Smart Accident Detection and Alert System

A Project Report Submitted in Partial Fulfillment of the Requirements for the Degree of

Bachelor of Computer Application

Submitted By: ()

Under Guidance of:

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Introduction

Road accidents are a major cause of injuries and deaths worldwide. Immediate response and timely medical help can save lives, but delays in alerting emergency services cause serious losses. This project proposes a smart accident detection system that automatically detects dangerous accidents and raises an alarm.

Background

The increasing number of road accidents highlights the need for quick detection and faster response. Manual reporting often leads to delays. Thus, there is a necessity for an automated system that ensures timely alerts and location tracking.

Application & Feature of Project

• Accident detection using accelerometer and vibration sensors.
• GPS integration for real-time location tracking.
• Mobile application to notify family and authorities.
• Automatic alarm system with instant notifications.
• Low-cost IoT hardware implementation.

Objective

1. To design an automated accident detection system.
2. To reduce delay in emergency medical response.
3. To alert family, hospital, and police in real time.
4. To provide location tracking for faster rescue.

Problem Statement

Many accidents occur on highways and remote areas where immediate help is unavailable. Victims often remain unattended due to lack of timely alerts. There is a need for a system that can detect accidents automatically and raise an alarm instantly.

Research Gap

Existing systems are expensive and mostly found in high-end vehicles. Low-cost IoT-based accident detection is still under research. Integration with mobile apps for real-time alerts is limited.

Literature Review

S.No.	Paper Title	Author(s)	Year	Methodology Used	Pros	Cons	Journal
1	IoT Accident Detection	XYZ	2021	IoT + GPS	Low cost	Accuracy issue	IEEE
2	Smart Vehicle Safety	ABC	2020	Sensor + AI	Fast detection	Expensive	Springer
3	Real-time Accident Reporting	PQR	2019	IoT System	Quick alert	Limited coverage	IJERT

Below are some example studies relevant to accident detection systems:

Methodology

The methodology involves the use of IoT sensors connected to a microcontroller. The steps include:
1. Installation of accelerometer and vibration sensors in the vehicle.
2. Data processing through a microcontroller.
3. Accident detection algorithm implementation.
4. Triggering alarm and sending notification with GPS coordinates.
5. Emergency services and family members are alerted instantly.

Conclusion

The proposed system ensures timely detection and alerting in case of accidents, reducing casualties by enabling faster medical response. This project is a step towards smart transportation safety.

References

1. XYZ et al., "IoT Based Accident Detection and Alerting System," IEEE, 2021.
2. ABC et al., "Vehicle Safety Monitoring Using Sensors," Springer, 2020.
3. PQR et al., "Real-time Accident Reporting System," IJERT, 2019.

Role of Each Member

• Member 1: Hardware and Sensor Integration
• Member 2: Software and Mobile App Development

- Member 3: Testing, Deployment, and Documentation