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# Traffic based Street Light System

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**ABSTRACT:** Traffic light control systems are widely used to monitor and control the flow of automobiles through the junction of many roads. They aim to realize smooth motion of cars in the transportation routes. However, the synchronization of multiple traffic light system at adjacent intersection is a complicated problem given the various parameters involved.

Conventional systems do not handle variable flows approaching the junctions. In addition, the mutual interference between adjacent traffic light systems, the disparity of cars flow with time, the accidents, the passage of emergency vehicles, and the pedestrian crossing are not implemented in the existing traffic system.

## I. INTRODUCTION

The Internet of things (IoT) describes physical objects (or groups of such objects) that are embedded with sensors, processing ability, software, and other technologies that connect and exchange data with other devices and systems over the Internet or other communications networks.

The field has evolved due to the convergence of multiple technologies, including ubiquitous computing, commodity sensors, increasingly powerful embedded systems, and machine learning. Traditional fields of embedded systems, wireless sensor networks, control systems, automation (including home and building automation), independently and collectively enable the Internet of things. In the consumer market, IoT technology is most synonymous with products pertaining to the concept of the "smart home", including devices and appliances (such as lighting fixtures, thermostats, home security systems and cameras, and other home appliances) that support one or more common ecosystems, and can be controlled via devices associated with that ecosystem, such as smart phones and smart speakers. The IoT can also be used in healthcare systems.

There are a number of concerns about the risks in the growth of IoT technologies and products, especially in the areas of privacy and security, and consequently, industry and governmental moves to address these concerns have begun, including the development of international and local standards, guidelines, and regulatory frameworks.

## Raspberry PI Board



Fig1:Raspberry PI Board

The Raspberry Pi 3 Model B+ is the latest product in the Raspberry Pi 3 range, boasting a 64-bit quad core processor running at 1.4GHz, dual-band 2.4GHz and 5GHz wireless LAN, Bluetooth 4.2/BLE, faster Ethernet, and PoE capability via a separate PoE HAT. The dual-band wireless LAN comes with modular compliance certification, allowing the board to be designed into end products with significantly reduced wireless LAN compliance testing, improving both cost and time to market. The Raspberry Pi 3 Model B+ maintains the same mechanical footprint as both the Raspberry Pi 2 Model B and the Raspberry Pi 3 Model B.

The Raspberry Pi 3 Model B+ is the final revision in the Raspberry Pi 3 range.

- Broadcom BCM2837B0, Cortex-A53 (ARMv8) 64-bit SoC @ 1.4GHz
- 1GB LPDDR2 SDRAM
- 2.4GHz and 5GHz IEEE 802.11.b/g/n/ac wireless LAN, Bluetooth 4.2, BLE
- Gigabit Ethernet over USB 2.0 (maximum throughput 300 Mbps)
- Extended 40-pin GPIO header
- Full-size HDMI
- 4 USB 2.0 ports
- CSI camera port for connecting a Raspberry Pi camera
- DSI display port for connecting a Raspberry Pi touchscreen display
- 4-pole stereo output and composite video port
- Micro SD port for loading your operating system and storing data
- 5V/2.5A DC power input
- Power-over-Ethernet (PoE) support (requires separate PoE HAT)

## II. OVER VIEW OF THE PROJECT

The venture targets sparing vitality by distinguishing the vehicle development on parkways and turning on the square of streetlight in front of it and at the same time turning off the trailing lights. The undertaking expects sensor to distinguish the vehicle developments and switches on the lights in front of it as soon as the vehicle pushes forward the trailing lights consequently turns off. This can be utilized to spare a ton of vitality as opposed to utilizing regular framework where the streetlights are remained ON. PWM is utilized for power control through microcontroller.



This proposed framework gives an answer for vitality sparing. This is accomplished by detecting a moving toward vehicle and afterward turns ON a square of streetlights in front of the vehicle. As the vehicle cruises by, the trailing lights switch off consequently. Accordingly, we spare a great deal of vitality. So when there are no vehicles on the interstate, at that point all the lights stay OFF.

Sensors utilized on either roadside detects vehicle development and sends rationale orders to microcontroller to turn ON/OFF the LEDs. In this way along these lines of powerfully changing force ON/OFF aides in sparing a heaps of vitality. The sensors sense the vehicle developments and send it at Arduino Uno family microcontroller that starts orders for turning the lights ON/OFF.

As it was expressed before, the conventional street light system uses sodium lights which intern responsible for the pollution by emitting harmful gases, and manual maintenance system is not economical as it depends on the labor who supposed to monitor and control the system. This is one of the significant reasons for moving to the programmed framework, since there is less wastage of intensity and along these lines sparing a great deal of fiscal costs.

### III. LITERATURE SURVEY

In the existing system monitoring and controlling is done manually with the help of labors ,they supposed to visit the spot and control them, there is no facility to control the intensity of light based on traffic.

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### IV. ANALYSIS

#### Sensors

Are the transducers used to fetch information like thumb parameters, temperature, humidity and voltage; they operate at low voltage and help to fetch information.

#### Raspberry Pi board

The Raspberry pi is a single computer board with credit card size, that can be used for many tasks that your computer does, it has GPIOs to which sensors and other devices could be connected, information can be read from sensors and actuators like buzzer, led ,motor, relays could be controlled programmatically

#### Breadboard

This device helps to connect various components and form circuit without soldering, it has grid of interconnected sockets with which we can connect various components required for project.

#### IR Sensor

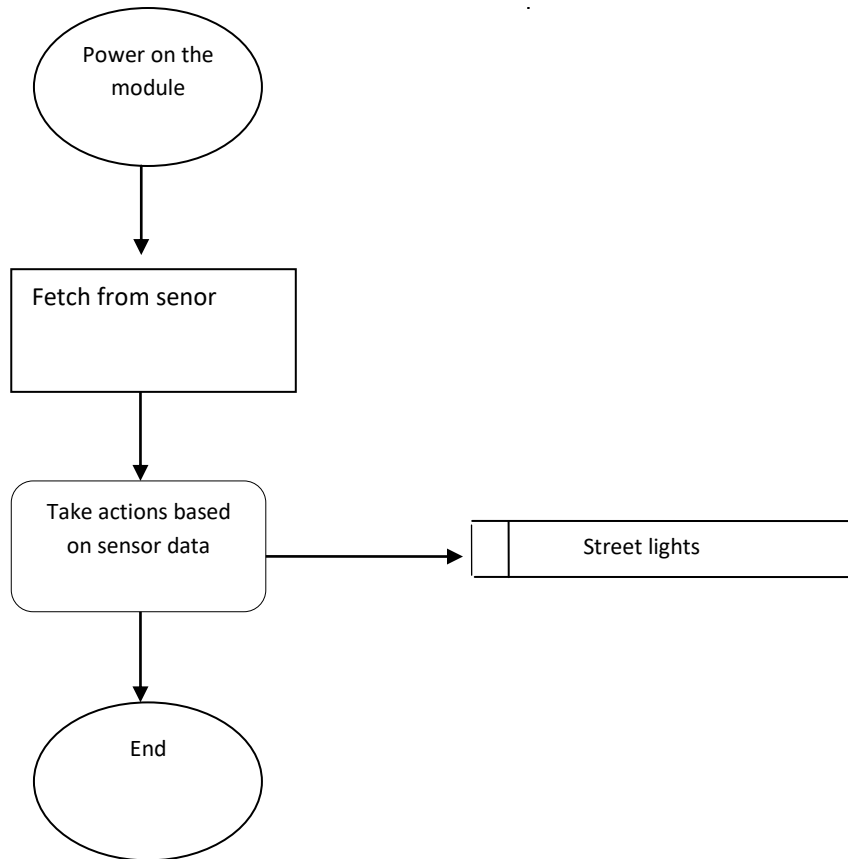
Sensor is used to measure range between column and any objects

### Data flow diagram

A data-flow diagram is a way of representing a flow of data through a process or a system (usually an information system). The DFD also provides information about the outputs and inputs of each entity and the process itself. A data-flow diagram has no control flow there are no decision rules and no loops. Specific operations based on the data can be represented by a flowchart.

For each data flow, at least one of the endpoints (source and / or destination) must exist in a process. The refined representation of a process can be done in another data-flow diagram, which subdivides this process into sub-processes.

The data-flow diagram is a tool that is part of structured analysis and data modeling. When using UML, the activity diagram typically takes over the role of the data-flow diagram. A special form of data-flow plan is a site-oriented data-flow plan.



### Implementation

Software implementation refers to the process of adopting and integrating a software application into a business workflow. Implementation of new tools and software into an enterprise can be complex, depending on the size of the organization and the software.

Prior to implementation, the software should be selected by assessing needs, budget, potential benefits, obstacles, and so forth. Once the solution is chosen, implementation can begin. For software implementation initiatives to succeed, it's important to follow a few key steps.

**Pilot Program** – Prior to full-scale installation, pre-test the software with a test group within the company



**Installation** – The IT department should work with the vendor to install the application across all target machines

**Onboarding and Training** – Once installed, develop an on boarding program and a software training program to ensure employees are able to utilize all functions and features

**Monitoring, Maintenance, and Follow-Up** – Throughout the implementation process, monitor user feedback, usage data, and measure against KPIs

## V. CONCLUSION

The proposed system expects to depict a strategy for adjusting road light enlightenment by utilizing sensors at least electrical vitality utilization. At the point when nearness is distinguished, all-encompassing streetlights gleam at their most splendid mode, and LED bulbs will be actualized, as they are superior to ordinary glowing bulbs inside and out. This will lessen heat emanation, power utilization, support and substitution expenses and carbon dioxide discharges. Combined with SSSLS (Solar Smart Street Light System), gigantic vitality investment funds are imagined. Additionally, a show with a continuous proto sort model including expenses and usage method has been created utilizing web of things (IOT) to imagine the constant updates of road handling and telling changes happen. In the proposed system the elements such as LDR,IR sensors, pi development board, jumper wires, bread board, buzzer, LED's are used, to program the board Thonny IDE is used.

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