Real-time video analytics for detecting illegally parked vehicles

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Abstract

In this research, a system that helps improve traffic flow, enhance safety, and ensure fair enforcement of parking regulations by detecting illegally parked vehicles is proposed. The system is composed of fixed standardized cameras with AI video analytics. Cameras need to be strategically installed at fixed locations throughout the monitored area, such as street corners, parking lots, or key intersections, providing optimal coverage. The AI system performs real-time analysis of the video streams with the capability to identify a range of infractions, including vehicles parked in prohibited areas, obstructing traffic flow, or contravening parking rules and regulations. Once a violation is confirmed by the decision-making process, the system generates a report detailing the offense, including relevant information such as timestamp, location, and photographic evidence.

The fixed camera model provides a cost-effective and scalable solution for parking enforcement, enabling continuous monitoring of parking compliance in urban areas without the need for a mobile platform. Reports generated by the system can trigger various enforcement actions, from issuing automated citations to sending alerts to parking enforcement officers or notifying relevant authorities for further action. The authors believe that with the current AI-based video analytics & hardware technology level, a reaction time of three minutes can be achieved in urban conditions characteristic of a city as large as the City of Kragujevac.

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