

Revolutionary Accident Notification System using Sensor and Instantons Images

Vikas N Nirgude

Sanjivani College of Engineering Kopargaon, India

Email: nirgudevikascomp@sanjivani.org.in

Abstract— This research presents a novel accident notification system that utilizes sensor technology and instantons images. The system aims to quickly and accurately detect accidents, improving emergency response times. By integrating visual context, it enhances accident assessment and addresses privacy concerns while optimizing computational resources. The proposed system has the potential to revolutionize accident response, enhance safety measures, and save lives in diverse domains. The innovative approach of combining sensors and instantons images offers a groundbreaking solution to the challenges faced by existing accident notification systems.

Index Terms— Accident notification system, Sensor, Instantons images, Accident detection

I. INTRODUCTION

The demand of vehicle high quality vehicles is increased after Covid-19 phase. Everyone wants own vehicle for security purpose and want to reach on time for his/her workplace, as increased the number of vehicle traffic hazards and road accidents are also increases. Most of the people life are in danger under this high risk. Some people will not get the medical service on time ,as they lost there life as nearby hospital ,relative or required people will not get required information on time. The proposed system will send the notification alarm or signal to the nearest hospital and police station so people will get the service on time ,as we can save there life. The same information also send to there relatives. In some of the cases when the vehicle met with accident, sensor will get damage and System is not able to send the required signal to nearby police station and hospital so the sometimes system will get failed for this solution is capture the images instantly and send it to nearby hospital and police station ,also their relatives. By using the proposed system we can save the life of the people, also it give the solution to the problem which occur if the sensor will get damage.

Accidents are unfortunate events that require prompt response to minimize their impact and save lives. Traditional accident notification systems often lack the visual context necessary for accurate detection and assessment. This research presents a revolutionary accident notification system that combines sensor technology and instantons images. By integrating real-time sensor data analysis with high-speed image processing, the system aims to improve accident detection accuracy and response times. This introduction provides an overview of the challenges faced by existing systems and the need for an innovative solution that incorporates visual information. The proposed system offers a groundbreaking approach to revolutionize accident response efforts and enhance safety measures in various domains.

II. PROBLEM DEFINITION

Revolutionary Accident notification system using sensor and instantons images which help to detect accident by using sensors as well as by taking the instant images or pictures of current situation and surrounding environment. Arudino controller will get the signal by using sensor, then alert message given through GSM modem. It gives the exact location. If sensor will get damage, then instant images and GPS location which is capture by using camera will be send to relative number only if the sensor get damaged. So by using those image Relative will get the exact idea about the situation and location as well as their condition so necessary action will be taken to save their life if they are in critical condition.[1]

III. OBJECTIVE

The objective of this research is to develop a revolutionary accident notification system that combines sensors and instantons images. The system aims to:

- Provide immediate and accurate accident detection.
- Improve response times for emergency assistance.
- Incorporate visual context for better accident assessment.
- Minimize false positives and missed detections.
- Address privacy concerns associated with visual data.
- Optimize the use of computational resources.
- Revolutionize accident response efforts, enhance safety measures, and save lives in various domains.

IV. MOTIVATION

The motivation behind this research is the need for an advanced accident notification system that overcomes the limitations of existing approaches. Traditional systems lack the visual context required for accurate accident detection and assessment. By integrating sensor technology with instantons images, the proposed system aims to revolutionize accident response by providing immediate and accurate notifications, reducing response times, and enhancing overall safety measures in various domains.

V. LITERATURE SURVEY

Nicky Kuttukaran et al. [1] suggested that heartbeat could be used as a significant factor to differentiate accidents, and they proposed using Bluetooth for sending alert signals. However, this approach has limitations due to the limited range of Bluetooth and the subjective interpretation of heartbeat as a measurement for accident verification Vipul Rana et. al [2] introduced a method for accidental prevention by considering the output and user side experience. Their approach involved requesting users to fill out a form, providing information about the climate, types of vehicles, and other relevant factors. However, this verification process is only applicable in cases where the accident victim is able to complete the form.

Sanjay Kumar Singh [3] on road accidents in India, analyzing data at the state, city, and rural levels. The findings revealed that 50% of the cities in India are highly susceptible to road accident fatalities. Furthermore, it was estimated that the number of accidents is projected to increase to 250,000 by the year 2025. These findings highlight the urgent need for effective measures and interventions to address road safety concerns and reduce the alarming rate of accidents in India.

Khandbahale et al. [4] conducted a study on accident prevention by implementing multi-object detection using an embedded system. However, this approach has certain limitations. Firstly, it incurs high economic costs, making it less feasible for widespread implementation. Secondly, the embedded system relies on sensors, which may not function properly during rainy weather conditions, reducing its reliability for accident prevention. These limitations emphasize the importance of considering cost-effectiveness and robustness when developing accident prevention systems to ensure their practicality and effectiveness in real-world scenarios.

VI. SYSTEM ARCHITECTURE

The following Figure 1 shows the Accidental Notification System.

The system consist of component like vehicle with sensors, good quality camera , Arduino with ESP8266

The revolutionary accident notification system combines sensor technology, instantons images, an Arduino controller, and an ESP8266 module to enable effective accident detection and notification.

The system architecture starts with the placement of sensors that can detect accidents based on specific parameters such as impact, sudden movements, or abnormal vibrations. When an accident occurs, the sensors send signals to the Arduino controller.

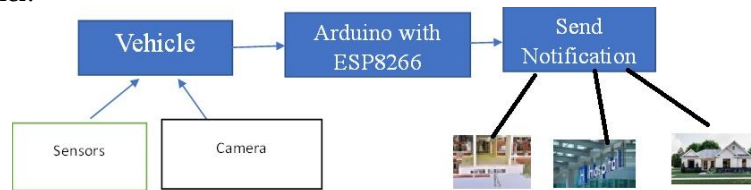


Figure 1. Accident Notification System

The Arduino controller acts as the central processing unit of the system. It receives signals from the sensors and triggers an alert message through a GSM modem. This message includes vital information about the accident, including the precise location obtained through GPS.

In the event that a sensor gets damaged or fails to provide accurate information, the system utilizes the ESP8266 module, which is connected to a camera. The camera captures instant images of the accident scene and the surrounding environment. Along with the GPS location, these images are then sent to a designated relative or emergency contact number.

By analysing the received images and assessing the condition of the individuals involved, the relative or emergency contact can make informed decisions and take necessary actions to save lives, particularly in critical situations.

The integration of the Arduino controller with the ESP8266 module ensures seamless communication between the sensors, camera, and the external contacts. This comprehensive system architecture facilitates efficient accident detection, accurate location tracking, and timely notifications to the relevant parties, enhancing emergency response and potentially saving lives.

Following Figure 2 show the flow diagram of the proposed system

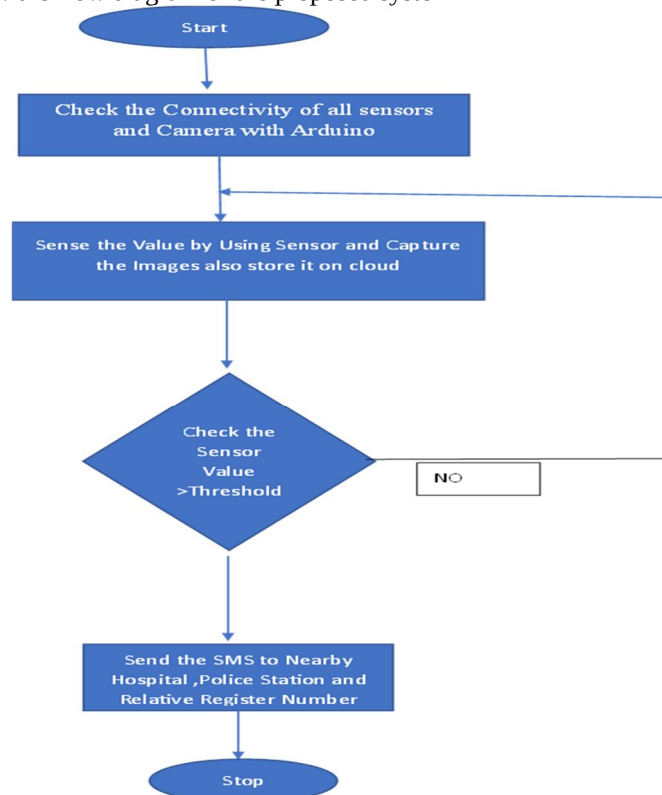


Figure 2. Flow Diagram of the Accident Detection System

VII. CONCLUSION

The revolutionary accident notification system utilizing sensors and instantons images offers a comprehensive solution for accident detection and response. By combining sensor technology with instant image capture, the system provides accurate and timely accident notifications.

The Arduino controller serves as the central processing unit, receiving signals from the sensors and triggering alert messages through a GSM modem. This ensures that relevant parties are notified promptly, along with the exact location of the accident.

In case a sensor is damaged or unable to provide accurate information, the system leverages a camera to capture instant images and GPS location. These images are selectively sent to a designated relative or emergency contact number, enabling them to assess the situation and take necessary actions.

The integrated system architecture ensures effective accident detection, precise location tracking, and enhanced emergency response. By providing visual information about the accident scene and the condition of individuals involved, it enables prompt and informed decision-making, potentially saving lives, particularly in critical conditions.

Overall, this revolutionary accident notification system revolutionizes the way accidents are detected and responded to. It offers a holistic approach, combining sensor technology, instantons images, and efficient communication channels to enhance safety measures and contribute to more effective accident management.

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