

Ideation Phase Literature Survey

Date	26 September 2022
Team ID	PNT2022TMID31677
Project Name	Signs with Smart Connectivity for better Road Safety

1)

Title:

Smart Road Accident Detection and communication System

Authors:

Nagarjuna R., Rambabu, Chandrashekhar Garde

Description:

In this paper they proposed that, The number of fatal and disabling road accident are increasing day by day and is a real public health challenge. Many times, in the road accidents, human lives will be lost due to delayed medical assistance. Hence road accident deaths are more prominent. There exist many accident prevention systems which can prevent the accidents to certain extent, but they do not have any facility to communicate to the relatives in case accident happens. In this paper, the authors made an attempt to develop a car accident detection and communication system which will inform the relatives, nearest hospitals and police along with the location of the accident. In the last they concluded that, Smart Road accident and communication system has been developed. Experiments have been conducted by implementing the system in a toy car. It is observed that the system is working properly. The system sends the message to the stored emergency numbers successfully when the car is collided and toppled or tilted by more than 30 degrees and if the reset button is not pressed in the stipulated time interval. Future scope: An android app can be developed for this in which instead of just receiving the co-ordinates of the location, it can be exactly pin pointed on the map. The heart rate can also be continuously monitored by the app to determine the driver's condition till the medical help arrives.

Year:

2018

2)

Title:

Telematics and Road Safety

Authors:

Sivaramalingam Kirushanth, Boniface Kabaso

Description:

In this they proposed that, Road Safety is a major concern around the world. Telematic solutions have been available for more than a decade, and several studies have been done in the use of telematics data in road safety. However, these studies are scattered on different topics. There is a need to find the best possible ways of using telematics data for safe driving. This paper presents the review made with the aim of finding the evidence on the effective use of telematics data for road safety. Summary of the data collection devices, sensors, features, algorithms, feedback types used are discussed in this paper. In the last they conclude that, more studies on presenting effective feedback techniques are needed. An efficient way of detecting who is using the phone while driving is a challenging task to be further studied. Only a few studies on total road safety monitoring, which covered driver, vehicle, and road anomaly, has been done so far. Since there are different types of features used in each study, performing a metaanalysis is challenging task.

Year:

2018

3)

Title:

Smart Vehicle Connectivity for Safety Applications

Authors:

Usha Devi Gandhi, Arun Singh, Arnab Mukherjee, Atul Chandak

Description:

Connected vehicle technology aim to solve some of the biggest challenges in the transportation in the areas of safety, mobility and environment. The safety application for Intelligent Transport System (ITS) is one of the main objectives in this project. Safety application is research and industrial initiative which aim to contribute to the global advancement of automobile industry. In this project we focus on V2V communication, once cars are connected which is able to share data with other cars on the road and which help to reduce Highway accidents. Ultimately, vehicles are connected via multiple complementary technologies of vehicle to-vehicle (V2V) and vehicle-to-infrastructure (V2I) connectivity based on Wi-Fi, GPS, Dedicated Short Range Communication (DSRC). VA NETS are also considered as one of the most important Simulator for safety of intelligent transportation systems. The use of the DSRC technologies support low latency vehicle-to-vehicle (V2V) communication. In this paper, they proposed to design Vehicle communication management protocols using vehicle-to vehicle communication to address these core issues of safety. They believe that accidents can be diminished and endured altogether utilizing V2V technology. Since installation of wireless environment at every cross point would be costly. A V2V-based methodology appears to be more reasonable for implementing. They have depicted V2V-based conventions to be specific Stop-Sign, Traffic-Light, Throughput-Enhancement and Throughput-Enhancement with Agreement conventions. They stretched out VANET test system to backing these conventions. Even though they conventions are intended for independent vehicles that utilization V2V correspondence for co-agent driving additionally they might be adjusted to a driver-caution framework for manual vehicles at roadways.

Year:

2014

4)

Title:

Internet-of-Things-Based Smart Transportation Systems for Safer Roads

Authors:

Yaser Dalweran, Mohammad Derawl

Description:

From the beginning of civilizations, transportation has been one of the most important requirements for humans. Over the years, it has been evolved to modern transportation systems such as road, train, and air transportation. With the development of technology, intelligent transportation systems have been enriched with Information and Communications Technology (ICT). Nowadays, smart city concept that integrates ICT and Internet-of-Things (IoT) have been appeared to optimize the efficiency of city operations and services. Recently, several IoT-based smart applications for smart cities have been developed. Among these applications, smart services for transportation are highly required to ease the issues especially regarding to road safety. In this context, this study presents a literature review that elaborates the existing IoT-based smart transportation systems especially in terms of road safety. In this way, the current state of IoT-based smart transportation systems for safer roads are provided. Then, the current research efforts undertaken by the authors to provide an IoT-based safe smart traffic system are briefly introduced. It is emphasized that road safety can be improved using Vehicle-to- Infrastructure (V2I) communication technologies via the cloud (Infrastructure-to-Cloud – I2C).

Year:

2020

5)

Title:

Reliable Smart Road Signs

Authors:

Muhammed O. Sayin, Chung-Wei Lin, Eunsuk Kang, Shinichi Shiraishi, Tamer Basar

Description:

In this paper, they propose a game theoretical adversarial intervention detection mechanism for reliable smart road signs. A future trend in intelligent transportation systems is “smart road signs” that incorporate smart codes (e.g., visible at infrared) on their surface to provide more detailed information to smart vehicles. Such smart codes make road sign classification problem aligned with communication settings more than conventional classification. This enables us to integrate well-established results in communication theory, e.g., error-correction methods, into road sign classification problem. Recently, vision-based road sign classification algorithms have been shown to be vulnerable against (even) small scale adversarial interventions that are imperceptible for humans. On the other hand, smart codes constructed via errorcorrection methods can lead to robustness against small scale intelligent or random perturbations on them. In the recognition of smart road signs, however, humans are out of the loop since they cannot see or interpret them. Therefore, there is no equivalent concept of imperceptible perturbations in order to achieve a comparable performance with humans. Robustness against small scale perturbations would not be sufficient since the attacker can attack more aggressively without such a constraint. Under a game theoretical solution concept, they seek to ensure certain measure of guarantees against even the worst case (intelligent) attackers that can perturb the signal even at large scale. they provide a randomized detection strategy based on the distance between the decoder output and the received input, i.e., error rate. Finally, they examine the performance of the proposed scheme over various scenarios.

Year:

2019

6)

Title:

IOT Based Smart Traffic Management System

Authors:

Rachana K P, Aravind R, Ranjitha M, Spoorthi Jwanita, Soumya K

Description:

Abstract with growing populace and no of motors on road, the site visitors may be predicted to be excessive and control of that site visitors manually may be greater difficult. This task is to offer help to the site visitors policemen through developing an interconnection among the motors primarily based totally on cloud connection in order that the site visitors may be monitored automatically.

Additionally, automatic ignition primarily based totally at the biometrics permits simplest the customers with allowable license to drive. Violation and site visitors offences are effortlessly captured and fined primarily based totally at the wide variety plate of the car and presently logged in user. In case of injuries or emergencies, nearest ambulance will acquire notification consisting of the closest clinic with all required information so the docs can take movement as required or create an alert to folks that set GPS on excessive congestion zones to deviate to a low congestion direction until truly necessary.

Year:

2021