Advance Street Light System Using IoT

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Problem Definition

Conventional street lights uses high intensity discharge lamps(HID), It leads to high energy consumption thus increasing demand and price for electricity. Due to high carbon emissions, climate changes occur. Also these lights have high maintenance cost, so we have to come up with a system that uses minimum power and also it should be environmentally friendly and cost effective.

Introduction

- Power is a necessity. An important component of power consumption worldwide is street lights. India is no different.

- Global trends in street lighting show that 18-38% of the total energy bill goes towards street lighting.

- Therefore this is one domain that needs major attention if we look at improving efficiency of power consumption with an objective of saving energy.

- Limiting the usage of street lights only when necessary.

Background

Currently, in the whole world, enormous electric energy is consumed by the street lamps, which are automatically turn on when it becomes dark and automatically turn off when it becomes bright. This is the huge waste of energy in the whole world and should be changed.

Review of Literature

TITLE	AUTHORS	DEFICIENCIES
Smart street light system with energy saving function based on the sensor network (September 18)	Yusaku Fujii, Noriaki Yoshiura, Akihiro Takita, Naoya Ohta	Lights gets completely on and off .So there is unnecessary wastage of power.

Review of Literature

| TITLE	AUTHORS	DEFICIENCIES
Movement Sensing Street Lighting (April 18)	Surabhi Gurav, Hardik Rathod, Heta Shah and Nilesh Rathod	No system for detection of faulty street lights.

Proposed Solution

- Our proposed system aims to reduce carbon emission and overall cost by integrating LED's and wireless communication.

- Features which are likely to be fulfilled by our proposed system are:
    - Automatic switching/Dimming of street lights
    - Automatic fault detection through sensors.
    - Intensity control of LED on detection of human or vehicle.
    - Controlling via wireless communication using GSM.
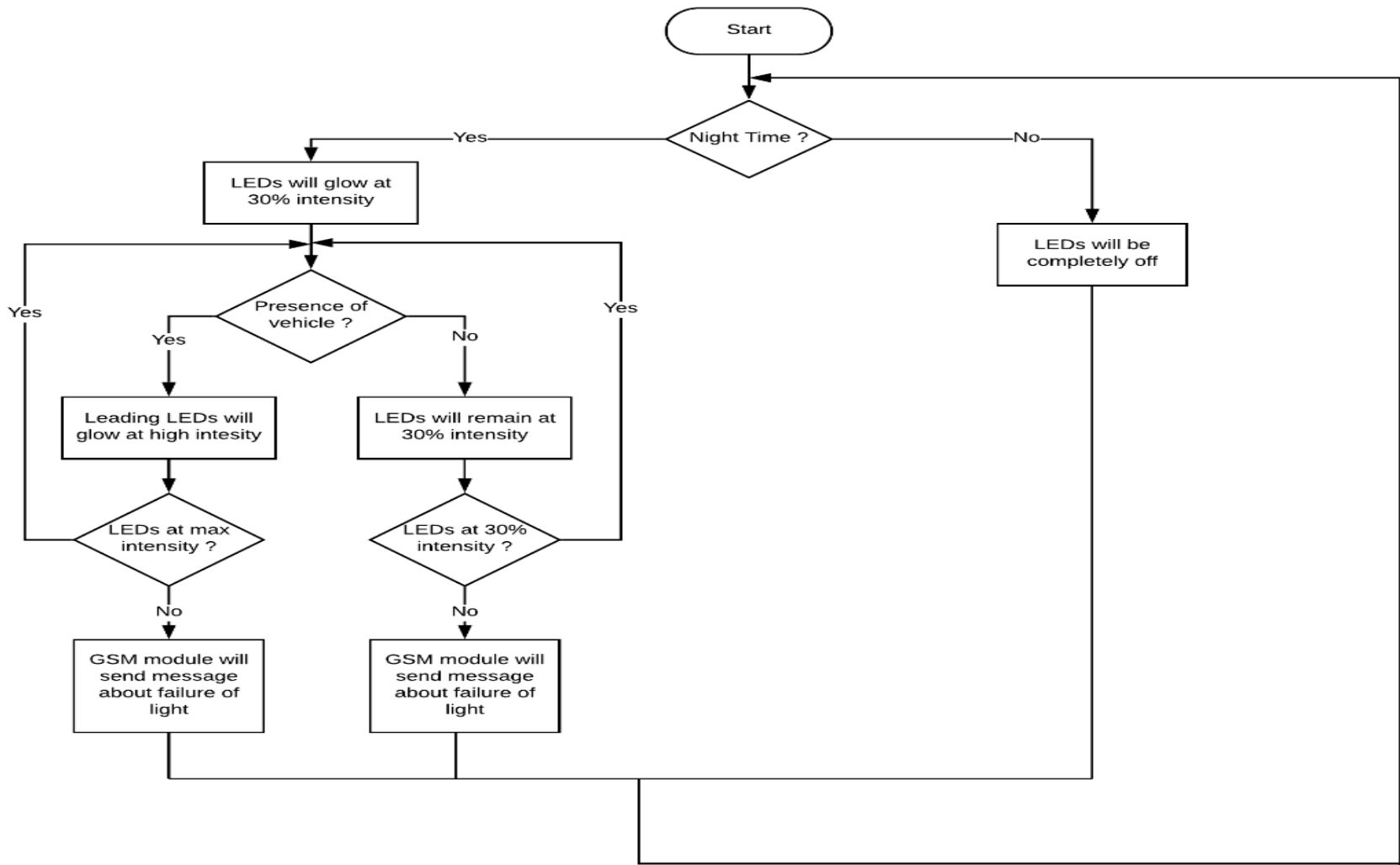
Feasibility

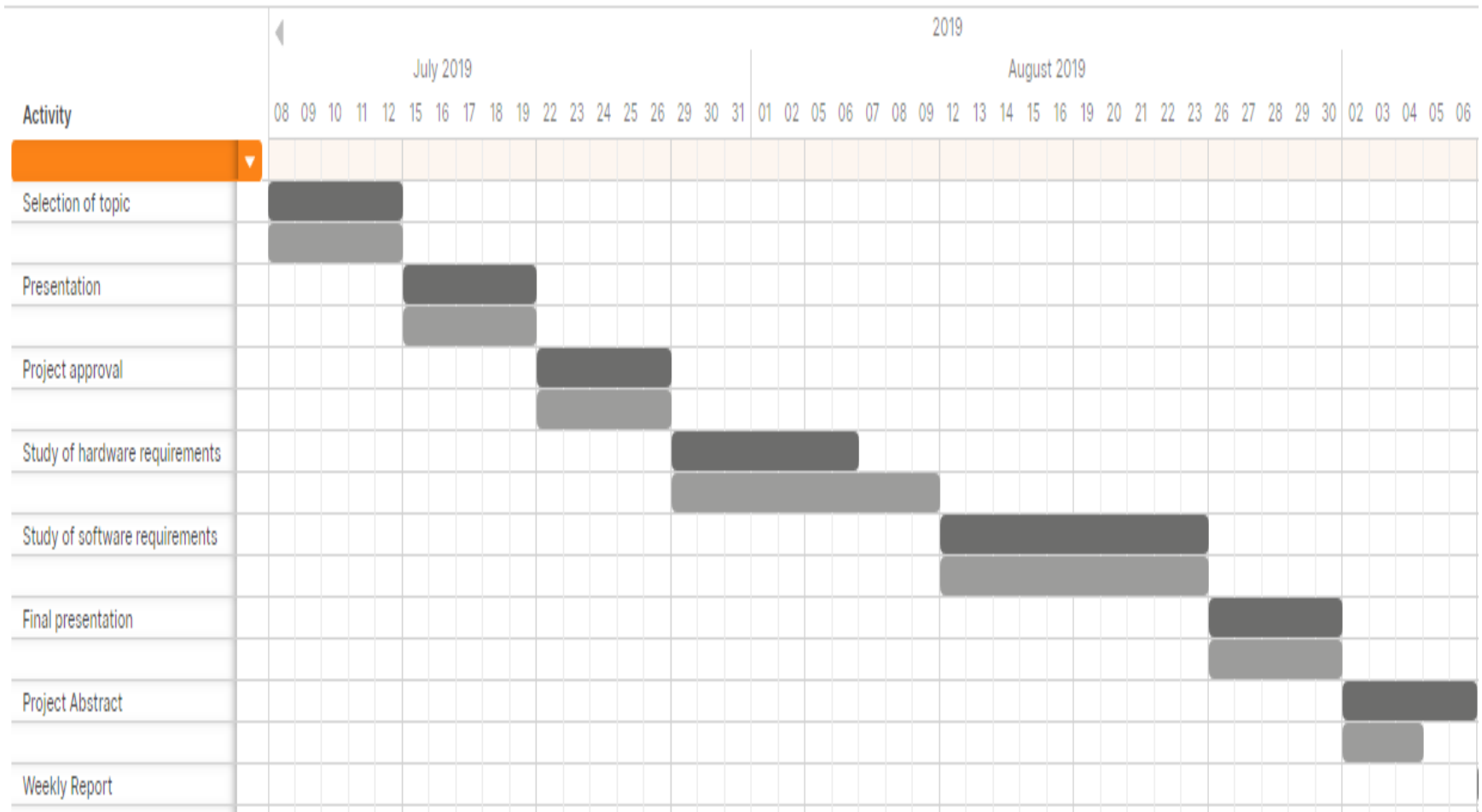The feasibility of the development software can be studied in terms of the following aspects:

- Operational Feasibility
- Technical Feasibility
- Economic Feasibility.
- Motivational Feasibility.

Block Diagram
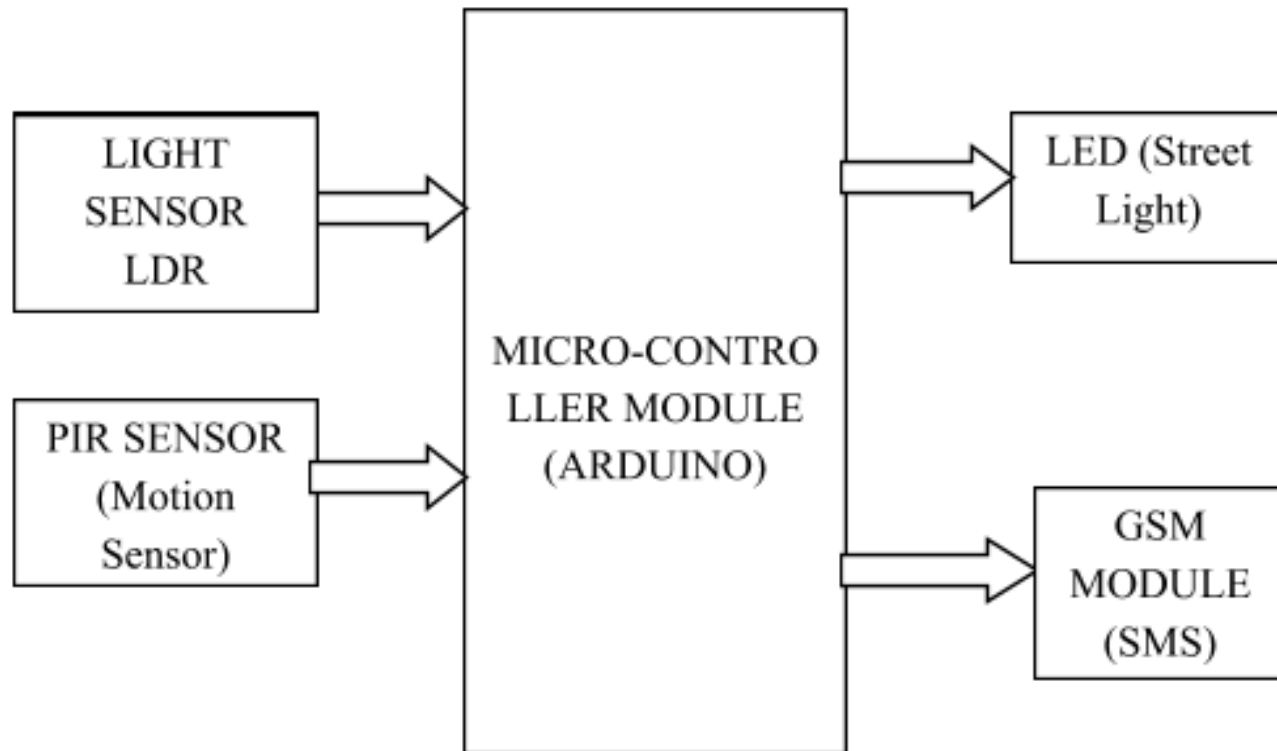
Design of System

Project Schedule

Individual Contribution

- Arduino coding : Khusboo Patel
  Coding of both the modules.
  Module 1: Switching the lights based on vehicle
  movement.
  Module 2:Sending an alert message about faulty lights.

- Documentation & Modelling : Lalit Makar & Vrushali Patil
  Black Book Draft (In Progress)

References

- Paper 1: Movement Sensing Street Lighting

  https://www.academia.edu/36790326/Movement_Sensing_Street_Lighting

- Paper 2: Smart street light system with energy saving function based on the sensor network

  https://bit.ly/2kGdpl4