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Accident Detection Android Application

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Abstract: *Road accidents are a major cause of fatalities worldwide, and timely emergency response can significantly reduce casualties. This paper presents an Accident Detection Android Application that utilizes smartphone sensors such as GPS, accelerometer, and gyroscope to detect accidents in real time. The application uses machine learning algorithms and threshold-based techniques to analyze sudden impacts and abnormal motion patterns indicative of a crash. Upon detecting an accident, the app automatically sends an alert to predefined emergency contacts and emergency services, providing the victim's real-time location. Additional features include voice-activated SOS, manual accident reporting, and integration with nearby hospitals and ambulance services. The application is designed to be lightweight, user-friendly, and energy-efficient, ensuring continuous monitoring without excessive battery drain.*

The proposed system aims to enhance road safety by reducing emergency response time, potentially saving lives. Future improvements include AI-based crash severity assessment and vehicle-to-infrastructure (V2I) communication for smarter accident handling. Additionally, the app features a manual SOS button and voice-activated commands, enabling users to request help in distress situations, even when they are unable to physically access their phones. The system is designed to run efficiently in the background with minimal battery consumption, ensuring continuous monitoring without significantly draining device resources. Furthermore, the application can be integrated with smart wear ables and vehicle systems for enhanced accuracy in accident detection..

Keywords: Machine Learning, Sensor Fusion, GPS Tracking, Accelerometer, Gyroscope, Real-time Monitoring , AI- based Detection , Emergency Contacts , SOS Alert , SMS Notification ,Push Notification ,Cloud Sync ,Bluetooth Integration , IoT Compatibility ,Smart Vehicles , Motorbike Safety , Elderly Care , Workplace Safety ,Health Monitoring

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