

Research on IoT-Cloud technology in building mobile security robot systems

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Abstract: This thesis investigates the integration of IoT-Cloud technology for the development of mobile security robot systems. The research addresses the critical need for intelligent, autonomous surveillance solutions that can operate beyond the limitations of traditional static systems. By leveraging a distributed architecture, the proposed framework enables real-time data acquisition from heterogeneous sensors, including cameras, motion detectors, and environmental monitors, mounted on a mobile robotic platform. The cloud component provides scalable computational resources for advanced data processing, such as object recognition and anomaly detection, while the IoT layer facilitates low-latency communication and remote control. A key contribution is the design of a robust middleware that ensures seamless interoperability between the robot's embedded systems and cloud services. Experimental results demonstrate that the system achieves high accuracy in threat identification and maintains reliable performance under dynamic conditions. This work validates the feasibility of deploying cost-effective, cloud-enhanced mobile robots for perimeter security, offering significant improvements in response time and operational flexibility compared to conventional approaches.

Keywords: IoT-Cloud, security robot, mobile system, IoT technology