

IMPLEMENTATION OF SAFETY MEASURES USING COMPUTER VISION AND MACHINE LEARNING ALGORITHMS

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Abstract

Urban traffic management is a critical aspect of tackling congestion issues and ensuring road safety in modern cities. This project introduces four groundbreaking systems:

1. **Dynamic Traffic Signal Timing:** By utilizing real-time camera detection and intelligent algorithms, signal timings are dynamically adjusted to alleviate congestion and improve traffic flow.
2. **Ambulance Clearance Prioritization:** This system employs sound sensors and cameras to create a responsive green wave for emergency vehicles, coordinating with connected vehicles for swift response.
3. **Seamless Traffic Signal Coordination:** Signal timings are adapted based on real-time traffic data, leading to minimal stops, reduced travel times, and the creation of sustainable and commuter-friendly urban environments.
4. **Enhanced Road Safety:** The integration of helmet detection technology enables the capture of safety violations, which are then displayed on electronic boards to raise awareness.

The research paper draws inspiration from existing computer vision applications worldwide, highlighting the potential impact of the project on traffic flow, emergency response, travel efficiency, and road safety. An analysis of effectiveness and impact reveals improvements in urban mobility, lives saved, environmental impact, road safety awareness, and technological advancement. It is important to note that the success of this project relies on meticulous planning, integration, public awareness, and continuous adjustments. The provided references include informative YouTube videos and relevant research articles that supplement the findings of this paper.