smart street light_Aakash

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Project Synopsis On

AN IOT BASED SMART STREET LIGHT

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2022-2023

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CERTIFICATE

This is to certify that the following students

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Have submitted project report entitled

AN IOT BASED SMART STREET LIGHT

as a part of their MINI-project-work in partial fulfilment of VI semester

T.E. INFORMATION TECHNOLOGY

course during the academic year 2022-2023.

Internal Guide : _____ ( )

Internal Examiner : _____ (
) External Examiner : _____ ( )

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ABSTRACT

A Street light which can be used only in need, taking care about the road accidents and also which can manage itself my increasing or decreasing its intensity according to the environments need which can reduce the cost of the street lights having such kind of technology is very necessary in our day to day life. The project is fully IOT based SMART STREET LIGHT which is cost effective. This project uses motion sensors to detect vehicles and adjust the light intensity accordingly the system is designed to make use of less energy by reducing the intensity of the light when no vehicle are present on the road. The project shows the smart street light is effective in energy consumption and minimizing light pollution . The project is able to manage the light intensity to prevent accidents on the road and improve the safety on the road.

INTRODUCTION

Problem Definition:

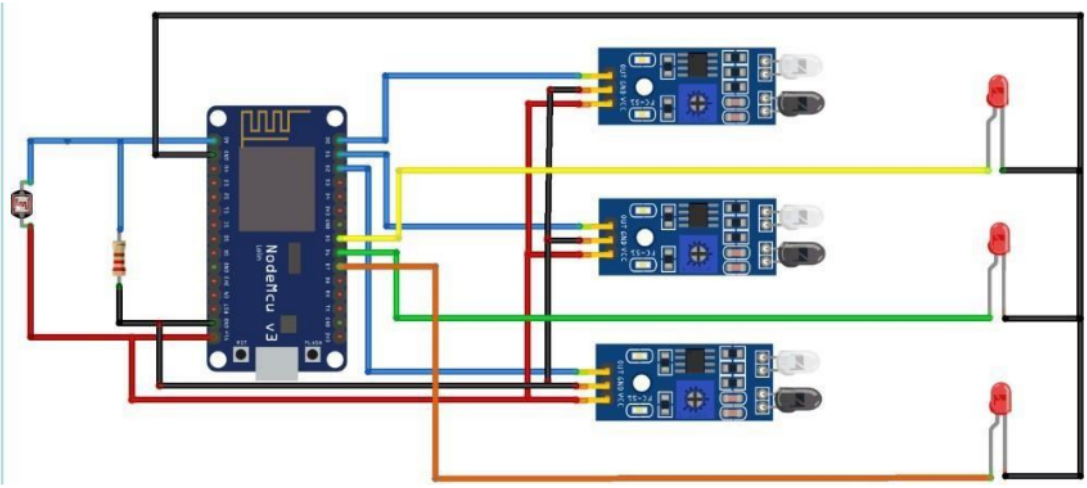
The traditional street lighting systems are not energy-efficient, resulting in high operational costs and potential safety hazards. An IoT-based smart street light project can address these issues by dynamically adjusting the lighting output based on real-time changes in lighting requirements. The project aims to optimize energy consumption, reduce operational costs, and improve public safety by utilizing sensors and smart control algorithms. The system should have a user-friendly interface for remote monitoring and control.

Scope:

system that can efficiently and dynamically adjust the lighting output of street lights based on real-time changes in lighting requirements. The project includes the
The scope of an IoT-based smart street light project is to design and develop a integration of various sensors such as light sensors, motion sensors, and traffic sensors. The system should also have a user-friendly interface for remote monitoring and control, allowing municipalities to monitor and adjust the lighting output of street lights in real-time. The project aims to optimize energy consumption, reduce operational costs,. The potential applications of an IoT-based smart street light project include improving the overall quality of life in cities by providing better illumination, reducing energy consumption and greenhouse gas emissions, and enhancing public safety.

DESCRIPTION

System Circuit diagram:



Methodology:

Requirements Analysis: Conducting a thorough analysis of the requirements of the project, including the integration of various sensors the user interface, and the overall system architecture.

System Design: Designing the system architecture and selecting the appropriate hardware and software components based on the requirements analysis. This step involves the development of the sensor network, data processing algorithms, and the IoT platform for monitoring and control.

Prototype Development: Building a prototype system to test the functionality and performance of the design. This involves integrating the hardware and software components, testing the sensor network, and validating the data processing algorithms.

System Testing: Conducting comprehensive testing of the prototype system to ensure it meets the requirements of the project. This includes testing the system's response to real-world conditions, such as changes in traffic flow and pedestrian activity.

Future Work:

Integration with Smart City Infrastructure: Integration with other smart city infrastructure systems such as traffic management, waste management, and public safety can enhance the overall effectiveness of the system. For instance, integrating with the traffic management system can optimize the lighting output of street lights based on real-time traffic conditions.

Energy Storage and Renewable Energy Integration: Incorporating energy storage solutions and renewable energy sources such as solar power can further reduce energy consumption and improve the overall sustainability of the system.

Predictive Maintenance: Developing predictive maintenance algorithms can detect potential failures and enable proactive maintenance, reducing system downtime and minimizing maintenance costs.

Conclusion:

The project's scope includes the integration of various sensors, the development of data analysis algorithms, and a user-friendly interface for remote monitoring and control. The methodology involves several steps, including requirements analysis, system design, prototype development, system testing, deployment and maintenance, and evaluation. Future work for the project includes integration with smart city infrastructure, energy storage and renewable energy integration, predictive maintenance, data analytics, and machine learning, and expansion to other regions.

An IoT-based smart street light project has the potential to improve the overall quality of life in cities by providing better illumination, reducing energy consumption and greenhouse gas emissions, and enhancing public safety. It is a multidisciplinary project that requires expertise in hardware and software design, data analysis, and IoT platforms. The project's success depends on following a structured methodology and continuous optimization to ensure its effectiveness and sustainability.

Cost of The Project:

Ardinouno		**700**
LR	**90**	
LDR	**5**	
LED	**10**	
BreadBoard	**60**	
Jumper Wire	**60**	
Resistor	**10**	
Other Cost	**200**	
Total :-	**1,135**	

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