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INTELLIGENT TRAFFIC SYSTEM IN INDORE, MADHYA PRADESH, INDIA

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Abstract - *Nowadays much more researches are going on "Intelligent transportation system" which comes from the traffic congestion and mishaps happening in the roads which can be reduced by proper plan and synchronization with technology, building strong communication network in road and systematic traffic plan. Well, we already know that Madhya Pradesh is one of the largest states of India. We can observe that the traffic system is very low. From 2013 the number of road traffic accident was 4903983 and in 2016 it has decreased till 480652. In this paper we will discuss about Indore. Here, traffic congestion is increasing because of rapid increase of motors, urbanization, population growth, and also changes in population density. Traffic congestion reduces the efficiency or transportation infrastructure and increase travel time, air pollution and fuel consumption. Intelligent Transport System is designed for every road transport organization in the country. These include traffic execution, versatility, wellbeing, open transport management, vitality utilization and contamination. A most troublesome result to anticipate is conduct change by street clients because of the framework after presentation, discrediting its advantages. ITS will be executed for all uses in growing influence in the high pay countries and for individual favorable position of rich vehicle owners. In low and focused pay countries the promising zones are improving open and taxi transport, truck the executives contamination control and prosperity devices that check crushed driving and speed control. Knowledge Transport System supports better open transport benefits by considering the vehicle gaining, open prosperity and security.*

Keywords**:** *Intelligent transportation system, advanced traveler information systems, Adaptive control strategies, Violation detection, Alcohol interlock systems.*

1. INTRODUCTION

World population increasing day by day and now it is nearly or more than the digit of 7billion; as the production is increasing and so the economy rate is also increasing. Here we are used to great mobility and hence for easy and smooth life we opt for road transportation which is accessible to everyone. So, we can easily get that the more number of people more will be accidents and to reduce it proper transportation system is in demand which is capable enough to handle the large unit of mass on cars safely and made sure it user friendly and environmental friendly too. In 1991 US department of transportation has also developed the intelligent transportation system and among which only few prototypes have been implemented. Vehicle to vehicle correspondence, vehicle to foundation correspondence, electronic expenses gathering are a portion of the exceptionally mainstream ventures experiencing around the world. With regards to the creating nations like India, Intelligent Transportation System is in essential phase of advancement. And as we are discussing about a city Indore in Madhya Pradesh intelligent transportation system is hardly implemented more over after Maharashtra and Rajasthan and Uttar Pradesh Madhya Pradesh is the state with more road accident. Most of the accident happened and are3 still happening at the age of 18yrs – 30yrs at the time of 1800hrs- 2100hrs. Wherever we implement Intelligence technologies the surface of transportation will be safest, economical and it will last but not the least environmental friendly. As there was invention of internal combustion engine there came the most revolutionary time where people can achieve travel speed like they ever thought they could ever do so. From only a bunch of vehicles a century back, presently there are in excess of 500 million autos, transports and trucks on the streets around the globe, and the number keeps on expanding. Street transport makes it less demanding for us to approach occupations, tutoring, markets, and relaxation time exercises and helps monetary development. These days there is a genuine worry about the effect of transportation in wellbeing and the general public. The negative externalities include: mishaps, air contamination, blockage, environmental change, clamor, and ruining of the scene and urban condition. As of late we are worried about the ozone harming substance emanation primarily carbon dioxide and fuel consumed on the streets by vehicles. Be that as it may, the architects are worried about how to diminish the accident wounds, emanation and clog. To address our issue ITS demonstrates to us the different scope of advances. When it will meet with one another the advancements will help in alleviation from clog, decrease contamination and increment security.

2. ITS APPLICATIONS

There are various ways to collaborate with ITS application and here some are being discussed.

(a) Voyager data

- Pre-trip data
- On-trip driver data
- On-trip open transport data

- Personal data administrations
- Route direction and route

There are so many car pick up & drop services like OLA, UBER AND JUGNOO (M.P). Here we can have each and every information regarding our travel time, driver, navigation, approx amount. Another app has be recently launched named CHALO where we can locate and can get the time of the bus when it will reach the particular bus stop. Amazingly everything is working well.

(b) Traffic Management

- Transportation arranging support
- Traffic control
- Incident the board
- Demand the board
- Policing/authorizing traffic guidelines
- Infrastructure upkeep the executives

Here traffic the executives is extremely poor. Everyday there is mishaps occurring in the city or in outskirts areas. Every people is in hurry including lorry drivers. Maintaining proper sign in traffic system seems to be like burden for them. Areas like Vijay Nagar, Bombay Hospital, Medicaps University main road, Rajen Nagar and many more are very risky as there is no proper traffic system.

(c) Vehicle

The Vision enhancement should be proper in vehicles in the roads. The vehicle must have automated operation. While driving in road we need to be very careful so that we can avoid longitudinal and lateral collision. We should be all time prepare about our safety. And the most important thing is pre-crash restraint deployment.

(d) Business Vehicle

- Commercial vehicle pre-leeway
- Commercial vehicle regulatory procedures
- Automated roadside wellbeing examination
- Commercial vehicle on-board wellbeing checking
- Commercial vehicle armada the board
- Automated Diagnostic Systems

(e) Public Transport

- Public transport the executives
- Demand responsive transport the board

(f) Emergency

- Emergency warning and individual security
- Emergency vehicle the executives
- Hazardous materials and episode notice

(g) Electronic Payment

- Electronic budgetary exchanges

(h) Safety

- Public travel security
- Safety upgrade for helpless street clients
- Intelligent intersections

The vast majority of the above applications can be gathered into the accompanying objectives:

(a) Safety (b) Mobility (c) Management and income accumulation (d) Energy and Environment.

The greater part of the ITS framework have been executed yet at the same time isn't legitimately kept up.

3. ITS WORLDWIDE

The use of ITS is broadly acknowledged and utilized in numerous nations for keeping away from traffic clog and request control, yet in addition for street security and proficient framework utilization.

3.1. ITS In USA:

Here ITS is facilitated through RITA of U.S. branch of transportation in the nation. Here ITS drives are generally centers around telephonic information dispersal where it has three digit numbers 511 to give current data with respect to travel condition. Introducing Intellidrive with which they can impart effectively among vehicles, framework and cell phone of voyagers. They likewise have agreeable convergence impact shirking framework which stays away from accident issues at the crossing point and intersections by empowering helpful correspondence framework. To lessen clog through toll installments, encouraging working from home to energize telecommute by blockage activities. To give constant data like climate, street fixes, and deferrals to street clients by giving statement activities. They likewise use crisis transportation framework which manages traffic occurrence the board,

traffic the board for arranged extraordinary occasions and crisis transportation framework amid catastrophes.

3.2. ITS In Europe

Europe ITS extensively falls under RTI. RTI have two interrelating programs. 1.DRIVE and 2. PROMETHEUS. DRIVE takes care for the street foundation for vehicles wellbeing and program for European traffic with most elevated proficiency and uncommon security. These projects out and out take care for advancing improvement, organization and utilization of keen vehicle framework. They additionally take care by discovery and elucidation of driving condition. Programmed discovery of intersection cyclists and people on foot by expectant dynamic wellbeing. Clog help through programmed journey and progress control.

3.3. ITS In UK

They have electronic guide for speed constrains in the whole city for individual, instructive, and business use. Cameras have been introduced in the significant piece of the nation and furthermore refreshing ring of steel ventures to watch the traffic stream and the traffic action. Electronic toll accumulation and the board framework has been introduced at different areas to maintain a strategic distance from jug necks and guarantees consistent voyage. Wise speed adjustment has been executed which shows the reasonable speed utmost of the vehicle that continually remind the driver not to surpass the speed by any oversight. This framework is encouraged in the vehicle mounted GPS which distinguish the area and demonstrates the reasonable speed in the presentation. They are presently attempting to actualize sun based controlled transport station for CCTV supervision and ongoing traveler data. To decrease carbon impression by changing over the old vehicles in to half breed vehicles.

3.4. ITS In Dubai

It has congested road alert in the vehicle with the goal that they can change the course. There are redirections in course so the path having mishap won't make any burden to the explorers. Robotized change in speed if there should be an occurrence of mishaps. Robotized traffic the board plan amid celebrations or any extraordinary days. There are traffic frameworks organized for crisis vehicles. Dynamic on board route for vehicle clients. They likewise use explorer data booth with contact screen route in open zones to give make a trip related data to people in general.

3.5. ITS In India

Chennai and Mumbai has started propelled traffic the executives framework where they have total observing framework for guidelines violators particularly at intersections. They have unique high goals cameras to take note of the number plate of vehicles at the intersections. They have CCTV cameras introduced in different pieces of the city. They synchronize the entire procedure without being getting physically included via programmed traffic control framework alongside traffic administrative administration framework. They additionally have computerized presentation board to indicate where mishap or any bother occurred with the goal that individuals can decide on various course. Another gadget is FM RADIO by which they report about the congested driving conditions and street blockage because of climate condition. In Bengaluru and Hyderabad an innovation has been set up by which constant situation of significant crossing points and furthermore auxiliary connectors where the pictures jumps on refreshing in each 15sec in light of the fact that it's a 24x7 entryway. They has likewise included SMS based framework with the goal that individuals can be cautioned in regards to the roads turned parking lots, under development regions. This office has been made free of the considerable number of individuals and they get refreshes with each multiple times for example amid pinnacle hours. ITS is utilized for transport fast framework and metro framework. They additionally incorporate flag need, observation, and vehicle following and robotized admission accumulation. ITS additionally incorporate development stopping framework, electronic stopping framework, VMS card framework.

4. ISSUE OF ITS IN INDIA

It's a great challenge for India to implement high source of ITS. The major issue that are becoming an obstruction for ITS to flourish all over India are inefficient road network structure, financial boundaries among the government bodies, rapid growth of urbanization and lack of willingness, lack of maintenance, ;lack of automation of demand, road user awareness negligence and avoidance of decision makers. Small scale event in ITS has been implemented in India. We know that ITS works properly in road network system not in small scale events. We need to adopted ITS specially for congestion, accidents, traffic jam, advanced traveler information system.

5. IMPROVING ITS IN INDORE, MADHYA PRADESH

1. We need to properly implement traffic management system by implementing GIS, GPS and remote sensing so that every citizen could know the situation of the road they are travelling by and incase of any problem or mishaps they can change the route. This digitalizing and controlling traffic system will lead to easy and smooth leading of traffic system that creates sustainability in the environment.

2. Here we need wireless communication network among all the vehicles, drivers and infrastructure. This is needed to keep vehicles on track by giving every car digital identity. So that the vehicles record would be on screen and know about the previous trips of vehicles.

3. We need wireless communicating system for every vehicle and every people should have SMS alert system or by Bluetooth, wifi and various sensors which will make the vehicles contact with each other so that collision can be eliminated. They can immediately alert the vehicle for exceeding the speed so that it won't create any mishaps.

4. The social acceptance is very much needed. They should be well educated enough regarding the need of ITS. Yes, it definitely need huge resource but it's a onetime investment with huge in return. It will save the lives of people.

5. For sustainable environment we need transportation technologies which can make our life more easy and smooth. Some of the technologies are :

Electronic road tolling: this will save our time, save fuel consumption and smooth travelling.

We need advanced driver assistance system so that the driver should know about the situation of the road by SMS alert or by connecting the vehicles, infrastructure so that the driving becomes easy and prevent collision. There should be digital display which will keep on updating about every road of the city.

6. There should be high resolution camera in every part of the city so that the vehicles violating rules and creating mishaps can be identified easily.

7. Advanced traveler information systems (ATIS): It provides the information regarding the condition of the road to the travelers. Proper digital route guidance and navigation is needed. It's good for keep track of vehicle density on roads and then informing the drivers about speed, incidents, road closure. It can also predict travel time.

8. Adaptive control strategies (ACS): The main benefits come during off-peak hours and this has the potential of reducing traffic light violations as drivers do not have to wait when there is no traffic on the intersecting road.

9. Violation detection and enforcement systems: The best measure is the utilization of camera innovation to snap a photo of the tag of transit regulation violators. This innovation is being utilized for controlling the frequency of red light running. Field experience demonstrates that crossing point crashes diminish 30%-half where red light cameras are introduced. Nonetheless, these innovations are not as solid when traffic incorporates an expansive number of vehicles a lot littler in size than a car (three-wheeled vehicles and bikes). In such circumstances there can be more than one vehicle for each path and programmed location and recording turns out to be increasingly troublesome. Cautioning frameworks can enable drivers to pursue rules. Street signs can give data about the momentum speed limit (variable) on an area of the street relying upon traffic and climate conditions and caution drivers about perils ahead. Later on, it is normal that ITS can help in decreasing the quantity of infringement through computerized speed authorization, cautioning and fining a driver when the person in question damages a standard.

10. Indirect effects of ITS: Street evaluating plans, mechanized blockage charging, frameworks offering need to open transport can bring about lessening utilization of individual engine vehicles, and accordingly, the occurrence of engine vehicle crashes.

11. Alcohol interlock systems: The least difficult liquor interlock framework comprises of a mouth piece fixed in a vehicle with a liquor analyzer. The driver must blow into a mouthpiece and whenever observed to surpass the breath liquor limit, the framework cripples the vehicle from beginning. An all the more encouraging innovation being tried different things with depends on detecting liquor levels through the skin. A sensor can be placed on the directing wheel which enables the vehicle to run just if the driver's blood liquor level is inside suitable breaking points.

12. Injury Control: ITS application in lessening the outcomes of an accident by diminishing damage seriousness is for the most part dependent on expanding the adequacy of safety belts and airbags in vehicles. Most importantly, ITS could guarantee that travelers must be belted before the vehicle can move. This is finished by detecting seat surface weights and strain in safety belts comparing to that situate. Current vehicles are utilizing complex gadgets to detect the seriousness of the collide with pre-tense safety belts and to enhance airbag arrangement. Sensors can pass judgment on the heaviness of inhabitants, their positions and afterward time the sending and powers fundamental for ideal insurance. Quite a bit of this is as of now set up in extravagance autos, yet is required to be regular later on.

13. Post Crash Management: ITS frameworks are utilized for accident identification by cameras in uncommon areas. This could have progressively across the board use later on. At the point when an episode is distinguished the framework sends the data to a war room with the goal that the police, ambulances and fire administrations can make fitting move. An accident recorder may naturally illuminate the responders how genuine the accident is.. If there should be an occurrence of exploited people who are not harmed genuinely, the outcomes are not changed essentially by decreasing reaction times by little sums.

14. The most important part is having CCTV surveillance in every bus stop so that we can keep real time record about all the passengers. Make use of every electricity by solar.

15. Energy and Environment: Engine vehicles are furnished today with electronic control units (ECUs) that control the inner burning motor, including the air-fuel proportion and preparing of fumes gases through exhaust systems. In any case, most ECUs work best with clean powers and subsequently may not be adequately utilizable in numerous

nations. The estimation of ECUs has been colossal, as efficiency has dramatically increased in vehicles in the course of recent decades. Motor innovation alongside cleaner powers combined with ECUs have diminished emanations of transport-related toxins, for example, NOx, CO, unstable natural mixes , lead, and particulates. However, advance in lessening absolute transport related outflows of different contaminations has been slower or non-existent. Carbon Dioxide outflows (a green house gas) have not seen any decrease. Increment in transport action won't permit Carbon Dioxide discharges to diminish soon. ITS must be an empowering highlight not a deciding one.

6. CONCLUSION

ITS plays an important role by securing the future of mobility by going against of economics, environmental mishaps. It will reduce the congestion, and bring control over the road and railway accidents, it will provide us the real time information about the vehicles and passengers and will also help the vehicles not to violate the traffic laws. New generations of traffic management systems will integrate data from vehicles, to provide dynamic control of traffic flows.

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