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VEHICLE THEFT CONTROL AND ACCIDDENT LOCATION INFORMATION AND TRAFFICING SINGALING FOR VIP & AMBULANCE PURPOSE

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ABSTRACT

Rising traffic clog is an unpreventable condition in enormous and developing metropolitan zones all over India. An increased volume of vehicles not only increases the chances for them being involved in accidents. According to a report published in Times of India, 146,133 people were killed in road accidents in India in the year 2016. Unfortunately, about 30% of deaths are caused due to delayed ambulance. Another data shows that more than 50% of heart attack cases reach hospital late. Everybody detests traffic clog, and it continues deteriorating, despite endeavoured cures. In this manner, emergency vehicles stuck in a road turned parking lot and deferred in arriving at their goal can cause loss of property and significant lives. This paper provides the knowledge of all kind of techniques used till now to make traffic management system for emergency vehicle better and make it easier for people to reach on time to the hospital. Explain ways to get the best route while maintaining a cloud using IoT based system and various algorithms to various ways to detect ambulance using image processing and fuzzy logic.

INTRODUCTION

In India, 33% and 99% of people die in road accidents and heart attacks respectively because of the late arrival of Ambulance or delay in reaching hospitals due to traffic jams. According to the National Crime Records Bureau, nearly 24,012 people die each day due to a delay in getting medical assistance. The first hour after an emergency is the critical hour for medical aid to the patient for saving a life. What is required to improve ambulance arrival on time to hospitals as well as on-site? Major metro political cities like Mumbai, Delhi, Bangalore, Chennai, Hyderabad, Kolkata, Jaipur, Lucknow and much more advancing cities face the problem of traffic jams in leading hours. For reducing congestion, it requires to observe the intensity of vehicles on one side rather than going for a timing-based system. Necessarily for emergency vehicles, so many IoT and Artificial Intelligence-based systems can be utilized to give

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Ambulance priority rather than any other vehicle as life is very precious. This paper presents different methodologies gist to deal with emergency vehicles in rush hour gridlock. IoT can be used to track the vehicles and detect the exact location with an asset of Artificial Intelligence. Embedded system has also been proved to be very beneficial and has the potential to minimize the waiting time of emergency vehicles. The system can be improvised in combination with machine learning algorithms and neural networks. The information on recognizing the emergency vehicle is sent to the traffic system through the RF transmitter and receiver or ZigBee, for adequately controlling the traffic light until the emergency vehicle experiences. The condition of Indian traffic makes it hard for the emergency vehicle to reach the destination on time. So to decrease the response time of ambulance, a precise traffic control system is used, which turns the traffic signal green for an emergency vehicle.

LITERATURE SURVEY

Sharma, Suresh, et al. "Traffic light priority control for emergency vehicle using RFID." Int. J. Innov. Eng. Technol 2.2 (2013): 363-366.

Traffic related problems include not just traffic congestion due to increase in vehicular density, but also difficulty for passage of emergency vehicles, violation of rules such as red signal jumps, vehicle breakdowns and accidents causing blockage of roads and loss of lives. Previously proposed systems for smart traffic management focus on vehicular density based traffic signal control and provision for emergency vehicle passage. The capability of such systems are limited to one or two focus areas and most systems are not cost effective for real time implementation. In order to build a smart city, a comprehensive system for traffic management needs to be built that addresses all traffic related issues, not just traffic congestion. In this paper, a Comprehensive Traffic Management System (CTMS) using Radio Frequency Identification (RFID) and analytics for real time implementation has been proposed. The system is both cost effective and easy to implement. The outcomes are dynamic traffic signal timers that operate based on vehicular density, deviation of vehicles at previous junctions in case of blockage, traffic signal control for passage of emergency vehicles, detecting red signal violations, detecting road accidents, vehicle breakdowns for providing immediate assistance and tracking of vehicles. In 2015, Delhi declared 1,622 deaths due to delay in response time for road accidents [1]. Red signal violations have also caused major

accidents and deaths in the past. Another problem due to congestion is fuel wastage. A survey conducted by IIM stated that India loses Rs. 60,000 crore due to traffic congestion every year [2]. Air pollution due to congested traffic is multiple times higher compared to air pollution in case of smooth flowing traffic. At trip speeds of up to 20 kmph, carbon dioxide emissions were about four times as much as when the average speed was about 60 kmph [3]. Traffic congestion also leads to delays, which may result in late arrival for employment, meetings and education resulting in lost business, disciplinary action or other personal losses. The chances of collision are higher due to tight spacing of vehicles. All these problems extensively contribute to traffic related issues. To address all these issues, a dynamic real-time traffic management system based on RFID and analytics has been proposed. One of the main goals of the system is smooth traffic flow at all times. This means that traffic congestion is to be prevented before it occurs, rather than managing it after it occurs. Using analytics, if traffic congestion is predicted even after density based timer control, dashboards are used to display messages for mandatory deviation of traffic at the previous junctions. This ensures that traffic congestion is avoided even before it occurs. Passage of emergency vehicles can be assured by turning on the green signal for the lane where an emergency vehicle is detected. The capability of the system stretches beyond traffic management. RFID tags associated with each vehicle can store data such as vehicle number and owner's details. Vehicle breakdowns, road accidents and traffic violations such as red signal jumps can be immediately detected and notified to emergency services and the traffic police department respectively. RFID tags and scanners are highly cost effective compared to cameras and sensors.

Sundar, Rajeshwari, Santhoshs Hebbar, and Varaprasad Golla. "Implementing intelligent traffic control system for congestion control, ambulance clearance, and stolen vehicle detection." IEEE Sensors Journal 15.2 (2014): 1109-1113.

Traffic is significant issue in our nation, particularly in urban ranges. Aftereffect of this, activity clog issue happens. Crisis vehicle like rescue vehicle, fire unit, squad cars confront bunches of issue to achieve their goal on account of congested driving conditions, coming about loss of human lives. To minimize this issue, we approach new idea named as "Traffic control framework for blockage control and stolen

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Vehicle location". In this framework activity freedom done by transforming Red flag into Green flag. We demonstrate an idea of what we call "Green wave". Alongside this, we distinguish stolen vehicle by utilizing extremely advantageous RFID innovation. In the event that stolen vehicle is been distinguished, the framework gives ready sign through ringer. Framework sends Message with the assistance of GSM to Police station. In this framework we Use diverse RFID labels for recognizing rescue vehicle and the stolen Vehicle. On the off chance that Red flag is on and IR sensor is initiated, then framework gives ringer alarm to movement police. This is novel framework which encourage great answer for comprehend traffic clog. Fundamental Aim to actualize this framework is to distinguish Emergency vehicle like Ambulance utilizing RFID innovation and following stolen vehicle. In customary framework, they utilize image processing to recognize crisis vehicles. Inconvenience of this framework is amid terrible climate conditions. In stormy season or in windy season, picture captured by the camera gets bended. So it's hard to recognize required vehicle and hence we actualize Reliable RFID based framework which gives continuous system correspondence regardless of the possibility that the climate condition is bad. India is prominent improvement nation. This paper concentrates on freedom of movement clog in urban region. Usually traffic issues occur as a result of drastically increment of vehicle in city ranges. Advance features of RFID, GSM give practical answer for past framework. For that reason, we will use RFID Tag to recognize stolen vehicle, emergency vehicle. RFID is a unique innovation that utilizes radio recurrence to convey data between the RFID tag and RFID reader. RFID tag is accessible in two sort Active RFID tag and Passive RFID tag. We are utilizing Passive RFID tag. Inactive label implies no need of outside power. So battery upkeep issue is killed. Dynamic RFID label needs Supply to enact. We utilize Passive reader. GSM is a creative modem having SIM card opening and this module is actuated over a membership to portable administrator, much the same as cell phone. This modem works on AT summons. We go AT summons through Microcontroller. IR sensor emits infrared waves. An IR sensor can gauge the heat of an object and also distinguishes the movement. These types of sensors measure just the infrared radiation, instead of transmitting it. These are called as a detached IR sensor. In this module, basic IR drove and IR photodiode is accessible. At the point when any impediment interacts with it,

it gives high flag to microcontroller. LCD implies Liquid Crystal Display. We utilize 16*2 shows in our framework. LCD has numerous applications like PC screens, TV and so on. We utilize two LCD in shading green and red to tell activity light. At the point when rescue vehicle is identified around, then red light is supplanted with green, which implies to framework give green activity flag. Buzzer is an electronic device that produces sound. Piezzo signal depends on the reverse rule of piezoelectricity. It produces power when mechanical weight is connected to specific materials and the other way around is likewise valid. Such materials are known as piezoelectric material.

Djahel, Soufiene, et al. "Reducing emergency services response time in smart cities: An advanced adaptive and fuzzy approach." 2015 IEEE First International Smart Cities Conference (ISC2). IEEE, 2015.

Nowadays, the unprecedented increase in road traffic congestion has led to severe consequences on individuals, economy and environment, especially in urban areas in most of big cities worldwide. The most critical among the above consequences is the delay of emergency vehicles, such as ambulances and police cars, leading to increased deaths on roads and substantial financial losses. To alleviate the impact of this problem, we design an advanced adaptive traffic control system that enables faster emergency services response in smart cities while maintaining a minimal increase in congestion level around the route of the emergency vehicle. This can be achieved with a Traffic Management System (TMS) capable of implementing changes to the road network's control and driving policies following an appropriate and well-tuned adaptation strategy. This latter is determined based on the severity of the emergency situation and current traffic conditions estimated using a fuzzy logicbased scheme. The obtained simulation results, using a set of typical road networks, have demonstrated the effectiveness of our approach in terms of the significant reduction of emergency vehicles' response time and the negligible disruption caused to the non-emergency vehicles travelling on the same road network. Keywords – Traffic Management Systems (TMS), Smart Transport, Smart Cities, Emergency Services, Road Traffic Congestion. The fast emergence of Smart Cities concept as a futuristic vision of today's cities promises to significantly change our lives and offer novel unprecedented services.

These services and the underlying advanced Information and Communication Technologies (ICT) supporting them will also help in solving a myriad of contemporary problems which are hard to overcome using current solutions and technologies. Road traffic congestion is among the most challenging issues that current road traffic authorities are facing due to its overwhelming impacts. Among these impacts, the delay of emergency services delivery to the emergency location is the most critical due to the incurred cost in terms of deaths, injuries and financial losses in case of fires, car crashes, terrorist attacks, etc. According to [1], in Ireland only an average of 700 fatalities are caused every year due to ambulances' late response. To reduce these fatalities, Smart Cities and in particular smart transportation services are inherently an ideal platform for implementing ICT-based solutions, thanks to their rich technological resources. In the case of fire emergencies, the response time requirements in the U.S indicate that the first fire fighter engine is expected to arrive at the scene of a fire within four minutes of a call in at least 90% of cases [2]. As a matter of fact, meeting this requirement increases the enormous cost of maintaining a functional fire response service, especially in populated areas experiencing heavy traffic congestion. The Fire Department of New York (FDNY) alone reported an expense budget of $1.671 billion in 2012, with approximately 1.43 million emergency medical service vehicles and 900,000 fire vehicles dispatched in the same year [3]. These statistics do not take into account the property damage and loss of life caused by fires. In 2013 there were more than 1.2 million fires in USA, with a fire department responding to a fire every 25 seconds. In the same year, fires caused 3,240 civilian deaths, 15,925 civilian injuries in addition to $11.5 billion in property damage [4]. The investment in Smart Cities at the moment is enormous, with both governments and large companies such as Siemens [5] and IBM [6] funding and researching initiatives to develop this revolutionary concept. Several cities around the world are already widely recognized to be the leading examples of Smart Cities such as Vienna, Amsterdam and Tianjin. According to [7], the number of Smart Cities is expected to quadruple from 2013 to 2025 with a staggering 88 Smart cities predicted at minimum by Information Handling Services (IHS) with 32 planned Smart Cities in the Asia-Pacific region, 31 in Europe and 25 in the Americas. Compared to 21 Smart Cities worldwide in 2013 it is very clear from the above information that there is

both a pressing need for a more optimised ICTdriven emergency response system and a significant opportunity for its implementation with the upsurge of investment and interest in Smart Cities. To this end, we propose, in this paper, a system which could be widely deployed across Smart Cities worldwide to mitigate the devastating losses caused by emergency services delay. This is achieved by taking into account the severity of each occurring emergency event along with the traffic conditions and deciding which traffic control protocols and parameters should be changed to ensure the fastest journey of the emergency vehicle.

Reddy, Benjaram Madhusudhan, Kiran Kumar Anumandla, and Vikas Kumar Tiwari. "Optimization of smart vehicle ad hoc network (SVANET) communication for traffic related issues with a security." 2017 International Conference on Computer Communication and Informatics (ICCCI). IEEE, 2017.

Nowadays Vehicle Ad hoc Networks have an interesting research and application area in real time scenario. Vehicles are embedded with smart embedded sensors, processing ability and wireless communication capabilities will lead to an efficient development of road safety, comfort, information sharing and efficient control while on the road. In this paper, traffic related issues like signal jumps, expiry of RCs, Pollution status etc., can be identified and corrective actions can be initiated. This system can also be used for other applications like traffic density identification, signs of other vehicles like turnings, ambulance signs, advertisements etc. This work mainly targets to route the information from vehicle to gateway and from gateway to vehicle efficiently. In vehicle to gateway communication, firstly gateway will broadcast the signals to all surrounding vehicles. If any vehicle is detected by the gateway, then the gateway sends a command to the corresponding vehicle to send their id information. Then the gateway verifies the information of RC, Pollution status, pending challans status, and if any discrepancies are found, then the vehicle is notified. The proposed work is implemented on LPC2148 microcontroller using RFID technology. Keywords—RSRC, LPC 2148, NS2, RFID, Mobile nodes, SVANET etc. Communications are becoming more wireless and mobile now a days. Thus in future we can expect that vehicles will be equipped with wireless devices and embedded sensors, which enable the

formation of intelligent Vehicular Ad Hoc Networks (VANETs). The main goal of these wireless networks is to provide safety, security and comfort to passengers, but their structural advantage helps in designing many applications such as commercial usage, access to Internet, notification, etc., VANETs are similar to the concept of Mobile Ad Hoc network (MANET's). In VANET communication, the information can be transferred from Gateway to vehicle and vice versa. In vehicle to Gateway (V2G) communication, Dedicated Short Range Communication (DSRC) routing algorithm and IEEE 802.11p standard protocol were used.

EXISTING SYSTEM

The existing system for vehicle theft control, accident location information, and signaling for VIP and ambulance purposes typically involves a combination of technologies and systems. Vehicle theft control mechanisms often include GPS tracking devices and immobilizers. GPS trackers help locate stolen vehicles in real-time, allowing law enforcement to track and recover them quickly. Immobilizers prevent unauthorized access to the vehicle by disabling the ignition system.

Accident location information is usually facilitated through the integration of GPS and sensor technologies within vehicles. In the event of an accident, these systems can automatically transmit the vehicle's location to emergency services, enabling a swift response. Additionally, some systems may include impact sensors that trigger automatic distress signals to emergency contacts or relevant authorities.

For VIP and ambulance purposes, specialized signaling systems are employed. VIP vehicles may be equipped with communication devices and signal lights to facilitate their smooth passage through traffic. Ambulances, on the other hand, often utilize a combination of sirens, lights, and communication systems to alert other drivers and ensure a clear path in emergency situations.

While these individual systems are effective in their respective domains, there is ongoing development in integrating them for a more comprehensive and interconnected approach. Integrated platforms aim to provide a centralized control system that can monitor and manage vehicle security, accident response, and VIP/ambulance signaling simultaneously. This approach enhances overall efficiency and coordination in emergency scenarios, ensuring a more effective response to vehicle thefts, accidents, and priority traffic situations.

PROPOSED SYSTEM

The proposed system for vehicle theft control, accident location information, and signaling for VIP and ambulance purposes envisions a cutting-edge integration of advanced technologies to enhance overall security and emergency response capabilities. The core of the system would

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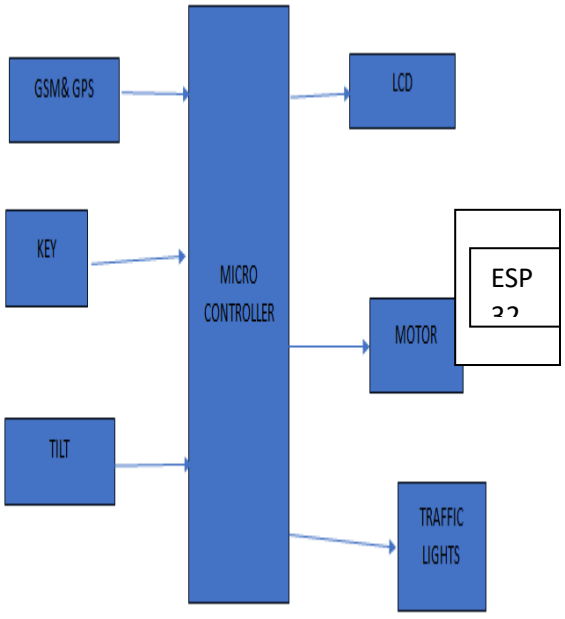
involve a sophisticated GPS tracking and communication network installed in vehicles. GPS trackers with real-time capabilities would not only assist in vehicle theft control but also serve as the foundation for accident location information.

In the event of a theft, the system would enable authorities to remotely track and recover the stolen vehicle swiftly. For accidents, the integrated GPS and sensor technologies would automatically transmit precise location details to emergency services, facilitating quicker response times and potentially saving lives. Additionally, impact sensors could trigger immediate distress signals to relevant authorities and emergency contacts, ensuring a rapid and coordinated reaction to accidents.

Specifically tailored signaling mechanisms for VIP and ambulance purposes would be incorporated into the system. VIP vehicles would feature advanced communication devices, signal lights, and potentially AI-driven traffic management capabilities to streamline their passage through traffic. Ambulances would utilize a combination of sirens, lights, and communication systems to alert nearby vehicles and ensure a clear and expedited route during emergency situations.

The proposed system aims to go beyond individual functionalities, offering a holistic approach through a centralized control platform. This platform would allow for real-time monitoring and management of vehicle security, accident response, and priority traffic situations. The seamless integration of these features promises to optimize emergency services, enhance public safety, and improve overall traffic management in critical situations. The proposed system stands as a testament to the evolving landscape of intelligent transportation systems, where interconnected technologies work synergistically to create a safer and more responsive environment.

BLOCK DIAGRAM



CONCLUSION

Combination of IoT, AI and machine learning can lead to the advancement of the developing country like India as the health infrastructure will be improved, and people suffering will become less. In India, people suffer due to no ambulance availability or traffic jams which leads to an increase in waiting time and loss of a golden hour. But after building the infrastructure that connects everything to cloud, it becomes effortless to save lives and reduce jams. It becomes cost-effective if used in the whole city and connected to the control room and by giving access to the traffic police to do everything in an emergency so the very delicate case can also be handled.

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