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Traffic Management System by using a YOLO Algorithm

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Abstract: *The issue of traffic congestion is becoming worse day by day. The typical traffic lights are unable to effectively regulate the growing number of vehicular traffic; therefore, we mixed computer vision and machine learning to mimic complicated incoming traffic at signalized intersections. This was accomplished using the cutting-edge, real-time object detection system You Only Look Once (YOLO), which is built on deep convolutional neural networks. In order to maximize the number of vehicles that can cross safely with the least amount of waiting time, this paper presents an efficient method to use this algorithm, where traffic signal phases are based on the data obtained, primarily queue density and waiting time per vehicle. Embedded controllers that adopt the transfer learning methodology can implement YOLO.*

Keywords: Smart Traffic Management System, Traffic congestion, Urban areas, Artificial Intelligence (AI), Data analytics, Traffic monitoring, Real-time data analysis, Adaptive signal control, Smart infrastructure, Transportation efficiency, Commute times, Emissions reduction