Traffic Density Control with Android Override using AVR

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Abstract*: Traffic density control is a crucial aspect of modern transportation systems, especially in urban areas where congestion is a significant challenge. This project focuses on developing an efficient traffic density control system with an Android-based override mechanism, utilizing AVR (Advanced Virtual RISC) microcontroller technology. The system is designed to monitor traffic flow at intersections, dynamically adjusting traffic light durations based on real-time vehicle density data to minimize congestion and improve road safety.*

Using infrared (IR) sensors or cameras, the system continuously collects data on vehicle presence and density at various points of an intersection. The AVR microcontroller processes this data and makes intelligent decisions about traffic light control. In scenarios of heavy traffic, the Android application allows manual override, giving traffic authorities real-time control over traffic signals via a mobile interface. This feature is particularly useful in emergency situations, such as when an ambulance or VIP convoy needs to pass.

The integration of Android for manual override provides flexibility, while the AVR microcontroller ensures reliable and efficient automation. This project aims to reduce wait times, optimize traffic flow, and enhance the overall efficiency of urban traffic management systems.

Keywords: Traffic Density Control, AVR Microcontroller, Android Override, Real-time Traffic Monitoring, Embedded Traffic System

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