



e-ISSN: 2319-8753 | p-ISSN: 2347-6710

# IJRSET

International Journal of Innovative Research in  
**SCIENCE | ENGINEERING | TECHNOLOGY**

A person's hands are shown from the bottom, holding a glowing, semi-transparent globe of the Earth. The globe is surrounded by various digital data visualizations, including bar charts, line graphs, and network diagrams. The background is a dark blue with a grid pattern and some text elements like 'BUSINESS', 'NETWORK SEARCH', and 'WORLD'.

# INTERNATIONAL JOURNAL OF INNOVATIVE RESEARCH

IN SCIENCE | ENGINEERING | TECHNOLOGY

Volume 12, Issue 5, May 2023

**ISSN** INTERNATIONAL  
STANDARD  
SERIAL  
NUMBER  
INDIA

Impact Factor: 8.423

9940 572 462

6381 907 438

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# Accident Alert and Ambulance Tracking System

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**ABSTRACT:** In today's urban regions, the number of traffic accidents has climbed to an unsettling level. If the sufferers are able to get to the nearest hospital as soon as possible, the loss of human life due to accident can be averted. Early accident identification, calling the nearest ambulance and hospital, and finally monitoring the ambulance's route from the accident site to the closest hospital can all help to save lives. To produce satisfactory outcomes, the system's entire process needs to be well-managed and automated. The suggested system uses IoT and deep learning techniques to track the ambulance and detect accidents. Accidents are discovered when the vibration and accelerometer sensor values in the car deviate. Alerts are sent to the closest hospital and ambulance with the help of KNN algorithm. An ambulance is managed by the control unit, which provides an appropriate path for the ambulance and manages the traffic light in accordance with the location of the ambulance, ensuring safe arrival at the hospital. The hospital uses a GPS tracking device to find the ambulance after reporting the accidents. The system encourages automated processes for allocating services without human intervention. Thus, the technology aids in identifying accidents and assisting patients in quickly reaching the closest hospital.

**KEYWORDS:** Accident Detection, Ambulance Tracking, GPS, KNN, Hospital Management.

## I. INTRODUCTION

For a patient's survival and recovery, an emergency occurrence must be handled efficiently and quickly. The efforts of first responders (paramedics), efficient dispatch practises for ambulance vehicles, and information exchanged between an ambulance vehicle, the control centre, and the hospital emergency department all have a direct impact on this. Recent developments in electronic health systems, together with technological advancements and computer science research, can greatly aid the aforementioned problems. Despite technical advancements, mishandling of their delivery during emergencies led to a number of logistical issues. When answering emergency calls, a number of emergency dispatch centres around the world are progressively employing a variety of emergency dispatch procedures. The primary goal of these methods is to guarantee that an incident is properly assessed and handled. In order to automate procedures and further reduce human error rates, there has also been a persistent attempt to deploy a number of priority dispatch protocols through computer-based systems. The main goal was to streamline and modify the emergency call processing and ambulance dispatching processes. Every step of the process, from emergency dispatch through incident handling, has been planned according to particular protocols. In order to support the workflow used for emergency call processing and ambulance dispatch, the presented system has been built and developed in accordance with the needs of the ambulance call centre. An extensive user requirements method was initially finished in order to begin the design and development of the system. Despite the initial definition of user requirements, the development team used an incremental development model because there was a small but easily accessible group of users, while the processes used to handle emergency calls and ambulances were changed during the center's reformation.

## II. RELATED WORK

### COCOMO Model :-

One of the models that is most frequently utilised commercially is the Bohem [Boehm 8] COCOMO Model. The 1981 delivery of the model's initial iteration and the current availability of COCOMO II. The examination of 63 software projects in 1981 yielded COCOMO'81. Basic, intermediate, and detailed are the three stages of the model that Boehm suggested.



- 1. The fundamental COCOMO'81 model**, which computes software development effort (and cost) as a function of programme size represented in estimated lines of code (LOC), is a single-valued, static model.
- 2. The intermediate COCOMO'81 model** determines the software development effort as a function of programme size and a set of "cost drivers" that comprise arbitrary evaluations of project, product, hardware, and staff attributes.
- 3. The comprehensive COCOMO'81 model** includes all features.

the impact of the cost drivers on each stage (analysis, design, etc.) of the software engineering process is assessed for the intermediate version.

The two key equations of the COCOMO'81 model are as follows:

The first is development effort (based on MM, where one person's effort is measured in man-months, personmonths, and staff-months). The duration of COCOMO'81 is 152 hours.

The author has suggested a Nericell a device that can do rich sensing using a smartphone that the user can use to monitor the road and traffic conditions.

generally carries the user. Nericell has overcome certain difficulties, such as virtually moving the accelerometer's position on the phone in any direction and conducting horn sound recognition and positioning in an energy-efficient way. Nericell's sensing function was examined for effectiveness using tests done on Bangalorean roadways, and the findings were encouraging.

Around the world, drunk driving—officially known as driving while intoxicated—is the primary factor in traffic accidents. An effective system for the early detection and alerting of harmful vehicle activities has been proposed by the author in

### III. METHODOLOGY

#### ARCHITECTURE OF SYSTEMS

With the use of sensors, the technology is intended to identify accidents on crowded roadways. Accident information is relayed to the server and an ambulance stationed nearby. Patients are picked up by an ambulance that sends an alarm the closest hospital. The hospital receives notice of the ambulance and monitors it for incoming patients.

Use case diagrams are frequently employed to represent scenarios in which your system or application interacts with outside actors. Use case diagrams, also known as behaviour diagrams, are used to illustrate a series of tasks that a system or systems (the subject) ought to or is capable of carrying out in coordination with one or more external users of the system (the actors). Each use case ought to produce a tangible benefit for the system's actors or other stakeholders

In this system, the accident detection module detects external disturbances, and when it does, a function is run to locate the user's present location using GPS in the location detection module. The emergency services are contacted for assistance using the location information gleaned from the GPS.

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In our system, we initially focused on preventing car accidents, and even after all the precautions have been taken, if an accident does happen, the system still recognises it. In order to prevent the casualty from losing his or her life owing to a delay in receiving medical attention, the system immediately alerts the ambulance service and police station after detecting a car collision. The system is set up in the automobile. Accelerometers are installed for car collision detection, and GPS and GSM modules are employed for reporting. Engine control is handled by a motor (control switch), and warning measures like buzzers and LED lights are employed. These gadgets connect to the main microcontroller (Arduino Uno) unit.

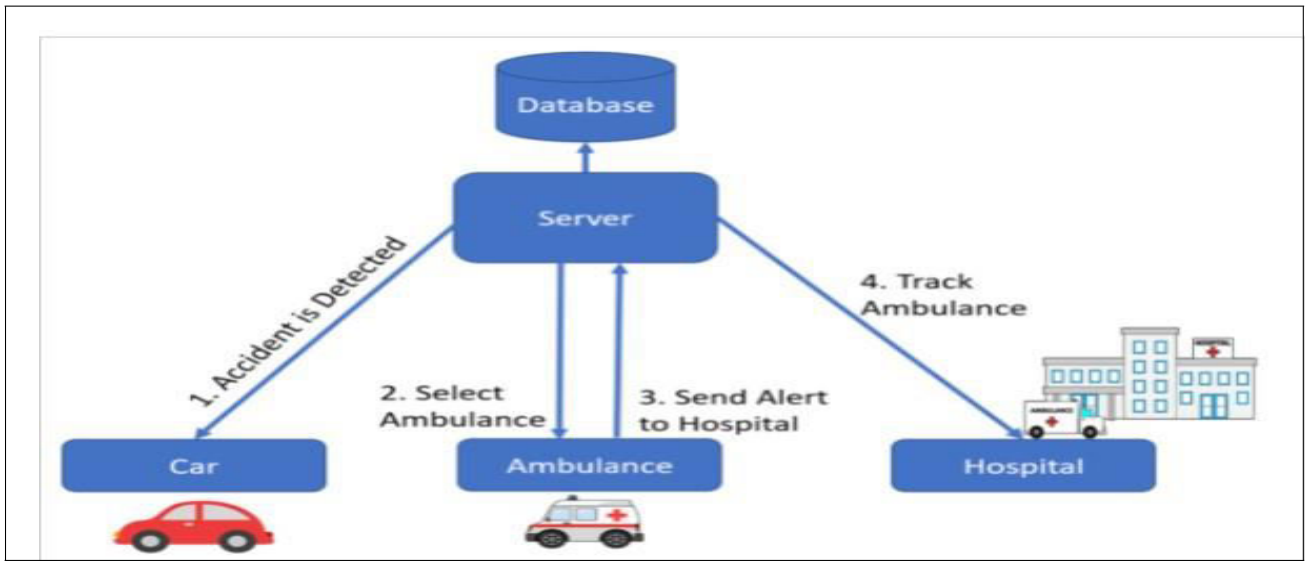
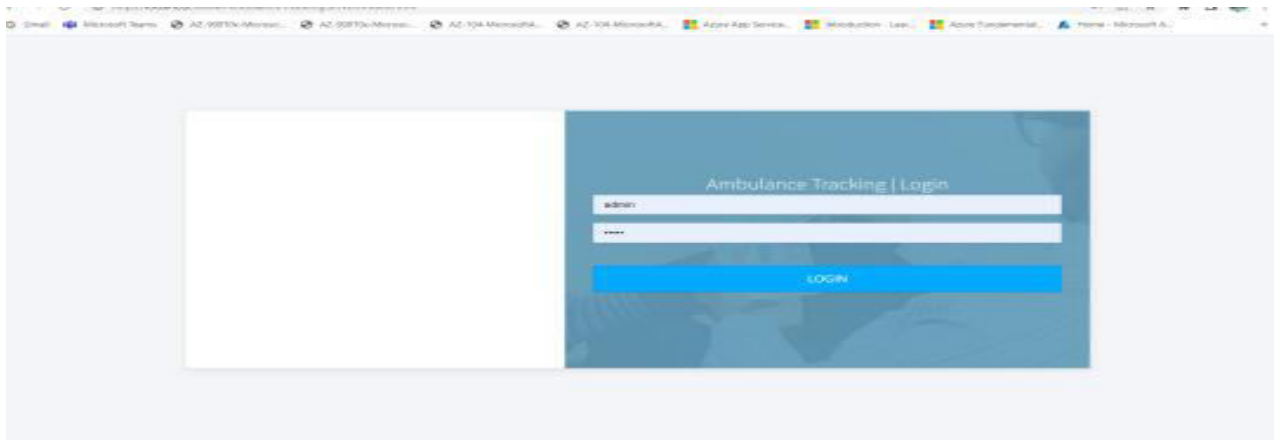
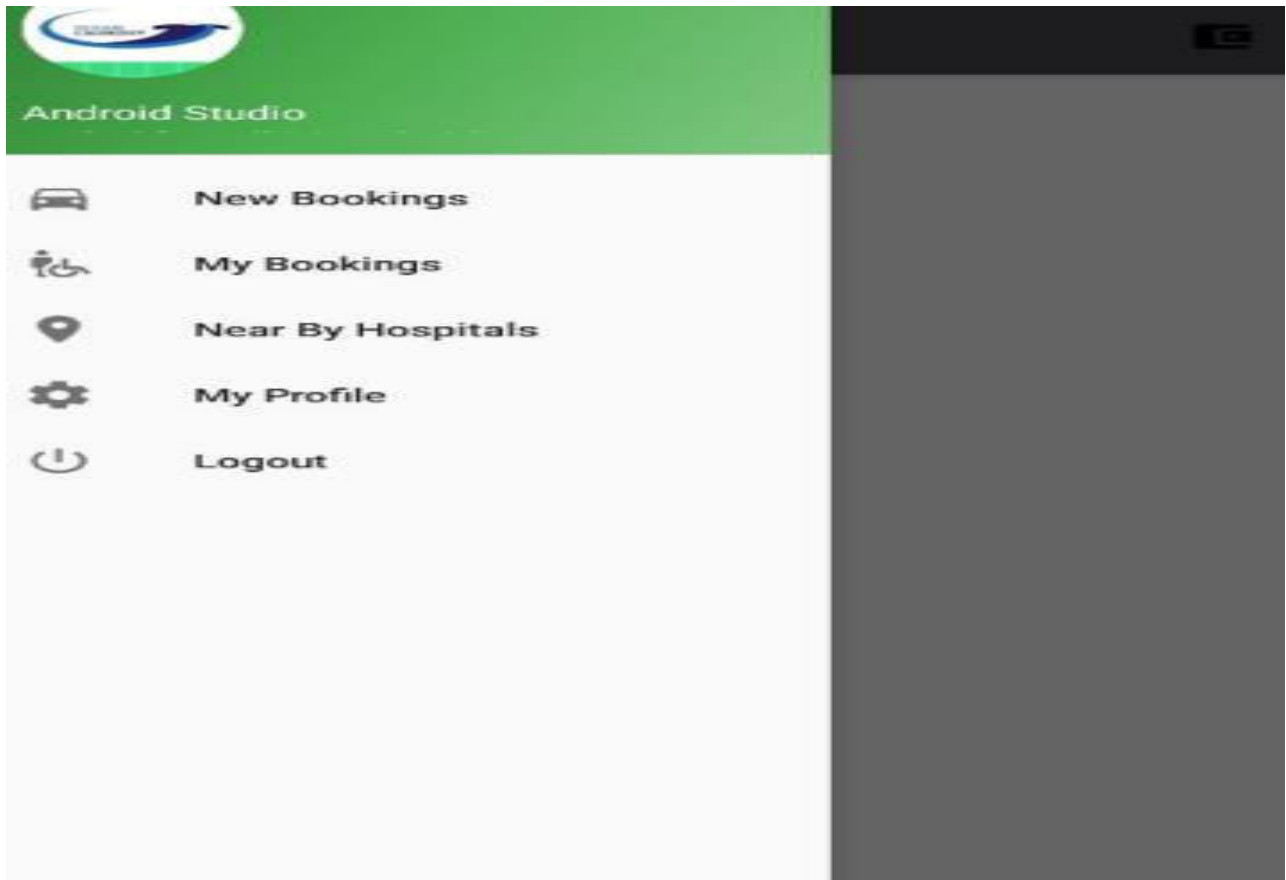


Fig 1 - System Architecture

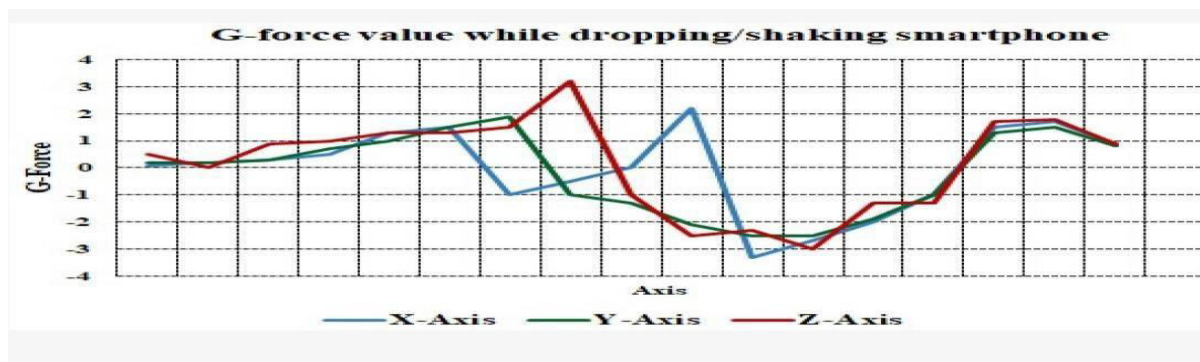
#### IV. EXPERIMENTAL RESULTS



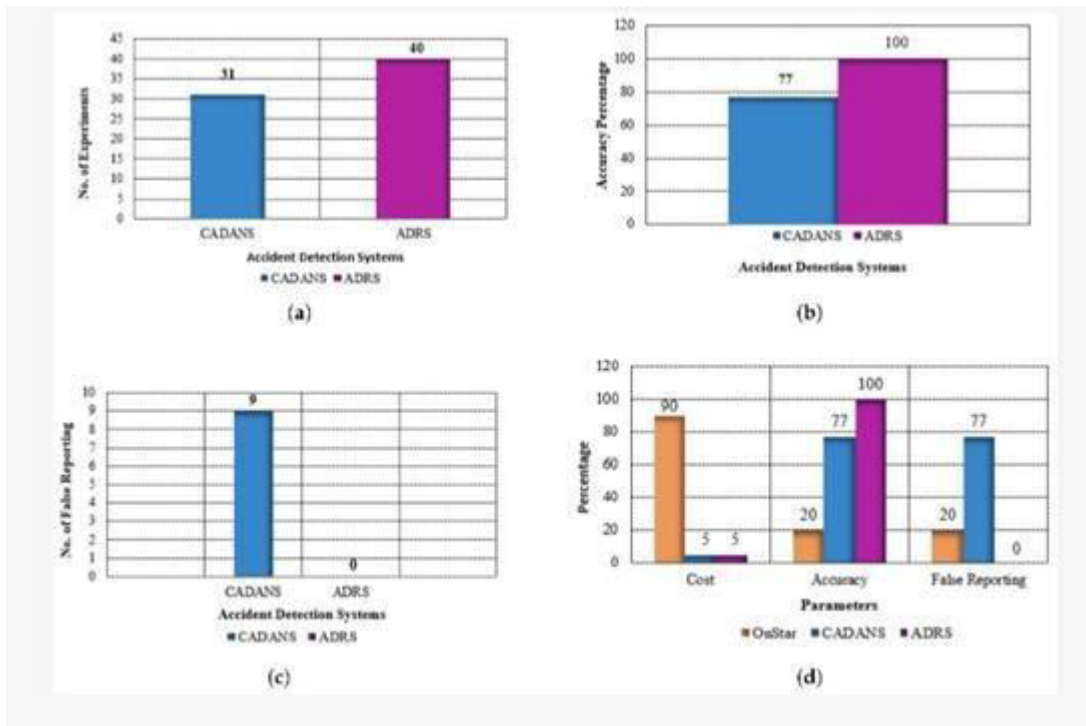
Access Page



Android application



An example 2-D graphic showing the results of an experiment from [9]. The X-axis, Y-axis, and plotting region are the areas of interest in the diagram.



Graph, experimental

FIG. 10: RESULTS OF THE EXPERIMENT. COMPARISON OF ACCIDENT DETECTION, EXPERIMENT ACCURACY PERCENTAGE, EXPERIMENT REPORTING FRAUD, AND PARAMETER-BASED COMPARISON ARE ONLY A FEW EXAMPLES.

## V. CONCLUSION

It is highly likely that shorter ambulance response time intervals result in higher survival rates, individually and as a planning factor, since shorter response time intervals enable less deaths due to accidents. The proposed system detects accident with IoT module to notify nearest ambulance which in turn reaches location and alerts nearest hospital. This system helps victims to get early medical help. Hospital is given early reports about medical condition of patient. Accident emergency section of hospital can be well managed with this system. The system helps to save lives.

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