Inventive Transportation System by a Technology of Sensor Interfaced Network.

PERISETTY NAGA SANTHAN
M.Tech Student
Dept of ECE
DRK-Institute of Science & Technology
Hyderabad, A.P, India

Dr.R.V.KRISHNAIAH
Principal
Dept of ECE
DRK -Institute of Science & Technology
Hyderabad, A.P, India

Abstract: Here with rapid advancement in the technology related to the wireless based approach related to the field of the communication based approach in a well oriented fashion respectively. Here there is a huge advancement in the usage of the sensor oriented strategy where is an accurate retrieval of the data in automated fashion related to the sensor oriented strategy where there is an accurate detection of the data in a well oriented approach respectively. Here these particular type of the approach is generally use in the many of the applications and some of them includes system based on the transportation, Military oriented analysis followed by the civil aviation, Bio medical based analysis that is the applications related to the field of the bio medical oriented strategy followed by the communication, Automation oriented strategy, Smart grids followed by the smart homes in a well oriented fashion respectively. Here is a huge research related to the applications oriented with respect to the industrial based automation oriented strategy in a well efficient manner even though there is not much changes in the strategy related to the environmental oriented aspects of the physical strategy in a well oriented fashion respectively. There is a revolution related to the technology oriented with respected to the information based aspect there is a huge research based analysis is going on the present strategy where it is completely based on the implementation followed by the development approach in a well effective manner respectively. Experiments have been conducted on the present technique where the evaluation of the analysis in an accurate fashion followed by the evaluation of the performance oriented strategy is shown in a well accurate fashion respectively.

Keywords: Sensor network, System based transportation, intelligent system, Data authentication, Alert based accident oriented strategy respectively.

I. INTRODUCTION

In the last decade there is a lot of advancement in the system relate to the automobile oriented strategy as a primary key aspect in its implementation respectively [2]. There is a most effective strategy on behalf of the vehicle implementation as am powerful strategy in a well effective manner respectively which is further related to the automation based application, efficient energy based strategy followed by the friendly environmental aspect in a well respective fashion[3][4]. As per the above based strategy there is some of the problems oriented aspect in which there is large number of the vehicles and also the uncontrolled behavioral aspects takes place in a well oriented fashion respectively|1|5]. Here these are all the things are taken into the consideration and on behalf of the above based strategy there is no particular system which is effective in terms of the strategy followed by the environmental aspects respectively. Therefore there is a huge challenge for the present system where it is supposed to overcome the above problem oriented strategy in a well oriented fashion followed by the accurate analysis in the system based perspective followed by the improvement in the performance and to effectively control the degraded performance finally related to the outcome of the system respectively. As per the usage of the vehicles oriented strategy in a well effective manner and all the things take on to the consideration related to the mobility operation in a well respective aspect respectively [7]. There is a major trouble with respect to the vehicle design oriented consideration in a quite respective fashion where the implementation of the system is not flexible in its consideration followed by the design oriented strategy is quite failure where it is implemented on the roads it is a worst scenario at the traffic times where there is huge problem related scenario oriented aspect due to the experience less implementation and adaptation on to the roads in a well effective fashion respectively.

II. METHODOLOGY

In this paper a method is designed with a well efficient strategy with a design oriented framework where in order to improve the performance based strategy followed by the accurate analysis in a respective fashion[6][8]. There is a huge challenge
for the present method where it is supposed to analyze the drawbacks of the several previous methods in a well oriented fashion and also to study the research oriented aspect where for the further analysis and also for the accurate theoretical purpose respectively[9]. Here the present method completely controls the degraded performance of the several previous methods and also the accurate analysis which is with respect to the outcome of the entire system is effectively maintained in a well oriented fashion respectively [10]. Here we finally conclude that the present method is effective and efficient in terms of the analysis oriented scenario respectively following figure.1 represents the block diagram and in a briefly elaborated fashion.

III. PROPOSED TRANSPORTATION METHOD (PTM)

The proposed transportation method refers to integrated uses of communication control and information technology to the transportation infrastructure and automobiles. The resulting benefits save lives, time, money, energy, and the environment. Bright based transportation based on the collection, processing, integration and dissemination of information, based on static and real-time data obtained from sensors onboard vehicles, sensors on the roadways, satellite data, digital maps, traffic information, as well as weather conditions. Users of this method include motorists, commercial operators and public transport customers, who rely on it to make informed travel decisions based on such factors as traffic conditions, road maintenance and construction work, and weather conditions that could potentially impact travel time and safety. Policy makers and road or highway operators also utilize the information from this method in the management and future planning of the road networks.

The primary interest for this method comes from problems caused by traffic congestion, which has been increasing worldwide as a result of population growth, urbanization, increased motorization, and changes in population density. Congestion reduces efficiency of transportation infrastructure and increases travel time, fuel consumption and air pollution. A 2010 Urban Mobility Report from a study conducted by the Texas Transportation Institute at Texas A&M University indicates that due to congestions Americans spend an additional 4.8 billion hours on the roadways. This translates to an extra 1.9 billion gallons of fuel, making the total cost of congestion due to wasted time and fuel to about $115 billion. This is over and above the cost of gas just to get around. The average wasted time due to congestion per auto commuter in 2010 was about 34 hours per year, up from 14 hours in 1982. Thus, policy makers, politicians, road and highway engineers, town planners, and the general public have a great stake in reducing congestion and its associated economic and environmental costs.

With the help of distributed sensing technology forming this method infrastructure, information could be gathered about the real-time conditions on roadways, such as accidents, traffic backup, bad weather, road construction, etc. and could be disseminated to alert motorists via dynamic message signs, highway advisory radio, in-vehicle navigation systems, or Smartphone application.

Drivers weigh in the traffic information to make informed decisions on whether to take a given route, reschedule travel route and time, or change mode of transportation. Commercial fleet operating companies use information from this method for fleet management, to decide when and how to deploy their fleet. This method also provides information about the public transit system such as bus and train schedules, trip planners, and fares.

PTM technology has also greatly improved highway toll collection. Automatic toll collection systems make use of transponders with RFID technology,
license platerecognition system, or barcode stickers, to identify vehicles and collect toll fees without stopping or slowing traffic. This helps eliminate or minimize chock points along routes having toll booths. In cities that have designated cordon zones with congestion pricing, special fees are collected using the electronic tollcollection system when vehicles enter congested city zones. Many high-traffic systems also provide highoccupancy vehicle lanes. For law enforcement purposes different in-vehicle and external automatic vehicle occupancy counting systems are developed.

Managing realtime information about city parking spaces on public streets and parking garages is an important component of service expected from PTM. A network of distributed electronic sensors could monitor the availability of parking spaces and provide real-time information to motorists looking for them. For example, the city of Los Angeles recently deployed a pilot program known as ExpressPark that combines demand based pricing principles and technology to guide drivers to open parking spaces and show current parking rates. The rates are determined in real-time based on the number of available parking spaces, the time of day and drivers' length of stay. More advanced technology could even provide mechanisms for reserving parking space ahead of time before arrival, thus minimizing delays, frustrations, expenses in gas, and car wear and tear caused by time spent circling around city blocks.

The PTM system also plays critical role in the area of accident prevention and quick emergency response. In-vehicle safety technology already available today include: collision avoidance systems, lane departure warning systems, and drowsy driver warning systems. In incident and emergency response, PTM technology helps identify and facilitate quick response to automobile crashes or other disaster locations. Automatic crash notification systems onboard vehicles employ sensors to detect a crash and automatically the incident and vehicle location to emergency call center. Emergency vehicle preemption technology provides the right-of-way to emergency vehicles at traffic lights to provide quick response to accidents. Real-time data sharing between emergency responders, police, and traffic managers allows coordinated traffic management and emergency operation. Standardization efforts are also underway to support development of cooperative systems.

IV. DATA ACQUISITION TECHNIQUES

The effective realization of the PTM services, roadway and in-vehicle infrastructure has to be deployed to collect and communicate timely, accurate and reliable information about traffic flow and road conditions. The system includes sensor, communication and traffic control technologies. Vehicle detection and surveillance technologies form the basis of PTM for providing speed monitoring, traffic counting, presence detection, headway identification, vehicle classification and weight-in-motion data collection. In this section we discuss the currently available roadway PTM infrastructure technologies.

Data acquisition techniques: A data acquisition technique is one that is either embedded in the pavement of the route, or embedded in the subgrade of the route, or taped/attached to the surface of the route. Examples of in-route sensors are discussed in following parameters:

Ultrasonic sensors (also known as transmitters when they both send and receive, but more generally called transducers) work on a principle similar to radar or sonar which evaluate attributes of a target by interpreting the echoes from radio or sound waves respectively (general concept of ultrasonic sensor as shown in fig2). Ultrasonic sensors generate high frequency sound waves and evaluate the echo which is received back by the sensor. Sensors calculate the time interval between sending the signal and receiving the echo to determine the distance to an object. Premier line of Ultra unique sensors with an in-line amplifier, for applications with restricted spacing or small part detection requiring an adjustable sensing distance.

Piezoelectric sensors:

A piezoelectric sensor is a device that uses the piezoelectric effect to a measure pressure,
acceleration, strain or force by converting them to an electrical charge. Piezoelectric sensors have proven to be versatile tools for the measurement of various processes. They are used for quality assurance, process control and for research and development in many different industries.

Infrared Sensors:

An infrared sensor is an electronic device that emits and/or detects infrared radiation in order to sense some aspect of its surroundings (as shown in fig3). Infrared sensors can measure the heat of an object, as well as detect motion. Many of these types of sensors only measure infrared radiation, rather than emitting it, and thus are known as passive infrared (PIR) sensors. An infrared detector is a detector that reacts to infrared radiation. The sensing of electromagnetic radiation is essential for a wide variety of activities.

V. MOTOR VEHICLE TECHNOLOGIES

The roadway sensor technology presented in the previous section, for effective realization of state of the art services vehicles need to get smarter and provide their own on-board sensing and communication technology. This section presents currently available technology for navigational aid, lane-departure warning, driver drowsiness detection, blind-spot monitoring, adaptive cruise control, traffic sign recognition, collision avoidance, and automatic crash notification systems.

Navigating aid provided by a set of on-boardsensors including speed gauge, compass, indicators for travel distance, time, location, remaining distance and time to destination, turn-by-turn guidance for drivers, aswell as real-time traffic information. The global positioning system (GPS) is becoming an essential component of navigational aid. Its operation is based on a constellation of satellites, providing position, speed, and time information anywhere on earth, where there is an unobstructed line of sight to four or more satellites. The latest GPS navigational aids come with support formap updates, real-time traffic information, incident reports, updates on delay information, travel and arrival time, and alternate route proposals.

Indication crash notice system uses on-board units, such as airbag deployment or other sensors, to detect evidence of a collision. When the vehicle’s sensors detect collision, the crash notification system automatically communicates with a call center and transmits information about the accident and the vehicle’s location. The On Star service [22] available on GM vehicles, and recently made accessible to the general public, is an example of such a service. Besides crash notification, OnStar provides navigational-aid, remote diagnostics, roadside assistance, hands-free calling, in-vehicle security, and stolen vehicle tracking. OnStar service relies on CDMA mobile voice and data communication.

Crash avoidance process shows a change of focus in the way car manufacturers look at automotive safety. Traditionally the emphasis has been on injury mitigation for those involved in a collision, for example by providing stronger vehicle frames, seat belts, and airbags. The focus has now shifted to collision avoidance systems. CAS is based on a system of sensors placed within a car to warn its driver and/or take action when necessary to avoid imminent dangers that may lie ahead on the road. It is an extension of the other safety systems described above including lane departure warning, blind spot monitor, and adaptive cruise control. For example, the forward looking radar used for ACC could sense if a vehicle is getting too close to another vehicle in front and warn the driver or apply braking to avoid crash.

Traffic monitoring scheme Typically, this technology is based on visual sensors and real-time image processing operations [21] for detection and recognition of the traffic signs on a road. Such driver assist system aids the driver in significantly improving driving safety as well as for enabling autonomous operation of intelligent robotic self driving vehicles. This scheme is a technology of sensors and computation that enable a vehicle to recognize traffic signs put on roadways, such as speed limit, turn ahead, or traffic signals.

VI. RESULTS

In this paper a method is designed with a well efficient strategy where a lot of analysis is made on the present system followed by the number of computations have been implemented on the large number of the data sets in a well oriented fashion respectively. A comparative analysis is made between the present methods to that of the several previous existing methods and is shown in the
pictorial representation respectively (Fig.4). Here the present technique is effective and efficient in terms of the analysis followed by the performance based strategy in a well efficient fashion. Here the designed method completely overcomes the drawbacks of the previous methods in a well efficient fashion. Here we finally conclude that the present technique is designed in order to control the degraded performance followed by the accurate analysis in the entire system with respect to the accurate outcome respectively.

VII. CONCLUSION

In this paper a method is designed with a well efficient strategy where the design oriented framework is powerful in its aspect at the time of the implementation based strategy in a well efficient fashion respectively. Here in the new technique there is a lot of advancement in the system oriented representation takes place in a particular phenomena in a well efficient manner where there is a realization oriented with the system based on the transportation based strategy is a major concern respectively. There is a huge several opportunities related to the system based on the ITS based scenario where there is a huge attraction from the user side based on the provided features followed by the proper facility oriented scenario in a well efficient manner respectively. Where due to this there are large number of the user getting attracted to this particular sought of the implementation where there is a huge consumption of the fuel oriented strategy in a well efficient manner where it is the primary concern of the user whenever at the time of the selection of the vehicle in a well oriented fashion respectively. Here apart from the strategies related to the less fuel consumption based strategy there are also some of the aspects includes congestion based problems, traffic oriented vehicle impact on the environment based strategy in a well efficient fashion respectively. Here we finally conclude that the present system is efficient and effective in terms of the performance based strategy followed by the accurate analysis in the system perspective.
REFERENCES


AUTHOR’S PROFILES

Perisetty Naga Santhan has completed B.Tech (E.C.E) from Sindhura College of engineering & technology and pursuing M.Tech (E.C.E) in DRK institute of science and technology, JNTUH, Hyderabad, Andhra Pradesh, India. Her main research interest includes in Electronics, Embedded & VLSI Systems.

Dr.R.V.Krishnaiah, did M.Tech (EIE) from NIT Waranagal, M.Tech (CSE) form JNTU, Ph.D from JNTU Ananthapur, He has memberships in professional bodies MIE, MIETE, MISTE. His main research interests include Image Processing, Security systems, Sensors, Intelligent Systems, Computer networks, Data mining, Software Engineering, network protection and security control. He has published many papers and Editorial Member and Reviewer for some national and international journals.