

Development of Vehicle Entry-Exit Management System using real-time intelligent video analytics deployed on edge devices.

Abstract

The proposed project aims to develop a Vehicle Entry-Exit Management System utilizing real-time intelligent video analytics deployed on edge devices. This system leverages advanced computer vision techniques and deep learning models to provide an efficient, automated, and secure method of monitoring vehicular access to institute's controlled premise.

By integrating tools such as OpenCV, CUDA, Jetson Nano libraries, and YOLO (You Only Look Once) for object detection, the system should ensure accurate vehicle identification. Additionally, Optical Character Recognition (OCR) is to be deployed to extract license plate information, enabling precise tracking and record-keeping. A MySQL database is to be used to support data storage and management, ensuring scalability and reliability.

In this implementation the edge-computing approach ensures low-latency processing, enhancing system responsiveness and reducing dependency on centralized servers. The solution is designed to address challenges such as real-time decision-making, efficient resource utilization, and adaptability to varying environmental conditions.

Apart from its implementation at Institute, the learning from this project is envisioned to have significant applications in other areas like smart cities, industrial facilities, offering a robust, real-time, and cost-effective solution for vehicle access management.

Deliverables: Deployment of Video Analytics Application on edge devices (Raspberry/Jetson Nano) with Vehicle Entry-Exit Management System.

Academic Project Requirements:

1) Required No. of student(s) for academic project: 2

2) Name of course with branch/discipline: B.E./B.Tech. Computer Engineering/IT/MCA

3) Academic Project duration:

(a) Total academic project duration: 16 Weeks

(b) Student's presence at IPR for academic project work: 3 Full working Days per week

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