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Survey towards Accident Detection and Ambulance Tracking System

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ABSTRACT: Nowadays the road accidents in modern urban areas are increased to uncertain level. The loss of human life due to accident is to be avoided if the patients are able to reach nearest hospital at earliest. For same the detection of accident at earliest, alerting nearest the ambulance, alerting nearest hospital and at last tracking the travel of ambulance from accident spot to nearest hospital can help to save precious lives. The process for whole system needs to be well managed and automated to give full-filling results. The proposed system uses deep learning and IoT methods for detecting accident and tracking the ambulance. Accident is detected when the values of sensor related to accelerometer and vibration in car deflect. The Nearest Hospital and Ambulance is alerted with help of KNN algorithm. The ambulance is controlled by the control unit which furnishes adequate route to the ambulance and also controls the traffic light according to the ambulance location and thus reaching the hospital safely. The hospital after conveying the accidents tracks the Ambulance with help of GPS system. The system encourages automated process without any human intervention for allocating services. The system thus helps to spot accident and help patients to reach nearest hospital at earliest. algorithm.

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

I. INTRODUCTION

The effective and quick handling of an emergency incident can be crucial for patient's survival and recovery. This is directly affected by the work of first responders (paramedics); the effective dispatch procedures of ambulance vehicles, as well as data interchanged between an ambulance vehicle, the control centre, and the hospital emergency department. Recent advances in electronic health systems along with evolution in technology and research in computer science is something, which can significantly help the aforementioned issues. Despite the technological advances, several logistical problems appeared in emergencies due to failures to coordinate their distribution. In order to address these issues several emergency dispatch centres around the world are increasingly using several forms of emergency dispatch protocols when handling emergency calls. The main objective behind these protocols is to ensure that an incident is appropriately evaluated and responded. In addition, there has been a consistent effort to implement several priority dispatches protocols through computer-based systems in an effort to automate processes and further minimize human error rates. The main purpose was to reforms and optimize the procedures of emergency call handling and Ambulance dispatch. All procedures starting from the emergency dispatch and moving to the incident handling have been organized using specific protocols. The presented system has been designed and developed according to the needs of the ambulance call centre in order to support the workflow followed for emergency call handling and ambulance dispatch. In order to start the design and development of the system an extensive user requirements procedure was initially completed. Despite the initial definition of user requirements, the development team followed an incremental development model since it was a concentrated group of users easily accessible; while the procedures followed during emergency call handling and ambulance were modified during the reformation of the centre.

II. RELATED WORK

SMART HELMET WITH REAR VIEW AND ACCIDENT DETECTION SYSTEM FOR INCREASED SAFETY [1]
This paper presents a smart helmet to show the rider his rear view using a raspberry pi camera. A speed limit indicator

will help the rider stay within safe speed limits. Accident detection system is implemented by means of a heart rate sensor. In case of an accident an automated SMS will be sent to the relevant authorities using a GPS and GSM module. The heart rate sensor is also used to detect drowsiness and a vibrator alerts the rider to stay awake.

REALTIME ACCIDENT DETECTION AND ALARM GENERATION SYSTEM OVER IOT[2] With the application of machine learning processes and communication advancements, there is scope for the development of a more accurate system. In this chapter, a model is presented based on IoT devices that can sense and predict the pre-collision state and generates an alarm message about the collision is going to occur. This model is designed to extract image/video features to determine the possibility of occurrence of a collision. This model is also efficient for post-collision.

SIREN TRACKING SYSTEM WITH EMERGENCY SUPPORT USING SELF-ORGANIZING MAP[3] For this system, Authors developed a mobile application, named Siren Tracking system with Emergency Support (STES), to allow users to track ambulance sirens, for drivers on the road. In order to examine the system performance, they subject the system on some real-time scenarios, using St John ambulance sirens. Based on the experimental results, the system is shown to be able to reliably localize the location of the ambulance car.

A COMPREHENSIVE COMPOSITE OF SMART AMBULANCE BOOKING AND TRACKING SYSTEMS USING IOT FOR DIGITAL SERVICES[4] Authors propose an app-based real-time interface that will be made ambulance bookings easier in inimical situations and the definite algorithm will serve crowd management making ambulance ready to go for every patient. We are on a verge of digital evolution and smart ambulances require the hour and will prove an essential addition to the smart grid technology.

SMART AMBULANCE FOR TRAFFIC CONTROL AND TRACKING BY GPS THROUGH IOT[5] This project is related to technologies like big data and the Internet of Things for efficient database operation. This work helps in controlling the traffic lights when the ambulance reaches the pre-destined location, and also, the location of the ambulance is spotted by the driver. Additionally, the selection of a nearby hospital is made with the help algorithm.

III. METHODOLOGY

The system is designed to detect accident on busy roads with help of sensors. The server is notified about accident and nearby ambulance is notified about accident. The ambulance picks up patients and sends alert to nearest hospital. The hospital is notified and tracks ambulance for incoming patients.

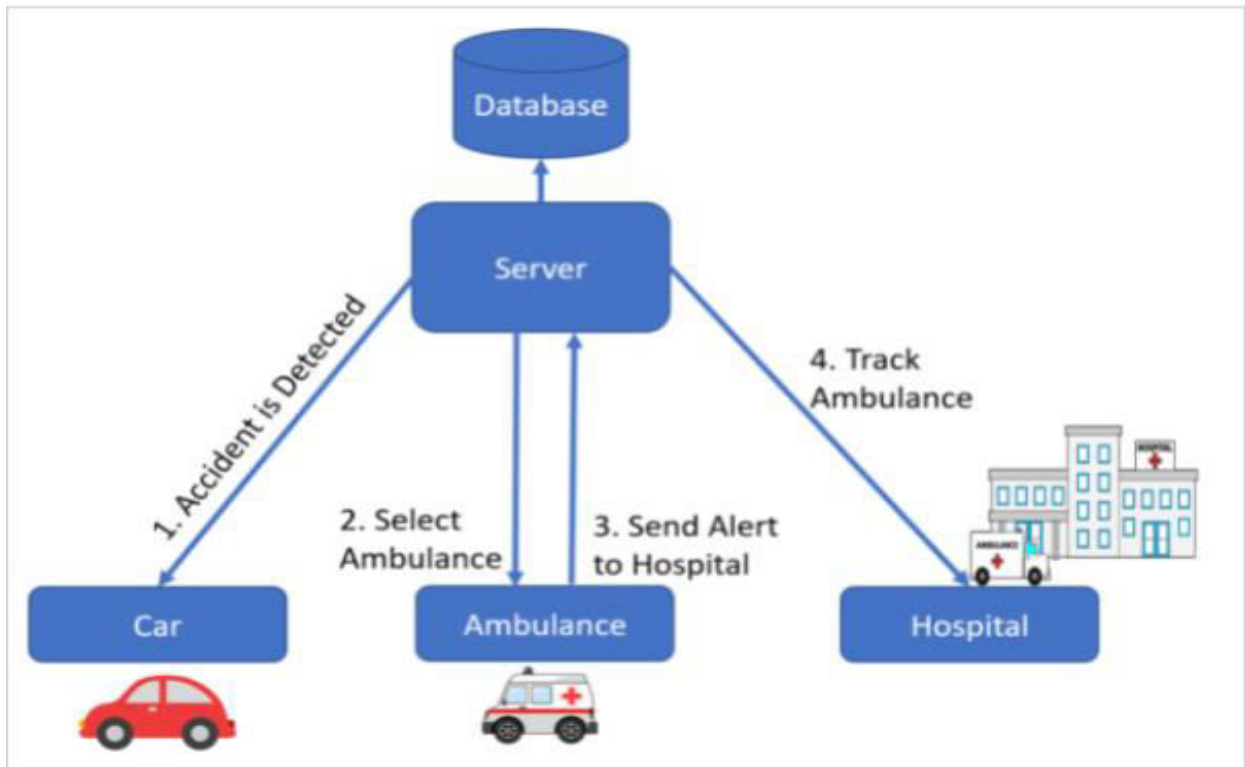


Fig1: System Architecture

IV. RESULTS

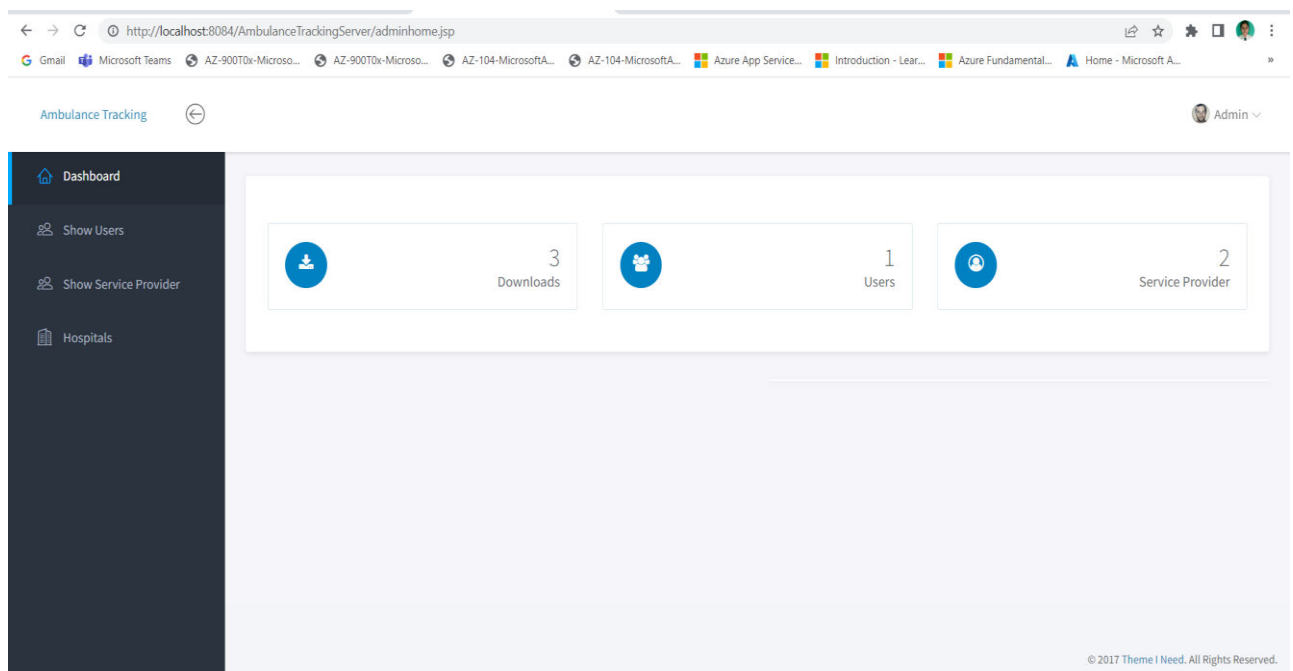


Fig 2: Dashboard

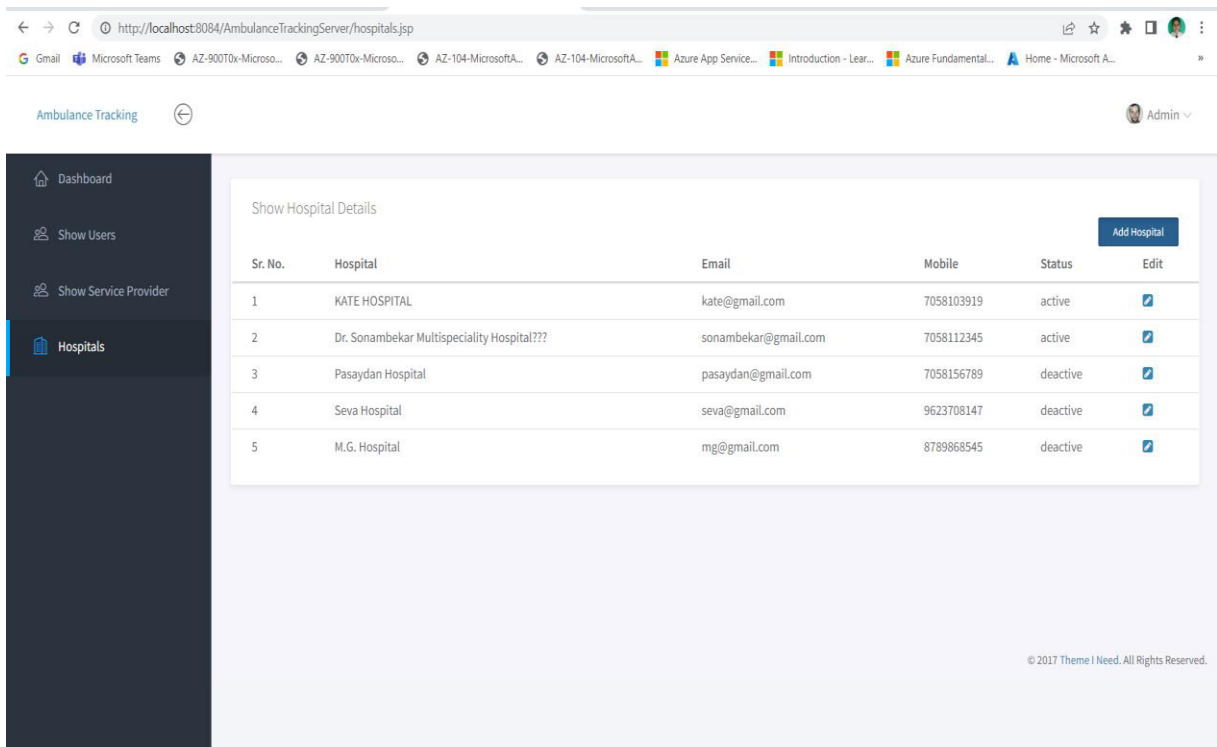


Fig 3: List Of Hospitals

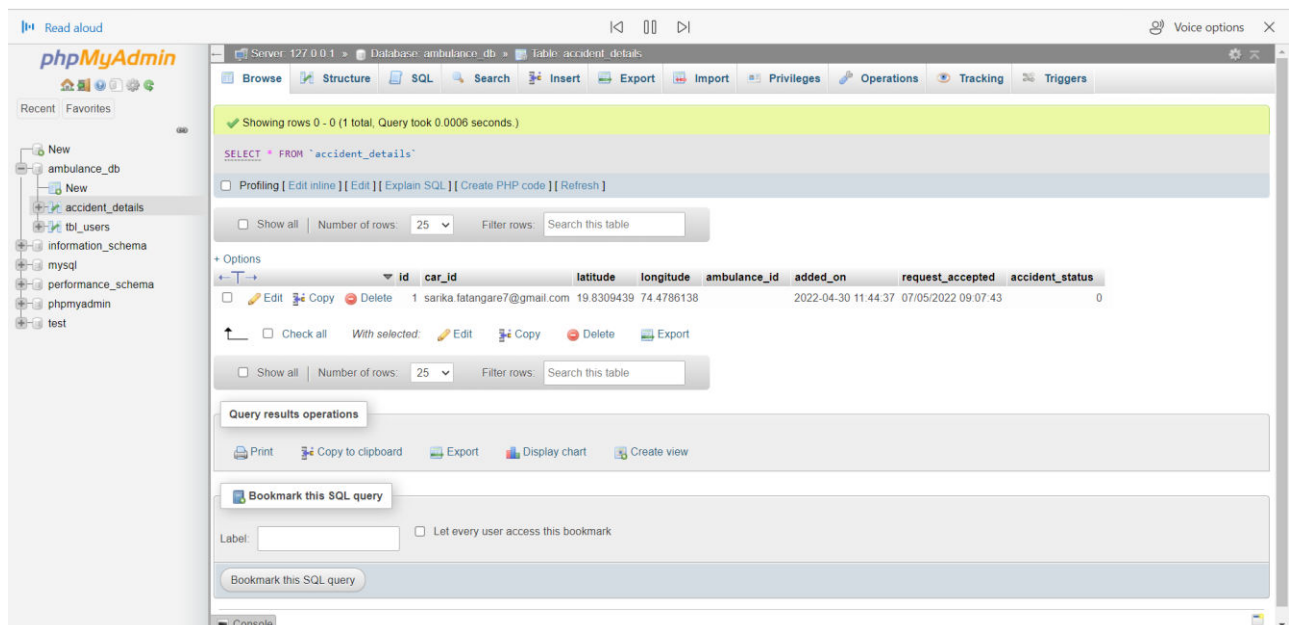


Fig 4: Details of Accidents

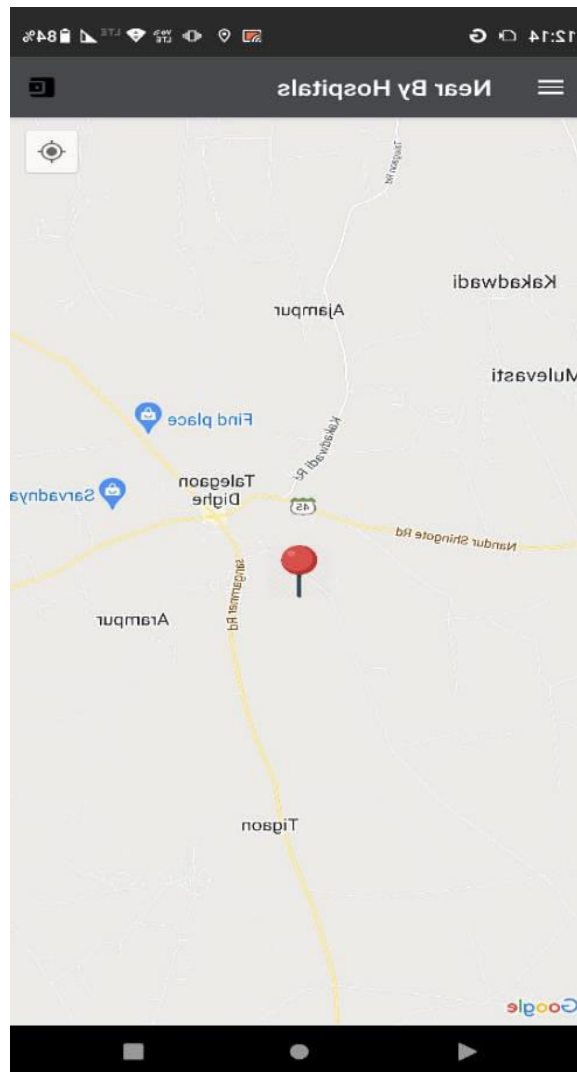


Fig 5: Location Of Accident

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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