



IOT Based Smart Transportation System

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ABSTRACT

IOT stands for Internet of Things is a new concept that changes the traditional way of living high lifestyle into a high-tech lifestyle smart city , smart home ,pollution control, energy saving and smart transportation , Smart industries are such transformation due to IOT. Transportation is evolving substantially to improve our lives, and still, there are unsolved problems.The transportation sector is always evolving to offer safer, faster, cleaner and more comfortable commutes.In future IOT collaborates with artificial intelligence and machine learning which both software and hardware component will use and create some advance system for transportation sector.The tremendous growth in up-gradation of hardware's, enhancement of software's and networking has made an easy way to support IOT technologies.The Internet of Things is driven by an expansion of the Internet through the inclusion of physical objects combined with anability to provide smarter services to the environment as more data becomes available. The purpose of this paper is to explore opportunities, challenges, problems with the help of IoT on local transport.

Keywords: Internet of things , Smarttransportation , Navigation System, Public Transport.

Introduction

The progress of information technology in IOT development is very influential on the various aspects of human activities.With our changing habits, people are moving faster because of busy schedules and an increasingly fastpaced lifestyle. As a consequence, this requires smarter ways of managing our lives and maximising our time. Public transport is expected to follow this trend with the aim of improving the quality of service and reducing delays for passengers. The main reason why the people choose public transportation over other modes of transport are its subsidized rates, environment-friendly attributes and easy accessibility. Firstly, public transport is very economical allowing a large population to have access to it. Using a bus or a train to commute is comparatively cheaper than using a private car. If people have their own car, they have to spend a lot of money on fuel, car servicing, repairs, and insurance. There are many discounts available for some individuals, like students and senior citizens who choose public transport as their transportation.

In most developing countries like India , public transportation system are main source of travels for many commuters living in urban as well as rural area.Furthermore, public transportation has good accessibility in big cities, making it easier to travel to any part of the city, making buses a favorable option. It provides personal mobility and freedom for people. Taking into consideration the other aspects of public transportation, there are some downsides to this service as well. Public transportation, by its very nature, is far more time consuming than any other mode of transportation. Therefore, to prevent such situations, it is important to understand how smart navigation system works in smart transportation system.

Smart Navigation System

Though this feature already exists with the support of maps, an IOT based smart transportation would help you to get destination even quicker. With help of IOT in a fully connected transportation world, you may receive constant real-time data on traffic, closed roads, and the travel schedule of public transportation this will indeed help in getting efficiency and effectiveness to ensure that you get to go on or before time-limit from point A to point B.Smart Navigation is a quick and easy tool that can be very beneficial to large and congested cities or other municipalities. Using Smart Navigation, cities will enable users to find the fastest travel routes possible. Because users will access the quickest route possible, Smart Navigation is an excellent way of reducing emissions, time spent on travels and last but not least, the stress that long journeys can bring with them. As we can see there are only smart vehicles who uses smart navigation system what if we uses smart navigation system in local and public transportations our life will become so easy and fast.In today's life smart navigation system is so important in our day to day life. we can use smart navigation system in local transportation system with the help of various devices and sensors with the help of Internet of things .In these system. we are able to see if the road is in good condition or not also we can see how much traffic are there so we can avoid that route. It became so beneficial for those who are getting late for there works

The main concepts of smart transportation

The application of smart transportation system has a variety of practices that ranging from installing a single sensor on roads for measuring traffic data

to self-automated cars which analyze and process all type information to travel without needing a driver. Thus, smart transportation systems have different and evolving concepts which maintain and improve efficiency through the use information technologies. Firstly, advanced traffic management systems that collect and analyze the data of traffic density and delays in urban areas through the installment of traffic cameras and road sensors that will be transmitted to traffic centers in order to reduce congestion in metropolitan cities which suffers badly from traffic. These centers will inform drivers about unexpected circumstances that causes congestion and direct them to the most suitable route for reaching destination in the fastest way through variable message system that can provide real-time instant messages

Moreover, dynamic traffic lights which are managed by the database of traffic centers will provide an effective traffic flow in the congested areas through use of instant rush-hour traffic information and road maintenance information. This dynamic system will also program a flexible light time for the most used intersection which will be changeable when the traffic begins at rush hours; and it can be used for prioritizing emergency vehicles and buses to promote public service provisions.

Another concept in the traffic management is electronic detection system that can disclose vehicles which violates rules through the use of installed cameras and sensors. This type of detection will reduce the workload of public officials and bring more accountability to the operation of system by minimizing corruption and favoritism since every vehicle would be equal in the electronic system.

The major issues of smart transportation system and possible solutions —

The smart transportation projects have been implemented world-wide for solving the major problems that caused by traditional transportation methods which lack technological infrastructures. There are certain problems that are related to the traditional methods such as traffic congestion, high level of carbon emission, inefficient spending on operating cost and scarce resources such as fuel, and lack of data selection and analysis. According to research of United States Department of Transportation a typical job is accessible to only about a twenty-seven percent of its metropolitan workforce by transit in ninety minutes or less; hence, most of the commuters that travels from home to work are spending at least two hours on roads for just only going to the workplace and same is valid for returning from job, consequently they spent approximately four hours on road which would equal to half hour of work. This problem can easily be solved by the mobile applications that promote real-time ride sharing.

Smartphone applications are used for travelers to demand a ride from where and whenever they want. For instance, one of the world's most famous mobile application is Uber which is a technology platform that connects driver partners and travelers. It is an application that enables travelers to request a ride and then it notifies the user about arrival time of driver partner and informs when the driver is near to pick-up location. After reaching destination, fare is automatically calculated and charged by the application through payment method that linked to the account, and finally application feedback system will ask both sides to rate each other from one to five stars to maintain stable bond between drivers and passengers.

Another and more effective solution of data dissemination is smart phone applications that maintains a time table of buses arrival time to the stations through the use of aforementioned technologies. It is more efficient than smart bus-stops since people can easily obtain information whenever and wherever they want via smartphones.

Importance and relevance of smart transportation systems to public administration

20th century was a year when resources were wasted too much. The world has been very polluted. Even the ozone layer could not resist this. Population has increased in many countries, people want to live independently and individually, in this respect, vehicle ownership also is increased too much. Negative effects of highway which are air pollution, noise, urban sprawl were emerged. Traffic congestion has increased in many countries, especially in metropolitan areas, and also the highways which exist have been insufficient for peak hours. People have been more stressful since they lose time greatly at toll plazas for toll highways. Traffic accidents on the roads have increased enormously. In addition, the intelligent use of existing systems has begun to come into stage because of the costly super-roads made and the capacity of the roads to be sufficient outside peak hours. In this regard, smart transportation is the intelligent use of existing natural resources, financial resources and infrastructure.

Smart transportation system applications in our country are mostly concentrated in traffic (especially intersection) management, traffic safety and automatic fee collection. Recently, it has come to the agenda that the applications of the metropolitan municipalities to support public transportation systems.

Conclusion and evaluation

The main purpose of this research is to gather the information about smart transportation system. Moreover, this paper discussed the various types of concepts and issues related to public transportation

When we compare the rapid and radical changes in the world and the changes in transportation systems in our country, we reach this conclusion that our country are not at the beginning of solutions but at the beginning of problems. It is expected that in the next century the problems of our country will increase rapidly when considering the increasing population, economic activities and automobile ownership in our country which still have a transportation structure which is the opposite of transportation systems of the western countries.

Needs and problems should be identified and possible solutions identified. Measurement systems should be established and data collected and statistics should be identified.

References

ERTICO (1998a) Intelligent city transport: A guidebook to intelligent transport systems. Brussels. ITS City Pioneers

ERTICO (1998b) Intelligent city transport: ITS toolbox. Brussels. ITS City Pioneers

ERTICO (1998c) Intelligent city transport: ITS planning handbook. Brussels. ITS City Pioneers

IHT (Institution of Highway and Transportation) (1997) Transport in the urban environment. Chapter 18 Technology for network management.

Perrett, K.E. and Stevens, A (1996) Review of the potential benefits of road transport telematics, TRL Report 220. Crowthorne. TRL.

"Reducing delay due to traffic congestion. [Social Impact]. ITS. The Intelligent Transportation Systems Centre and Testbed". SIOR, Social Impact Open Repository. Archived from the original on 2017-09-05. Retrieved 2017-09-05.

Ahmed, Hazem; EL-Darieby, Mohamed; Abdulhai, Baher; Morgan, Yasser (2008-01-13). "Bluetooth- and Wi-Fi-Based Mesh Network Platform for Traffic Monitoring"

"Smart tech to end fwy congestion". PerthNow. 2020-07-07. Retrieved 2020-10-07.