A Review on Smart Movable Divider for Ambulance Path Optimization

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Abstract: *Traffic congestion is a major challenge in cities. The Smart Movable Road Divider offers a dynamic solution using a barrier that shifts positions in real time. Sensors installed in roads gather live traffic data, which is sent to a cloud system via IoT technology. The cloud processes this information and directs the divider to shift positions, optimizing lane space based on current needs. The system's algorithm balances traffic volume on both sides, uses past trends to predict patterns, and prioritizes creating emergency lanes when ambulances are detected. This ensures smoother traffic during peak hours and faster emergency response times, saving lives. Future upgrades could link the system to traffic lights or use machine learning to refine predictions, making traffic management even smarter and more adaptive.*

Keywords: Smart Traffic System,Automatic road Divider ,Iot, Deep learning, Density of Traffic

I. INTRODUCTION

In busy cities today, heavy traffic often leads to major delays, especially for emergency vehicles like management even smarter and more adaptive. Keywords—Smart Traffic System,Automatic road Divider,Iot, Deep learning, Density of Traffic ambulances that must reach their destinations fast. To solve this problem, the Smart Movable Road Divider offers a smart solution to quickly clear paths for ambulances while improving everyday traffic flow. This system uses a roadside barrier that can physically move automatically when needed. Equipped with sensors and automatic controls, it detects approaching emergency vehicles and shifts to create an open lane, letting ambulances pass without obstacles. During regular traffic, the divider adjusts to keep lanes organized, reducing congestion and making roads safer. By combining real-time responses with smart design, this innovation prioritizes emergency access and smoother traffic, helping save lives by cutting down critical travel time for ambulances..

II. METHODOLOGY

Real-Time continuously Data Collection: Sensors monitor traffic conditions, including vehicle locations, speeds, and the divider's position. Emergency Request: When an emergency vehicle (e.g., ambulance) needs to pass, it sends a request to the Traffic Management System (TMS). Priority Assessment: The TMS evaluates the urgency of the request based on factors like the type of emergency vehicle and its impact on traffic flow. Divider Control Decision: The TMS decides whether to move the divider and in which direction, considering the request's priority and current traffic conditions.Divider Movement: If approved, the control system signals actuators to physically reposition the divider. Monitoring and Feedback: The system continuously tracks the divider's position and traffic flow, providing real-time updates to operators via a user interface. System Optimization: Over time, the system improves its algorithms using sensor data and user feedback to make faster and more efficient decisions
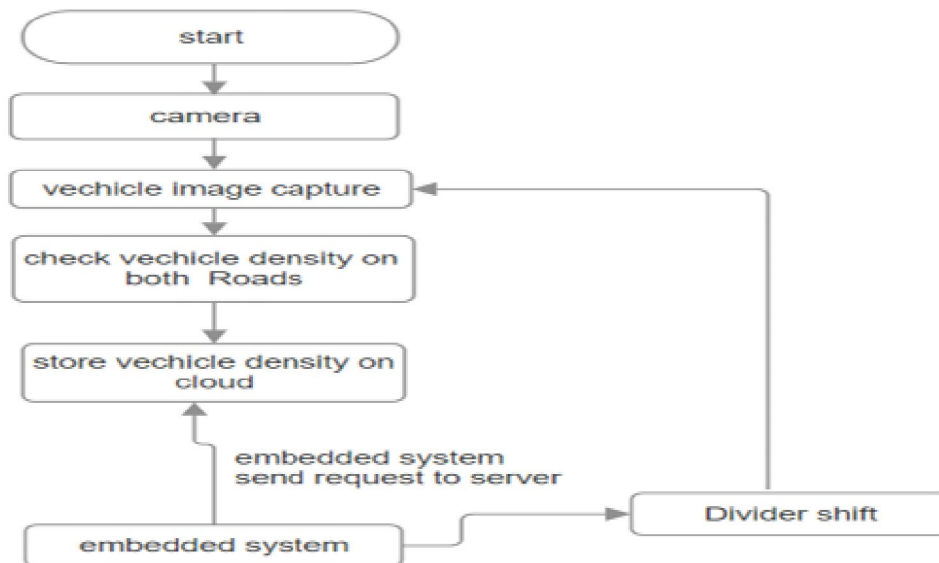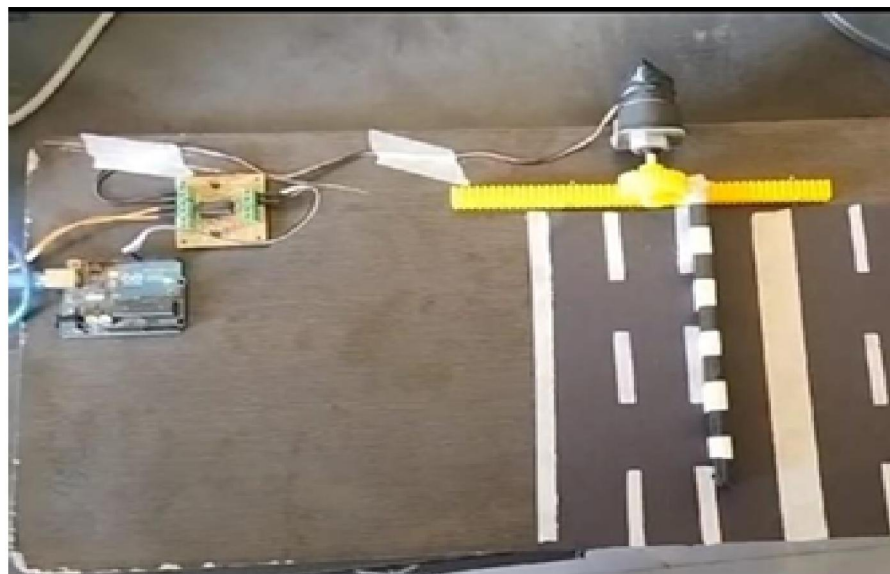
III. SYSTEM ARCHITECTURE

Figure 1 . flowchart

Fig 2. Experimental setup of the proposed system

IV. CONCLUSION

The development of a Smart Movable Road Divider offers a valuable solution for improving emergency response and traffic management. This innovative system can efficiently facilitate the passage of ambulances through congested areas, enhancing safety and reducing response times. It represents a significant step forward in modernizing traffic management and ensuring timely emergency assistance.

V. ACKNOWLEDGMENT

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