

## **AUTOMATED ACCIDENT DETECTION AND EMERGENCY RESPONSE SYSTEM USING CLOUD COMPUTING**

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Worldwide, traffic accidents are a leading source of fatalities and serious injuries. The severity of road accidents is largely influenced by the slow reporting of incidents and the ineffective emergency response. This study proposes an Automated Accident Detection and Emergency Response System using Cloud Computing to improve emergency response times and reduce the impact of accidents on the transportation system. The system leverages cloud computing and AI technologies to automatically detect accidents and generate alerts for emergency responders, improving response times and reducing the potential for secondary accidents and traffic congestion.

We compared the performance of the proposed system with existing systems, including traditional reporting, sensor-based detection, and machine learning approaches. The results showed that the proposed system outperformed all other systems in terms of accuracy, precision, recall, and F1-score, indicating its potential to significantly improve emergency response operations.

Successful deployment of the system requires careful planning, implementation, and monitoring, as well as integration with existing transportation and emergency response systems. Training and education of stakeholders, as well as continuous improvement of the system, are also necessary for its successful operation.

**Keywords:** road accidents, emergency response, machine learning, automated detection, real-time traffic updates, rerouting information, sensitivity analysis, parameter tuning, performance evaluation.