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| **PMAS ARID AGRICULTURE UNIVERSITY RAWALPINDI** | October 12  2019 | |
| **Project Name : Smart-Street SUPERVISOR : SIR ZESSHAN JAVEED** | |  |

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**FYP PROJECT IDEA WITH GOOGLE-SCHOLAR SEARCH**

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**GROUP MEMBER:**

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**ABSTRACT:-**

PIC Microcontroller, IR Sensor, Current Sensor, LDR, Intel Galileo Gen2.

**This project**

aims for designing and executing the advanced development in embedded systems for

energy saving of street lights. Currently we have a manual system where the street lights will be switched ON in the evening before the sunsets and they are switched OFF in the next day morning after there is sufficient light on the outside. But the actual timing for these lights to be switched ON is when there is absolute darkness. With this, the power will be wasted up to some extent. This project gives solution for electrical power wastage. Also the manual operation of the lighting system is completely eliminated. The proposed system provide a solution for energy saving. This is achieved by sensing and approaching a vehicle using an IR transmitter and IR Receiver couple. Upon sensing

the movement the sensor transmit the data to the microcontroller which furthermore the Light to switch ON. Similarly as soon as the vehicle or an obstacle goes away the Light gets switched OFF as the sensor sense any object at the same time the status(ON/OFF) of the street light can be accessed from anywhere and anytime through internet. This project is implemented with smart embedded system which controls the street lights based on detection of vehicles or any other obstacles on the street .Whenever the obstacle is detected on the street within the specified time the light will get automatically ON/OFF according to the obstacle detection and the same information can be accessed

through internet. The real time information of the street light(ON/OFF Status) can be accessed from anytime, anywhere through internet.

**Introduction:-**

The street lighting is one of the largest energy expenses for a city. An intelligent street lighting system can cut municipal street lighting costs as much as 50% - 70%. An intelligent street lighting system is a system that adjusts light output based on usage and occupancy, i.e., automating classification of pedestrian versus cyclist, versus automotive. An intelligent street light management proposes the installation of the wireless based system to remotely track and control the actual energy consumption of the street lights and take appropriate energy consumption reduction measures through power conditioning and control.

The street light controller should be installed on the pole lights which consist of microcontroller along with various sensor and wireless module. The street light controller installed on the street light pole will control LED street lighting depending on traffic flow, communicate data between each street light. The data from the street light controller can be transferred to base station using wireless technology to monitor the system. The mode of operation of the system can be conducted using auto mode and manual mode. The control system will switch on-off the lights at required timings and can also vary the intensity of the street light according to requirement.

Disadvantages of Existing System :-

* Manual Switching off/on of street lights
* More energy consumption.
* High Expense.
* More Man Power.

Advantages of the Proposed System:-

* Automatic switching on/off os street lights.
* Maintenance Cost reduction.
* Reduction in CO2 emission.
* Reduction of light pollution.
* Wireless communication.
* Energy saving.
* Reduction of man power

Methodology:-

i.MPLAB IDE

ii.Arduino IDE

iii.OrCAD

**Material:-**

1. PIC16F877A MICROCONTROLLER
2. Intel Galileo Gen2
3. LDR
4. IR Sensor
5. Current Sensor
6. Relays
7. WiFi Module

WORKING PRINCIPLE :-

The system architecture of the intelligent street light system consists of IR sensors, LDR,PIC16F877A microcontroller, Relay, UART and Wifi Module. LDR‟s are light dependent devices whose resistance decreases when light falls on them and increases in the dark. When a light dependent resistor is kept in dark, its resistance is very high. The vehicle which passes by the street light is detected by IR sensor. Relay are used as a switch to switch on/off the street light bulb. A UART (Universal Asynchronous Receiver/Transmitter) is the microchip with programming that controls acomputer's interface to its attached street light system.

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