Signs with Smart Connectivity for Better Road Safety

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LITERATURE SURVEY :

Usha Devi Gandhi Published on "International Conference on Reliability Optimization and Information Technology (ICROIT) 2014". The use of connected vehicles aims to address some of the main problems with transportation in the areas of environment, mobility, and safety. One of the key goals of this project is the application of the Intelligent Transport System (ITS) for safety. The goal of safety application research and industrial projects is to develop the vehicle industry globally. In this project, we concentrate on vehicle-to-vehicle (V2V) communication, which allows linked vehicles to share information with other vehicles on the road and helps to decrease highway accidents. Vehicle to vehicle (V2V) and vehicle to infrastructure (V2I) connectivity based on Wi-Fi, GPS, and dedicated short range communication are ultimately used to connect automobiles (DSRC). VANETS are regarded as one of the most significant safety simulations.

Ching-Hao Lai Published on "International Conference on Technologies and Applications of Artificial Intelligence 2014". Smart phones and intelligent automobiles have grown in popularity over the past few years. One type of driving assistance system (DAS) that automatically notifies the driver of traffic sign information via a head-up display (HUD), monitor, or speaker device is the traffic sign recognition system. As a result, this technology helps to decrease driver distraction and raise driving safety. An effective real-time traffic sign recognition technique for intelligent vehicles is proposed in this work. The suggested approach can create an in-vehicle traffic sign recognition system by fusing smart phones with in-vehicle computer gear. The four main stages of this approach are character/icon extraction and identification, traffic sign detection, image preprocessing, and video frame capturing and transmission.

Ashish Sharma Published on "IEEE India Council International Subsections Conference (INDISCON) 2020".There are more cars on the road today. As a result, managing traffic bottlenecks and accidents on the roads around the world is difficult for society. The performance of the total road safety management system can be greatly enhanced by artificial intelligence (AI) technologies like machine learning (ML) algorithms. Numerous practical applications of AI are employed to make any system intelligent. The Smart Road Traffic Management System (SRTMS) recognises the impact that unplanned modifications have on traffic safety with ease. The SRTMS not only notifies the appropriate authorities but also recognises risky driving behaviours. Real-time monitoring of human activity is made possible via the Internet of Things (IoT).Sensors are a frequent component of Internet of Things (IoT) devices and nodes and are used to recognise and respond to electrical and other signals. The most popular technology today for automating transactions, or the sharing or exchange of information between IoT devices or nodes, is Blockchain (BC). Information sharing on the network is made possible by BC technology in a decentralised, secure, persistent, anonymous, appropriate, and reliable way. Blockchain aims to coordinate communication between nodes without the help of a third party or intermediary organisation thanks to consensus algorithms and smart contracts. AI has the potential to develop robots that are both intelligent and capable of making decisions, much like human minds. In order to address traffic congestion, road accidents, and information dissemination to all stakeholders, this article suggests the SRTMS paradigm. This recommended model.

W. H. D. Fernando Published on " International Research Conference on Smart Computing and Systems Engineering (SCSE) 2021". Sensors are a frequent component of Internet of Things (IoT) devices and nodes and are used to recognise and respond to electrical and other signals. The most popular technology today for automating transactions, or the sharing or exchange of information between IoT devices or nodes, is Blockchain (BC). Information sharing on the network is made possible by BC technology in a decentralised, secure, persistent, anonymous, appropriate, and reliable way. Blockchain aims to coordinate communication between nodes without the help of a third party or intermediary organisation thanks to consensus algorithms and smart contracts. AI has the potential to develop robots that are both intelligent and capable of making decisions, much like human minds. In order to address traffic congestion, road accidents, and information dissemination to all stakeholders, this article suggests the SRTMS paradigm. This recommended model in intelligent transportation systems, but challenging procedure. To address the significant problems they encounter, numerous initiatives have been made. Using a method that first detects a traffic sign's bounding box, the goal of this work is to address the detection and recognition of road traffic signs. When a traffic sign is noticed, it will then be quickly recognised and put to use. The YOLOv4 network was used in this study because safe driving requires the real-time monitoring of traffic signs. On our dataset, which was composed of 43 distinct traffic sign classes identified through manual annotations, YOLOv4 was assessed. Averaging 84.7% accuracy, it was able to recognise objects. A simple yet successful model for the real-time detection and identification of traffic is presented in the paper, adding value overall.

Mingming Cui Published on "IEEE Internet of Things Journal 2019". The research on road safety has garnered a lot of attention in vehicular ad hoc networks recently with the development of intelligent vehicles and wireless sensor network technology (VANETs). Vehicles can broadcast information to let other driver know about accidents or traffic congestion by sensing occurrences on the road. Real-time content transfer is, however, not practicable over the mobile vehicle network due to the significant transmission delay. This research uses a fog computing platform that provides mobility, low latency, and location awareness to propose a novel certificateless aggregate signcryption system (CLASC). It combines with online/offline encryption (OOE) technology, which speeds up a number of laborious processes while enhancing message authentication effectiveness and vehicle user security. The system also includes features for mutual authentication, anonymity,nondeniability and untraceability The discrete logarithm problem's (DLP) and computational Diffie-Hellman problem's (CDH) degree of difficulty are used to further demonstrate the scheme's unforgeability and confidentiality under the random oracle paradigm. The simulation results demonstrate that, in comparison to the current schemes, this scheme can not only guarantee the system's security requirements but also achieve higher computation and communication efficiency.

Abubakar M. Miyim Published on " 15th International Conference on Electronics, Computer and Computation (ICECCO) 2019 ". Every day, millions of automobiles go through cities and on roadways. There are many economic, social, and cultural elements that influence how traffic congestion grows. Traffic congestion has a significant negative influence on accidents, lost time, costs, emergency response delays, etc. Because of traffic jams, workers are less productive, people waste time, trade opportunities are lost, and deliveries are delayed, which raises costs. A novel strong and clever solution based on Vehicle-to-Infrastructure (V2I) technology that can address traffic management and road accident issues in Nigeria's megacities is offered in order to alleviate these congestion issues. The proposed system in this study serves as an alternative to the current traffic management system with a junction control station that interacts with approaching vehicles.The junction where the V2I network intersects. Dashboard Traffic Light (DBTL) sensors on the vehicles can connect with the infrastructure. The Safe-to-Pass-First (SPF) algorithm was created to determine whether to allow the car to pass through the junction while taking into account real-time speed, vehicle position, and data. To guarantee that vehicles cross the intersection safely, the algorithm examines the status of any conflicting lanes. This method has been found to be more efficient than the existing methods as the average waiting time at the intersection is reduced by 23% and improved throughput recorded, Python code and SUMO were used for the simulation.

M. Divyaprabha Published on" IEEE International Conference on Computational Intelligence and Computing Research (ICCIC) 2018". The transportation system needs to take road safety into account. Road safety issues are to blame for a lot of incidents. Due to the rapid increase in the number of automobiles, road accidents are becoming more and more common in India. One of the main contributing elements to the problem of poor road safety is the growth of traffic congestion, which is increasing at a pace of 7 to 10% per year while vehicle growth is 12% per year. Around the world, traffic accidents cause 50 million injuries and about 1 million fatalities each year. Since 70,000 people die in India alone every year, it is imperative that this issue is resolved in order to save lives. This article conducts a survey based on the numerous issues with road safety.The comparison is carried out to determine the issue that causes significant accidents.

Gianni D'Angelo Published on "IEEE Internet of Things Journal 2021". Today's vehicles are getting ever smarter, more connected, and more intelligent. Several cyber-physical systems, including actuators and sensors, are housed inside modern vehicles and are managed by electronic control units (ECUs). To provide cutting-edge and intelligent features, these ECUs are connected via in-vehicle networks, which in turn are connected to the Internet of Vehicles (IoV). However, despite having obvious benefits, increased vehicle connectivity and computerization also poses major safety risks that could jeopardise pedestrians' lives as well as that of the driver and other passengers. These issues are mostly brought on by the controller area network (CAN) bus's security flaws, which are utilised to send data between ECUs. In this article, two methods are presented that implement an anomaly detection system that is data-driven. While the second algorithm (data-driven anomaly detection algorithm) is used to perform real-time classification of such messages (licit or illicit) for early alerting in the presence of malicious uses, the first algorithm (cluster-based learning algorithm) is used to learn the behaviour of messages passing on the CAN bus for base-lining purposes. Our approach is capable of outperforming previous anomaly detection-based approaches, according to experimental results that were acquired utilising data from a real car.

Marian Gogola Published on "XII International Science-Technical Conference AUTOMOTIVE SAFETY 2020". The current state of road safety places a strong emphasis on reducing accidents, particularly those that result in significant injuries. This essay focuses on issues related to children's and students' road safety from the standpoint of their presence in the transportation system as a sidewalk, etc. The examination of young children's road safety is presented in the paper from the viewpoint of the parents. Children's behaviour has changed significantly both with and without parental or adult supervision. When children are left alone, the scenario is harmful or risky in 33% of the cases.

Yiming Xu Published on " IEEE International Conference on Smart Cloud (SmartCloud) 2019".The World Health Organization has identified traffic accidents as a social and public health issue. To solve this issue, an intelligent transportation system that is entirely based on cutting-edge information and communication technology is now in operation. However, the rise of road fatalities necessitates the use of technology to forecast future interactions and behaviour. In order to find solutions for the detection of real-time human activity and interaction on roads, this article explores modern technologies including computer vision and artificial intelligence.