**Surveillance Car Using ESP32-CAM**

**Abstract:**

The **Surveillance Car using ESP32-CAM** is a cost-effective and efficient solution for real-time remote monitoring and security applications. It is designed for use in **home security, military surveillance, industrial monitoring, and disaster management**. The system is built using an **ESP32-CAM module**, which features a built-in camera and Wi-Fi, enabling live video streaming over a wireless network.

The car’s movement is controlled using **DC motors** driven by an **L298N motor driver module** and powered by a **rechargeable battery**. A web-based interface or mobile application allows users to **remotely control the car’s movement and view live video feed** from anywhere with internet access. The system leverages **IoT technology** to provide seamless communication and real-time monitoring.

Key features include:

* **Live video streaming** via ESP32-CAM over Wi-Fi.
* **Remote control functionality** through a web app or smartphone.
* **Night vision capability** using infrared (IR) LEDs for low-light environments.
* **Object detection and obstacle avoidance** using AI and ultrasonic sensors (optional).
* **Low power consumption and cost-effective design**, making it ideal for real-world applications.

The ESP32-CAM processes video data and transmits it over a wireless network, ensuring **low-latency monitoring**. Additional enhancements, such as **motion detection**, **cloud storage for video recording**, and **GPS tracking**, can be integrated to improve security and performance.

This surveillance car provides a **portable, wireless, and autonomous** security solution. Its small size makes it suitable for **indoor and outdoor surveillance**, allowing it to access areas that may be difficult for humans. By combining **IoT, embedded systems, and automation**, this project demonstrates a smart and scalable approach to real-time surveillance, making security more efficient and accessible.