

# Experimental Study on Automated Controller of Street Light Management System using IoT

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**Abstract:** *In order to ensure public safety and support nighttime activities, street lighting is crucial to the urban landscape, and this study starts by contextualizing its importance. It then goes on to analyze the shortcomings of the current street lighting systems, which are typified by their static control methods and poor environmental response. These shortcomings underscore the urgent need for a paradigm shift towards more intelligent and adaptive solutions. The core proposition of this project lies in the design and implementation of an advanced street light management system empowered by IoT technology. At its heart, the system comprises a sophisticated network of interconnected devices, including sensors, actuators, and a central control unit. These components collaborate synergistically to capture, analyze, and act upon real-time data gleaned from the surrounding environment. Through the application of cutting-edge data analytics and machine learning algorithms, the system autonomously adjusts lighting levels in accordance with fluctuating parameters such as ambient light levels, traffic density, weather conditions, and pedestrian activity. By dynamically optimizing energy usage while ensuring adequate illumination, the system not only enhances operational efficiency but also contributes to cost reduction and environmental sustainability. Moreover, the proposed system incorporates proactive maintenance features, enabling early fault detection and remote diagnostics. This capability minimizes downtime and enhances system reliability, thereby mitigating the operational challenges associated with traditional street lighting infrastructure. The project further explores the conceptual framework of IoT, elucidating its transformative potential in revolutionizing urban infrastructure management. By seamlessly integrating physical devices with digital intelligence, IoT facilitates the creation of interconnected ecosystems wherein data-driven decision-making and automation converge to drive unprecedented efficiency and innovation*

**Keywords:** Street light, automatic system, IoT, Management