

# Traffic Density Analysis using Image Processing: A Review

TGTM Jayawickrama, G Gayamini, EATA Edirisuriya

*Department of Computer Engineering, Faculty of Computing, General Sir John Kotelawala Defence University, Ratmalana, Sri Lanka*

**Abstract.** Due to the growing number of vehicles and the limited resources given by current infrastructures, traffic problems are becoming more prevalent. The traffic light control system is commonly used to control the flow of traffic at road junctions. To control traffic flow, most traffic signal systems currently use pre-time and count down timers. Because of the fixed time setting, the system is frequently unable to handle unusually high traffic flows, resulting in traffic jams. Delays, safety, parking, and environmental difficulties are all major concerns with today's traffic systems, which emit smoke and contribute to global warming. As a result, adaptive traffic signals are required, which can perform real-time monitoring and control traffic light signals based on traffic density. This paper presents a review of various image processing techniques used to detect traffic congestion. Regardless of traffic congestion, the traditional traffic signal system has a predetermined time cycle. A system that controls traffic lights based on the number of vehicles can be designed to reduce traffic congestion. For efficient vehicle management, a heavy flow of vehicles on one side can be given higher priority. It is required to detect real-time traffic congestion. Various image processing algorithms, such as background subtraction, edge detection, and so on, are covered in this study.

**Keywords:** *Traffic Congestion, Image Processing, Background Subtraction, Edge Detection*