Design and Development of A Smart Military Robot for Surveillance and Explosive Handling

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Abstract: *The Design and Development of a Smart Military Robot for Surveillance and Explosive Handling focuses on creating an intelligent unmanned ground vehicle (UGV) capable of operating in hazardous and high-risk environments. The system is built around the Raspberry Pi microcontroller, which serves as the main processing and control unit. The robot is designed to assist defense and security forces in surveillance, reconnaissance, and suspicious object handling operations while minimizing human exposure to danger.*

The Raspberry Pi enables real-time video streaming, wireless communication, sensor data processing, and remote operation through a web or mobile interface. The robot integrates a night vision camera for continuous monitoring, ultrasonic sensors for obstacle detection, a metal detector sensor for identifying potential explosive materials, and a robotic arm controlled by servo motors for safe handling of suspicious objects. GPS integration allows real-time location tracking, improving situational awareness during field deployment.

The proposed system offers a cost-effective, efficient, and reliable solution for military surveillance and explosive handling tasks. By combining embedded systems, IoT communication, and robotic mechanisms, the smart military robot enhances operational safety, reduces human casualties, and improves mission efficiency in critical defense applications..

Keywords*: Smart Military Robot, Raspberry Pi, Surveillance System, Explosive Detection, Unmanned Ground Vehicle (UGV), Robotic Arm, Metal Detector Sensor, IoT, Wireless Communication, Night Vision Camera, Defense Robotics*