

Density Based Traffic Light System

Rahul Madame, Piyush Ukinkar, Faijal Sheikh, Dhammadip Ramteke, Mr. Aditya Khandare

Department of Information Technology

Govindrao Wanjari College of Engineering & Technology, Nagpur, Maharashtra

Abstract: *Traffic congestion remains a critical issue in urban transportation systems, leading to increased travel times, fuel consumption, and environmental pollution. Traditional traffic control systems that operate on fixed time intervals are inefficient in handling dynamic traffic conditions. Intelligent Traffic Control Systems (ITCS) have emerged as a promising solution, integrating advanced technologies such as real-time data processing, Internet of Things (IoT), and cloud computing to optimize traffic flow. Various approaches have been explored in this field, including traffic light recognition (TLR) systems, congestion monitoring using RFID and GSM technologies, and cloud-based traffic control systems [1,2,3]. These systems leverage real-time data from sensors and communication devices to dynamically adjust traffic signals, prioritize emergency vehicles, and improve overall efficiency. This paper provides a comprehensive review of ITCS, discussing its tools, advantages, disadvantages, and future scope. Additionally, we analyse various existing models and identify gaps for further research. The findings indicate that while ITCS significantly enhance urban mobility, challenges such as high implementation costs, system reliability, and data privacy must be addressed to ensure widespread adoption.*

Keywords: *Traffic congestion.*

