

Signal Master using YOLO

Dr. Kiran Bhandari¹, Ridhima Lawane², Megha Atale³, Shubham Pawar⁴

Faculty, Department of Information Technology¹
Students, Department of Information Technology^{2,3,4}
KC College Of Engineering, Thane, India

Abstract: *As urban populations and automobile numbers continue to swell, traffic congestion emerges as a pressing concern, inflicting delays, stress, heightened fuel consumption, and increased air pollution. Megacities, in particular, bear the brunt of this escalating issue. Real-time assessment of road traffic density becomes imperative for efficient signal control and traffic management. Among the pivotal factors influencing traffic flow, the traffic controller stands paramount, necessitating optimization to meet the surging demand. Our proposed system capitalizes on live camera feeds from traffic junctions to conduct traffic density calculations through image processing techniques and artificial intelligence (AI). By harnessing these technologies, the system aims to offer a dynamic solution to the persistent challenge of congestion. The core focus lies in devising an algorithm that dynamically adjusts traffic light signals based on the detected vehicle density, thereby mitigating congestion and fostering smoother transit experiences for commuters. This innovative approach not only promises expedited travel times but also holds the potential to curtail pollution levels, contributing to a more sustainable urban environment. By seamlessly integrating image processing and AI-driven traffic control mechanisms, our system endeavors to pave the way towards a more efficient and eco-friendly transportation infrastructure*

Keywords: Traffic congestion, YOLO, image processing, traffic control, signal switching, object detection, machine learning

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