Warfield Spy Robot with Night Vision Camera

https://www.youtube.com/watch?v=8VQ-i1pA77A

This project presents the design and implementation of a Warfield Spy Robot with Night Vision Camera based on the Raspberry Pi 3 Model B+ platform for real-time surveillance and remote monitoring. The system integrates a night-vision Pi camera, metal detector sensor, buzzer GPS module, motor driver with DC motors, LCD display (via I2C), SD card storage, and a rechargeable battery powered through an LM2596 voltage regulator.

The robot is wirelessly controlled through a web browser interface, enabling live video streaming and remote navigation from any connected device. The night vision camera allows continuous monitoring in low-light or dark environments, making the system suitable for military, border security, and high-risk surveillance applications.

Image processing techniques are implemented on the Raspberry Pi to enhance autonomous intelligence. When the system detects metal objects using sensor, it automatically captures an image and sends an alert email along with the GPS-based location coordinates and also activate the buzzer for alerts. Similarly, face recognition algorithms are employed to identify unknown individuals. Upon detecting an unrecognized face, the robot captures the image and transmits an alert email containing both the image and real-time location data.

The integration of GPS ensures accurate location tracking, while web-based live streaming provides real-time situational awareness. This intelligent robotic surveillance system enhances security operations by combining remote control, night vision monitoring, object detection, face recognition, and automated alert mechanisms into a compact and cost-effective platform.

The main objectives of the project:

- To design and build a spy robot using the Raspberry Pi 3 Model B+.

 To provide live video streaming using a night vision camera for monitoring in dark areas.

 To control the robot wirelessly through a web browser.

 To track the robot's real-time location using a GPS module.

 To detect metal objects using sensor techniques.

 To recognize unknown faces using face recognition technology.

 To automatically capture images and send alert emails with location details when a threat or metal is detected.

 To store captured data on an SD card.

 To ensure proper power supply using a rechargeable battery and voltage regulator.

 To develop a smart and cost-effective robotic system for security and surveillance applications.

The major building blocks of this project are:

1. Battery Power Supply.
2. Raspberry pi3 B+ processor.
3. SD card.
4. Night Vision Pi camera.
5. GPS.
6. LCD display.
7. L298 motor driver with DC motors.
8. LM2596 Buck converter.
9. Metal detector sensor.
10. Buzzer.

Software's used in the project:

1. Raspbian OS.
2. WEB technology.
3. Express SCH for Circuit design.

4. Face recognition.

Block diagram: