**WEAPON THREAT DETECTION**

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**ABSTRACT**

This project presents a robust weapon threat detection system designed to identify firearms and knives in real-time using a custom-trained YOLOv8 model. The system leverages custom datasets comprising images of guns and knives to train and fine-tune the YOLOv8 (You Only Look Once) object detection model, enhancing its accuracy and efficiency in recognizing these threats. Upon successful detection, the system triggers an audible alert, sends sms and mail to authorities. The hardware setup involves the integration of a RaspberryPi4 along with a Raspberry Pi Camera module for live recording and streaming capabilities. The Raspberry Pi platform acts as the edge device, executing the trained YOLOv8 model locally, thereby ensuring real-time detection without relying on external servers. This design enhances the system's autonomy and reduces latency, making it suitable for various applications, including security surveillance, public spaces, and controlled environments. The project demonstrates the effectiveness of custom training YOLOv8 for specific threat detection tasks and showcases the practical implementation of such a system on a compact and cost-effective Raspberry Pi platform. The real-time detection and alerting capabilities make this solution valuable for enhancing security measures in diverse scenarios, contributing to the overall safety and well-being of individuals within the monitored environments.

**Keywords –** YoloV8, Raspberrypi4, firearms, knives, custom training, object detection, threat **detection tasks.**

**Primary SDG Goal:** Industry, Innovation and Infrastructure

**Secondary SDG Goal:** Sustainable cities and communities

**Tertiary SDG Goal:** Partnership for the goals

**SAP Code:**