

## **Cutting-Edge AI-Powered Real-time Surveillance System for Proactive Threat Detection and Response in Robbery Situations**

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### **Abstract**

In today's security-conscious world, the need for advanced surveillance systems is paramount. This research focuses on pioneering a cutting-edge real-time surveillance system driven by artificial intelligence (AI) to proactively detect and respond to potential robbery situations. Utilizing deep learning, this system surpasses traditional surveillance methods by identifying specific anomalies linked to robberies, such as individuals wearing helmets and carrying weapons or knives. The system's core strength lies in its robust object detection and tracking capabilities, powered by state-of-the-art deep learning algorithms analyzing live video streams. It swiftly identifies anomalies like people entering monitored areas with helmets and various weapons, such as rifles, handguns, or knives. Upon detection, an automatic alarm is triggered, notifying security personnel and relevant authorities for immediate action. This study introduces an innovative automated response feature, allowing security personnel to take control of the system. Once a robbery is confirmed, it triggers alarm & access doors can be closed promptly, preventing illegal entry and limiting potential attackers' movements. This seamless integration of AI-driven detection and automated security response not only enhances overall security but also reduces human error and response time, ultimately safeguarding lives and valuable assets. The AI-powered real-time surveillance system described in this study represents a significant advancement in security technology. It establishes a new standard for crime control and prevention due to its ability to adapt to dynamic scenarios, accurately detect anomalies, and automate security protocols. The research incorporates the latest object detection frameworks with models for precise object detection and proper algorithm for efficient object tracking. This technology reshapes the landscape of modern security systems, offering a robust solution to safeguard public spaces, corporations, and institutions as threats continue to evolve.

**Keywords:** *Surveillance Systems, Robbery Situations, Object Detection, Object Tracking, AI- driven Surveillance*