Patent Search

Invention Title	Energy Efficient Smart Street Light System based onPulse Width Modulation and Arduino
Publication Number	1/2025
Publication Date	03/01/2025
Publication Type	INA
Application Number	202441101762
Application Filing Date	22/12/2024
Priority Number	
Priority Country	
Priority Date	
Field Of Invention	ELECTRICAL
Classification (IPC)	H05B47/10, H05B47/115, H05B47/13, H05B45/325, G05B19/02, F21W111/02

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Abstract:

ABSTRACT: The Energy Efficient Smart Street Light System utilizes an Arduino microcontroller and Pulse Width Modulation (PWM) technology to optimize streetlight e consumption while ensuring sufficient illumination. The system dynamically adjusts the brightness of streetlights based on real-time environmental data, including ar levels, traffic flow, and time of day. By using sensors, such as light sensors and motion detectors, the system detects changes in these parameters and adjusts the str intensity accordingly, providing full brightness during high traffic periods and dimming during low activity hours. This energy-efficient approach reduces electricity co and operating costs by ensuring that streetlights only consume the necessary amount of power. The system enhances urban sustainability by lowering energy waste contributing to reduced carbon footprints. It is designed to be easily scalable and adaptable, making it suitable for installation in various urban settings, including roa and highways. The system also offers the potential for remote monitoring and management, allowing municipalities to track energy usage and streetlight performan ensures efficient maintenance and helps optimize the lighting network. Overall, this invention provides an advanced, cost-effective, and sustainable solution for smar lighting, improving both energy efficiency and public safety in urban environments

Complete Specification

Description:DESCRIPTION:

Field of Invention

The present invention relates to energy-efficient street lighting systems, specifically an Arduino-based smart street light system that utilizes Pulse Width Modulation to optimize energy consumption. Traditional street lighting systems are known for their high energy consumption, particularly during off-peak hours. This results in unnecessary waste of electricity and contributes to higher energy costs. The invention aims to address these inefficiencies by integrating smart technology, which automatically adjusts the brightness of street lights based on real-time conditions such as traffic flow, time of day, and ambient light levels.

This invention lies within the fields of electrical engineering, automation, and energy management. By leveraging Arduino microcontrollers and PWM techniques, th system provides a smart solution for public street lighting that balances energy efficiency with effective illumination. The use of PWM allows for fine control over the brightness levels of streetlights, reducing energy usage without compromising safety or visibility. The invention also contributes to sustainable energy practices, alig with modern demands for reducing carbon footprints and minimizing resource consumption in urban infrastructure.

Furthermore, this system enhances public safety and environmental sustainability by automatically adjusting lighting to meet specific needs. It offers a solution that cost-effective and scalable, suitable for installation in urban areas, highways, parks, and other public spaces. This smart street light system is a step forward in creat smart cities that integrate energy-saving technology with urban development to improve quality of life while reducing environmental impact.

Objective of the Invention

The primary objective of this invention is to develop an energy-efficient street lighting system that reduces electricity consumption by intelligently adjusting light lev

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