Real-Time People Counting System

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Abstract*: This paper introduces an advanced system for real-time people counting, utilizing live video streams or IP cameras. The core of this system is the Single Shot Multibox Detector (SSD) framework, enhanced with MobileNet architecture to ensure precise object detection. To continuously track detected individuals, we employ a centroid tracking algorithm. The system's design prioritizes scalability, making it ideal for various business applications, such as monitoring foot traffic in stores, buildings, and shopping malls. A key feature of our system is its ability to send immediate alerts when the number of people exceeds a set threshold. This functionality is crucial for managing crowd control and adhering to safety protocols, particularly in scenarios like the COVID-19 pandemic. We have optimized the system's performance with threading, which improves its responsiveness and efficiency. By integrating advanced machine learning techniques with practical business applications, our real-time people counting system offers a dependable and scalable solution for contemporary crowd management challenges. Features like real-time alerts, automatic scheduling, and comprehensive data logging highlight its effectiveness in enhancing operational efficiency and safety across various settings.*

Keywords: Real-time people counting, Single Shot Multibox Detector (SSD), MobileNet architecture, centroidtracking, machine learning, Efficiency, Scalability