A Survey on Vehicle Monitoring System in Real Time

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Abstract: *In today's situation road injuries has become more common. Most of the accidents happen while the speed of the vehicle exceeds. Despite many years of reformative rules concerning the protection of motorists and immense efforts with the aid of using producers to enhance automobile protection features, motor vehicle accidents related to speeding claims approximately 4 lakhs cases every year and claims 1.5 lakh deaths. This paper presents a detailed survey on various actions taken by using the sensors to inform the owners while over speed, alcohol consumed, drowsiness, eye blinking soon.*

Keywords: *GPS, Internet of Things, Cruise Control System, Smart Driving, Autonomous*

1. INTRODUCTION

The most of the accidents is capturing towards every day in accompanying with the evolving security care while on the journey road. Such studies gives an answer for maximum of those and also with Intelligent Vehicle Monitoring System Using Global Positioning System together with Google Maps and Cloud Computing which collects beneficial records approximately a automobiles.

Vehicle monitoring structured have introduced GPS era to the everyday lifestyles of the human being. This very day GPS outfitted cars; rescue squad vehicle, fleets and police cars are normal visual perception on the roads of advanced nations. Known with the aid of using many names including Automatic Vehicle Locating System (AVLS), Vehicle Tracking and Information System (VTIS), Mobile Asset Management System (MAMS), those formation provide a powerful device for enrich the functioning performance and utilization of automobiles.

The mode of transport is a necessary part of our everyday lifestyles and its increase drastically every day. The situation of extended automobile mass in Bengaluru from 2007 to 2019 is proven in Fig.1 On account of extended automobile bulk and rush driving reasons greater injuries. The probability reviews of occurred accidents are taken place are shown in Fig.1.2.Accounted for lot of reasons behind it.

The Indian roads are not changed up to the predicted level except the national highway, at the particular period of driving the vehicle that is like use of cell phone, drinking and driving, ignore of traffic laws and regulation, maximum speed which is hazardous on one's own security and that of others and many more. In spite of it permitted speed limit at fixed areas are displayed in sign form by traffic control system. For example in residentiary areas and market places fastness

speed should be permitted upto20 km/hr to 30 km/hr. Secondary in the zone of school and hospital speed limits are kept up to 30 km/hr to 40 km/hr and so on. Nevertheless, sad to say most of the drivers are certainly not for distracted the rule of speed limit at particularize areas mentioned by the authority and causes the accidents. These accidents are happen growing because the entire control of the speed of the motor car is in driver hand. The operator of automobile do not lower and control the speed in restricted areas as per rules.

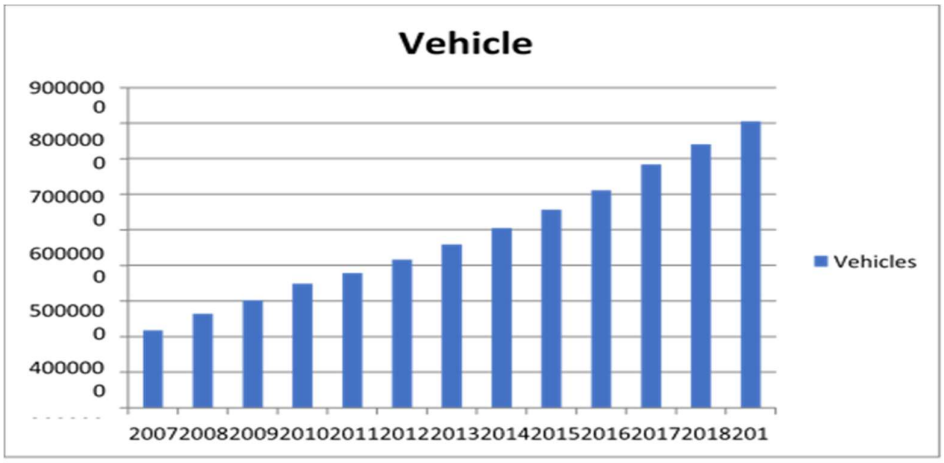
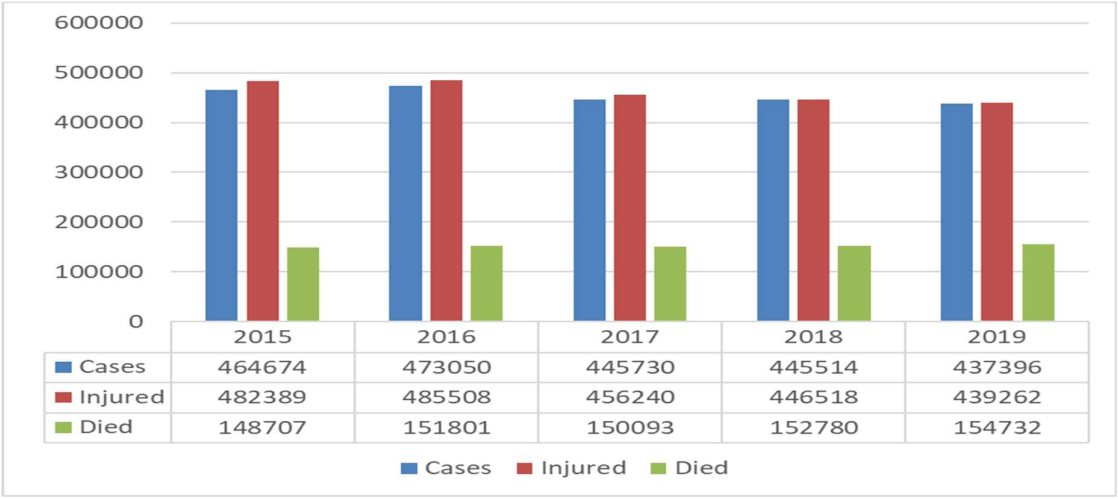


Figure-1.1 Vehicle density in Bengaluru from 2007 to 2019



	2015	2016	2017	2018	2019
Cases	464674	473050	445730	445514	437396
Injured	482389	485508	456240	446518	439262
Died	148707	151801	150093	152780	154732

Figure-1.2: Road Accident Cases, Person Injured and Person Died during 2015-2019

2. LITERATURE SURVEY

2.1 Advanced Vehicle System Based On Embedded Technology

The vehicle are stolen when the vehicle are left improperly secured and unattended. Most thefts occur when vehicles are parked on streets or at a unsafe place. To solve this problem the researchers have come up with advanced vehicle system based on embedded technology. When this device is installed in vehicle it helps to track the location of the vehicle and the vehicle engine automatically turns off for safety. It also monitors the fuel of vehicle and it helps to know the distance between the vehicles in front while drivers.

The position and location of the vehicle will be detected by GPS and GSM. This system will have a continuous data of motion of automobile vehicle and can report the condition of the vehicle at any time. When the vehicle is stolen, the vehicle owner will send a SMS to the control unit. Once the SMS reaches the controller, the controller issues the needed and sends the control system to stop the vehicle engine and sends SMS to the owner and police about the status and location of the vehicle. If the vehicle has to work or to open the doors, the authorized person should provide the password to the control unit. By using that password the vehicle will restarted.

2.2 Real Time Vehicle Tracking System Using GSM and GPS Technology: Anti-Theft Tracking system.

The theft of vehicle it has been worldwide business where the theft vehicle is imported and exported for their parts. To solve this problem the actual time vehicle follow system using GSM and GPS technology was designed. The automobile tracking system is station in the automobile to permit the owner or third party to track the place and its position. The trail device is a electronic device which would be a low cost device of tracking and which works as anti-theft system and it operate using Global Positioning (GPS) and Global System for Mobile Communication (GSM) mechanization. When vehicle is stolen the tracking device will carry on supervising a on the move motorcar and report the level of motor vehicle on order. For execution this an AT89c51 microcontroller is interlinking sequential to a GSM modem and GPS receiver. Where the GPS helps to give input of latitude and longitude and indicate the locality of the automobile. The same information is convey to the cellular telephone at the other end where the spot and location of the automobile is requested. When the invocation is sent by the user the number at the GSM mode, the system instinctively sends a reply to the cell number recommended the location and site of the vehicle in real time.

2.3 Accident Alert and Vehicle Tracking System

An accident is an unexpected act in nature. Accidents can cause injuries like physical injuries, physical disabilities, trauma, unconsciousness and death. To solve this problem in this paper they had come up with a new application of which the early accident can be detected. When the accident is because the vehicle is detected and lay hold of loaded information from the space station and reserve the latitude and longitude in AT mega 16 microcontroller shield. If we have traces the vehicle we need to send the communication to GSM tool, by which it gets operated. It also start off by detecting accident by the shock sensors which is link to Raspberry Pi, parallels activates GPS with the assistance of impart. Once GSM gets turn on it saves the location and

last collected latitude and longitude position worth from the barrier and transmit message to a main emergency dispatch sever which is established in advance in the program. Once the vehicle is tracked the emergency medical care is send off to the accident place this can save the life's and it is a important factor in the survival rates after accidents. The sever is set up by using Raspberry Pi, vibrations sensors, GPS and GSM components to expose traffic accidents.

2.4 Review of Accident Reporting and Prevention System

Accidents are one of the main cause of death rate to increase. The accident occurs due to carelessness, breaking traffic rules, speeding, drunk-driving. When accidents occur and if emergency services gets information's regarding the accident location and status on time, they can reach the accident location on time and rescue the injured. At the same time when the accident occurs the extremity medical teams are transmittal to the accident locality immediately. By terminating the time between an accident incident and the initial replies are dispatched to the location lowering morality rates so that can save the life. In this paper observing on present system for accident reporting and prevention to compile with new system. In this paper they are also thinking of coming up with a new system to reduce the time of occurrence such as intimating to law enforcement agency , traffic department, family, hospital and many more aspects.

2.5 Secured Luxury Transporting System

In daily fast existence, the mode of transporting the well-being and safe keeping plays an main role, hence we tendency to provide a good protection system while travelling day by day the vehicles are increasing rapidly for transporting in the same way the safety accessories should also increase to protect. Before it used to be seatbelt, AC, glove compartment but now the safety has increased to like airbags, speed limiters, warning alerts, alarms, biometric locking system and many more. Before it was only a fuel vehicle but now there are electric and LPG transporting vehicles. If the driver is under the influence of alcohol consumption, the sensors which are inside the vehicle will give warning signals and alert the authorized person. An IR sensor is used to determine the immovable hurdle in front of the vehicle and warns about the obstacle which makes the vehicle stop automatically. In luxurious vehicles, the vehicles are modified to compartment protection and security by merging the survive modules. The main aim of this project is to prevent accidents due to collisions of vehicle with any static obstacle. This includes vehicle reversing mechanism too.

2.6 Real-Time Based Smart Vehicle Monitoring and Alert Using GSM

Vehicle tracking in real-time system is a well-established technology in today's world where smart vehicle monitoring helps to secure the vehicle. When the vehicle is stolen it is continuously monitored and tracked by using GSM. When the GSM sends the site of the automobile from the inhospitable region. When the request send by the user to the main server or to the integer at the Ethernet in the form of text message, The network impulsive convey alert by Short message service to the cellular number specify the location of the motor vehicle via SMS. This vehicle tracking system is total Security. It can also help the vehicle owner to get data about the vehicle on real time.

2.7 Vehicle Tracking and Locking System Based on GSM and GPS.

The major objective of this paper is to protect and trail the car when it is thieve by using Global Positioning System (GPS) and Global System for Mobile Communication (GSM). Such system helps in continual observing a moving transport and give data about the automobile on want. Where GSM modem is used to send the area of motor vehicle and GPS modem is a space capsule hi-tech for its yachting structure will provide facts on longitude, latitude and velocity interval moved. Such system will send all the data to the authorized person. When extortion is recognize the authorized person forward text massage to the microcontroller, then microcontroller will receive the control signals to halt the vehicle. If the vehicle has to restart only it happens when authorized person give the permission.

2.8 Obstacle Avoidance with Anti-Theft Mechanism System and Cabin safety System for Automobiles.

Now a days every vehicle owner will look for safety along with security. The main aim of this project for safety and security of vehicle by integrating and modifying existing systems. The main loss of vehicle due to obstacle. To avoid the obstacle the obstacle sensors are customary to sense the fixed barrier in front of the vehicle such that accident result in unwanted parking of the vehicle and obstacle especially in the dark time might be ignored. This obstacle can be noticed utilize by sensors like ultrasonic sensors. Anti-theft mechanism system where help owner to protect the vehicle by anti-theft mechanism system like bio metric locking system and use of GPS and GSM tracking system can track the vehicle before or after the accident. The cabin safety system in automobiles are safe if accident occurs the people inside the cabin can be safe and it can also determine people present inside the vehicle and whether seat belts are being used. This system is very helpful to prevent accidents.

2.9 RFID Technology Applied to Monitor Vehicle in High ways

The foremost intention of this exploration is to monitor the speed of vehicle and RFID is mainly applied to Highway management. RFID is a portable non-contact system. The data is transfer using transmission frequency electromagnetic fields from a tag link to an device, for the purpose of automated spotting and follow. The tags work through accumulator and also capability by the ionizing radiation fields used to read them. RFID present welfare over manual systems or use of bar code. The label can read when vehicle passes close to a reader or bar code even if it is enclose by the or not seen. This system is mainly used in highways administration which can attain efficient and smart, can lessen the accidents and to enhance road security.

2.10 IOV based Dynamics Batch Formation and Scheduling Technique for driverless vehicles

The driverless vehicle is also known as the autonomous vehicle, it's a self-driving car and it operates and performs itself without any human help. This analysis propose an program for mechanized drive traffic control and get rid the require for traffic signal. Here are feasibility of easy traffic regulation system that plan vehicle dynamically hang on their speed and conduct of their vehicle within the system. Batch formation helps to guarantee collisions free motion of vehicle span of lower fuel utilization This paper prove more effectiveness on keep up a stability between traffic stream regulation and energy expending. In driverless vehicle with benefits of automatic road traffic control avoids accidents a main cloud server will communicate with the vehicle when vehicle approaches the traffic signal and control the speed of vehicle to enlarge

the planning of traffic flow. The server is set up by using Raspberry, pi, X Bee communication modules to communicate between vehicle and server.

2.11 Integrated Real-time vehicle speed control system using RFID and GPS

The chief intention of this project is to reduce road accidents. Such work put forward an comprehensive submission to productively to hold on the speed of automobile at different rate based on the uttermost speed limitation. With the help of RFID unified with GPS detector in the motor can control the speed the vehicle based on its speed limitations in a specific site. A interface resembling an programmatically controlled road vehicle with customized speed restriction are handed-down. RFID viewer which is interior the automobile takeover the encoded signal from the RFID label that is set down at the speed controller zone and spontaneously controls the speed of the motor car, when the motor car approaches the nearness of RFID tag the work also replicates speed control through GPS data. Therefore by using RFID and GPS locator the real-time vehicle speed can be controlled.

2.12 Over Speed Monitoring System

The over speed is major cause for the accident normally on highway, there will be definite speed limits to be stick to depending on the particular place then to drivers will not follow the rules given by the traffic control department careless of drivers many life's will be on risk and his /her own life. To solve this problem this research is designed and execution of a system which provide easy way to traffic officials for observing the over speed vehicle from the control space itself. When the vehicle is entering the place by over speeding, the over speed monitoring system calculates the speed and GPS correlate incessantly which helps to find the vehicle at the exact location. There are speed limits at every location for safety reasons. The speed and the synchronize of the automobile is calculated and save in the recollection cards and if the channel is over speeding, the driver is alerted by warning signals and a buzzer indicating that he has crossed the speed limit. If the driver still does not acknowledge the speed limits a message will be sent which includes the channel enrolment number, GPS synchronize at where the driver exceeds the speed restriction and is sent to the traffic officials.

2.13 Intelligent vehicle monitoring using Global Positioning System and cloud computing

In day to day life are increasing to solve this problem this research provides a solution with a whip-smart automobile observing using Global Positioning System and utility computing. Which collect data /information about an vehicle. The details like fuel quantity, operator state and condition of tire coercion. This also gives us a virtual information on vehicle location, speed, position of vehicle. The sensors identity fuel level of vehicle which helps the driver to know the fuel level. If fuel level is low it indicates a warning signal to the driver.

The alcohol breath sensors are used to associate either the motorist is drunk or not. If the sensors determine any alcohol consumption the gadget will instinctively generate warning signals to the motorist and also the particulars is passion to cloud server. The sensors will identify the place the driver will currently be and help to navigate his route to reach his destination. It also helps the driver to know the distance travelled and also calculate the reaching time from the current location to its destination by calculating the speed of the vehicle. Once the sensors monitor the vehicle that data is transmit to cloud server using GSM empower device.

All the automobile are provide with GPS antenna for identifying the spot and GPS antenna passion with GPS space station for forwarding data and spot information. The GPS satellite impart the signal to certain access point. The GSM network supports both change voice and no voice appeals. The server is keep up in cloud configuration and it is inter web based computing where give out data and details are given to computer and other appliance on command.

2.14 Advanced vehicle control with an optimized speed profile using Road characteristics for Road departure prevention

Road departure are often in highway which occurs after a vehicle crosses an edge line or center line or otherwise leaves the travelled way. To solve this problem firstly we have taken a road characteristic in to account, dispute being and prime subscriber to a channel energetic.

This tasks present machine controller to assist road side departure throughout encompass the path segment and acridness to estimates the channel guarded operating speed. An advanced speed account cause a speed track to admit the automobile to successful steer the district. The major benefaction in this effort is a fore telling speed control system. Therefore the authority system utilises an operative friction based on the roads ISO classical and an LQR based optimism speed portrait originate.

This is an advanced technology can control the vehicle by using speed profile by classified of road roughness and it is done and put forward by the Global Organization for Standardization (ISO), ISO 8608 is used as a standard.

2.15 An IOT-enabled intelligent automobile system for smart cities

The proposed system includes many embedded devices in automobiles and keep track of different feature including speed, span, seatbelt, door lock, airbags and hand breaks etc. Artificial intelligence (AI) is interrelated with Internet thing's is the future most of upgradable application advanced for transportation industry to upgrade act and security. The main important of this to advanced fresh technology that can upgrade the current automation at this time in automobiles at low cost.

In the present technology there is a stored actual-time information in cloud and motor can adapt to different circumstances from the stored data. And with the help google assistance user can make his easier like lock, unlock start and stop and alerts the driver about vehicle and fuel level of vehicle. This system will have more positive impact on automobiles industries and society.

This current product have satisfied many objects like: Voice commanding google assistant. Live vehicle location details (GPS, GMS) Current condition of vehicle. Lane collision detection. Security of vehicle. In order to support a actual -time response the Internet of things IOT automation the best way.

All above noticed technologies along with operation from Artificial intelligence (AI) and IOT with a real-time information is associate to form a unique product which fulfil the need of low end car in low cost.

2.16 GPS Tracking System for Autonomous vehicle

Autonomous automobile is self-driving car or driverless cars the vehicle that uses a merge of sensors, camera, and artificial intelligence (AI) to travel between destinations without a human operator. This design is able to memorise he knew routes on Global Positioning System

(GPS) instead of using pre-saved location and that are updated rarely and this does not include all the roads.

Where mechatronics system is where it accommodates the different sensors distributed among unlike site in the automobile. Tracking of path if the driver has driven the vehicle in a desired path for reclaim and GPS will recall the location by saving GPS routing point received from GPS sensors on the board and android phone and range is calculated from the velocity sensor according to a control sequence.

3. LIMITATIONS

We have observed few limitations like they have not considered the complete data of NH and SH for automatic speed control of vehicles, whenever the driver didn't't wear the seat belt, door not closed properly and crossed the speed limit only the alarm will be activated, it will not take any further action.

4. CONCLUSION

In this paper we have performed detailed analysis on how the Vehicles are monitored through the different sensors like alcoholic sensor to detect whether the driver consumed the alcohol or not, GPS to find out where exactly the vehicle is there, Ultrasonic sensor to find the obstacle in front of the vehicle, Lidar Sensors used for count the interval to different objects on the path, camera sensors are used in order to see and illustrate the things in the way. In the future research work planned to the speed of the vehicle automatically without the intervention of the driver.

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