMGADE	SETC02
2. BHAGYASHREE SHROTE	SETC06
3. SANYUKTA RAUT	SETC11
4. TRIPTI GIRI	SETC13
5. ANIKET PRASAD	SETC14
6. ANKITA NARSALE	SETC15

Name of Guide: Mrs. Priti Shende

Area/Domain

ELECTRICAL & ELECTRONICS

MOTION DETECTING STREET LAMP :
- In this project, we have presented the design to detect vehicle movement on roads to switch ON for just a block of road where it is needed and switch OFF when the vehicle passes by saving the energy that is being used in street lights that glow all night.
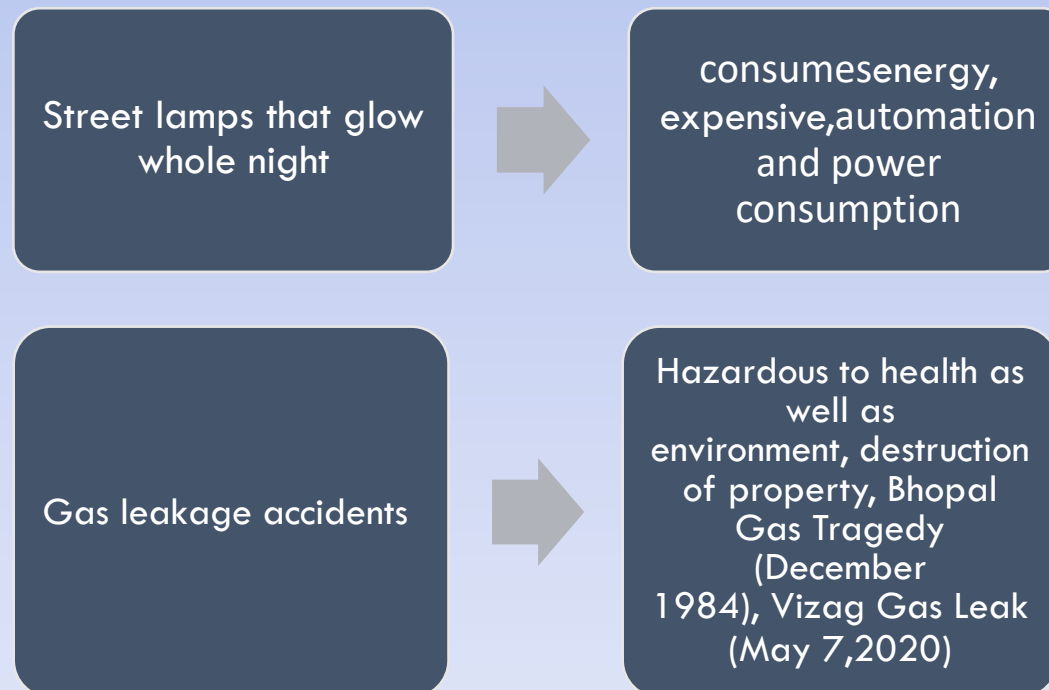- Here, we have used microcontroller 8051 to control the signals from the photodiode and IR sensors.
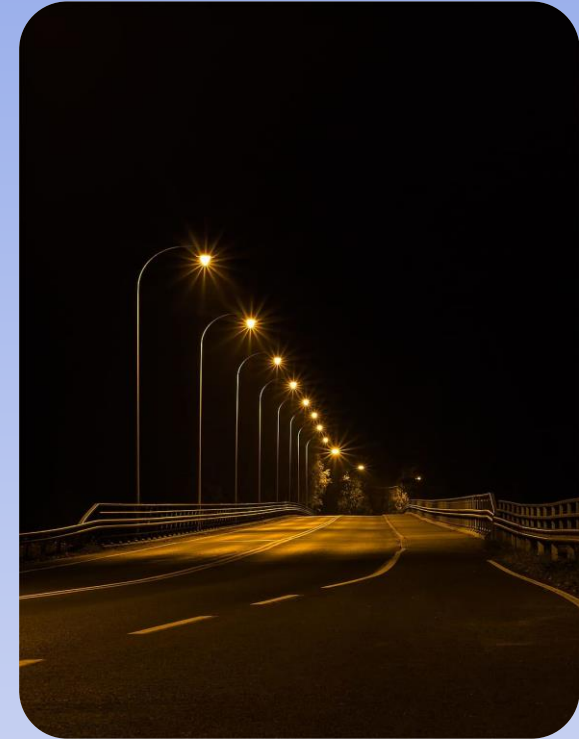
GAS LEAKAGE DETECTION SYSTEM :
- In this IOT based project, we can detect the smoke and gas leaks that may happen on a street and contribute towards the making of a smart street alongside vehicle movement detecting street lamps.
- Here we are using smoke detector circuit which triggers the alarm on detection of smoke or gas and also displays the level of smoke in PPM.

PROBLEM STATEMENT

- The amount of power consumed by lighting and streets share a major energy demand.
- Hence leading to high amount of energy wastage and moreover in today's world, everyone is busy in their own life that people rarely take care of using resources effectively.
- Gas like CNG used in vehicle operation and if there is any amount of leakage of these types of gases it can cause a huge loss to life and property.

Street lamps that glow whole night	→	consumesenergy, expensive,automation and power consumption
Gas leakage accidents	→	Hazardous to health as well as environment, destruction of property, Bhopal Gas Tragedy (December 1984), Vizag Gas Leak (May 7,2020)

LITERATURE SURVEY

| Sr. No.	Paper Tile	Author	Journal Name
1.	Automatic Street Light Control by Detecting Vehicle Movement	N. Yashaswini, N. Raghu, S. Yashaswini and G. Prathib Kumar	Electronics, Information & Communication Technology (RTEICT),
2.	Smart Power Consumption Street Light That Glows On Detecting Vehicle Moment Utilizing The Solar Power - An Energy Saving Approach	Ankit Patel , Snehal Patel Student	Student, Electronics and Communication department, Laxmi institute of Technology, SarigamValsad. Gujarat
3.	Comparison of ESP programming platform	Filip Rak, Józef Wiora	Department of Measurements and Control Systems, Silesian University of Technology, Gliwice, Poland
4.	I Advanced gas leakage, fire and power supply failure monitoring system	Amirul Asraf Roslan, Rashimi Baharom	Indonesian Journal of Electrical Engineering and Computer Science
5.	IOT Based Air Quality Monitoring	Kinnera Bharath Kumar Sai, Somula Ramasubbareddy, and Ashish Kr. L	Scalable computing: practice and experience

AIM AND OBJECTIVES

AIM : The main aim of a new smart street lighting system is to control energy efficient LED street lights to turn on only when needed and smartly detect smoke leakages on street.

OBJECTIVES :
- To reduce consumption of electricity by street lamps.
- To efficiently use the resources of our planet.
- To alert officials regarding any gas leakages on streets.
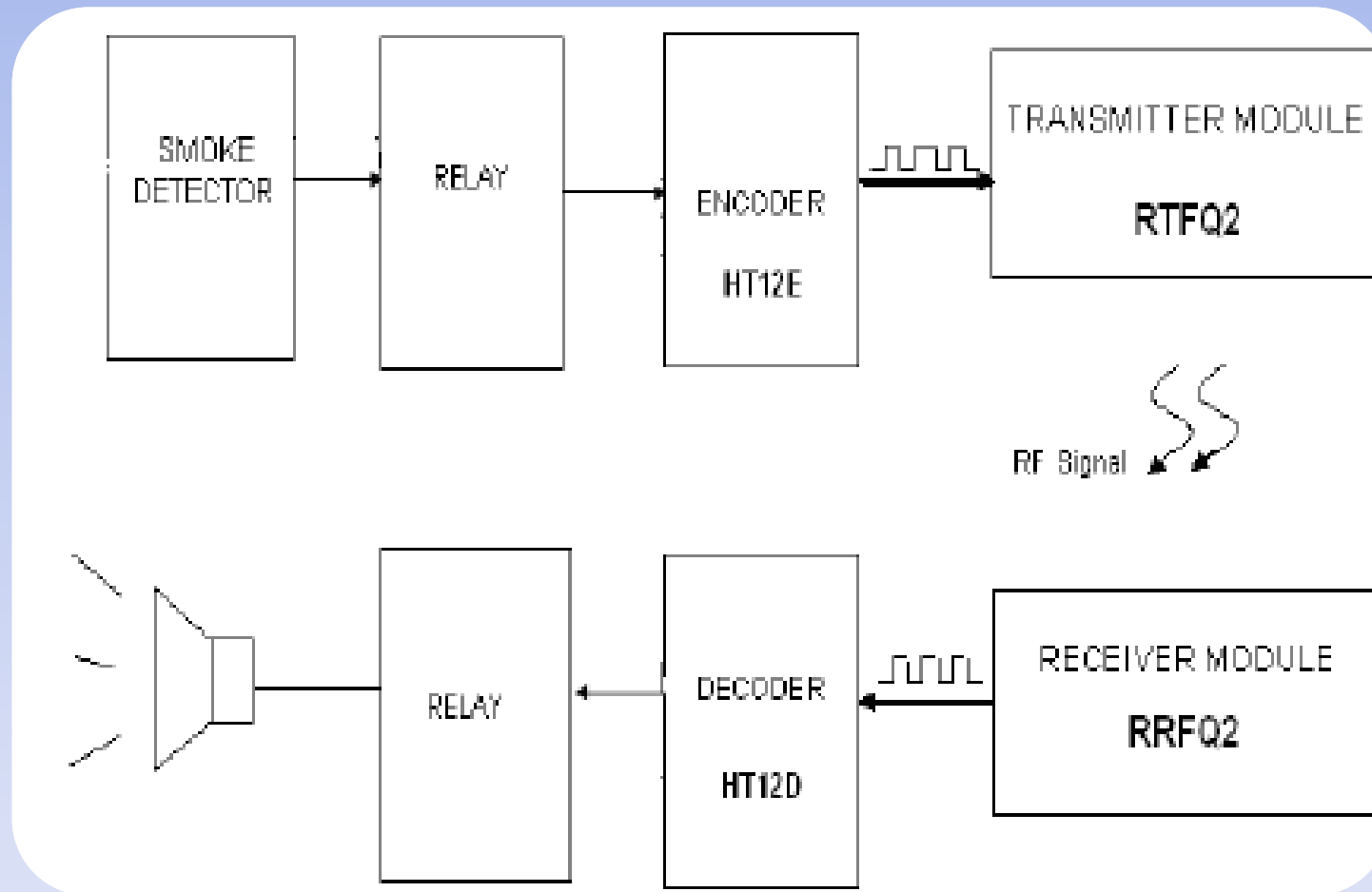- To make our life more comfortable, eco-friendly, healthy and safe.

BLOCK DIAGRAM

1. MOTION DETECTING STREET LAMP
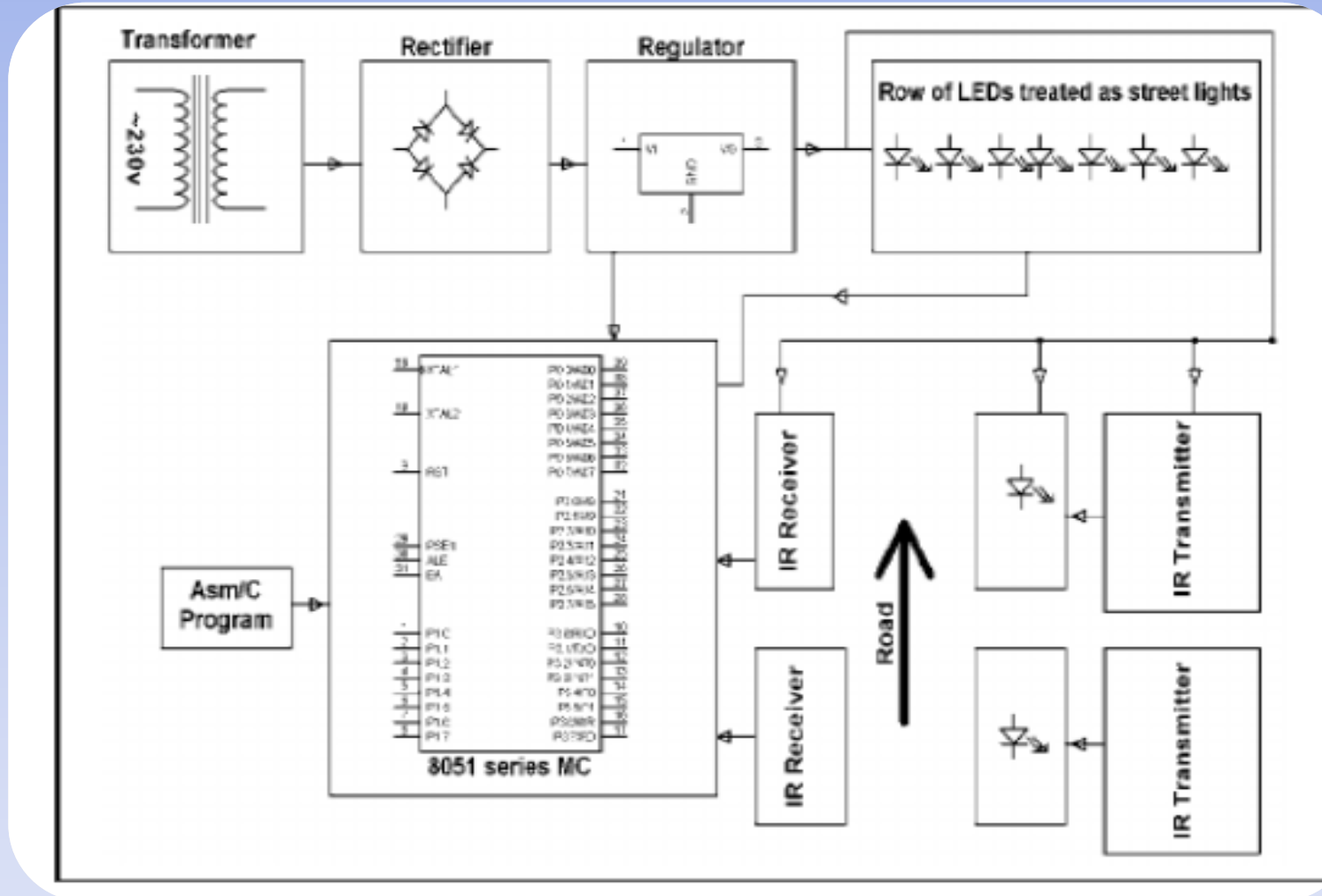
BLOCK DIAGRAM

2. GAS AND SMOKE DETECTION SYSTEM

BLOCK DIAGRAM EXPLANATION

AUTOMATIC STREET LIGHT CONTROL :

*   In this work, the LED lights are used for street arrangement, the Photo diodes and IR sensors are used to sense vehicle moments.

*   In this block diagram, there are IR sensors which is used for interruption detection and send logic signal to microcontroller for the glowing of the LEDs ahead of the Vehicle.

*   Photodiodes or infrared diodes are utilized as sensors, variable resistors and transistors which work as switch.

*   The infrared diodes are set on side of the street and photodiodes are set on the opposite side of the street, straightforwardly confronting IR diodes.

*   The control signals of sensors have been fed to microcontroller 8051. In the microcontroller the control logic is implemented to control lights based on vehicles and pedestrian moments with bright and dim mode of operation and to switch off lights during no vehicles and pedestrian.

BLOCK DIAGRAM EXPLANATION

Smoke Detector:

- Working of this Smoke Detector Alarm Circuit is easy. In this project, we have used transistor operating properties to work this circuit as a smoke detector.

- As we already know that we have used a BC547 NPN transistor which will turn on whenever it gets least 0.70v at its base terminal. So we have applied a Voltage Divider Circuit at its base. But before using this circuit, we need to calibrate it by using pot.

- In calibration, we have applied voltage just below than 0.70V at transistor base. Whenever smoke sensor senses smoke, it reduces its resistance and due to this decrease in resistance, voltage across the base of the transistor increases.

- Now when the voltage at the base terminal of transistor become more than or equal to 0.70v then transistor turns on and LED lights up and buzzer also starts beeping. And when there is no Smoke, both the indication components turns off as the voltage across base terminal of transistor goes below the 0.70v.

ADVANTAGES AND APPLICATIONS

ADVANTAGES:

1. More lifespan.

2. Cost effective.

3. Less energy consumption.

4. Hazard prevention.

5. Pollution control.

6. Healthy and safe environment.

APPLICATIONS:

1. Application of street lights that glow on detection of vehicle movement mainly involve in **highways, real time street lights, hotels, parking areas and restaurants.**

2. Gas detectors can be used to detect **combustible, flammable and toxic gases and oxygen depletion**. It can also be widely used in industries and can be found in locations such as on oil rigs.

REFERENCES

1. N. Yashaswini, N. Raghu, S. Yashaswini and G. Prathib Kumar, "Automatic Street Light Control by Detecting Vehicle Movement," 2018 3rd IEEE International Conference on Recent Trends in Electronics, Information & Communication Technology (RTEICT), Bangalore, India, 2018, pp. 847-850, doi: 10.1109/RTEICT42901.2018.9012376.

2. SMART POWER CONUMPUTION .STREET LIGHT THAT GLOWS ON DETECTING VEHICLE MOVEMENT USING SENSOR 1 Ankit Patel , 2 Snehal Patel Student, Electronics and Communication department, Laxmi institute of Technology, Sarigam-Valsad. Gujarat

3. Automatic Street Lights Sakshee Srivastava Electronics And Communication Engineering, Institute Of Technology And Management AL-1, Sector-7, GIDA, Gorakhpur, U.P., INDIA.

4.. IOT based air quality monitoring system using MQ135 and MQ7 with machine learning analysis Kinnera Bharath Kumar Sai, Somula Ramasubbareddy, and Ashish Kr. Luhach, scalable computing:practice asnd experience.,2019 SCPE,ISSN 1895-1767, DOI 10.12694/scpe.v20i4.1561.

5. Advanced gas leakage, fire and power supply failure monitoring system Amirul Asraf Roslan, Rahimi Baharom Faculty of Electrical Engineering, Universiti Teknologi MARA, Malaysia 6. Comparison of ESP programming platforms Filip Rak, Józef Wiora Department of Measurements and Control Systems, Silesian University of Technology, Gliwice, Poland, VOL. 2 NO. 2 JULY,2021pp. 77-86,ISSN: 2722-3221, DOI: 10.11591 /csit.v2i2.p77-86 .

-Thank You