

Enhanced Traffic Management System using Artificial Intelligent Congestion Control

S.Thulasee Krishna, K. Nagendra Rao, P.Poornima



Abstract: *The smart city proposed by government is providing better infrastructure with possible automated device. Every smart city proposes to provide smart transport through automated traffic management. The peak hours face the congestion road and many traffic irregularities. The congested road aids in poor Travel experience, environmental pollution and health hazards by vehicular fuel. The solution to aforesaid issues leads to traffic Automation in urban communities. To implement the traffic automation need access to real time traffic congestion information, best possible route and alternate strategy with online traffic information applicable to specific traffic stream. An more suitable site visitors manipulate and MF has been mentioned to finish short information transmission and their corresponding motion performed via artificial intelligence. The VANET scenario, congestion manage algorithm executed through mobile agent controller uniformly organizes the traffic glide by way of heading off the congestion at the smart visitors zone, The law-enforcement bodies, the fire opponents and the clinical and/or paramedical teams consciousness on elevated quantity of crime in addition to lifestyles losses through site visitors irregularities. The benefits of adopting the internet of things(iot) provide a new prospect for intelligent site visitors improvement.*

Keywords : Intelligent traffic systems, artificial intelligent system, VANET

I. INTRODUCTION

Traffic Management Systems (TMS) use a variety of technologies to manage traffic flows and the effects of congestion on the road network. Traffic Management Systems do this by addressing the traffic management effects of accidents and slow moving or queuing vehicles, planned events and extreme weather[1]. TMS include, ramp signaling, dynamic lane management, variable speed limits, incident detection, vehicle activated signs and adaptive traffic signal control. Many of the systems are usually integrated to gain maximum benefit.

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Managing the allocation of road space is an important concept that is becoming increasingly relevant as it is not feasible or cost-effective to continue to accommodate the growth of urban traffic by constructing additional roads. It is widely acknowledged that a large part of added road capacity is often quickly absorbed by 'induced' demand.

Benefited of TMS

TMS measures can be applied in urban, peri-urban, and rural areas, as appropriate. TMS systems are often used on the state highway network, and are likely to operate across different organizational boundaries. Road authorities wanting to introduce TMS should work closely with the New Zealand Transport Agency, regional authorities (including cross boundary) the police and wider emergency services, passenger transport operators and other stakeholders in order to consider wider network implications. In addition to this, planned measures by the local road authority that may displace extra vehicles onto the state highway network, will need to be assessed in terms of their implications for TMS applications on the state highway system.

II. RELATED WORK

Enormous computing power, human intends to calculate every atom in the universe.as an exception human fails to control the traffic in urban cities with automated traffic system. such cities being highly populated cause high consumptions of fuel but increases expenditure for communication and pollute the environment. The immediate effect is considerable amount of working hours are wasted and production costs are increased which impacts the economical figure of the nation[2].

Smart city mission intends to combat this problem using satellite and computer technology to re-route vehicles from highly congested roads to less congested ones by appropriate infrastructure, wireless communication and sensor devices. Based on decentralized decision traffic density in various roads. It helps to save fuel and save a lot of time spend in travelling a accessible distance at high cost of energy[4].

The use of VANET is network connectivity between the vehicles and the network infrastructure helps to reduce the problems of congestion, accidents, crime problems and population overhead.

Data analytics (DA)tools takes data from the traffic management system and by GIS mapping under real time support, DA provide useful information to the vehicles and help reducing the traffic congestion[3].



III. OUR PROPOSED SYSTEM MECHANISM

STMS has been mentioned in this area intended. The estimated work contain with traffic control system it has sub divided such as video controlling devices inspect device

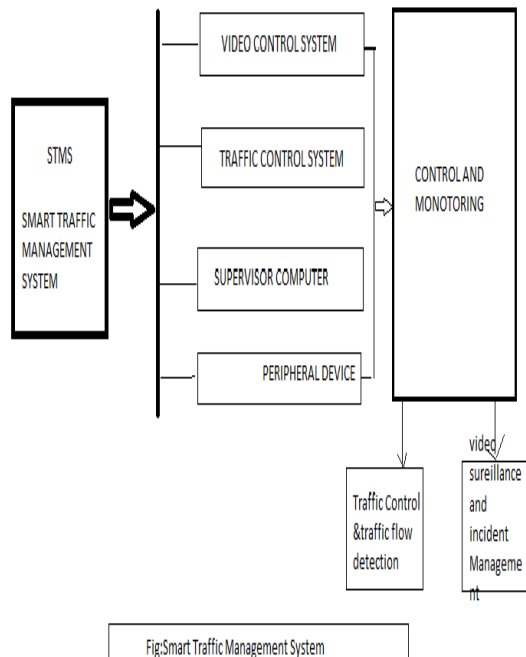


Fig.1. Block diagram of the proposed system

follow the system and their related component .Heavy traffic control by traffic maintenances device. Shown in figure the mentioned in this all active machine and control the system. This is prevent interpreting communication.

Short description of the device

The smart towns incurs site visitors congestion troubles as a lifestyles hacking problem solution better by using VANET having network connection of the automobile , network infrastructure. In a vehicular ad-hoc network (VANETs) state of affairs the networks are ultra-modern in generation for smart road traffic control and control structures .The wide utility of wi-fi generation is titanic on motors and thus motors are transformed to clever cars to be accessed beneath clever site visitors application .VANETs guide flexible conversation among cars and visitors controlling structures in each infrastructures based totally and in wireless medium with out fixed infrastructure. Information analytics is the vital enter in this gadget that is executed by way of cell agent dynamically in VANET

Scenario. This advanced facts analytics gives the smart metropolis the answer for site visitors congestion answer in clever city. Cell agent used on this machine implements the congestion manipulate algorithm in automatic visitors manage device. The visitors density explored with the aid of cellular software is used to manage congested traffic and shows an change solution[5]. nice tracking controlling approach can be applied with improvement of ABM (agent-based model)which incorporates built-up road community setup and measures actual period and estimated airborne pollutants catalog in unique parts the road through

the sensors connected with base station through the wi-fi communication gadget an produces recommended techniques for road customers. Such techniques encompass decreasing wide variety pollutants stages growing automobiles go with the flow at the roads. This helps real-time lifestyles existence in metropolitan cities. Statistics sets used for this reason are accumulated from first-rate tracking machine, road community facts available really less cost pollutants devices[6]. Cellular cloud computing support technical development in clever cities. An enhancing healthcare utility using cellular massive facts planned with cloud-centered mobile cloud computing structure may be established.

Conversation steps precisely the traffic manipulate schemes in (VANET) often stimulated with useful resource of density the site visitors phrases of extensive variety vehicles. An more suitable website online site visitors manipulate and tracking framework has been proposed to perform brief facts transmission and initiates responsible movement .Within the VANET situation, cell agent primarily absolutely regulator implements a blocking resistor set of rules to set up site visitors waft with the resource of warding off the congestion at the smart traffic vicinity. The prevention of injuries ,crime, motive force tractability and refuge of the commuters are the unique capabilities exhibited by way of this state of affairs. To manipulate the postpone and stop any fate due to deep jamming Ns2 simulator simulates better performance.

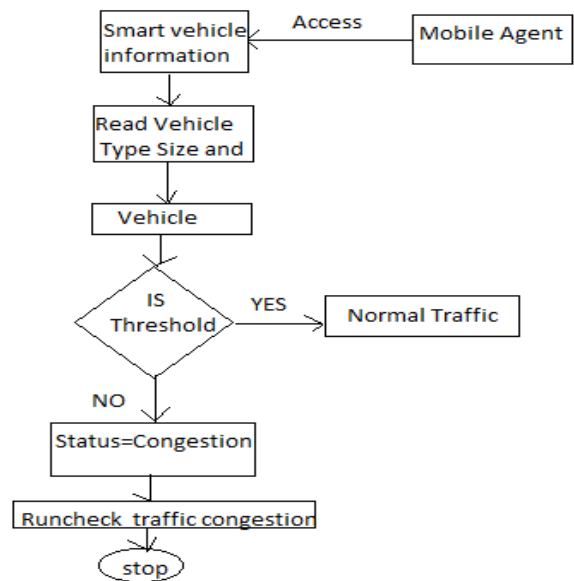


Fig: Flow chart Traffic Congestion and Prevention Method

Description of the system

In VANET situation, the cellular system primarily control process congestion maintenances set of rules to prepare web site traffic flows by manner of heading off the congestion at the clever site visitors sector. An sensible visitors management framework proposed with the deliberate framework to address site visitors manipulate gadget has STMS because the center module and sub modules which includes video control tool and peripheral gadgets.

The website visitors manage device manages and controls the heavy web page site visitors at some point of pre-defined length on the street with prepared automated gadgets. The video tracking system perceive congested visitors through video digital camera and display the growth in car drift in notified time slot primarily based on a pre-calculated threshold charge. The cars trying to use the congested direction would be diverted in the direction of any other selected direction, for this reason providing computerized traffic control. The clever peripheral gadgets implemented in the this Machine manage the appropriate configuration and discover the occasions ship the records , govern factors. As the basic infrastructure requirement traffic monitoring cameras should be installed at every prone zone with accurate camera aspects.

To prevent traffic congestion SMTS works on below procedure

- 1.video monitoring devices sense The visitors records like awaiting particular traffic selected time range and is despatched via the site visitors sign sensor device to the server.
- 2.Traffic control system identifies the best possible routes for both inward and outward flow of traffic within a limited parameter. Suggests the possibilities to the trespassers of congested path through the mobile agent connected with SMTS enabled with GIS mapping of roads.
- 3.Smart computer control system monitors both congestion and decongestion of the monitoring paths.
- 4.Pollution monitoring system embedded with specific sensor monitors the polluting gas present in the atmosphere of vehicle trespassing. The data are transmitted to the central server and get stored. When it cross the safe limit the hazard is notified to the concerned team to initiate appropriate action and to public through SMTS mobile agent to avoid the path notified.

IV. RESULT AND DISCUSSION

The simulation has been carried out under three traffic scenario with variable number of vehicles and the results are obtained by extracting output values from trace file created after simulation.

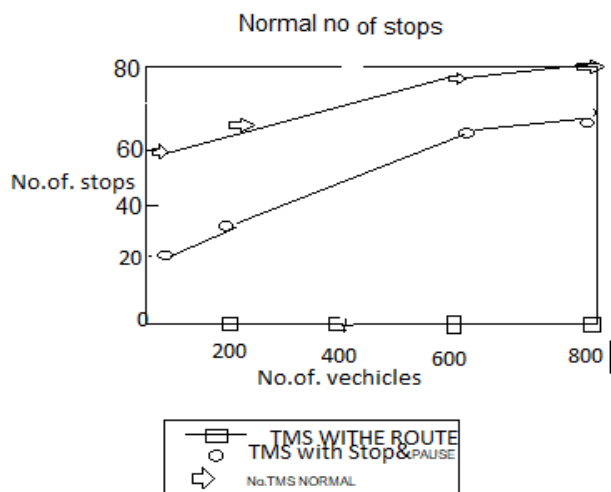


Fig :analysis of .no.of stop points

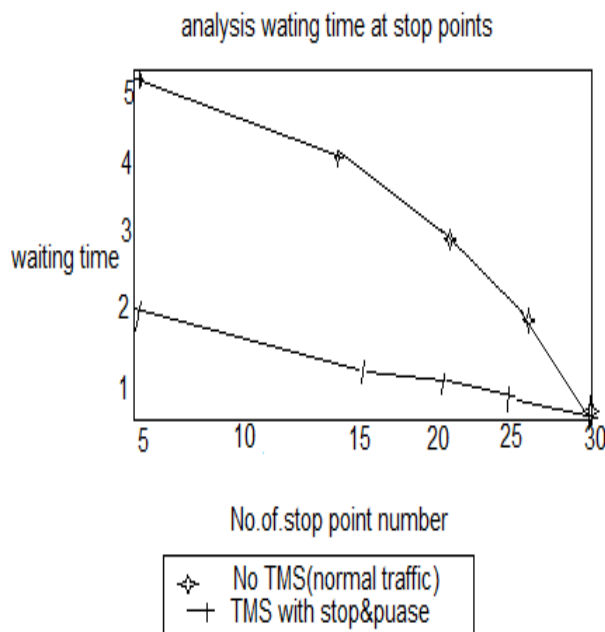


Fig: Analysis of wating time at stop points

fig. depicts the average number of stop positions by the vehicles with varying condition of traffic. This depends on the waiting points controlled by the SP1.3 signal point as shown in fig.. Fig indicates the average waiting time found during simulation by the proposed system TMS under a particular vehicle range between 1500 to 2000. It can be noted here that the stop points are controlled by the automated signals from SP 1.3 to the corresponding vehicles. As the no. of stop point increases, the congestion gradually gets reduced and the waiting time at stop points gradually decreases. But the waiting time in normal traffic (No TMS) is too high at the stop points.

V. CONCLUSION

Improving transportation performance remains an active and tough research region because of the criticality of the transportation infrastructure being monitored via such structures. We've additionally proposed an in-intensity classification and evaluate of TMS offerings organized with the aid of their architecture and dreams. Furthermore, a qualitative analysis changed into finished primarily based on TMS described.

In the end, we offered our vision on improving TMS performance and robustness to achieve the preferred degree of accuracy and visitors manage. For the general advantage of the visitors device, various modules like video tracking, clever visitors manage device, signal device and clever gadgets are blanketed within the offered method with distinct shape in their clever functionality. Simulation effects display an advanced fee of consistent manipulate in site visitors , it uses advanced generation of automating automobiles, cellular system and massive records analytic devices.



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