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## ACCIDENT ALERT SYSTEM USING IOT A REVIEW

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### ABSTRACT

As civilizations over the earth are becoming financially enhanced, people now possess their respective vehicles. With that progress accidents are likewise increasing. In earlier days, Accidents are not as much as today. The reason behind this is less population and awareness among the people. But in modern days and from the past decade the accidents have become common and are increasing continually with the rise of population. In addition people also become careless and indecisive. There are numerous reasons that prompts accidents. To figure out this accident rate, we have framed a project which gestures the drivers to trace standards. As science and automations like IOT have become sophisticated, at this time there is a necessity of providing safety measures to restrict accidents.

The perception of tracking systems is not new and enterprises have made a lot of advancements in maximizing the technology. There are certain manual things to prevent accidents just like paying attention, beware of surroundings, inspect vehicles before and after, take breaks whenever needed but this is impossible to follow all these stuff in modern world.

We designed a system that permits us to build a sensor network. The plan and the framework involves two areas where initially designating traffic signs by sorting the images and as well as during night and bad climate conditions it warns by a voice note. And secondly if a person feels drowsy our system signals the person with a blow sound. If any emergency takes place then an alert message and geographical location of the person will be sent to their emergency contact. This system is also designed to help with providing an immediate medical help. If in case we are comfort and safe we can send a message by using a switch provided in that device.

Our device makes use of integrated Arduino that comprises of GSM primarily based module along with GPS module and Accelerometer Sensor. The objective is to build up a product that sends the area of accident vehicle automatically utilizing IOT. An alarming message which contains time and area is send to rescue offices for alleviation of the person.

**Keywords** :- Sensor Alerts, GSM, GPS, SOS , Arduino, Detection of Accident, Accident alert System, Iot Based Alert System,

### INTRODUCTION

In Modern times, safe and secure precautions are essential to an individual. To impart an individual safety who drives a vehicle several companies, along with the researchers have been developing driver fatigue system as equivalent technologies have advanced. Moreover vehicle manufacturing industries has created a variety of enhancements in speed, security, potency. Regardless of all these things there's no decrease over the quantitative relation of accidents. If there is no proper immediate rescue plan when the accident takes place then the situation of victim becomes critical and in certain case it leads to death.

In such cases this alert system sends a communication to the emergency services with the location. The Initial work on this system was carried out in Japan in 1984. The most familiar ones are based on Support Vector Machine, Template Matching and in recent times Convolutional Neural Network. In this, in the first phase and also a general perception is the facial actions of driver is analyzed. The facial analysis encompasses eye sensing, blinking, ratio during yawn, head spot, yawn recognition, percent of eye closure. Secondly, traffic indications have been blueprinted by means of remarkable shapes and colors, varying from the natural environment. They are planned according to regulations

in which a sign comprises of three layouts such as- edge, grounding and pictogram.

Only high-end vehicles are equipped with smart road safety technologies, such as driver monitoring systems, immediate braking for rear accidents, blind-spot recognition, backup cameras, automated emergency braking, lane departure warning, and cross-traffic alert systems. A system of a physical thing or objects that are connected to the internet via sensors, software, electronics, and other components is known as the Internet of Things (IoT). This makes it possible to communicate and collect data. It enables the remote sensing and control of items over the current network architecture. When unexpected circumstances lead to an emergency, IoT-connected automobiles, such in System for Radio Service (GPRS). In order to facilitate a prompt reaction, the system alerts the relevant authorities to the accident's time and location. So the paper's main focus is on designing a system that may be applied to all different kinds a variety of automobiles, such as cars, trucks, buses, bicycles, and scooters. This makes it easier for people to communicate effectively between the accident scene and the aid stations.. The suggested approach's highest data rate, range, low power requirement, and cost-effectiveness will be helpful in distant places.

### LITERATURE SURVEY

**Murshed, Mubashir, and Md Sanaullah Chowdhury** The smart system outlined in [1] is made to explain alarms and control a car's speed by alerting the proper parties when an accident occurs. The programme keeps track of the space between automobiles using a distance sensor, and any obstructions in their path. When an impediment approaches the speed limit, the system warns the driver to regulate the speed and automatically slows down.

**Ortiz, Fernando M., et al** Long-range radio (LoRa) infrastructure is used in [2] by attaching LoRa terminal devices to moving objects and a LoRa reception unit. Here, it is to compare the output of the NS-3 Referring to the data obtained through the communication channel between a vehicle's internal LoRa module and a LoRa receiver in terms of their equivalence to experimental and simulated results. Three metrics are Received Signal Strength Indicator (RSSI), Packet Inter-Reception (PIR) time, and Packet Delivery Ratio (PDR). that are considered and analyzed (RSSI). The findings demonstrate that every statistic assessed in the simulated tests agrees with the outcomes of the actual experiments.

**Sudepa, K. R., et al** LoRaWAN, short for long-range wide area network, is one of the low-powered area technologies [3]. Only LoRaWAN gateways and the top gadgets in this can be directly communicated with via the star network design. The chirp spread spectrum (CSS) technology served as the basis for the spread-spectrum modulation techniques used in this work. Each payload item is represented by a number of knowledge. In order to govern conjunction with cloud-based media For all widely used electrical devices, LoRaWAN is being developed to provide communication frequencies, data speeds, and power.

**Mounika, A., and A. Chepuru** Technology such as the Global Positioning System and the Global System for Mobile Communication are used in the system, as in [4], to locate a missing vehicle. The Arduino UNO controller is used by the GPS receiver and GSM module to transmit orders. A vehicle's interior houses this fixed system. The controller will get the placement values from the GPS module. The controller will acquire it and transmit the data to the GSM modem using the vehicle user.

**Chaudhary, Utsav, et al** Using the smartphone's Accidents are automatically The SoSMart application [5] used an accelerometer and internal sensors to identify the object. It alerts a chosen contact to the location after detection alert so they can quickly dispatch rescue personnel. Administration for Highway and Traffic Safety real data on auto accidents to design and test the advanced algorithms that are used in this programme.

**Murshed, Mubashir, and Md Sanaullah Chowdhury** By alerting the appropriate people when an accident happens the smart system described in [6] is designed to describe the alerts and manage the speed of a vehicle. The system uses a distance sensor to keep track of the separation between vehicles and the barriers in front of them. When an impediment approaches the speed limit, the technology warns the driver and automatically reduces the speed.

**Ballerini, Massimo, et al** [7] According to tests using LoRaWAN and NarrowBand-Internet of

S.No	Proposed System	Merits	Demerits
1	The smart system using iot	The system automatically slows down after warning the driver to control their speed.	Complexity. IoT has disadvantages despite its technological breakthroughs and better user experience.
2	Long-rangeradio(LoRa) infrastructure	The packet delivery ratio (PDR), packet inter-reception (PIR) time, and received signal strength indication are three metrics which are taken into account and analyzed.	Interference in the spectrum: As LoRa technology advances and more networks and equipment are deployed, there will be some degree of spectrum interference between the two
3	low-powered area technologies is called LoRaWAN,	With LoRaWAN, end devices and a gateway may communicate across long distances of up to 15 kilometers or more in rural areas and 5 kilometers in urban areas.	Payloads exceeding 100 bytes are not permitted. Not for constant observation (except Class C devices). Not the best choice for real-time applications that need bounded jitter and lower latency.
4	The Global Positioning System (GPS)	Since physical obstacles like walls and other things will block radio waves, indoors, global positioning systems (GPS) are frequently useless.	GPS is a navigation device that makes operations very simple because it provides directions for every step you take. Without it, achieving where you're going would require lengthy detours.
5	Using the smartphone's internal sensors	The main benefits of this system are cost effectiveness, safety assurance, the ability to save victims' lives immediately, reduced power consumption, improved accuracy.	This system's biggest flaw is its inability to accurately determine whether a user is in the car when travelling at low speeds, which can lead to misleading reports of accidents. Patel and co.
6	The smart system uses a distance sensor	In order to provide prompt medical assistance, this system aims to notify the neighborhood medical	If the alert system failed it won,t work or it didn't give the signal or intimation to the user so in this time the accident

		facility about the accident. The	may occur.
7	on LoRaWAN and NarrowBand-Internet of Things (NB-IoT	In addition to having a longer battery life than NB-IoT (15+ years as opposed to 10+ years), LoRaWAN also uses less power. Things begin to overlap in terms of bandwidth and coverage	optimized, low energy consumption, and especially strong building penetration due to operating at low frequencies.

Things (NB-IoT), this protocol can increase battery life up to ten times over NB-IoT in applications of delayed transmissions, taking into account results supported by energy consumption, predicted battery life, and packet loss. It is honorable to use NB-IoT to reduce traffic accidents because faster data transmission is required. Table I compares several protocols taking into account the aforementioned qualities. In comparison to LoRaWAN's 64% packet delivery ratio, Because it guarantees message delivery and offers the finest Quality of Service (QoS), NB-IoT is competitive. Consequently, considering the NB- IoT is selected as the best protocol for applications involving traffic safety based on the research study above and Table 1.

### CONCLUSION

The major goal of this approach is to improve an accident victim's chances of survival. By sending an alarm message as soon as an accident happens, this device enables paramedics to arrive at the accident scene in the shortest amount of time. As a result, the communication lag is reduced and the accident victim can receive prompt medical attention. It is crucial in pinpointing the locations of accidents that happen around midnight.

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### REFERENCES

[1] Murshed, Mubashir, and Md Sanaullah Chowdhury. "An IoT based car accident prevention and detection system with smart brake control." Proc. Int. Conf. Appl. Techn. Inf. Sci.(iCATIS). 2019.

[2] Ortiz, Fernando M., et al. "Experimental vs. simulation analysis of LoRa for vehicular communications." Computer Communications 160 (2020): 299-310.

[3] Sudeepa, K. R., et al. "LoRa Based Network for Accident Detection and providing Quicker Ambulance Services for Medical Assistance." vol 6: 1-3.

[4] Mounika, A., and A. Chepuru. "Iot based vehicle tracking and monitoring system using GPS and gsm." International Journal of Recent Technology and Engineering (IJRTE) 8.2S111 (2019): 2399-2403.

[5] Chaudhary, Utsav, et al. "Survey paper on automatic vehicle accident detection and rescue system." Data Science and Intelligent Applications. Springer, Singapore, 2021. 319-324

[6] Murshed, Mubashir, and Md Sanaullah Chowdhury. "An IoT based car accident prevention and detection system with smart brake control." Proc. Int. Conf. Appl. Techn. Inf. Sci.(iCATIS). 2019.

[7] Ballerini, Massimo, et al. "Nb-IoT versus lorawan: An experimental evaluation for industrial applications." IEEE Transactions on Industrial Informatics 16.12 (2020): 7802-7811.