**VisionEdge: Compact AI Object Detection System Using ESP32-CAM and OpenCV**

**Problem Statement:**

Traditional Closed-Circuit Television (CCTV) systems are limited to passive monitoring, lacking the inherent intelligence to automatically identify objects within their surveillance feeds. This deficiency necessitates manual analysis of video footage, a process that is inherently time-consuming, prone to human error, and highly inefficient, particularly in the context of modern smart surveillance requirements. The escalating demand for cost-effective, real-time, and AI-driven edge computing solutions capable of interpreting visual data highlights a critical gap in current surveillance technologies. This work directly addresses this need by proposing an innovative solution that integrates AI-powered object recognition capabilities into a highly economical hardware platform utilizing the ESP32, thereby offering an accessible and efficient alternative to conventional monitoring systems.