**Power Theft Detection using IOT**

**Abstract:**

Power theft is a significant issue faced by utility companies worldwide, leading to financial losses and operational inefficiencies. This paper explores the development of an IoT-based power theft detection system aimed at mitigating electricity theft. The proposed system utilizes smart meters and sensor networks integrated with the Internet of Things (IoT) to monitor electricity consumption in real-time. By collecting and analyzing data, the system can detect anomalies in power usage patterns, which may indicate unauthorized consumption. Key components include smart meters with embedded communication modules, cloud-based analytics, and alert mechanisms for immediate detection and reporting of suspicious activities. Requirements for the system include reliable sensors, real-time data transmission, secure communication protocols, and an efficient anomaly detection algorithm. Additionally, the integration of machine learning algorithms enhances the accuracy of detecting unusual consumption patterns. This IoT-driven approach offers a scalable, cost-effective solution to reduce power theft and improve the efficiency of electricity distribution systems.

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