# INTELLIGENT SELF-CONTROLLED AND MONITORING OF STREET LIGHT ACCORDING TO THE HUMAN DETECTION AND INTENSITY USING ZIGBEE

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## ABSTRACT

*This project is a new forwirelessly control street lights,every individual streetlight i.e. every node has hisownunique IPv6 and IEEE address through that only we can control from the controller center. The system is designed using a microcontroller and zigbee communication. The zigbee is used for the sending and receiving signals from the control center.The controller process the signals obtained from the lamp and PIR sensor. The messages are sent from the controller to the other nodes via gateway. The communication between the nodes and controller nodes takes place through the zigbee communication. Automatic as well as manual remote switching on or off of individual lamps, controlling their light intensity and acquisition of status and failure is possible.by using this project can reduce upto 50% of power.*

*Keywords: lpc2148, PIR sensor, Lcd , zigbee, LED light*

## I. INTRODUCTION

The main theme of this project is to control the street lights through wirelessly by sending the signals from the controller and zigbee.In this we have the total three poles;first pole is main pole means that is server from that pole we need to operate the remaining poles. If any person was detected    the light will automatically switch on and that information will sends to the controller whether that light was on or off. If the light was not on the main pole controls that pole. Third pole is for the light intensity if the light intensity is high the that light glows very with low intensity for that light intensitywe  are using the ldr.With this system almost 50% of the power consumed just dimming lights. This paper makes as flexible, compact and cost effective.

## II. LITERATUREREVIEW

### 2.1 Existing System

Every day the power was wasting a lot to reduce the wastage of the power that they proposed one system, if any obstacle will come the sensor will detects and the light will be on. For this if any obstacle will be there the light will automatically on, so there is no use with that one, for that reason we want for this project.

## 2.2 Proposed System

Now a days we are facing a lot of problems with the power consumption so we need to save power for that reason here introducing the new project "Intelligent Monitoring and Control Rendered To Street Lighting" in this project whenever the person was detected than only the street light will glow. It will contains the totally three poles one is main pole from that main pole only we need to control that remaining two poles by this project we can save the power 50% of the power.

**Block Diagram**

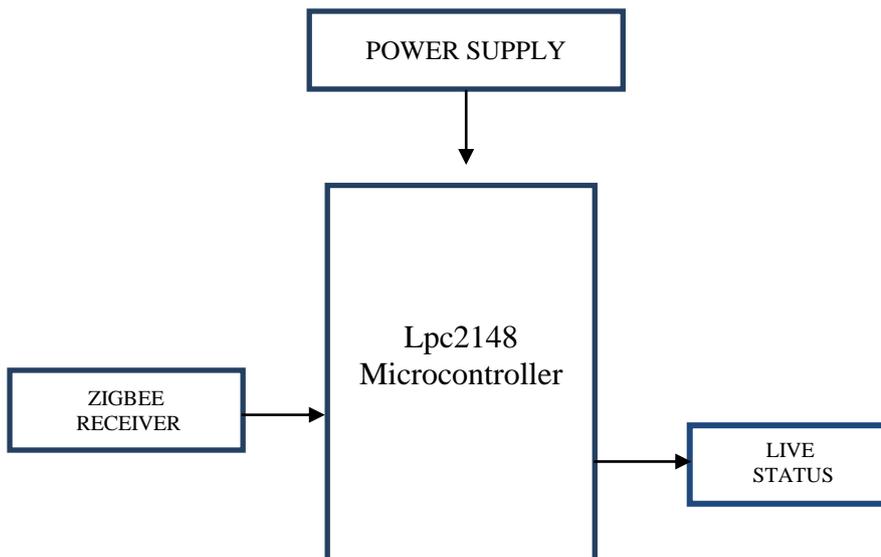### 2.3 Transmitter Section
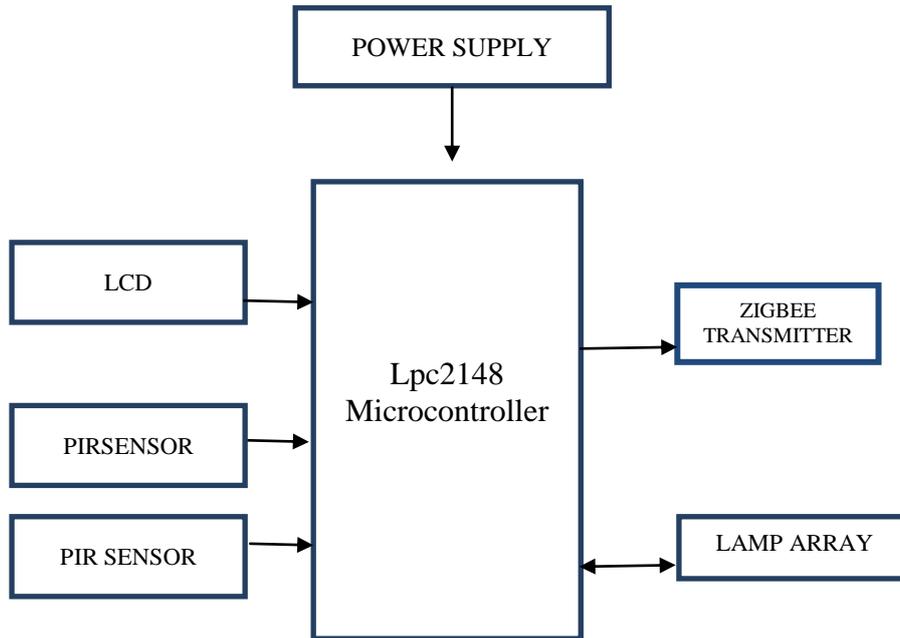
### 2.4 Receiver Section

**Fig1: Block diagram**

## III. HARDWAREREQUPIREMENTS

### 3.1 LPC2148 microcontroller

The ARM7 (advanced RISC machine) pressers board primarily based whole on a 16/32-bit ARM7 its method of 16/32-bit ARM7 TDMI-S microcontroller, 8 computer memory unit to forty computer memory unit of on-chip static RAM and 32 computer memory unit to 512computer memory unit on-chip flash memory; 128-bit In- system Programming (ISP). 32-bit timers/outside event counters, PWM pulse width modulation unit (six outputs) and watchdog, Low strength of actual-Time Clock (RTC), more than one serial interfaces which has 2 UARTs , rapid I2C-bus (400kbit/. There are sixty four pins of ARM7 processer and 2 ports (port0, port1) 45 pins are input/output.
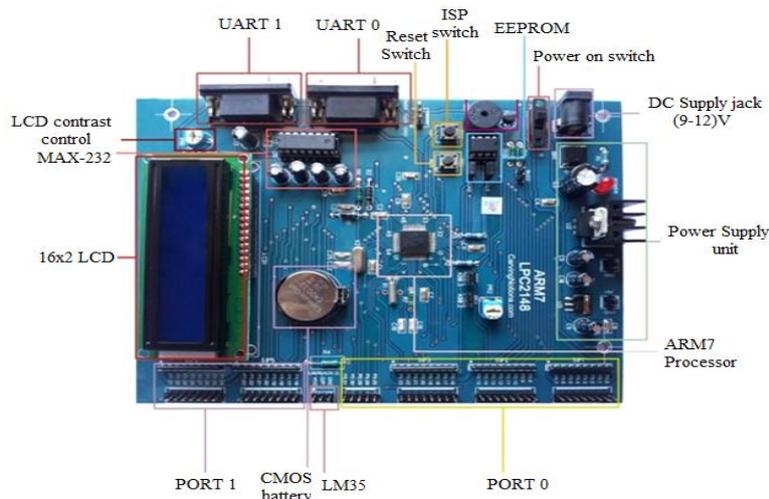


**Fig2:-LPC2148 board**

### 3.2 ZIGBEE

The IEEE 802.15.4 normal may be an easy packet information protocol for light-weight wireless networks and specifies Medium Access management –MAC and the Physical-PHY layers for Multiple frequency –RF bands, together with 868 M.C, 915 MHz, and 2.4 GHz.The zigbee is used for sending and receiving the data through serial communication. The zigbee contains one pair of modules one is for transmitting and another one is for receiving the data. The zigbee are works on the TTL logic levels only for that reason we need to convert MAX 232 IC for converting the CMOS logic levels to TTL logic levels. The zigbee will works both 3.5v power supply and 5 v power supply, by using the 3.5 power supply only we can get the perfect output.



**Fig 3: Zigbee pair**

### 3.3 PIR (Passive Infrared Sensor)

A passive infrared sensor (PIR sensor) is an electronic sensor that measures infrared (IR) light radiating from objects in its field of view. They are most often used in PIR-based motion detectors.The PIR Sensor has a range of approximately 20 feet (6 meters). The sensor is designed to identify the slowly changing conditions that would happen normally as the daily progresses and the environmental condition changes, but it responds by making its output when sudden changes occur, such as when there is motion. This device is designed mainly for indoor use. Operation outside or in very high temperatures may affect stability negatively.



**Fig 4: PIR sensor**

### 3.4 LDR

A photo resistor or light structured resistor or cods (cadmium supplied) cell is a resistor whose resistance decreases with growing incident light depth. It can also be known as a photoconductor.A photo resistor is fabricated from a high resistance semiconductor. If light falling on the tool is of excessive sufficient frequency, photons absorbed by using the semiconductor supply bound electrons enough power to jump into the conduction band. The ensuing loose electron behavior strength, thereby reducing resistance.
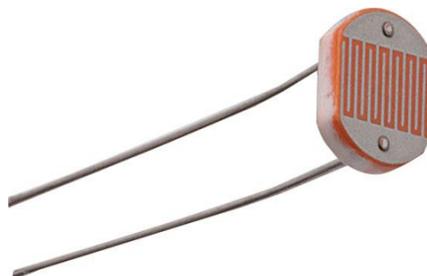


**Fig 5: LDR sensor**

### IV. SOFTWARE DESIGN

In this proposed contrivance, as we tend to used LPC2148 we wish to use following software package instrumentation to program for it.

1. Keil4 Vision
2. Flash Magic

The Keil4 Vision an IDE for Embedded c language. In this IDE, we wish to import the utilities and libraries consistent with the controller. This IDE is very more easily and in user friendly thanks to apply, assemblers, and debuggers in it. It simplifies the manner of embedded simulation and trying entering conjunction with Hex file technology.The flash magic is a programming utility. The C/C++ software written in IDE could be

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processed into Hex document i.e. in .hex layout. By using hex file we tend to merchandise the code into microcontroller and perform application

## V. WORKING PROCEDURE

This project is a novel idea to wirelessly control street lights. The system is designed using a microcontroller and zigbee. The zigbee is used for sending and receiving the monitoring and control signals to and from the control center. The controller takes the signals from the zigbee as well as the lamp, Messages are sent from control center to nodes via gateway, which is a node with a zigbee module. Automatic as well as manual remote switching on or off of individual lamps, controlling thepir light intensity and acquisition of status and failure is possible. This project was done on the wireless technology by using the zigbee communication. Here we have the transmitter and receiver section.

Whenever the person was detected the on the PIR sensor automatically detects that person and that signals will sends to the controller. Here we have the totally three poles one pole is main poles like server from that pole only we can operate the remaining two poles for light on and off. Whenever the person was detected the sends the signal for the poles for the on and off. Every poles having the some specific IEEE address by using that address only we need to send the signal to the other poles and here communication occurring by the zigbee. By the zigbee transmitter and receiver only we need to send the signal from the control to the remaining poles.From the controller we can the signal to the other reaming poles but the controller don't know whether that receiver receiving the signal or signal for that the receiver also sends the signals to the controller like as acknowledgement that we can called as the live status of the signal. If the signal was successfully received the light will automatically on or off.

When the person was detected the light will automatically on and that information will sends to the controller if that light was not on the controller will done the relative operation, and third pole for the intensity of the light, if the intensity was high the light will not glow when the light is dim than only the light will be on.

## VI. RESULT

Here the results are shown our project"Intelligent Monitoring and Control Rendered to Street Lighting" was whenever the person will come the PIR sensor will detects the light will automatically on and that status will sends to the controller and another pole for detects the light intensity if light intensity is high the light will not glow the intensity of will depends on the LDR.
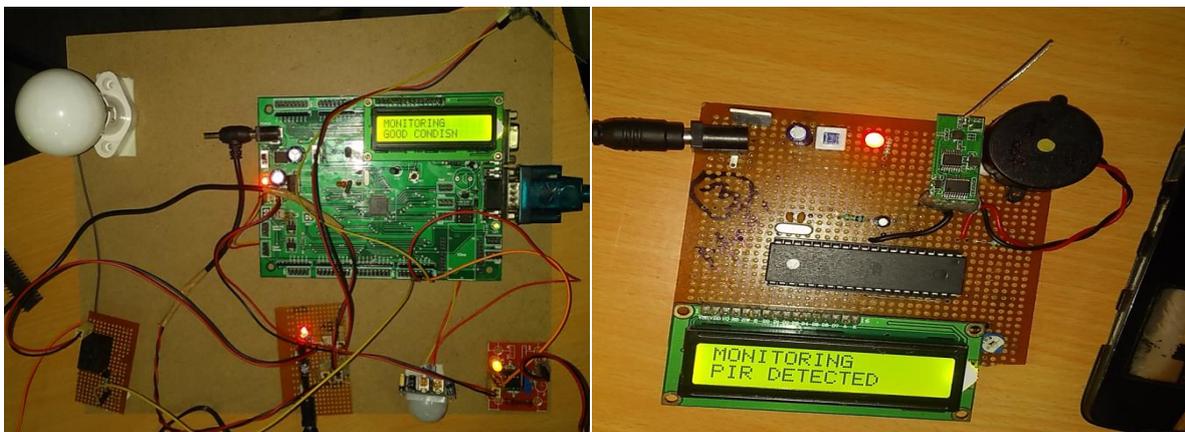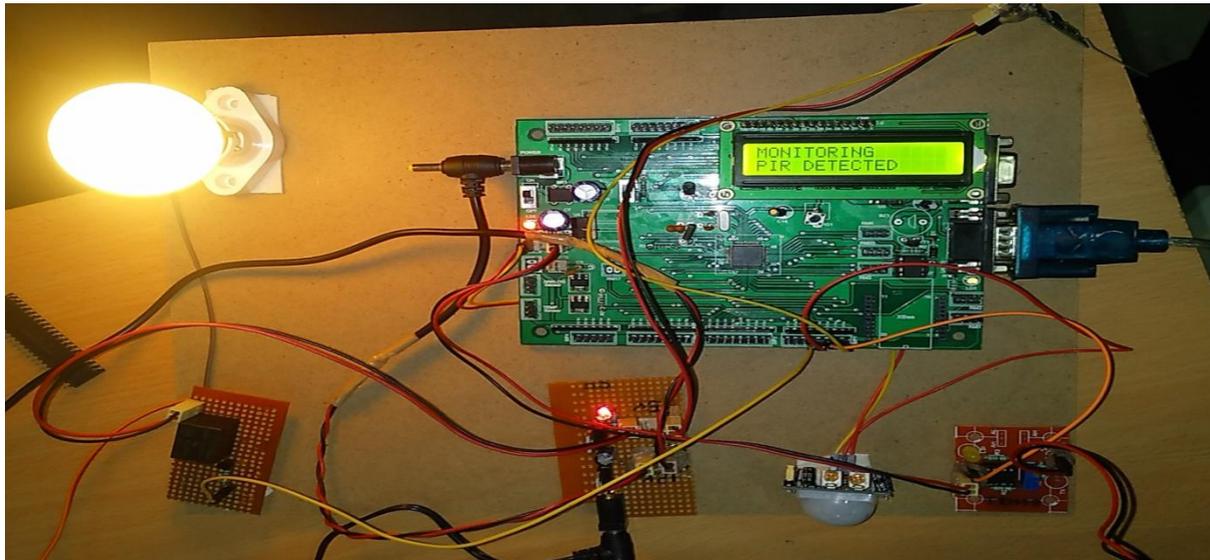
## VII. CONCLUSION

By using this project we are saving the power wasting in the highways,in the highways the lights are continuously will on for that so a lot power was wasting to avoid that we using this project ,by using this project when person came the PIR will automatically detect and sends to the controller ,whenever that person reaches to the pole than only the lights will be on and other time the lights will be switched off. These will done by thee zigbee communication.

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