

Paper Type: Original Article



Avoidance Traffic Congestion through Smart Transportation Approach

Chenguang Wang*

School of Economics and Management, China Three Gorges University, China; chenguangwang@email.poe.edu.pl.

Citation:



Wang, Ch. (2022). Avoidance traffic congestion through smart transportation approach. *Big data and computing visions*, 2(4), 159-162.

Received: 04/03/2022

Reviewed: 06/04/2022

Revised: 19/04/2022


Accept: 01/05/2022

Abstract

Recent times the concept of smart city gained so much of popularity because of internet of things technology. Smart parking is one of the ideas of smart city. Smart parking system used to monitor the status of every parking available. As society fosters the streets become more swarmed and vehicles fill in number there are different sort of circumstances on streets in view of atmospheric conditions and gridlocks because of mishaps or vehicles breakdowns and because of every one of these arriving at objective causes to feel like drained and aggravated. Also here comes the shrewd traffic framework IDs.

Keywords: Smart transportation, IoT, Networking.

1 | Introduction

 Licensee **Big Data and Computing Visions**. This article is an open access article distributed under the terms and conditions of the Creative Commons Attribution (CC BY) license (<http://creativecommons.org/licenses/by/4.0>).

Parking a vehicle in a busy parking lot lead to excess time of driving in search of free space which lead to waste of time and environmental pollution. Lack of guidance information to vacant parking spaces is one reason for inefficient parking behaviour [1]. Smart parking sensors and technologies facilitate guidance of drivers to free parking spaces there by improving parking efficiency [2]. Intelligent traffic system is a traffic system which combines many transport systems and traffic facilities with high technology and information to increase the efficiency and safety of the road and then to operate and manage it scientifically [3]. Sensors works in transportation as monitoring traffic flow, payments, speed control, and parking [4]. Bus information system in smart transportation collects the location information of busses, process and transmits set information at the traffic info centre and then makes it possible to check such information through mobile and at bus stops in real time [5]. Info on bus run routes, current locations, arrival times, bus interval times can be distributed which increases the satisfaction of the users [6].



Corresponding Author: chenguangwang@email.poe.edu.pl



<http://doi.org/10.22105/bdcv.2022.332460.1064>

2 | Benefits of Smart Parking

By applying this system, we can reveal the stress, and time for the driver when he is looking for a parking [7]. It reduces the traffic as driver already knows the parking availabilities. By smart parking technology drivers can make payments by using electronic payments through an app or browsers, which makes parking experience easier and provides structured data to income streams [8].

3 | Working

We need to have a parking, which is coming with the sensor and this sensor going to collect the data through a certain cloud system [9]. And then the clients from their mobiles and laptops they will be able to access the system to see the status of every parking available [10]. Every parking is having one sensor which is the light sensor and two LED's these sensors are going to collect the data or the status of every parking and it was pushed over the Rasberry Pi and from Rasberry Pi the data will go through the Gateway and from Gateway it will go to the cloud system of their individual devices [11]. Now from our own devices we can give the data from all of the sensors to our cloud [12]. The green LED at the parking will show the status of the availability of parking for the person [13]. If the red LED glows at the parking that means it was already reserved [14]. The transport card has all public transport payment system integrated and related info sent to a pre-arranged traffic integration card company where the profit is divided in to respective public transport companies [15]. The users can enjoy a highly convenient service and the transportation company can run an efficient management system services with nation buses subways, taxis trains and all are integrated [16].

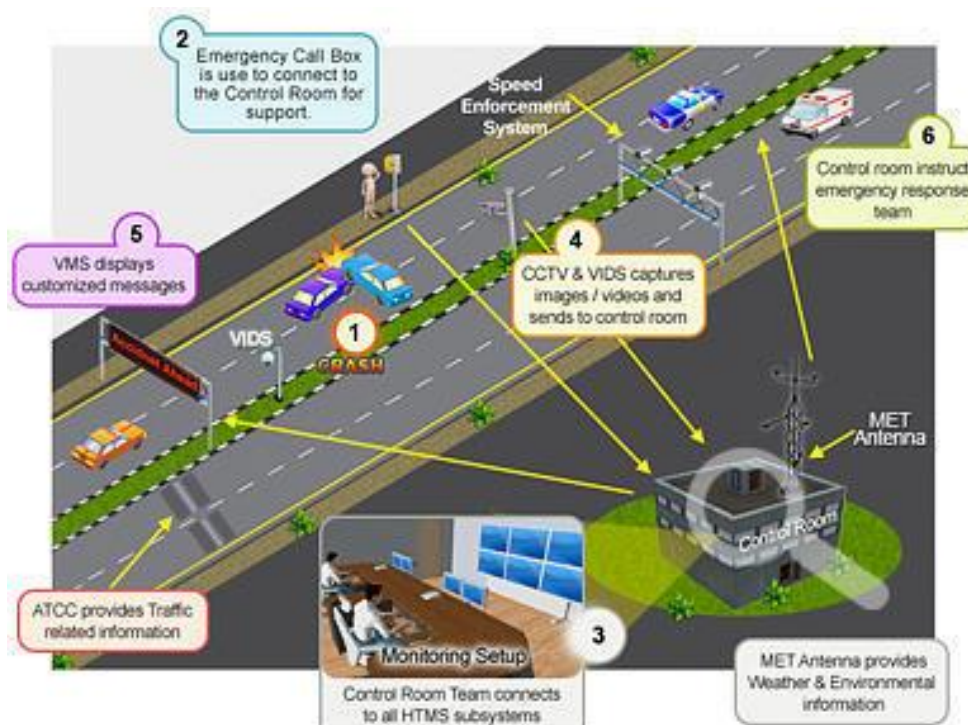


Fig. 1. Hypothetical modelling of smart parking.

4 | Parking Reservation

Even if the parking is available on application the moment we reach to that parking may be it will not be available anymore. So in order for us to reserve parking here we have preferred one red LED, if this red LED is turned on that means somebody have booked and reserved this parking and no any other car allows to park here [17]. So from the application which is on our mobiles we can go through the parking which we want to reserve.

5 | Parking Confirmation Mail

To ensure for the customer that the parking is being reserved. The mail will be sent to that man who is reserving any parking mentioning that parking no.1 is reserved for you. The moment the client click on reserve parking, immediate mail will be sent to him [18].

6 | Smart Parking Report

For the future development storing the history of every parking is very important. In our applications we will have a report which can be generated and it is a life time report. In that report all the parking status is recorded for the future reference [19]. So by applying the IOT smart parking system we can reduce the stress and the for the driver to look for a parking. And also this will increase happiness and satisfaction of the visitors and clients [20]. FTMS collects various info from the express ways using vehicle detection sensors CCTVs DSRC and VDS reprocess said info at the traffic info centre and distributes info through an electronic displays navigator’s traffic broadcasting and smart phones [21]. And there are many smart transportation IDs like Electronic toll collection system reduces the traffic jams at tolls, Automatic traffic enforcement system which regulates speed controls, Parking information system, National information traffic centre which gathers all information from public and private enterprises, Cooperative ITS which provides to drivers in real time nearby road situations, abrupt stops or danger information such as falling objects there will be huge decrease in traffic accidents and social cost [22], [23].

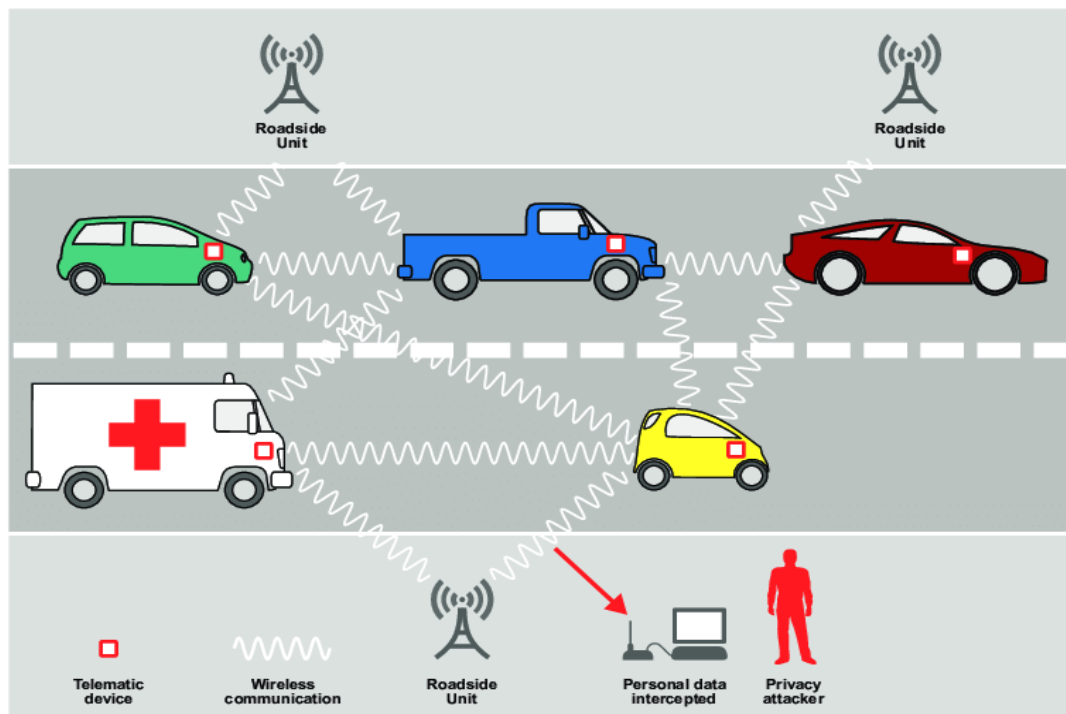


Fig. 2. Communication among devices.

7 | Conclusion

Traffic jam less roads and convenient public transport, pleasant and happy driving and above all safe drives. An effective (and often extensive) traffic surveillance and monitoring system is a pre-requisite for any intelligent traffic control system to keep track of prevailing conditions across the network. A wide scope of various sensors are introduced in, on or more the street for this reason and to acquire the important geological and crucial time inclusion [23]. They incorporate inductive circles, non-nosy traffic recognition gadgets, camcorders and video picture handling. Every innovation enjoys its own benefits and inadequacies - so the decision of sensor type for any ITS application will rely upon what performs well in the predominant ecological circumstances, and its expense.

References

- [1] Mohapatra, H., & Rath, A. K. (2020). Fault-tolerant mechanism for wireless sensor network. *IET wireless sensor systems*, 10(1), 23-30.
- [2] Mohapatra, H., & Rath, A. K. (2019). Fault tolerance in WSN through PE-LEACH protocol. *IET wireless sensor systems*, 9(6), 358-365.
- [3] Mohapatra, H., & Rath, A. K. (2019). Detection and avoidance of water loss through municipality taps in India by using smart taps and ICT. *IET wireless sensor systems*, 9(6), 447-457.
- [4] Mohapatra, H., & Rath, A. K. (2020). Survey on fault tolerance-based clustering evolution in WSN. *IET networks*, 9(4), 145-155.
- [5] Mohapatra, H., & Rath, A. K. (2021). Fault tolerance in WSN through uniform load distribution function. *International journal of sensors wireless communications and control*, 11(4), 385-394.
- [6] Mohapatra, H., & Rath, A. K. (2020, October). Nub less sensor based smart water tap for preventing water loss at public stand posts. *2020 IEEE microwave theory and techniques in wireless communications (MTTW)* (Vol. 1, pp. 145-150). IEEE.
- [7] Mohapatra, H., & Rath, A. K. (2022). IoE based framework for smart agriculture. *Journal of ambient intelligence and humanized computing*, 13(1), 407-424.
- [8] Mohapatra, H., & Rath, A. K. (2021). A fault tolerant routing scheme for advanced metering infrastructure: an approach towards smart grid. *Cluster computing*, 24(3), 2193-2211.
- [9] Mohapatra, H., & Rath, A. K. (2021). An IoT based efficient multi-objective real-time smart parking system. *International journal of sensor networks*, 37(4), 219-232.
- [10] Mohapatra, H., & Rath, A. K. (2019). Fault tolerance through energy balanced cluster formation (EBCF) in WSN. In *Smart innovations in communication and computational sciences* (pp. 313-321). Springer, Singapore.
- [11] Panda, H., Mohapatra, H., & Rath, A. K. (2020). WSN-based water channelization: an approach of smart water. In *Smart cities – opportunities and challenges* (pp. 157-166). Springer, Singapore.
- [12] Mohapatra, Hitesh; Rath, Amiya Kumar: 'IoT-based smart water' [Control, Robotics & Sensors, 2020], 'IoT Technologies in Smart Cities: From sensors to big data, security and trust', Chap. 3, pp. 63-82, DOI: 0.1049/PBCE128E_ch3, IET Digital Library.
- [13] Mohapatra, H. (2021, September). Socio-technical challenges in the implementation of smart city. *2021 international conference on innovation and intelligence for informatics, computing, and technologies (3ICT)* (pp. 57-62). IEEE.
- [14] Mohapatra, H. (2020). Offline drone instrumentalized ambulance for emergency situations. *IAES international journal of robotics and automation*, 9(4), 251-255.
- [15] Mohapatra, H., & Rath, A. K. (2020). *Fundamentals of software engineering: designed to provide an insight into the software engineering concepts*. BPB Publications.
- [16] Mohapatra, H. (2021). *Designing of fault tolerant models for wireless sensor network* (Doctoral dissertation, Ph. D Dissertation, Veer Surendra Sai University of Technology). Retrieved from <http://hdl.handle.net/10603/333160>
- [17] Mohapatra, H., & Rath, A. K. (2020). Social distancing alarming through proximity sensors for COVID-19. *Easy chair*, 18. https://wvww.easychair.org/publications/preprint_download/dMGk
- [18] Mohapatra, H. (2021). *Smart city with wireless sensor network*, ISBN-13: 979-8791261380, KDP, 2021.
- [19] Mohapatra, H. (2018). *C Programming: practice.cpp*. Independently Publisher.
- [20] Mohapatra, Hitesh; Rath, Amiya Kumar, 'Smart Bike Wheel Lock for Public Parking', Application Number: 336834-001.
- [21] Mohapatra, H., & Rath, A. K. (2020). Advancing generation Z employability through new forms of learning: quality assurance and recognition of alternative credentials. DOI: [10.13140/RG.2.2.33463.06560](https://doi.org/10.13140/RG.2.2.33463.06560)
- [22] Mohapatra, H. (2009). *HCR using neural network* (PhD's Desertion, Biju Patnaik University of Technology). Retrieved from https://www.academia.edu/29846341/HCR_English_using_Neural_Network
- [23] Mohapatra, H. (2019). *Ground level survey on sambalpur in the perspective of smart water* (No. 1918). Retrieved from <https://easychair.org/publications/preprint/CWpb>