CASE STUDY

ENHANCING SECURITY: PEOPLE TRACKING AND COUNTING WITH CCTV SURVEILLANCE

Overview

Spiral Technologies provides an augmented reality (AR) and artificial intelligence (AI) platform designed for aerospace technicians, optimizing defect documentation and validation processes while reducing cycle times. Among our platform's capabilities is a specialized module designed for people tracking and counting, using CCTV streams. This innovative feature enables seamless monitoring of individuals entering and exiting a premise, effectively alleviating the workload of security teams.

Customer

Spiral Technologies (Tech Start), USA

Country: USA

Industry: B2B & B2C

Customer Size: 1000+

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Problem Statement

Efficient and accurate tracking of individuals within large premises is a critical requirement for both security and operational efficiency. Traditional methods rely heavily on manual monitoring, which can be prone to human error and resource-intensive. Spiral Technologies identified the need for an automated solution that could enhance security protocols and streamline the process of tracking and counting people in real time.

Technical Solution

Our solution employs cutting-edge technologies such as the Yolov8 Object Detection model and the BoT-SORT tracker to accurately identify and track individuals. Implemented in Python, the processing pipeline is hosted on a Flask server and efficiently handles video streams from CCTV sources. The platform, hosted on Paperspace VM instances, ensures scalability and reliability to meet varying client demands. Our solution delivers robust performance in real-time people tracking and counting. The implementation utilizes Ultralytics Yolov8 for object detection, OpenCV for image processing, and Scikit-Image for additional image analysis tasks. The integration of CUDA and PyTorch ensures optimized performance on compatible hardware, enhancing the overall efficiency and accuracy of the system.

Results

With our solution, we are able to efficiently track people entering and exiting a given premises, thereby relieving the burden on the security team. The system demonstrated high accuracy with a mean Average Precision (mAP) in detecting and counting individuals across various environments. This deployment has not only improved the operational efficiency of security personnel but also ensured a more secure and monitored environment for the clients. The adaptability of the platform allows for application in both Business to Business (B2B) and Business to Customer (B2C) contexts, showcasing its versatility and effectiveness in enhancing premises security through advanced people tracking capabilities.

Technologies

- Yolov8
- PaperSpace
- PyTorch
- Scikit-Image
- Flask
- Ubuntu
- Cuda
- BoT-SORT
- Ultralytics
- Python
- OpenCV

Domains

- Computer Vision
- Image Processing
- Object Tracking
- Deep Learning