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IOT BASED VEHICLE LOAD BALANCING & ACCIDENT DETECTION

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Abstract- In this project, propose system implementing an IOT based vehicle load balancing and accident detection. This system using Load cell sensor, Vibration sensor, Web camera, Arduino Microcontroller, and Android App. Our application focus on to providing them more convenience with vehicle. It provides load balancing tracking information to admin so that they may not get overload. Also we will detecting the accident and capture the image and send to the admin. Design load balancing system, which will track the load of the vehicle using load cell sensor. Design vehicle accident detection system, which will detect the accident of the vehicle using vibration sensor and capture the vehicle accident image through camera.

Keywords: *IOT, Load Balancing, Vehicle Accident Detection, Arduino, Vibration Sensor, Load Cell Sensor, Cloud Server, Android App*

I INTRODUCTION

About million people die each year as a result of vehicle load limit exceed that's why road traffic crashes, drivers being drunk, traffic signal, etc. The aim of saving millions of lives by improving the safety of roads, vehicles, loads, accident detection, and accident avoidance. In this project, propose system implementing an IOT based vehicle load balancing and accident detection. This system using Load cell sensor, Vibration sensor, Web camera, Arduino Microcontroller, Android App. Our application focus on to providing them more convenience with vehicle. It provides load balancing tracking information to admin so that they may not get overload. Also we will detecting the accident and capture the image and send to the admin.

II PROBLEM DEFINITION

Accident occur as public do not follow the load limit, traffic rules, like not maintaining a proper braking distance between two vehicles, they also fail to follow the traffic signals when it is RED, also due to the fast life everyone is in a hurry of reaching the destination in time. This implementation is aimed at a real time usage of vehicle load balancing and accident detection system using IOT.

III GOALS & OBJECTIVES

- It detects the vehicle load balance and sends information to the server and admin.
- It detects the accident and sends information to the server and alert message to the admin.
- After accident camera is automatically on and capturing accident image.

IV LITERATURE SURVEY

With the rapid development of the market economy, the volume of road freight is growing rapidly. At the same time, the overloading of trucks has become more and more serious. It is necessary to accurately monitor loading capacity in real time. Although the truck weighing technology has achieved a breakthrough in theoretical field, it made high financing costs and low accuracy. This paper presents an optimized method for dynamic measurement of truck loading capacity, which is mainly applied to accurately calibrate the load sensor, analyze the real-time dynamic data collected from trucks, and significantly improves the measurement accuracy of the truck load. [1]

For the sake of monitoring truck loading imbalance, a truck loading balance detection system based on TPMS (Tire Pressure Monitoring System) is developed. A judging module for loading balance is added in the TPMS processor, which can calculate the corresponding wheel load according to the change of tire pressure signals before and after loading, so that the balance of each wheel load sharing can be judged. The solving method of judging load balance is proposed in the thesis, the method of matching and calibration of the system are considered, and the results shows that the monitoring system is practicable and can judge lorry loading balance exactly. [2]

In order to Real-time monitoring of vehicle load status, device for measuring suspension displacement with overload protection function had been operated on collecting information of vehicle axle load in this research, then the axle load signal with noise was filtered by using the EMD method and steady-state values of load were obtained. A monitoring system of vehicle load status was designed on FAW truck based on above key technologies. The system uses the vehicle terminal microcontroller acquisition and processing axle load voltage signal which sensor output, processed load information was output to the PC and displayed by the Human-Computer Interaction to achieve the purpose of real-time monitoring of the load status. Finally, system was tested in the conditions of different load, speed, type of road; measurement error is less than 5% that meet the requirement of real-time monitoring of vehicle loading status. This research laid the foundation for follow-up development of vehicle early-warning technology. [3]

In speedy moving world, mainly accidents are occurring due to over loaded heavy duty vehicles. To meet the state of the art problem we have to develop a new setup with high accuracy, and cheat free mechanisms has to be adopted. Devices designed have to be even fast and convenient. The devices that are available in the market are much prone to errors. The electronic truck scale is much more applied to weighing measurement systems in all walks of life. The main problem with that of the existing setup is that the fabrication and that the devices values could be easily altered. Owners of the heavy duty vehicles do such things for mere profit but the problem is that when the driver of the overloaded vehicle is not in a position to have control over the vehicle, which results in road accidents. A perfect system required to have a control over the problem, in proposed system, many cheating methods are analyzed and anti-cheating monitoring system of the electronic truck scale is designed. The added advantage of our setup is that the information about the accident is also sent to the owner and the nearby emergency center using GSM and GPS. According to a survey made more than 73%of the highway accidents are due to over loaded vehicles and we assure that our proposal satisfies our requirements. [4]

The suspension systems of production automobiles and trucks are designed to support the comfort and safety of human occupants. The response of these vehicles to the road surface is a function of vehicle loading. In this research we demonstrate the automatic monitoring of vehicle load using an optical sensor and a speed bump. This paper investigates the dynamics of vehicle response and describes the software developed to extract vibrational information from video. [5]

V PROPOSE SYSTEM

In this project, propose system implementing an IOT based vehicle load balancing and accident detection. Design load balancing system, which will track the load of the vehicle using load cell sensor. Design vehicle accident detection system, which will detect the accident of the vehicle using vibration sensor and capture the vehicle accident image through camera.

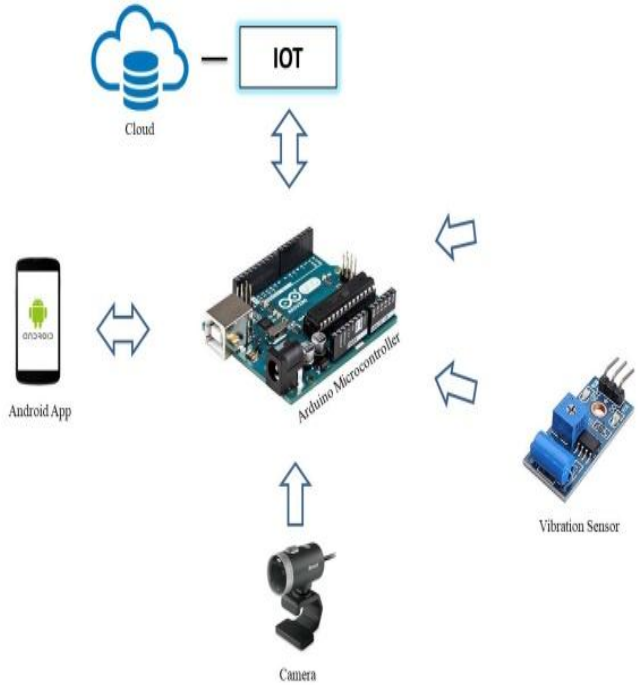

Figure 1: System Architecture

VI. ADVANTAGES

- It detects the vehicle load balance and send information to the server and admin.
- It detects the accident and send information to the server and alert message to the admin.
- After accident camera is automatically on and capturing accident image.

VII. APPLICATIONS

- Truck
- Container
- Bus
- Travels
- Car
- Bike

VIII RESULT

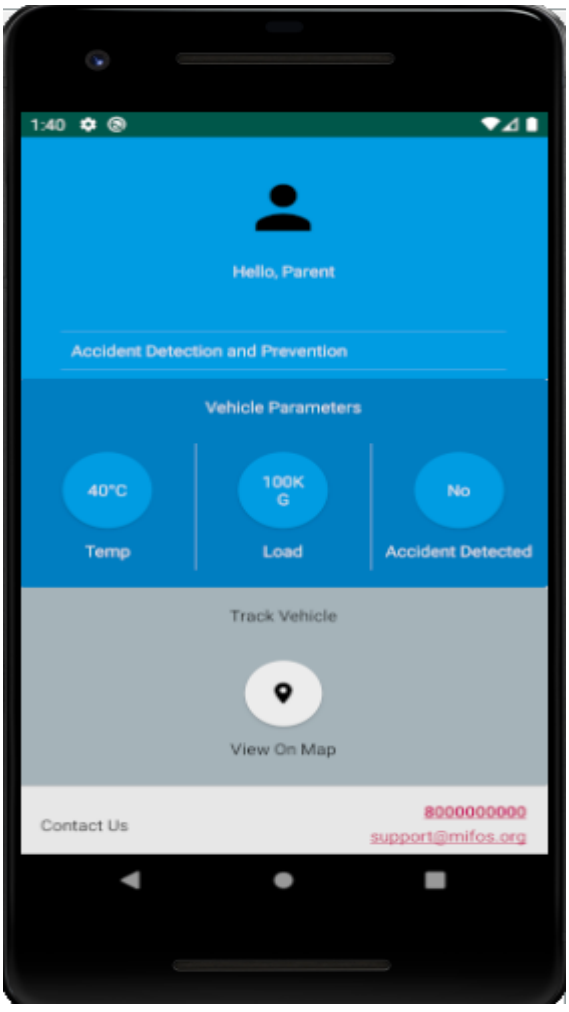

Figure 2: Parent Page

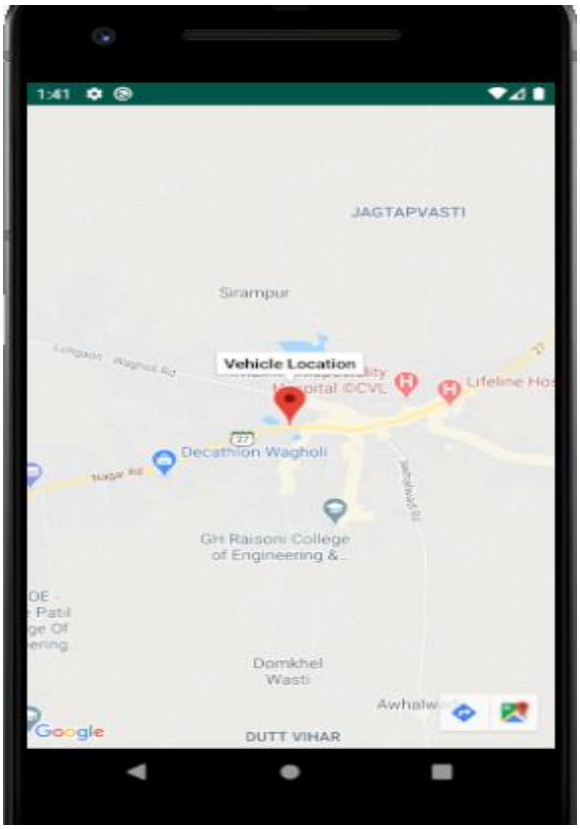

Figure 3: Vehicle Location

IX. CONCLUSION

This project is made with pre-planning, that it provides flexibility in operation. This innovation has made more desirable and economical. This project "Tacking load balance, and accident detection system using IOT" is designed with the hope that it is very much economical and helpful for passenger and as well as conductors and driver during journey.

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