Speed Detector

**Chapter 1: Introduction**

* 1. **Background**

Speed Detector project is simply designed to detect the speed of object automatically. This project checks the amount of light according to its requirement and adjust them (either turn off or turn on).

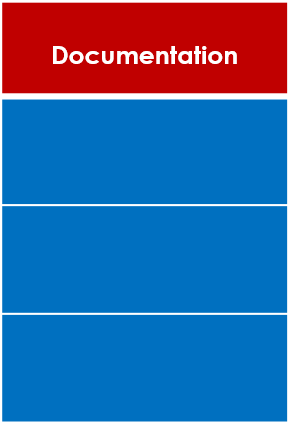
**1.2 Significance**

This project is a simple project created to run on microcontroller 8051 using assembly and C programming languages and its main significance is to conserve the energy by automatically controlling street lights.

* 1. **Objectives**
* To automate the signaling of vehicles
* To reduce wastage of electricity.
* Security of pedestrian visibility.
* To reduces cost and time.

**1.4 Features**

* LDR detect the intensity of light
* Motion sensor to detect movement within the range
* ADC to read the analog value and converted into digital value
* Automatically controlled.
  1. **Team Structure and Role**

The members assigned with these particular responsibilities:

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| Members | Study and analysis | Designing | Coding  and hardware | debugging | Documentation |
| Asma  Bohara | Asma  Bohara | Asma  Bohara | Asma  Bohara |  |  |
| Elisha  Rai | Elisha  Rai |  | Elisha  Rai | Elisha  Rai | Elisha  Rai |
| Manish  Dev Thakur | Manish  Dev Thakur | Manish  Dev Thakur |  | Manish  Dev Thakur | Manish  Dev Thakur |

**Chapter 2: System Analysis**

**2.1 Literature review**

Travelling at night has been an integral part of human life since the dawn of time. So, in order to ensure safe travel during night, number of automated street light systems have been created which we have researched in detail.

The details of the research behind this project are explained here:

* At first, research was done on a website name: ‘www.projectsof8051.com’ whose URL is given in ***References****.* Within this website, numerous projects written for microcontroller 8051 were available for study out of which, we studied:

# Project name: ***Automatic Room light Controller with Visitor Counter***

* We also researched on another website named: ‘microcontrollerslab.com’ whose URL is given in ***References****.*

Project name: Automatic control of Street Light

**Chapter 3: System Design**

**3.1 Working Principle**

The street lights are turned on when light detector sensor detect the light resolution and motion sensor detect the infrared radiation(any kind of movement) within PIR sensor covered area in the street.

The street light are turned off when light detector sensor or motion sensor both can’t detect and another case also lights are off whenever light sensor detect but motion sensor can’t detect any movement in the street.

**3.2 Algorithm**

Step1: start (light off)

Step2: if LDR detect the high intensity of light then light turned off else goto step3

Step3: if PIR detect the motion then light will turned on else goto step 4

Step4: stop (light off)

**3.3 Block Diagram**

LEDS

MICROCONTROLLER(8051)

LDR

ADC

LCD

PIR

**3.4 Equipment Required**

**1) 8051 Microcontroller**

* + A microcontroller with 8-bit CPU, 128 bytes RAM & 4 KB ROM.
  + The code for our project is written such that it runs on 8051 and it is the main central equipment for this project.

**2) Light Dependent Resistor (LDR)**

* + It is used to sense the intensity of light.
  + The output of the LDR sensor is in the Format of resistance.
  + The resistance of LDR is inversely proportional to the light falling on the LDR.

**3) LED (Light Emitting Diode)**

* + A Light Emitting Diode (LED) is a semiconductor device, which can emit light when an electric current pass through it.
  + Used in the form of lamps.

**4) Analog to Digital Converter (ADC)**

* + It is a device used to convert an analog signal to a binary signal that can be processed in a microcontroller.
  + Used to convert analog signals sent by **LDR** into digital.

**5) PIR (Passive infrared sensor):**

* It measures IR (infrared) light radiating from objects in its field of view.

**6) LCD display:**

* We have used an LCD display which displays the message if the light is turned on or off.

**3.5 Gantt Chart**

|  |  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| **S. N** | **Tasks** | **Nov**  **Week**  **1 & 2** | **Nov**  **Week**  **3 & 4** | **Dec**  **Week**  **1 & 2** | **Dec**  **Week**  **3 & 4** | **Jan**  **Week**  **1 & 2** | **Jan**  **Week**  **3 & 4** | **Feb**  **Week**  **1 & 2** | **Feb**  **Week**  **3 & 4** | **March**  **Week**  **1 & 2** |
| **1.** | Requirement gathering and planning |  |  |  |  |  |  |  |  |  |
| **2.** | Analysis |  |  |  |  |  |  |  |  |  |
| **3.** | Designing |  |  |  |  |  |  |  |  |  |
| **4.** | Coding & Hardware Implementation |  |  |  |  |  |  |  |  |  |
| **5.** | Testing and debugging |  |  |  |  |  |  |  |  |  |
| **6.** | Documentation |  |  |  |  |  |  |  |  |  |

Total time: 18 weeks (4.5 months)

**Chapter 4: System Development and Implementation**

## 

**4.1 Software Specifications**

Computer software specification we have used for development:

* Operating System: Windows 10 Operating System
* Keil uVision5
* Proteus 8 Professional

**4.2 Hardware Specifications**

Computer hardware specification we have used for development:

* Processor: Intel Core i5
* RAM: 8GB
* SSD: 512GB

**Chapter 5: Conclusion**

**5.1 Conclusion**

Automatic control of street light is microcontroller (8051) based project. The main purpose or objective of this project is reduced electricity wastage. It is most beneficial project for developing countries. When you are too much busy to manage then it is very useful for you and also this project saves your time and energy.

**5.2 Limitations of this project**

* Data cannot be accessed remotely (using mobile phones).
  1. **Future Enhancements**
* Using solar energy to power the system.
* Displaying the present conditions like light intensity and temperature on the LCD.

**References**

* Technologies, M. (2022, December 25). *Automatic Room light Controller with Visitor Counter*. Microtronics Technologies. https://www.projectsof8051.com/automatic-room-light-controller-with-visitor-counter/
* Lab, M. (2017, April 25). *Automatic control of street lights*. Microcontrollers Lab. https://microcontrollerslab.com/automatic-control-of-street-lights/

**THE END**